

CHAPTER 8

The *wh* parameter and radical externalization

ÉRIC MATHIEU

1. INTRODUCTION

In this article, I propose that a significant part of linguistic variation is external to (narrow) syntax and in particular that it is reducible to differences in prosodic properties between languages. The logic and the details of my proposal are compatible with the idea that syntax is mainly invariant (Newmeyer 2005, Kandybowicz 2009, Boeckx 2012, 2014, Berwick and Chomsky 2011). However, my account leans towards radical externalization in that I attempt to do away with “strength” parameters. As I understand it, in Chomsky’s system (Chomsky 2005), some variation is, after all, kept in syntax by way of features (strong or weak), especially for cases such as the *wh* parameter. Since I abandon such features, my theoretical stance is thus (it seems to me) much closer to that of Boeckx (2012, 2014), who claims that syntactic parameters simply do not exist. If “strength parameters” are external to syntax, then they are typological generalizations susceptible of exceptions: they are not categorical (in the traditional sense) but tendencies, and this is exactly what we find.

As a way of illustration, I concentrate on French and use both synchronic and diachronic evidence to show the influence of prosody on language variation/change. My account is very much in the spirit of Longobardi (2001), who argues that languages do not change internally, but only because of external influences. The difference with my analysis is that UG is not only free of parameters but that it is completely encapsulated: no external influence is possible; external occurrences always remain external phenomena. In other words, like the OV/VO parameter (Chomsky 2000, 2001), the *wh* parameter is completely relegated to PF.¹

The article is organized as follows. Section 2 discusses the *wh* parameter and shows how it has been implemented in generative grammar over the years. I include a discussion of Richards (2010), since the present proposal is inspired by his influential account. I show, however, that for a number of reasons, my analysis is superior to his and that a pure prosodic account is possible. Section 3 shows that prosody and focus are interconnected and that languages that express focus via prosodic phrasing do it in two main ways: 1) culminatively, as in Germanic and (most) Romance languages; or 2) purely demarcatively. Section 4 shows that focus in French can be expressed prosodically and demarcatively via the insertion of boundaries followed by dephrasing and that the language has no lexical stress. With special emphasis on rephrasing/dephrasing and segmental cues, section 5 shows how *wh* in situ in French is licensed prosodically, providing many examples that show *wh* in situ phrases in that language create their own prosodic domains. In this section, I also spell out the main typological generalization introduced in this article, namely, that *wh* in situ languages tend to be languages with no lexical stress that use only prosodic phrasing to mark focus, while *wh* movement languages tend to be languages with lexical stress that use pitch accents to express focus. Section 6 concludes with a set of predictions that my theory makes and with possible extensions of the theory for future research.

2. THE WH PARAMETER

There is a long-standing observation in the literature about the distribution of *wh* questions cross-linguistically: some languages are *wh* in situ languages (the *wh* word remains in its argument position), while other languages are *wh* movement languages (the *wh* word is dislocated to the left periphery of the clause).² For many years, linguists have tried to give a rationale for this typological division, but unfortunately the results are not conclusive. Either the proposals are not explanatory, and must thus be abandoned, or they have recently collapsed in view of certain additional data not originally considered by linguists working on this topic.

Beginning with the ad hoc proposals, let us consider the strong/weak feature proposal introduced by Chomsky (1995). Languages with *wh* movement are claimed to have a strong feature on C, while languages with *wh* in situ have a weak feature on C. This proposal replaces the Government and Binding popular view, which had *wh* phrases move overtly at S-structure but covertly at LF (Huang 1982, and many others) but which is no longer valid in minimalism, since in minimalism the derivation from the Numeration to LF is uniform: there cannot be any movement between Spell-Out and LF. Under the minimalist view, the strong feature on C attracts the *wh* phrase to Spec-CP,

while the weak feature on C makes sure that the *wh* word remains in the argument position.

The problem with this account is that there does not appear to be any connection between strength and actual morphology in the case of *wh* movement. For example, there is no known special morpheme on C in English (or in other languages, as far as I know) that could be a trigger for *wh* movement. While proposals that link rich morphology and movement have been more successful in other areas of the grammar (e.g., verb movement, Pollock 1989), it is clearly much more problematic in the case of *wh* movement.

The EPP version of the strong versus weak parameter does not fare any better (Chomsky 2001). The proposal is that languages with *wh* movement have an EPP feature under C, while *wh* in situ languages do not. This is simply a stipulation.

Turning now to more explanatory proposals, let us focus on the very popular and very influential Clausal Typing Hypothesis³ from Cheng (1991, 1997). Cheng's proposal is that *wh* in situ languages are languages where Q particles are available and where *wh* words are simple indefinites (that can be used in all sorts of contexts, not just interrogatives). The Q particle unselectively binds the indefinite, which consequently can remain in situ (see also Nishigaushi 1986, 1990, Pesetsky 1987, Aoun and Li 1993, Cole and Hermon 1994, Shi 1994, Tsai 1994).⁴

Although this generalization is attractive, it nevertheless collapses in view of recent newly introduced evidence. Through a typological survey of over 500 languages taken from Dryer (2004) and a detailed comparison of Passamaquoddy and Mandarin Chinese, Bruening (2007), for example, shows convincingly that there is no systematic connection between *wh* in situ and either property (i.e., the availability of Q particles and *wh* phrases as simple indefinites; see also Haspelmath 1997). Passamaquoddy uses *wh* words as indefinites in all the contexts Chinese does, but it is a robust *wh* movement language. In fact, many languages, regardless of whether they are *wh* movement or *wh* in situ languages, have question particles, and most languages use *wh* words as indefinites.

French (in particular, its nonstandard varieties) is also a major problem for Cheng (1991) because it has *wh* in situ but no Q particle in *wh* questions (it nevertheless has a Q particle in the form of *est-ce que* for yes–no questions).⁵ The French problem is addressed in Cheng and Rooryck (2000). However, their claim that *wh* in situ in French is licensed by the same intonational properties used in yes–no questions does not seem to hold. It turns out that the intonation of a *wh* movement question is similar to that of declaratives denoting a proposition (Hirst and Di Cristo 1998), and the same goes for *wh* in situ questions (Wunderli and Braselmann 1980, Wunderli 1982, 1983, Mathieu 2002, Beyssade et al. 2004, 2007). In other words, there is no special pitch accent on French *wh* in situ question words. If one is added, then the sentence is interpreted as an echo question.⁶

A recent experiment by Déprez et al. (2013) also does not confirm the original predictions made by Cheng and Rooryck's proposal. For the majority of speakers in Déprez et al.'s experiment, the *wh in situ* phrases were perceived to have, and were shown to exhibit, a sentence-final rising intonation contour; however, when present (and there was a lot of variation), this was not identical to the rising contour exhibited by *yes–no* questions. As pointed out by Déprez et al., this difference is unexpected, given Cheng and Rooryck's proposal that the same intonation morpheme with default *yes–no* intonation is associated with both *yes–no* and *wh in situ* questions.

This does not mean that Cheng and Rooryck's (2001) account has no value: far from it. It has the merits of bringing prosody, and especially intonation, to the forefront of research on French *wh in situ* and *wh in situ* in general. This insight is an important one: as I will argue in this article, prosody is key in understanding the licensing of *wh in situ*, not only in French, but cross-linguistically. In fact, prosodic accounts of French *wh in situ* have flourished in recent years (Adli 2004, Hamlaoui 2011), and the claim that *wh in situ* is licensed prosodically has been a common feature of the literature on focus for many years (Ladd 1996, Zubizarreta 1998, Kahnemuyipour 2004).⁷ The exact nature of the licensing mechanism nevertheless remains an open question. Moreover, to my knowledge, apart from Richards (2010), no attempt to correlate *wh in situ* with the more general prosodic properties of the language that has *wh in situ* has been made.

My account is very much inspired by Richards' (2010) recent account of *wh in situ* versus *wh movement* cross-linguistically. His contribution is a great step forward to our understanding of the licensing of *wh in situ* and *wh movement*.

Richards (2010) proposes a universal PF well-formedness condition on *wh* constructions: a *wh DP* and its corresponding complementizer must phrase together prosodically. When syntax and prosody collaborate to build structures satisfying this condition, *wh movement* is unnecessary and *wh in situ* obtains. When this phrasing cannot be achieved, *wh movement* becomes obligatory, repositioning the interrogative closer to *C* for prosodic grouping. Two factors determine whether a *wh* item can be phrased with its corresponding *C* independent of movement: 1) whether prosodic boundaries are mapped onto the left or right edges of *wh DPs* and 2) the position of *C*. When a *wh* phrase's prosodic boundary and corresponding *C* are on opposite sides of the *wh* phrase, the required prosodic grouping can be obtained via prosodic rephrasing, allowing for *wh in situ*. An example of this case would be a language that prosodically marks its *DPs*' right edges and positions its complementizers sentence-initially. By contrast, if a *wh* phrase's prosodic boundary and its corresponding *C* fall on the same side of a *DP*, the requisite phrasing can obtain only if movement to the opposite side of *C* occurs. An example of this case would be a grammar that prosodically marks the left edge of *DP* and has initial complementizers. This gives us the following four options. Japanese and

Chichewâ (1) and (2) are *wh* in situ languages, while Basque and Tagalog (3) and (4) are *wh* movement languages (the a. and b. lines are Minor Phrases).



- (1) Japanese: a. [DP] [**whP**]_[DP] V C
 b. ()()()
 c. ()()



- (2) Chichewâ: a. C_[DP] [**whP**]_[DP]
 b. ()()()
 c. ()()



- (3) Basque: a. [DP] [**whP**]_[DP] V C
 b. ()()()()
 c. ()()()



- (4) Tagalog: a. C_[DP] [**whP**]_[DP]
 b. ()()()()
 c. ()()

Like Richards (2010), I argue that the *wh* in situ versus *wh* movement distinction is predictable from independently observable properties of languages. However, my account is not only different, but also has advantages over Richards', because it captures larger prosodic properties common to all *wh* in situ languages and it also avoids the pitfalls that a theory such as Richards' (2010) brings with it.

First, it must be emphasized that Richards' (2010) account is a prosodic account, but only partly. On his view, it matters where the complementizer is in the structure (left or right). No such requirement is necessary in my theory. My account does not care either whether the boundary is to the left or the right of the DP. In fact, many languages have a boundary to the left *and* the right of DPs (that informational properties affect prosody in addition to syntactic

properties has been well-studied since Nespor and Vogel 1986). As I will show, this is certainly the case for focused DPs in French and Bengali. Richards says that it does not matter if, for example in a structure such as (2), there was an extra boundary to the left of the DP, since what is important is that a boundary is present on the other side of the complementizer. Allowing such optionality in the theory, however, has the potential to render the theory unfalsifiable.

Second, according to Richards (2010), DPs, and no other maximal projections, are associated with prosodic boundaries. This is controversial, since many other XPs have boundaries (Selkirk 1984).

Third, Richards (2010: 195) chooses to ignore matters of focus (while noticing that there is a link in the Hayes and Lahiri 1991 discussion of Bengali about the association between focus and *in situ* phrases). My account, on the other hand, puts focus at the forefront of the discussion, since, on my view, it is crucial to our understanding of the facts.

It must also be noticed that Richards (2010) focuses on dephrasing (e.g., a left-edge complementizer and the right edge of a DP try to form a prosodic domain), whereas there are many cases where *rephrasing* is the relevant notion: the *wh* phrase creates a new domain with a boundary to the left and to the right (for Bengali, see Hayes and Lahiri 1991; for French, see Féry 2001; and for other languages, see Büring 2009; also see below).

Finally, it seems to me that the theory makes the wrong predictions. It predicts that English (and many other languages like English) are *wh in situ* languages. This is because in English, complementizers are at the left edge of the sentence but prosodic boundaries of DPs are at the right edge of XPs. In addition, it is not clear to me either how the proposal works for Chinese, perhaps the most famous *wh in situ* language, since in that language, complementizers appear at the right edge, and presumably DP boundaries are to the right.

On my account, whether a language is a *wh in situ* or a *wh movement* language depends entirely on whether the language associates focus with prosody in a purely demarcative fashion. I propose a typological generalization that sets languages with *wh in situ* and languages with *wh movement* apart based on their general prosodic properties, and more specifically to the way they use or do not use intonation or pitch accents to express focus.⁸ I concentrate on French *wh in situ* (Boeckx 1999, Mathieu 1999, 2002, 2004, Zubizarreta 2003, Adli 2004, Hamlaoui 2011) and thus contribute directly to the prosodic literature that already exists on the topic (Adli 2004, Hamlaoui 2011). However, my implementation of the facts and my conclusions are rather different from those found in these articles. In particular, the aim of my contribution is typological: it is meant to go beyond French. Many other languages will be discussed (Chinese, Japanese, Sinhala, Turkish, etc.) and will be shown to share with French crucial intonational properties that set them apart from *wh movement* languages.

I argue that the key to understanding the licensing of *wh in situ* in French (and other languages) is to be found in a proper understanding of the way focus

is licensed in the language that exhibits *wh* in situ. I propose that, although CP (complementizer phrase) is universal (it is present in all languages and so is *wh* scope), variation in question formation, i.e., whether the *wh* word remains in situ or raises to the left periphery of the clause, is conditioned (directly and indirectly) independently by prosodic factors. The generalization is the following: i) A language tends to be a *wh* in situ language if prominence/focus can be expressed prosodically and in a way that is purely demarcative, that is, without pitch accents and only with prosodic rephrasing/dephrasing and/or segmental cues (such languages tend to have no lexical stress); ii) A language tends to be a *wh* movement language if prominence/focus can be expressed prosodically and in a fashion that is culminative, that is, via pitch accents followed by deaccenting (such languages tend to have lexical/flexible stress). This explains why so many tone languages are *wh* in situ languages: East Asian (e.g., Vietnamese, Thai, Chinese, etc.) and most Bantu languages (Chichewâ, Zulu, Kinyarwanda, etc.) have no lexical stress.⁹ In diachronic terms, languages can go from i) to ii) or vice versa depending on what happens to the general prosodic system. A case in point is French, a language that went from ii) to i).

The French data are based on the author's speech, and one other native speaker. In my analysis, I rely on important works in prosody, for example, Pierrehumbert (1980), Beckman and Pierrehumbert (1986), Hayes and Lahiri (1991), and in particular Féry (2001) and Vaissière (2002). The notation that I use may often be different from what these authors use. The reason why I have developed my own notation is to achieve greater clarity and explicitness.

3. PROSODY AND FOCUS

In this section, I review how prosody feeds the way focus is licensed. This is in preparation for section 4, where I discuss French, and for section 5, where I make a correlation between the way focus is licensed in a given language and the position where *wh* phrases appear in that language. Since *wh* words are necessarily focused (Culicover and Rochemont 2003), it is natural to discuss focus more generally and the way it is licensed cross-linguistically.¹⁰

Let me begin by introducing the well-known observation that focus is realized differently cross-linguistically (see Büring 2009 for a comprehensive overview): focus is often said to be marked either syntactically, morphologically, or prosodically (some languages use more than one strategy). Languages such as Hungarian (Kenesei 1986) and Italian (Rizzi 1997) manipulate constituent ordering to mark focus, while languages such as Chickasaw¹¹ (Munro and Willmond 1994) and Wolof (Rialland and Robert 2001) use special focus particles. A third, very common strategy is prosodic phrasing. It is a matter of debate whether or not focus is *always* marked prosodically (Szendroi 2001), thus including cases such as Hungarian focus movement. I will leave this

matter aside, but some of the results of the present article show that the use of left and right dislocation as well as clefts in French is indirectly triggered by prosody. This means that focus movement and *wh* movement might be triggered in Hungarian because of the incapacity for focus and *wh* elements to be licensed prosodically in situ. Prosody may also turn out to be relevant in languages with focus particles (for the case of Sinhala, see Weerasooriya 2011).

Let us focus on prosodic phrasing, leaving aside languages where focus is licensed “syntactically” or “morphologically.” All known languages, as far as we know, have intonation and use prosodic phrasing to express prominence. However, languages differ in the way they realize it, and this is key in understanding why some languages allow *wh* in situ while some do not.

Prominence at the post-lexical level can be marked either 1) culminatively, as in Germanic and (most) Romance languages, or 2) purely demarcatively, as in Korean and Japanese (Hyman 1978, Beckman 1986, Ladd 1996, Venditti et al. 1996, Jun 2005). In the first case, in order for prominence to be realized, the rhythmically strongest element of a metrical structure must be associated with the Nuclear Pitch Accent (Halle and Vergnaud 1987, Cinque 1993, Zubizarreta 1998). The focused constituent in a sentence is always linked to a stressed syllable in one of the words that make up the focused constituent. In the second case, prosodic phrasing is independent from lexical stress, since the languages in question often have no lexical stress. Prominence is marked when a word (or a group of words) is at a certain location in a prosodic unit (e.g., the beginning or the end): a boundary tone then marks the edge of a prosodic unit and segmental processes are activated.

Section 3.1 concentrates on the culminative strategy, whereas section 3.2 deals with the demarcative strategy. Section 3.3 summarizes section 3.

3.1. The culminative strategy

In English, focus is first and foremost realized by pitch accents¹² and the main sentence accent is usually rightmost, that is, near the end of the phrase or sentence. In other words, it is the constituent with the last accent. For example, the answer to (5a) in (5b) involves focus on the constituent a *hammer* with lexical stress on the first syllable of *hammer*, which means *hammer* becomes culminatively the most prominent of the XPs by receiving main sentence accent.¹³

- (5) a. What did you break the window with?
b. I broke the window with [a **HAMMER**]_F.

However, main sentence accent in English can shift. For example, the question in (6a) receives the answer in (6b). Here the focused element is *window* and the first syllable of *window* is stressed, which means *window* becomes the

most prominent of the XPs. The main sentence accent is no longer rightmost. We see the same effect in (7), where contrastive focus is involved. In each case, everything to the right of focus is deaccented (Ladd 1980): pronounced with flat intonation.

- (6) a. What did you break with a hammer?
b. I broke [a **WINDOW**]_F with a hammer.
- (7) a. Did you break a table with your hammer?
b. No, I broke [a **WINDOW**]_F with my hammer.

Main sentence accent can shift yet further left of the sentence. (8) and (9) show that all that is needed in English to focus the subject noun phrase is to shift the stress from the object to the subject and the subject becomes prominent. Prominence is realized via head marking again: as above, the rhythmically strongest element of the metrical structure is culminatively associated to the main sentence accent (other languages that do this are German, Dutch, Greek, Italian, Spanish, and Portuguese).

- (8) a. Who broke the window with a hammer?
b. [**RICHARD**]_F broke the window with a hammer.
- (9) a. Peter just broke the window with a hammer.
b. No, [**RICHARD**]_F broke the window with a hammer.

In English, main sentence accent is not always associated with focus (Ladd 1996). For example, in cases of broad focus, main sentence accent may shift depending on the kind of predicate that is used.¹⁴ This is discussed in detail in Ladd (1996). Transitive verbs favor main sentence accent on the last constituent (10b); intransitive verbs with inanimate subjects, main sentence stress on the first constituent (the subject) (11b); intransitive verbs with animate subjects, main sentence stress on the last constituent (the verb) (12b); and generic predicates, main sentence stress on the verb regardless of whether the subject is animate or inanimate (13). I mention these cases because French, as we shall see below, behaves very differently with regard to these data.

- (10) a. What happened?
b. [I broke a window with a **HAMMER**]_F.
- (11) a. What happened?
b. [**The COFFEE** machine broke]_F.

- (12) a. What happened?
b. [The professor LEFT].

- (13) a. [Wood FLOATS].
b. [Penguins SWIM].

In summary, in Germanic and (most) Romance languages, focus is expressed by prosodic effects that are organized around prominent pitch accents related to lexical stresses.

3.2. The demarcative strategy

What happens in languages that have no lexical stress? In these languages, there cannot be a direct association between stressed syllables and prominence, since there is no syllable that stands out with regard to pitch accent. Instead, the languages resort to tone variation and other prosodic cues to express focus. For example, languages such as Chichewâ and Bengali use the presence of high tones at the edges of phonological phrases in order to make these phonological phrases more salient.

Let us focus first on Bengali, a language with prosodic phrasing that is the object of study of Hayes and Lahiri (1991). Traditionally there are three kinds of tones (Pierrehumbert 1980). 1) Pitch accents are tones that get linked to stressed syllables. Formally, they are annotated with an asterisk (H^* , L^*). 2) Phrase accents, notated H^- , L^- , are tones found between the rightmost pitch accent and the final boundary tone. 3) Boundary tones, marked $H\%$, $L\%$, are linked to a boundary rather than a syllable, meaning that the pitch target is aligned with the actual edge of a phrase rather than a particular syllable.

However, Hayes and Lahiri (1991) follow Beckman and Pierrehumbert (1986) in analyzing the old “phrase accent” as the boundary tone of an Intermediate Phrase (abbreviated iP) and the old “boundary tone” as the boundary tone of the Intonational Phrase (abbreviated IP). Hayes and Lahiri (1991) also adopt insights from independent research on phrasing, namely, the theory of Prosodic Hierarchy (Selkirk 1980, Nespor and Vogel 1986, Selkirk 1986). This theory is based on evidence from segmental phenomena rather than intonation, but also posits a level of phrasing immediately subordinate to the Intonational Phrase, namely, the Phonological Phrase. It is an unsettled issue whether the Intermediate Phrase and the Phonological Phrase are the same thing. With regard to Bengali, Hayes and Lahiri (1991) assume that it is, since the exact same phrases that control juncture effects also appear to control the intonation pattern.

In Bengali, stress always falls on the initial syllable of a word. This rule is inviolable. As pointed out by Hayes and Lahiri (1991: 56–57), “stress in

3.3. Summary

To summarize section 3: languages vary in the way they mark focus in the grammar. Some languages (Germanic, most Romance languages) have lexical stress and always link the prominence of the focused constituent to a stressed syllable, in which case deaccenting occurs on every constituent to the right of focus (and sometimes to the left). Other languages (Bengali, Chichewâ, Japanese) resort to the insertion of boundaries either to the left or right (or both) of the intonational phrase to mark focus without any pitch accent on a particular syllable. In these languages, everything that is not focused is dephrased rather than deaccented. As Ladd (1996) argues, this strategy is very common: more languages show a tendency to use phonological phrasing as the cue for focus rather than pitch prominence alone. While it is true that many languages that use the culminative strategy also make use of the demarcative strategy, the reverse is not true: there are languages that use only the demarcative strategy (in the absence of stress). The generalization that I will be making takes this into account: *wh in situ* languages tend to be languages that use the demarcative strategy only. “Culminative” languages (e.g., English, Spanish) may or may not allow *wh in situ* depending on whether and how the demarcative strategy is used (it is sometimes reported that Spanish has *wh in situ* and even English—while this is possible, it is clear that these languages are not full *wh in situ* languages, like, say, Chinese).

4. FOCUS IN FRENCH

French is very different from English in the way that it marks focus. It appears that French cannot shift main sentence stress at all. This is shown in (16).

- (16) a. Qu'est-ce qui s'est passé?
what-is this that refl-is happened
'What happened?'
- b. *[La MACHINE à café est tombée par terre]_F.
the machine at coffee is fallen by floor
'The coffee machine broke.'
or *La machine à CAFÉ est tombée par terre.

It is also impossible, or at least highly unnatural for most speakers of French, to use (17b) as an answer to a question such as (17a).

- (17) a. Qui a cassé la fenêtre avec un marteau?
 who has broken the window with a hammer
 ‘Who broke the window with a hammer?’
- b. *[RICHARD]_F a cassé la fenêtre avec un marteau.
 RICHARD has broken the window with a hammer
 ‘[RICHARD]_F broke the window with a hammer.’

A French speaker will tend to use a cleft structure instead of (17b), as in (18), where the second part of the cleft creates its own iP. This effect has been noted by Vaissière (2002) and other linguists (see also Belletti 2004, 2005, Hamlaoui 2011).

- (18) [C’est Richard]_{ip} [qui a cassé la fenêtre avec un marteau]_{ip}.
 it-is Richard who has broken the window with a hammer
 ‘[RICHARD]_F broke the window with a hammer.’

The cleft is a so-called presentational cleft: it does not have the semantics of an English-type cleft. It is not presupposed that someone broke the window (a possible answer to the question *Qui a cassé la fenêtre avec un marteau?* could have been *personne* ‘no one’) and *Richard* is not contrastively focused. Presentational clefts are widely used in spoken varieties of French (cf. Sasse 1987: 538–539).

The reason why main sentence accent shift is not possible in French and why the language resorts to clefts is because French speakers do not acquire a phonological distinction between stressed and unstressed syllables. This explains why French prosody is so different from English prosody. French speakers are “stress deaf,” as it were, as shown in several experimental studies by Emmanuel Dupoux and colleagues (Dupoux et al. 1997, Dupoux et al. 2001, Dupoux et al. 2008). English stress is contrastive (**refuse** versus **refuse**) and flexible (so much so that, as we have seen above, a focused word necessarily acquires the stress of the syllable in a lower prosodic group), whereas French “stress” has none of these properties. As pointed out by Féry (2001), the reason why French intonation is often lumped together with the intonation accounts of Germanic and other Romance languages is because French is analyzed as having final stress (see, for instance, Mertens 1990, Post 2000). There is indeed always intonational activity at the end of a phonological word or a phonological phrase, but this final activity appears to be a boundary correlate rather than stress per se. I will follow the approach taken by Féry (2001) and Vaissière (2002) that takes seriously the idea that French intonation lacks any kind of stress (Rossi 1980, Beckman 1986), but uses instead demarcative cues at the edge of a phonological word or phrase. This makes French a very interesting language to study because it is the only Romance language where lexical/flexible stress disappeared (Klausenburger 1970).

The proposition that French is a language without lexical stress is strengthened by the historical literature. French went through a major change in prosody in the later Old and Middle French period (1100–1600): the heavy tonic stress that characterized the earlier period (500–1110) started to crumble (Pope 1934, Kukenheim 1971, Marchello-Nizia 1995). A new tendency to link words closely together began to appear (Hjelmslev 1936–1937, Togeby 1965). In fact, it appears that grammarians noticed that French was a phrase-based rhythm rather than a stress system as early as 1580. Dufter (2010) reports the following quote from Sainliens (1580) found in Livet (1859)¹⁵:

(19) “[. . .] *ma tante a disné se prononce ma tanta disné; mon père et ma mère ont soupé se prononce monperetmamerontsoupé. Toutefois, en faisant une légère pause on peut dire: mon père, et ma mère ont soupé. Mais si l’on s’habitue à cette prononcia-tion on comprendra les livres, mais bien peu la conversation des Français.*” (Sainliens 1580, in Livet 1859: 502)

These differences between Germanic and French have been reflected in the metric system of each language for several centuries. Compare English (20) with French (21). In English, the rhythm is created through the use of stress, alternating between unstressed and stressed syllables, whereas in French there is no such alternation: the most prominent syllable is always the last one in a phonological phrase.

(20) Let me **not** to the **marriage** of true **minds**
Admit impediments. **Love** is not **love**
 Which **alters** when it **alteration** **finds**
 Or **bends** with the **remover** to **remove**. (Shakespeare, *Sonnets*)

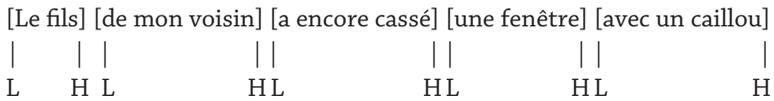
(21) a. Si je la haïssais, je ne la fuirais **pas**. (Racine, *Phèdre*)
 b. J’ose dire **pourtant** que je n’ai mérité
 Ni cet excès d’**honneur**, ni cette indignité (Racine, *Brit.*)

Before 1250, however, some French texts were closer to English metrics than Modern French metrics. Rainsford (2010) shows that the rhythm of octosyllabic in Old French verse was initially strongly iambic (weak-strong). Noyer (2002) reports similar results for Old French. While he admits that no text at any period conforms absolutely to the Iambic Pattern in the sense of classical English verse (Shakespeare, Milton, or even Shelley), in the earliest works, departure from this was fairly limited. Finally, Rainsford (2011) confirms his 2010 findings by looking at caesura: texts which mark the mid-line break in the octosyllable with a stressed syllable are not attested after 1250.

After the loss of the original lexical accent, French stress becomes fixed and develops a system that favors a prominence that regularly falls on the last full

vowel of a somewhat larger group, the so-called *Groupe rythmique* ‘Rhythmic Group’ (Grammont 1933, Coustenoble and Armstrong 1934, Dell 1984) or Accent Phrase (Jun and Fougeron 2000). This is notoriously hard to define: with a typical length of three to seven syllables, its size and structure depend not only on semantic and syntactic factors but also on individual speech rate and style. However, generally it corresponds to an L . . . H contour as in (22).

- (22) Le fils de mon voisin a encore cassé une fenêtre avec un caillou.
 the son of my neighbor has again broken a window with a stone
 ‘My neighbor’s son broke a window with a stone again.’



French also has an intermediate intonational phrase (iP) (Jun and Fougeron 2000, Michelas and D’Imperio 2009)¹⁶. I will assume that the prosodic phrase is the same as the iP, since the exact same phrases that control juncture effects also appear to control the intonation pattern. The highest level is represented by a full intonational phrase (IP) whose left edge is flanked with an L tone (in declaratives/statements).

The hypothesis entertained here is that French makes use of prosodic phrasing to a much greater extent than Germanic or other Romance languages, because it is the only device that the language has at its disposal in order to realize focus domains: phrasing takes over some of the roles traditionally attributed to pitch accents in the marking of discourse-structural domains. I will show that a focused constituent in French is marked by the insertion of an obligatory H tone at the right edge of a newly formed iP and an optional H tone at the left edge of that iP. The left edge tone was originally used to signal emphasis or insistence and is still used often by TV presenters and politicians. However, the process has become more and more generalized and grammaticalized, losing its emphatic power and is now mainly used to express focus by providing boundaries for phrasing (Féry 2001, Vaissière 2002). In sum, the focused constituent in French is realized in a separate phrase, with its own tonal structure.

The examples in (23), taken from Féry (2001) and originally heard on a program from the radio station France Culture, are illustrations of the left H tone. As shown by Féry (2001), what has been called “stress” in French is thus highly variable. It is generally possible for function words and schwa to be associated with a high tone. This is not a way to emphasize the function words. Rather the initial rises are to be interpreted as purely delimitative tones. As pointed out by Féry (2001), in a model predicting that a certain syllable is lexically stressed and that it will obligatorily get a pitch accent if the word or the larger domain for

which it stands is focused, such variation and facts cannot be accounted for. The location of stress, as conceived by most phonologists, is determined by rules, or alternatively by discourse-structural factors, or by both, and is largely predictable. None of this holds for French (the capital letters correspond to an H tone).

- (23) a. . . . quel est le premier thème scientifique
 which is the first theme scientific
 de votre premier livre [DE science fiction]_F?
 of your first book of science fiction
 ‘What is the first scientific theme that you have chosen in your first science-fiction book?’
- b. ça fait partie [D’UNE aventure]_F, il y a
 it makes part of-an adventure there is
 des gens qui . . .
 people who
 ‘It is part of an adventure, there are people who . . .’
- c. Ce sont des gens qui n’ont
 there are people who NE-have
 [JAMAIS eu la parole]_F
 never had the speech
 ‘These are people who never could express themselves.’

While the left H tone is optional, the right H tone is obligatory to express focus. This prosodic phrasing surfaces with lengthening of the vowel on the last syllable, and sometimes with a short break before and/or after the phrase boundary. Postfocus constituents are generally dephrased and realized with a rather low and flat intonation, or alternatively with a high and flat intonation until the end of the sentence, where the melody falls. Let me illustrate. (24) is a case of broad focus. I give two structures, because the wrapping of the verb and its objects is flexible in French (it depends on style, speakers, context, etc.). Either the object is grouped with the verb or it is not (24a/24b). Depending on what structure is counted as input, focus will involve breaking an iP into two iPs or simply the prosodic marking via special cues of the focused iP.

- (24) What happened? [V OBJ OBL] or [V OBJ] [OBL]
- a. [Le fils de mon voisin]_{iP} [a cassé la fenêtre avec un caillou]_{iP}
 b. [Le fils de mon voisin]_{iP} [a cassé la fenêtre]_{iP} [avec un caillou]_{iP}
 the son of my neighbor has broken the window with a stone
 ‘My neighbor’s son broke the window with a stone.’

causes devoicing of the preceding voiced fricative [v] of *rêve*. Other examples are: *bec de gaz* ‘gas tap’, where /kd/ becomes [gd]; *loupe grossissante* ‘magnifying glass’, where /pg/ becomes [bg]; *onze francs* ‘eleven francs’, where /zf/ becomes [sf] (all examples from Féry 2003).¹⁷

Nasal-obstruent simplification is the process by which a sequence of nasal vowel–obstruent–consonant is simplified into the sequence nasal vowel–nasal consonant–consonant. The medial obstruent is changed into the nasal consonant corresponding in place of articulation. For example, the sequence [ãgm] in an expression like *langue maternelle* ‘mother tongue’ is pronounced [ãɲm] (see also Dell 1986 for this phenomenon). Other examples are *vingt-deux* ‘twenty-two’, where /ɛ̃td/ becomes [ɛ̃nd]; *dinde de Noël* ‘Christmas turkey’, where /ɛ̃td/ becomes [ɛ̃nd] (examples from Féry 2003).

When a focused constituent introduces an iP boundary at its left edge and a new iP is formed, neither obstruent voicing assimilation nor nasal-obstruent simplification is possible.¹⁸ In (28b), *de gaz* ‘of gas’ is focused and separate phonologically from the preceding phonological phrase and *bec de gaz* is pronounced with [kd] rather than [gd].

- (28) a. Tu parles d’un bec d’oiseau?
 you speak of-a beak of-bird
 ‘Are you talking of a bird’s beak?’
 b. Non, je parle d’un bec | [de gaz]_F.
 no I speak of-a tap of gas
 ‘No, I am talking of a lamp post.’ (literally: ‘of a GAS beak’)

In (29b), *vingt-deux* ‘twenty two’ is pronounced [ɛ̃td] and not [ɛ̃nd].

- (29) a. Tu as pris vingt-trois bouteilles de vin?
 you have taken twenty-three bottles of wine
 ‘Did you take twenty-three bottles of wine?’
 b. Non, j’en ai pris vingt | [deux]_F.
 no, I-of.it have taken twenty two
 ‘No, I took twenty-TWO.’

We find exactly the same effects if it is *bec* ‘beak’ in (28) and *vingt* in (29) that are focused. This is shown in (30) and (31) respectively. In the following examples, *bec de gaz* is pronounced with [kd] rather than [gd] and *vingt-deux* ‘twenty two’ is pronounced [ɛ̃td] rather than [ɛ̃nd].

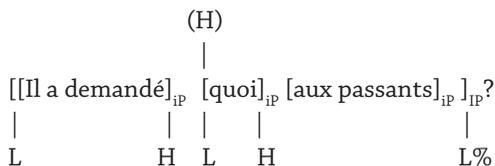
- (30) a. Tu parles d'une queue d'oiseau?
 you speak of-a tail of-bird
 'Are you talking of a bird's tail?'
 b. Non, je parle d'un [bec]_F | d'oiseau.
 no I speak of-a tap of-bird
 'No, I am talking of a bird's BEAK.'
- (31) a. Tu as pris trente-deux bouteilles de vin ?
 you have taken thirty-two bottles of wine
 'Did you take thirty-two bottles of wine?'
 b. Non, j'en ai pris [vingt]_F | deux.
 no, I-of.it have taken twenty two
 'No, I took TWENTY-two.'

To summarize section 4: because it has no lexical stress, French resorts to tone variation in order to express focus. These tones are not associated with particular stressed syllables, but their position varies greatly. Their sole function is to delimit the edges of phrases arising through the interaction of syntax, phonology, and focus structure. This state of affairs is a direct consequence of the loss of lexical accent in the later period of Old French. Moreover, special segmental processes are triggered when a constituent or a word is focused. These processes are very clear and shed light on the prosodic properties of focus in French.

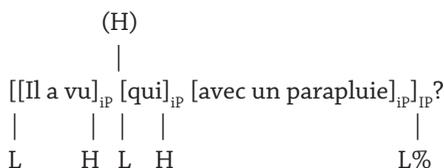
5. FOCUS ON WH IN SITU

In this section, I concentrate on *wh in situ* and show that *wh in situ* languages are languages that use prosodic phrasing rather than pitch accents to express focus. French is a case in point. As was argued in section 4, French has no lexical stress and uses prosodic phrasing to mark focus. In this section, I propose that French also uses prosodic phrasing to mark *wh in situ*. For example, in the following questions, the object *wh* word is set apart from the rest of the sentence prosodically. It has an H tone at the right edge of the *wh* phrase and an optional H tone at the left edge. Whether an H tone is selected at the left edge depends very much on the speaker or the context. The final lengthening and tonal activity are not indicative of stress or accent, but are best analyzed as suprasegmental correlates of phrasing as in section 3. There is also a slight pause after the *wh* phrase setting off the following *iP* apart from the rest of the sentence (the following questions can also be echo questions, in which case the tone at the *IP* level is H% rather than L%; normal focus is marked by L% at the *IP* level).

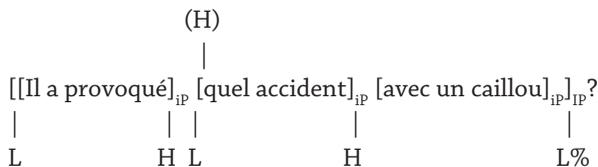
- (32) Il a demandé quoi aux passants?
 he has asked what to-the passers-by
 'What did he ask the passers-by?'



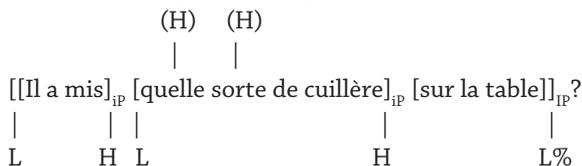
- (33) Il a vu qui avec un parapluie?
 he has seen who with an umbrella
 'Who did he see with an umbrella?'



- (34) Il a provoqué quel accident avec un caillou?
 he has provoked which accident with a stone
 'What (kind of) accident did he provoke with a stone?'



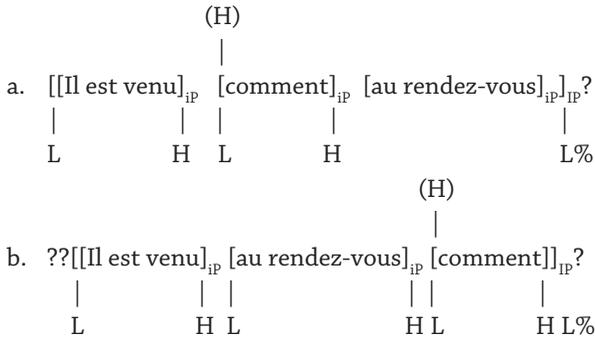
- (35) Il a mis quelle sorte de cuillère sur la table?
 he has put which sort of spoon on the table
 'What kind of spoon did he put on the table?'



Interestingly, French wh in situ phrases tend to require material to their right. I want to argue that this is so because a clear demarcation (to the left and the right) is preferable/required. This explains why, it seems to me, speakers rearrange the default word order for objects and adjuncts. For example, we would

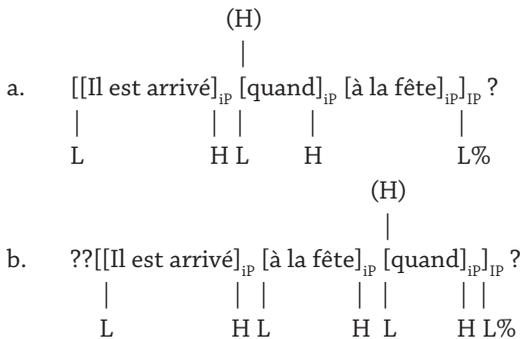
expect the in situ question in (36b) rather than the one in (36a) for the answer in (36), since *comment* 'how' is an adjunct and *au rendez-vous* a quasi-argument, but (36a) is the most natural.

- (36) Il est venu au rendez-vous en voiture.
 he is come to.the appointment in car
 'He drove to the appointment by car.'



We see the same effects with *quand* 'when' in (37). (37a) is much better than (37b).

- (37) Il est arrivé à la fête à deux heures du matin.
 He is gone to the party at two hours of.the morning
 'He arrived at the party at two in the morning.'



Generally, it appears that French *wh* in situ phrases are likely to surface with post-*wh* material. This is a preference and is not obligatory, since simple questions such as *Tu vas où?* 'where are you going' and *Tu fais quoi?* 'what are you doing?' are also very common in speech.

- (38) Tu fais quoi ce soir ?
 you do what this evening
 ‘What are you doing tonight?’
 (H)
 |
 [[tu fais]_{iP} [quoi]_{iP}]_{iP} [[ce soir]_{iP}]_{iP}
 | | | | | | | |
 L H L H L L H L%

- (39) Tu vas où comme ça ?
 you go where like this
 ‘Where are you going like this?’
 (H)
 |
 [[tu vas]_{iP} [où]_{iP}]_{iP} [[comme ça]_{iP}]_{iP}
 | | | | | | | |
 L H L H L L H L%

Prosodic constraints might also explain why in situ questions in French are much better with pronouns than with full noun phrases. For example, (40a) is much more natural than (40b). In order to express the proposition in (40b), movement of the *wh* phrase is preferred, as in (40c).

- (40) a. Ils ont cassé quoi?
 they have broken what
 ‘What did they break?’
 b. Jean-François et Marie-Catherine ont cassé quoi?
 Jean-François and Marie-Catherine have broken what
 ‘What did Jean-François and Marie-Catherine break?’
 c. Qu’est-ce que Jean-François et Marie-Catherine ont cassé?
 what-is-this that Jean-François and Marie-Catherine have broken
 ‘What did Jean-François and Marie-Catherine break?’

This may explain why French has *wh* movement alongside *wh* in situ: *wh* movement occurs for prosodic reasons as the result of a kind of rhythmic constraint. *Wh* phrases in situ in French do not like to be at the very right edge of an utterance if that utterance contains too many *iP*s or the relevant *iP*s are too large. This is dependent on context and speakers. This may also explain why there is so much variation in acceptability judgements for *wh* in situ in the literature, especially with regard to embedded clauses. There is a group of researchers that claims that *wh* in situ is unavailable in complement clauses introduced by a complementizer

(Mathieu 1999, Bošković 2000, Cheng and Rooryck 2000, Boeckx 1999), and another group that disagrees and that finds sentences such as (41) acceptable (Obenauer 1994, Starke 2001, Adli 2006, Baunaz 2008, Shlonsky 2012).

- (41) Il a dit qu'elle avait demandé quoi?
 he has said that-she had asked what
 'What did he say she had asked?'

Of course there are other factors that decide whether a *wh* word should be fronted or not: some are pragmatic (Mathieu 2004) and some semantic (Butler and Mathieu 2004).

Let us now turn to segmental evidence that shows that French *wh* in situ phrases create their own iPs. For example, the question corresponding to (42a) is (42b): *de quoi* is focused just like *de gaz*. In this case, it is not possible in either (42a) or (42b) for obstruent voicing assimilation to apply: [kd], but not *[gd]. When *de gaz* is not focused [gd] is possible. We find the same effect in (43): neither the sequence *patte de droite* or *patte de quoi* can be pronounced [dd]. Instead, it is pronounced [td]. When *de droite* is not focused, [dd] is possible.

- (42) a. Je parle d'un bec | [de gaz]_F.
 I speak of-a beak of gas
 'I am talking of a lamp post.'
 b. Tu parles d'un bec | [de quoi]_F ?
 you speak of-a beak/tap of what
 'What beak/tap are you talking about?'
- (43) a. Il a donné la patte | [de droite]_F.
 he has given the leg of right
 'He gave the right leg.'
 b. Il a donné la patte | [de quoi]_F ?
 it has given the leg of what
 'What/which leg did it give you?' (talking about a dog)

Turning now to nasal-obstruent simplification, if someone says (44a) and someone else asks 'what kind of turkey did you eat?', it is not possible for nasal-obstruent simplification to apply.

- (44) a. J'ai mangé une dinde | [de Noël]_F.
 I-have eaten a turkey of Christmas
 'I ate a CHRISTMAS turkey (rather than, say, an Easter turkey).'
 b. Tu as mangé une dinde | [de quoi]_F ?
 you have eaten a turkey of what
 'What (kind of) turkey did you eat?'

These were examples of demarcative cues at the left edge of the French *wh* in situ phrases. Let us now turn to the evidence for demarcative cues at the right edge of the French *wh* in situ phrases. In (45) and (46), we see that the narrowly focused part of the *wh* phrase creates its own prosodic domain and that consequently neither obstruent voicing assimilation (45a) nor nasal-obstruent simplification (46a) is possible.

- (45) a. Tu parles de [quel sac]_F | de caramels?
 you speak of which bag of caramels
 ‘Which caramels’ bag are you talking about?’
 b. Je parle du sien.
 I speak of his
 ‘I’m talking about his.’
- (46) a. Tu parles de [quelle dinde]_F | de Noel ?
 you speak of which turkey of Christmas
 ‘Which Christmas’ turkey are you talking about?’
 b. Celle qu’il a préparée plus tôt.
 the-one that-he has prepared more early
 ‘The one that he prepared earlier’.

We see that in French the prosodic phrasing mechanism used for focus in declaratives is also used in *wh* in situ questions. This is not a coincidence: *wh* words are necessarily focused. That a language should use the same prosodic strategy to express focus in declaratives and in questions is only natural. What is interesting is that all the languages that use prosodic phrasing rather than pitch accents are also *wh* in situ languages. This is where I introduce the main generalization of this article. Bengali (47), Chichewâ (48), Turkish (49), Inuktitut (50), Persian (51), Armenian (52), Japanese (53), Chinese (54), and Korean (55) are all *wh* in situ languages and they have a prosodic system that does not use pitch accents. Languages such as Japanese, Korean, and French are all languages with regular/no stress that use prosodic phrasing to express focus, and they are all *wh* in situ languages. In the following languages, the *wh* word is the most prominent in the sentence (Ladd 1996). In other words, prominence is realized in situ.

- (47) Ram kake dekhlo? (Bengali)
 Ram who saw
 ‘Who did Ram see?’ (Ladd 1996: 227)

- (48) Kodí anyaní á mísala a-ku-chí-pwány-a chiyáni? (Chichewâ)
 Q 2-baboons 2assoc 4-madness 2SM-pres-smash-fv what
 ‘What are the mad baboons smashing?’ (Mchombo 2004: 45)
- (49) Tamer kim-I gör-dü? (Turkish)
 Tamer-NOM who-ACC see-PAST.3SG
 ‘Who did Tamer see?’ (İşsever 2009: 105)
- (50) Alana suna-mit niuvi-qau-vaa? (Inuktitut)
 Alana what-ACC buy-PAST-3SG.INTERR
 ‘What did Alana buy?’ (Sherkina-Lieber 2004: 124)
- (51) Ali chi xord-ø? (Persian)
 Ali what ate-3SG
 ‘What did Ali eat?’ (Kahnemuyipour 2001)
- (52) Sirane umen e sirum? (Armenian)
 Siran-NOM who-ACC is like
 ‘Who does Siran like?’ (Tamrazian 1991: 104)
- (53) Taroo-ga nani-o kat-ta no? (Japanese)
 Taro-NOM what-ACC buy-PAST Q
 ‘What did Taro buy?’ (Miyagawa 2001: 311)
- (54) Qiaofeng mai-le shenme ne (Mandarin Chinese)
 Qiaofeng buy-ASP what Q
 ‘What did Qiaofeng buy?’ (Cheng 1991: 22)
- (55) Suna-ka muôs-ül sa-ss-ni? (Korean)
 Sun-Nom what-Acc buy-Past-Q
 ‘What did Suna buy?’ (Beck and Kim 1997: 339)

Of those languages above that are tone languages, it is noncontroversial to say that they lack lexical stress and pitch accents. For languages such as Turkish, Persian, Armenian, etc., it is more controversial.¹⁹ However, although most descriptions of the Turkish accentual system use the term “stress,” and although many researchers consider Turkish to be a stress-accent language (Kaisse 1986, Barker 1989, Inkelas 1999), many do not (Underhill 1976, Lewis 1985, Underhill 1986, Levi 2005). “Lexical stress” in Turkish is like French “lexical stress” in that it is completely regular and non-contrastive.²⁰ Armenian and Persian are also languages where stress is always predictable—it

always falls on the last syllable (unless it contains [ə], in which case it falls on the penultimate one). There are exceptions in Persian too in the case of verbal prefixes, but as argued by Kahnemuyipour (2009), these can be shown to enter the combination as phonological words with their own stress (on the last/unique syllable).

The generalization so far is that stress languages are wh movement languages, while non-stress languages are wh in situ languages. Non-stress languages include those that have no stress or lexical tones. What these languages do is use prosodic phrasing in order to mark focus. This is the only strategy for focus since it is not possible to link a particular stressed syllable to the most prominent phrase. We thus find that wh in situ is dependent mainly on prosody, and to syntax only indirectly. The movement alternative in languages like English is also dependent on prosody alone but perhaps more indirectly in that movement is triggered because the wh in situ option is not made available by the prosody. Of course, moved wh phrases may or may not receive an accent depending on the language. In languages like Romanian, Hungarian, and Greek nuclear accent falls on the moved wh word (all examples from Ladd 1996: 227), although in English it appears that it does not (for reasons that escape me; but see Engdahl 2006 for special contexts).

- (56) a. UNDE mergi? ‘Where are you going?’ (Romanian)
 b. CÂȚI bani ai? ‘How much money do you have?’
 c. CÂND a plecat? ‘When did it leave?’
 d. CINE a chemat? ‘Who called?’

- (57) a. KI az? ‘Who is that?’ (Hungarian)
 b. MIT vettél? ‘What did you buy?’
 c. MILYEN volt a vacsora? ‘How was the dinner?’

- (58) a. PU ine? ‘Where is it?’ (Greek)
 b. JIATI efije? ‘Why did she leave?’
 c. TI idhes? ‘What did you see?’

Before I conclude section 5, let me say a word about Mandarin Chinese, about optional wh movement, and about Arabic.

In Mandarin Chinese, every syllable has a lexical tone (with the possible exception of “neutral tone” syllables). Thus, there are of course no pitch accents. However, it is not clear that there are boundary tones. What Chinese uses instead to express focus is variations in the local pitch range in which

lexical tones are realized. Following Flemming (2008), focused words have expanded pitch range. Focus is also marked by duration apparently (word is longer when narrowly focused, compared to neutral/non-focused realizations). Finally, post-focus words are lowered and have compressed pitch range (Xu 2011). Pre-focus and final focus have “neutral” pitch ranges.

The use of duration and variation in the local pitch range is best seen in cases where question particles are optional. The particle *ne* is used for wh questions, while *ma* is used for yes–no questions, but not always. When *ne* and *ma* are not pronounced, the sentence may then be ambiguous. For example, *shui* has two possible meanings, ‘who’ and ‘anyone’, and in (59a) and (59b) *shui* only has one reading, ‘who’ and ‘anyone’, respectively. (59c) has two possible readings because of the lexical ambiguity of the wh word *shui* and the absence of the particle. The ambiguity can be resolved by extending the pitch range on the wh word as well as its duration and by compressing the pitch range of the post-focus words (Garding 1987, Xu 1999).

- (59) a. *shui lai-le ne ?*
 who come-ASP Q
 ‘Who is coming?’
 b. *shui lai-le ma ?*
 anyone come-ASP Q
 ‘Is there anyone coming?’
 c. *shui lai-le ?*
 who/anyone come-ASP
 ‘Who is coming?/Is there anyone coming?’

(Hu 2002: 403)

Let me now address the optionality issue. French, like many other wh in situ languages, allows wh movement as well. Why should this be tolerated? There are many different answers that one could propose, from the idea that competitive grammars are involved (Kroch 2001) to the idea that the wh movement option in these languages is not equivalent to the wh movement found in compulsory wh movement languages (e.g., for Cheng 1991, most wh movement configurations in wh in situ languages are clefts). However, it is my understanding that most languages that allow wh in situ also allow wh movement, including languages like Chinese (Hoh and Chiang 1990).²¹ This type of movement can be seen as a kind of scrambling. There are in fact known differences in terms of information structure between the wh in situ option and the wh movement alternative (see Chang 1997, Mathieu 2004, Pires and Taylor 2007, Hamlaoui 2010).

Finally, let me say a word about Arabic. Some dialects of Arabic have been claimed to be wh in situ languages, for example, Jordanian Arabic (Al-Momani

and Al-Saidat 2010, Yasin 2012). Arabic has lexical stress and thus may be a counter-example to my claim. However, I want to argue that *wh in situ* in Jordanian Arabic is just an illusion. Al-Shawashreh (2013) shows that the position of the *wh* word is always to the left periphery or the right periphery (not in an object position—15 participants were used, 93.8% had the *wh* word at the left, 6.2% at the right); the *wh* word is never in the actual object (or subject) position. I argue that Jordanian Arabic is a *wh* movement language: it has two focus positions (Moutaouakil 1989), one at the right and one at the left, and this is why it may appear that it has *wh in situ*. It remains to be seen whether such an account can be applied to other variants of Arabic (Egyptian, Iraqi) that have also been claimed to have *wh in situ*.

6. CONCLUSION

In this article, I argued that French is a *wh in situ* language because of its inherent prosodic properties and in particular because of the way focus is realized in the language. More generally, I argued that, whereas *wh* movement languages tend to use pitch accents followed by deaccenting to express focus, *wh in situ* languages tend to use prosodic phrasing. Languages in the first group usually have lexical stress, whereas those in the second do not. In other words, the option to move or not to move in a given language is constrained by the limits imposed by the phonology of the language. Variation is thus not part of syntax but completely external to it.

This is compatible with the idea that UG is invariant²²: much of variation is reducible to external factors (Newmeyer 2005, Kandybowicz 2009, Berwick and Chomsky 2011, Boeckx 2014). However, what I propose is radical externalization. As I understand it, in Chomsky's system, some variation is kept in syntax by way of features (Chomsky 2005), especially for cases such as the *wh* "parameter." My theoretical stance is thus closer to that of Boeckx (2012), who claims that parameters simply do not exist. If the *wh* "parameter" is external to syntax, then it is a typological generalization susceptible of exceptions: it is not a categorical/classical parameter, but only a tendency. This does not imply that languages will differ "without limit and in unpredictable ways" (to use the often-quoted formulation of Joos 1957): the null hypothesis is that typological variation is still highly constrained and not completely wild, which means there is still a lot of work to do for syntacticians (the end of syntax is thus definitely not upon us). Much work, of course, also remains to be completed if we want a proper understanding of how classical parameters other than the *wh* parameter can be said to be reducible to external properties of syntax.

The account makes certain predictions. First, if suprasegmental/post-lexical properties are responsible for the licensing of *wh in situ*, then it is predicted that there will be a lot of variation across speakers with regard to the

distribution of *wh in situ* in French. This is exactly what we find (e.g., example (41) above). This is because realization of prominence via prosodic phrasing is variable: it varies according to the utterance, the speaker, the style of the speaker, and/or the speed of the utterance. It is also important to note that, since it is focused, the prosodic modulation of a *wh in situ* phrase in French may have an effect on its interpretation (Baunaz 2008). This may be why speakers disagree about the grammaticality of certain sentences.

Second, if *wh in situ* in French is purely prosodic and thus external to syntax, then it is predicted that *wh in situ* will be acquired early by children in the language. This is exactly what we find. This is because the prosodic characteristics of a language are the first phonetic features that are acquired by a child, and also French children know very early on that French has no lexical stress and thus that focus is not realized by pitch accent (Dupoux et al. 1997, Dupoux et al. 2001, Dupoux et al. 2008). Experimental work indicates that French-speaking children prefer the *wh in situ* in the early stages despite its lower frequency in their input (Hoh and Chiang 1990, Zuckerman and Hulk 2001, Jakubowicz 2004, Hamann 2006, Jakubowicz and Strik 2008).

Third, prosody will be involved in many other areas of the grammar. While word order with respect to the verb and its object is usually considered a PF phenomenon (Chomsky 2001), it appears that its distribution is not completely free. It is dependent instead on prosody. Nespor et al. (2008) argue that depending on whether the language is OV or VO, complements are realized differently. Their prosodic realization depends on their position in the phrase: initial complements are realized mainly through higher intensity as well as higher pitch, while final complements are mainly realized with increased duration. They find this pattern across languages—in Turkish (complement-head order) and in French (head-complement order)—and within a single language (German, both orders are possible). Finally, the difference between languages that have pre-nominal or post-nominal adjectives may be reducible to prosody as well: in French, adjectives are focused and marked demarcatively (they receive main stress *in situ*, as it were). In English, adjectives are also focused, but marked culminatively (they receive pitch accents).

ACKNOWLEDGMENT

I thank two reviewers for their interesting suggestions and comments, the organizers for such an inspiring workshop, and the participants for their questions and comments, especially David Adger, Phil Branigan, and Giuseppe Longobardi. I also thank the participants of the *What drives syntactic computation? Alternatives to formal features* organized by Dennis Ott and Radek Šimik, March 4–6, 2015, at the University of Leipzig, especially Norvin Richards, Kriszta Szendroi, Thomas MacFadden, and Elly Van Gelderen.

NOTES

1. There may of course remain “lexical” parameters: that English has NPs after the verb *to phone someone* whereas French has PPs *téléphoner à quelqu’un* is not variation that is prosodic in nature.
2. Wh movement is always to the left, and does not appear to proceed to the right (Kayne 1994).
3. The Clause Typing Hypothesis (Cheng 1991: 22): “Every clause needs to be typed. In the case of typing a WH-question, either a WH-particle in C° is used or else the Fronting of a WH-word to the Spec of C° is used, thereby typing a clause through C° through Spec-Head Agreement.”
4. See also Hagstrom (1998) and Miyagawa (2001) for the idea that the wh in situ word does not need to move, since by moving to C the Q particle has already satisfied the relevant feature on C.
5. West Greenlandic, Swahili, Maori, and Tuvaluan are all in situ languages that have no question particles (yes-no or wh).
6. Echo questions are not real questions in the sense that they do not ask for new information: they do not form an operator-variable structure.
7. “An in situ question word will to some degree be accentually prominent” (Ladd 1996: 170-171). “On the other hand, note that the wh-in-situ in (167) bears NS. This indicates that a wh-in-situ is licensed prosodically (rather than in terms of feature checking). (167) (I wonder) who ate what?”
8. Intonation here is used in a narrow sense. Intonation can be defined in a broad sense or in a narrow sense. In the broad sense, it includes factors such as word stress, tone, and quantity, all related to the lexical identity of words. In the narrow sense, it excludes such factors and refers to supralexical, post-lexical, and non-lexical characteristics. Call this intonation proper. So of course English has that kind of intonation too, but what English does is that, since it cannot license wh in situ prosodically, it licenses it syntactically.
9. Yoruba may be an exception (Norvin Richards, p.c.).
10. A question is an operator/variable structure that asks for new information and new information is what focus is about.
11. A Western Muskogean language.
12. The literature does not deny that Germanic and (most) Romance languages use tonal variation and duration to mark focus to some extent. The idea is that these languages use pitch accents predominantly.
13. Of course, because lexical stress in English is not fixed, it may fall on syllables other than the first one, that is, on the second or third syllable, as in *Who did you hire? I hired a [photographer]_F*, or *What did you take? I took a [photograph]_F*.
14. Broad focus is the case where all the parts of the sentence are given equal prominence. The cases in (10) and (11) were cases of narrow focus. For the difference between narrow and broad focus, see (Ladd 1980).
15. “*Ma tante a disné* is pronounced *ma tanta disné*; *mon père et ma mère ont soupe* is pronounced *monperetmamerontsopé*. In fact, one can also say, making a small pause: *mon père, et ma mère ont soupe*. But if one gets accustomed to that pronunciation, one will understand books, but hardly the conversation of Frenchmen.” Quote and translation found in Dufter (2010).
16. Whether it is equivalent to a Major Phrase (Selkirk 1986) or a Phonological Phrase (Nespor and Vogel 1986) remains to be established.
17. Note that the processes I am describing are optional phenomena.

18. Their application versus blocking is not categorical, but applies gradiently, to a greater or lesser degree. Also, as shown by Féry (2003), there is another process, liaison, that applies nearly as often across iP boundaries as inside iPs and is thus to be analyzed as an IP-bounded (Intonation Phrase-bounded) process.
19. As pointed out by a reviewer, there is an additional problem for the Tokyo dialect of Japanese, the basis of the standard dialect, since the language has word-level prominence and uses pitch accents. Tokyo Japanese has a lexical distinction between accented and unaccented words, and accented words are stressed on a given syllable. Thus, Japanese is not at the same level as tone languages, where there is no sense of stress, or French, where stress is a phrasal property. Japanese is different from Germanic or Romance languages in that not all words need receive stress in a given syllable, as most words are actually lexically unaccented, but it is different from tone languages or French.
20. It must be noted that Hungarian has a very regular stress system. However, it has wh movement rather than wh in situ. What is noteworthy of Hungarian is that it has a preverbal focus position. I speculate that this is a higher constraint and that a wh word must move to that position without the possibility to be licensed only prosodically.
21. Exceptions appear to be Vietnamese and Cham. More work is needed on those two languages.
22. It contains universal principles such as argument structure, phrase structure, c-command, scope, etc. These universal principles are not parameterizable.

REFERENCES

- Adli, Aria. 2004. Y a-t-il des morphèmes intonatifs impliqués dans la syntaxe interrogative du français? Le cas du qu-in-situ. In T. Meisenburg and M. Selig, eds., *Nouveaux départs en phonologie: Les conceptions sub- et suprasegmentales*, 199–216. Tübingen: Narr.
- Adli, Aria. 2006. French Wh-in-situ Questions and Syntactic Optionality: Evidence from Three Data Types. *Zeitschrift für Sprachwissenschaft* 25: 163–203.
- Al-Momani, Islam, and Emad Al-Saidat. 2010. The Syntax of Wh-Movement in Jordanian Arabic. *European Journal of Scientific Research* 40: 609–628.
- Al-Shawashreh, Ekab. 2013. Wh in situ in Jordanian Arabic: A Prosodic Account. *Generals Papers*, University of Ottawa.
- Aoun, Joseph, and Yen-hui Audrey Li. 1993. *Syntax of Scope*. Cambridge, Mass.: MIT Press.
- Barker, Chris. 1989. Extrametricality, the Cycle, and Turkish Word Stress. *Phonology at Santa Cruz* 1: 1–34.
- Baunaz, Lena. 2008. Split-DP and Floating Quantifiers: A Syntactic Approach to French Quantification. Ph.D. diss., University of Geneva.
- Beck, Sigrid, and Shin-Sook Kim. 1997. On Wh and Operator Scope in Korean. *Journal of East Asian Linguistics* 6: 339–384.
- Beckman, Mary. 1986. *Stress and Non-stress Accent*. Dordrecht: Foris.
- Beckman, Mary, and Janet Pierrehumbert. 1986. Intonational Structure in Japanese and English. *Phonology Yearbook* 3: 255–309.
- Belletti, Adriana. 2004. Aspects of the Low IP Area. In L. Rizzi, ed., *The Structure of CP and IP: The Cartography of Syntactic Structures*, Vol. 2, 16–51. Oxford: Oxford University Press.

- Belletti, Adriana. 2005. Answering with a “Cleft”: The Role of the Null Subject Parameter and the VP Periphery. In L. Brugè, G. Giusti, N. Munaro, W. Schweikert and G. Turano, eds., *Proceedings of the XXX Incontro di Grammatica Generativa*, 63–82. Venice: Cafoscarina.
- Berwick, Robert C., and Noam Chomsky. 2011. The Biolinguistic Program: The Current State of Its Evolution and Development. In A.-M. DiSciullo and C. Boeckx, eds., *The Biolinguistic Enterprise: New Perspectives on the Evolution and Nature of the Human Language Faculty*, 19–41. Oxford: Oxford University Press.
- Beysade, Claire, Elisabeth Delais-Roussarie, Jean-Marie Marandin, and Annie Rialland. 2004. Ground-Focus Articulation in the Grammar. Manuscript, CNRS, Paris.
- Beysade, Claire, Elisabeth Delais-Roussarie, and Jean-Marie Marandin. 2007. The Prosody of French Interrogatives. *Nouveaux cahiers de linguistique française* 28: 163–175.
- Boeckx, Cedric. 1999. Decomposing French Questions. In J. Alexander, N.-R. Han, and M. Minnick Fox, eds., *University of Pennsylvania Working Papers in Linguistics* (Proceedings of the 23rd Annual Penn Linguistics Colloquium): 69–80.
- Boeckx, Cedric. 2012. Considerations Pertaining to the Nature of Logodiversity, or How to Construct a Parametric Space without Parameters. Universitat de Barcelona. Lingbuzz/001453.
- Boeckx, Cedric. 2014. What Principles and Parameters Got Wrong. In C. Picallo, ed., *Linguistic Variation in the Minimalist Framework*, 155–178. Oxford: Oxford University Press.
- Bošković, Željko. 2000. Sometimes in Spec-CP, Sometimes In-situ. In Martin Roger, D. Michaels, and J. Uriagereka, eds., *Step by Step: Essays on Minimalism in Honor of Howard Lasnik*, 53–87. Cambridge, Mass.: MIT Press.
- Bruening, Benjamin. 2007. Wh-in-situ Does Not Correlate with Wh-Indefinites or Question Particles. *Linguistic Inquiry* 38: 139–166.
- Büring, Daniel. 2009. Towards a Typology of Focus Realization. In M. Zimmermann and C. Féry, eds., *Information Structure*, 177–205. Oxford: Oxford University Press.
- Butler, Alastair, and Eric Mathieu. 2004. *The Syntax and Semantics of Split Constructions: A Comparative Study*. New York: Palgrave Macmillan.
- Chang, Lisa. 1997. Wh-in situ Phenomena in French. M.A. diss., University of British Columbia.
- Cheng, Lisa. 1991. On the Typology of Wh-Questions. Ph.D. diss., Cambridge, Mass.: MIT.
- Cheng, Lisa. 1997. *On the Typology of Wh-Questions*. Outstanding dissertations in linguistics. New York: Garland.
- Cheng, Lisa, and Johan Rooryck. 2000. Licensing WH-in-situ. *Syntax* 3: 1–19.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In R. Martin, D. Michaels, and Juan Uriagereka, eds., *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, 89–155. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2001. Derivation by Phase. In M. Kenstowicz, ed., *Ken Hale: A Life in Language*, 1–52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2005. Three Factors in Language Design. *Linguistic Inquiry* 36: 1–22.
- Cinque, Guglielmo. 1993. A Null-Theory of Phrase and Compound Stress. *Linguistic Inquiry* 24: 239–298.
- Cole, Peter, and Gabriella Hermon. 1994. Is There LF Wh-Movement? *Linguistic Inquiry* 25: 239–262.

- Coustenoble, Hélène, and Liliás Armstrong. 1934. *Studies in French Intonation*. Cambridge: Heffers.
- Culicover, Peter, and Michael Rochemont. 2003. Stress and Focus in English. *Language* 59: 123–165.
- Deguchi, Masanori, and Yoshihisa Kitagawa. 2002. Prosody and Wh-Questions. In M. Hirotsu, ed., *Proceedings of NELS 32*, Vol. 1, 73–92. Amherst, Mass.: GLSA.
- Dell, François. 1984. L'accentuation dans les phrases en français. In F. Dell, D. Hirst, and J.-R. Vergnaud, eds., *Forme Sonore du Langage*, 65–122. Paris: Hermann.
- Dell, François. 1986. Deux nasalisations en français. In G. Pérennou, ed., *Actes du séminaire "Lexique et traitement automatique des langages"*, 187–190. Toulouse: Université Paul Sabatier.
- Déprez, Viviane, Kristen Syrett, and Shigeto Kawahara. 2013. The Interaction of Syntax, Prosody, and Discourse in Licensing French Wh-in-situ Questions. *Lingua* 124: 4–19.
- Downing, Laura, Al Mtenje, and Bernd Pompino-Marschall. 2004. Prosody and Information Structure in Chichewa. *ZAS Papers in Linguistics* 37: 167–186.
- Dryer, Matthew. 2004. Typological Database. University at Buffalo.
- Dufter, Andreas. 2010. Remarks on Rhythmic Typologies and Comparative Metrics. Paper presented at the Cologne International Workshop on Prosody.
- Dupoux, Emmanuel, Christophe Pallier, Nuria Sebastián, and Jacques Mehler. 1997. A Destressing "Deafness" in French? *Journal of Memory and Language* 36: 406–421.
- Dupoux, Emmanuel, Sharon Peperkamp, and Nuria Sebastián-Gallés. 2001. A Robust Method to Study Stress "Deafness." *Journal of the Acoustical Society of America* 110: 1606–1618.
- Dupoux, Emmanuel, Nuria Sebastián-Gallés, Eduardo Navarrete, and Sharon Peperkamp. 2008. Persistent Stress "Deafness": The Case of French Learners of Spanish. *Cognition* 106: 682–706.
- Engdahl, Elisabet. 2006. Information Packaging in Questions. In O. Bonami and P. Cabredo-Hofherr, eds., *Empirical Issues in Syntax and Semantics*, 93–111. CSSP: Paris.
- Féry, Caroline. 2001. Focus and Phrasing in French. In C. Féry and W. Sternefeld, eds., *Audiatur Vox Sapientiae: A Festschrift for Arnim von Stechow*, 153–181. Berlin: Akademie-Verlag.
- Féry, Caroline. 2003. Gradient Prosodic Correlates of Phrasing in French. In T. Meisenburg and M. Selig, eds., *Nouveaux Départs en Phonologie: Les conceptions sub- et suprasegmentales*, 161–182. Tübingen: Narr.
- Féry, Caroline. 2009. Indian Languages as Intonational 'Phrase Languages.' Manuscript, Potsdam University.
- Flemming, Edward. 2008. The Role of Pitch Range in Focus Marking. Talk given at the Workshop on Information Structure and Prosody, Studiecentrum Soeterbeek.
- Garding, Eva. 1987. Speech Act and Tonal Pattern in Standard Chinese: Constancy and Variation. *Phonetica* 44: 13–29.
- Grammont, Maurice. 1933. *Traité de phonétique*. Paris: Librairie Delagrave.
- Hagstrom, Paul. 1998. Decomposing Questions. Ph.D. diss., MIT.
- Halle, Morris, and Jean-Roger Vergnaud. 1987. *An Essay on Stress*. Cambridge, Mass.: MIT Press.
- Hamann, Cornelia. 2006. Speculations about Early Syntax: The Production of Wh-Questions by Normally Developing French Children and French Children with SLI. *Catalan Journal of Linguistics* 5: 143–189.
- Hamlaoui, Fatima. 2011. On the Role of Phonology and Discourse in Francilian French Wh-Questions. *Journal of Linguistics* 47: 129–162.

- Haspelmath, Martin. 1997. *Indefinite Pronouns*. Oxford: Oxford University Press.
- Hayes, Bruce, and Aditi Lahiri. 1991. Bengali Intonational Phonology. *Natural Language and Linguistic Theory* 9: 47–96.
- Hirst, Daniel, and Albert Di Cristo. 1998. A Survey of Intonation Systems. In D. Hirst and A. Di Cristo, eds., *Intonation Systems: A Survey of Twenty Languages*, 1–44. Cambridge: Cambridge University Press.
- Hjelmslev, Louis. 1936–1937. Accent, intonation, quantité. *Studi Baltici* 6: 1–57.
- Hoh, Pau-San, and Wen-yu Chiang. 1990. A Focus Account of Moved Wh-Phrases at S-Structure in Chinese. *Lingua* 81: 47–73.
- Hu, Fang. 2002. A Prosodic Analysis of Wh-Words in Standard Chinese. Paper presented to the Proceedings of the 1st International Conference on Speech Prosody, Aix-en-Provence, France, 2002.
- Huang, C.-T. James. 1982. Logical Relations in Chinese and the Theory of Grammar. Ph.D. diss., MIT.
- Hyman, Larry. 1978. Word Demarcation. In J. Greenberg, ed., *Universals of Human Language*, Vol. 2: *Phonology*, 443–470. Stanford: Stanford University Press.
- Inkelas, Sharon. 1999. Exceptional Stress-Attracting Suffixes in Turkish: Representations vs. the Grammar. In R. Kager, H. van der Hulst, and W. Zonneveld, eds., *The Prosody-Morphology Interface*, 134–187. Cambridge: Cambridge University Press.
- Ishihara, Shinichiro. 2003. Intonation and Interface Conditions. Ph.D. diss., MIT.
- İşsever, Selçuk. 2009. A Syntactic Account of Wh-in-situ in Turkish. In S. Ay, Ö. Aydın, S. Gökmen, S. İşsever, and D. Peçenek, eds., *Essays on Turkish Linguistics: Proceedings of the 14th International Conference on Turkish Linguistics*, 103–112. Wiesbaden: Harrassowitz Verlag.
- Jakubowicz, Celia. 2004. Is Movement Costly? Paper presented at the Journées d'études linguistique, Nantes.
- Jakubowicz, Celia, and Nelleke Strik. 2008. Scope-Marking Strategies in the Acquisition of Long Distance Wh-Questions in French and Dutch. *Language and Speech* 51: 101–132.
- Joos, Martin. 1957. *Readings in Linguistics*. Vol. I. Chicago: University of Chicago Press.
- Jun, Sun-Ah. 2005. Prosodic Typology. In Sun-Ah Jun, ed., *Prosodic Typology: The Phonology of Intonation and Phrasing*, 430–458. Oxford: Oxford University Press.
- Jun, Sun-Ah, and Cécile Fougeron. 2000. A Phonological Model of French Intonation. In A. Botinis, ed., *Intonation: Analysis, Modeling and Technology*, 209–242. Dordrecht: Kluwer Academic Publishers.
- Kahnemuyipour, Arsalan. 2001. On Wh-Questions in Persian. *Canadian Journal of Linguistics* 46: 41–61.
- Kahnemuyipour, Arsalan. 2004. The Syntax of Sentential Stress. Manuscript, University of Toronto.
- Kahnemuyipour, Arsalan. 2009. *The Syntax of Sentential Stress*. Oxford: Oxford University Press.
- Kaisse, Ellen M. 1986. Toward a Lexical Phonology of Turkish. In M. Brame, H. Contre-ras, and F.J. Newmeyer, eds., *A Festschrift for Sol Saporta*, 231–239. Seattle: Noit Amrofer.
- Kandybowicz, Jason. 2009. Externalization and Emergence: On the Status of Parameters in the Minimalist Program. *Biolinguistics* 3: 94–99.
- Kanerva, Jonni. 1990. Focusing on Phonological Phrases in Chichewâ. In S. Inkelas and D. Zec, eds., *The Phonology-Syntax Connection*, 145–161. Chicago: University of Chicago Press.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, Mass.: MIT Press.

- Kenesei, Istvan. 1986. On the Logic of Word Order in Hungarian. In W. Abraham and S. D. Meij, eds., *Topic, Focus, and Configurationality*, 143–159. Amsterdam: John Benjamins.
- Klausenburger, Jürgen. 1970. French Prosodics and Phonotactics: An Historical Perspective. Tübingen: Max Niemeyer.
- Kroch, Anthony. 2001. Syntactic Change. In M. Baltin and C. Collins, eds., *The Handbook of Contemporary Syntactic Theory*, 699–739. Oxford: Blackwell.
- Kukenheim, Louis. 1971. Rôle de la prosodie dans l'histoire de la langue française. In I. M. Cluzel and F. Pirot, eds., *Mélanges de philologie romane dédiés à la mémoire de Jean Boutière*, 317–331. Liège: Soledi.
- Ladd, Robert. 1980. *The Structure of Intonational Meaning*. Bloomington: Indiana University Press.
- Ladd, Robert. 1996. *Intonational Phonology*. Cambridge: Cambridge University Press.
- Levi, Susannah. 2005. Acoustic Correlates of Lexical Accent in Turkish. *Journal of the International Phonetic Association* 35: 73–97.
- Lewis, Geoffrey. 1985. *Turkish Grammar*. Oxford: Oxford University Press.
- Livet, Charles-Louis. 1859. *La grammaire française et les grammairiens du XVIe siècle*. Paris: Didier/Durand.
- Longobardi, Giuseppe. 2001. Formal Syntax, Diachronic Minimalism, and Etymology: The History of French *Chez*. *Linguistic Inquiry* 32: 275–302.
- Marchello-Nizia, Christiane. 1995. *L'évolution du français: Ordre des mots, démonstratifs, accent tonique*. Paris: Armand Colin.
- Mathieu, Eric. 1999. French Wh in situ and the Intervention Effect. *UCL Working Papers in Linguistics* 11: 441–472.
- Mathieu, Eric. 2002. The Syntax of Non-canonical Quantification: A Comparative Study. Ph.D. diss., University College London.
- Mathieu, Eric. 2004. The Mapping of Form and Interpretation: The Case of Optional WH Movement in French. *Lingua* 114: 1090–1132.
- Mchombo, Sam. 2004. *The Syntax of Chichewâ*. Cambridge: Cambridge University Press.
- Mertens, Pierre. 1990. L'intonation. Chapter 4. In C. Blanche-Benveniste, M. Bilger, R. Christine, and K. van den Eynde, eds., *Le Français parlé*, 159–176. Paris: Éditions du CNRS.
- Michelas, Amandine, and Mariapaola D'Imperio. 2009. Is There an Intermediate Phrase in French? Paper presented at the Phonetics and Phonology in Iberia (PaPI 2009), Las Palmas de Gran Canaria, Spain.
- Miyagawa, Shigeru. 2001. The EPP, Scrambling, and Wh-in-situ. In M. Kenstowicz, ed., *Ken Hale: A Life in Language*, 293–338. Cambridge, Mass.: MIT Press.
- Moutaouakil, Ahmed. 1999. *Pragmatic Functions in a Functional Grammar of Arabic*. Dordrecht: Foris.
- Munro, Pamela, and Catherine Willmond. 1994. *Chickasaw: An Analytical Dictionary*. Norman: University of Oklahoma Press.
- Nespor, Marina, Mohinish Shukla, Ruben van de Vijver, Cinzia Avesani, Hanna Schraudolf, and Caterina Donati. 2008. Different Phrasal Prominence Realizations in VO and OV languages. *Lingue e linguaggio* 7: 1–29.
- Nespor, Marina, and Irene Vogel. 1986. *Prosodic Phonology*. Dordrecht: Foris.
- Newmeyer, Fritz. 2005. *Possible and Probable Languages: A Generative Perspective on Linguistic Typology*. Oxford: Oxford University Press.
- Nishigaushi, Taisuke. 1986. Quantification in Syntax. Ph.D. diss., University of Massachusetts.

- Nishigaushi, Taisuke. 1990. *Quantification in the Theory of Grammar*. Dordrecht: Kluwer.
- Noyer, Rolf. 2002. Generative Metrics and Old French Octosyllabic Verse. *Language Variation and Change* 14: 119–171.
- Obenauer, Hans-Georg. 1994. Aspects de la syntaxe A-barre. Thèse de doctorat d'état. Paris: Université de Paris VIII.
- Pesetsky, David. 1987. Wh-in-situ: Movement and Unselective Binding. In Eric Reuland and A. T. Meulen, eds., *The Representation of (In)Definiteness*, 98–129. Cambridge, Mass.: MIT Press.
- Pierrehumbert, Janet. 1980. The Phonetics and Phonology of English Intonation. Ph.D. diss., MIT.
- Pires, Acrísio and Heather Lee Taylor. 2007. The Syntax of Wh-in-situ and Common Ground. Romance Languages: Structure, Interfaces, and Microparametric Variation. Manuscript.
- Pollock, Jean-Yves. 1989. Verb Movement, Universal Grammar and the Structure of IP. *Linguistic Inquiry* 20: 365–424.
- Pope, Mildred. 1934. *From Latin to Modern French with Special Considerations of Anglo-Norman*. Manchester: Manchester University Press.
- Post, Brechtje. 2000. *Tonal and Phrasal Structures in French Intonation* (Een wetenschappelijke proeve op het gebied van de letteren). The Hague: Thesus.
- Rainsford, Thomas. 2010. Rhythmic Change in the Medieval Octosyllable and the Development of Group Stress. In F. Neuveu, V. Muni Toke, J. Durand, T. Klinger, L. Mondala, and S. Prévost, eds., *Congrès mondial de linguistique française – CMLF 2010*, 321–336. Paris.
- Rainsford, Thomas. 2011. Dividing Lines: The Changing Syntax and Prosody of the Mid-line Break in Medieval French Octosyllabic Verse. *Transactions of the Philological Society* 109: 265–283.
- Rialland, Annie, and Stéphane Robert. 2001. The Intonational System of Wolof. *Linguistics* 39: 893–939.
- Richards, Norvin. 2010. *Uttering Trees*. Cambridge, Mass.: MIT Press.
- Rizzi, Luigi. 1997. The Fine Structure of the Left Periphery. In L. Haegeman, ed., *Elements of Grammar*, 281–337. Dordrecht: Kluwer.
- Rossi, Mario. 1980. Le français, langue sans accent? L'accent en français contemporain. In I. Fónagy and P. P. Léon, eds., *Studia Phonetica*, 1513–1551. Montréal: Didier.
- Sainliens, Claude de. 1580. *De pronuntiatione linguae Gallicae*. London: Vautrollerius.
- Sasse, Hans-Jürgen. 1987. The Thetic/Categorical Distinction Revisited. *Linguistics* 25: 511–580.
- Selkirk, Lisa. 1980. Prosodic Domains in Phonology: Sanskrit Revisited. In M. Aronoff and M.-L. Kean, *Juncture*, 107–129. Saratoga, CA: Anma Libri.
- Selkirk, Lisa. 1984. *Phonology and Syntax: The Relation Between Sound and Structure*. Cambridge, Mass.: MIT Press.
- Selkirk, Lisa. 1986. On Derived Domains in Sentence Phonology. *Phonology Yearbook* 3: 371–405.
- Selkirk, Lisa. 2007. Bengali Intonation Revisited: An Optimality Theoretic Analysis in which FOCUS Stress Prominence Drives FOCUS Phrasing. In L. Chungmin, M. Gordon, and D. Büring, eds., *Topic and Focus: Cross-linguistic Perspectives on Meaning and Intonation* (No. 82 in Studies in Linguistics and Philosophy), 215–244. Dordrecht: Springer.
- Sherkina-Lieber, Marina. 2004. Focus Fronting in Wh-Questions in Inuktitut. *Toronto Working Papers in Linguistics* 23: 119–132.

- Shi, Dingxu. 1994. The Nature of Chinese Wh-Questions. *Natural Language and Linguistic Theory* 12: 301–333.
- Shlonsky, Ur. 2012. Notes on Wh in situ in French. In L. Brugè, A. Cardinaletti, G. Giusti, N. Munaro, and C. Poletto, eds., *Functional Heads. The Cartography of Syntactic Structures*, Volume 7, 242–252. New York: Oxford University Press.
- Starke, Michal. 2001. Move Dissolves into Merge: A Theory of Locality. Ph.D. diss., University of Geneva.
- Szendrői, Kriszta. 2001. Focus and the Syntax-Phonology Interface. Ph.D. diss., University College London.
- Tamrazian, Arminé. 1991. Focus and Wh-Movement in Armenian. *UCL Working Papers in Linguistics* 3: 101–121.
- Togeb, Knud. 1965. *Structure immanente de la langue française*. Paris: Larousse.
- Truckenbrodt, Hubert. 1995. Phonological Phrases: Their Relation to Syntax, Focus, and Prominence. Ph.D. diss., MIT.
- Tsai, Wei-tien Dylan. 1994. On Economizing the Theory of A-bar Dependencies. Ph.D. diss., MIT.
- Underhill, Robert. 1976. *Turkish Grammar*. Cambridge, Mass.: MIT Press.
- Underhill, Robert. 1986. Turkish. In D. Slobin and K. Zimmer, eds., *Studies in Turkish Linguistics*, 7–21. Amsterdam: John Benjamins.
- Vaissière, Jacqueline. 2002. Cross-linguistic Prosodic Transcription: French vs. English. In N. B. Volskaya, N. D. Svetozarova, and P. A. Skrelin, eds., *Problems and Methods of Experimental Phonetics: In Honour of the 70th Anniversary of Pr. L.V. Bondarko*, 147–164. St Petersburg: St Petersburg State University Press.
- Venditti, Jennifer V., Sun-Ah Jun, and Mary E. Beckman. 1996. Prosodic Cues to Syntactic and other Linguistic Structures in Japanese, Korean, and English. In J. L. Morgan and K. Demuth, eds., *Signal to Syntax*, 287–311. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Weerasooriya, Tharanga. 2011. V Based Wh-Agreement in Sinhala. Manuscript, University of Ottawa.
- Wunderli, Peter. 1982. Die Intonation der Fragen vom Typ “Tu penses à quoi?”. *Festschrift Johannes Hubschmid*, 827–846. Bern-Munich.
- Wunderli, Peter. 1983. L’intonation des phrases interrogatives du type “Il est né en quelle année?” *Romanica Gandensia* 20: 169–181.
- Wunderli, Peter, and Petra Braselmann. 1980. L’intonation des phrases interrogatives: Le type “Tu vas où?” *Studii Si Cercetari Linguistice* 31: 649–660.
- Xu, Yi. 1999. Effects of Tone and Focus on F° Contour Formation. *Journal of Phonetics* 27: 55–105.
- Xu, Yi. 2011. Post-focus Compression: Cross-linguistic Distribution and Historical Origin. *The 17th International Congress of Phonetic Sciences*: 152–155.
- Yasin, Ayman. 2012. Syntax-Prosody Interface: Evidence from Wh-Movement in Jordanian Arabic and Egyptian Arabic. Ph.D. diss., Purdue University.
- Zubizarreta, Maria-Luisa. 1998. *Prosody, Focus, and Word Order*. Cambridge, Mass.: MIT Press.
- Zubizarreta, Maria-Luisa. 2003. Intervention Effects in the French Wh-in-situ Construction: Syntax or Interpretation? In R. Nuñez Cedeño, L. López, and R. Cameron, eds., *A Romance Perspective in Language Knowledge and Use: Selected Papers from the 31st Linguistic Symposium on Romance Languages*, 359–380. Amsterdam: John Benjamins.
- Zuckerman, Shalom, and Aafke Hulk. 2001. Acquiring Optionality in French Wh-Questions: An Experimental Study. *Revue Québécoise de Linguistique* 30: 71–97.