

## A Note on Multiple Left Branch Extraction

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**ABSTRACT.** Since Shiobara (2016), I have been critically reviewing syntactic approaches to left branch extraction such as Bošković (2005). Shiobara (2019a,b) analyzed the prosody of left branch extraction in Croatian, and argued that the Left Branch Condition should be recaptured in terms of a condition on the syntax-prosody mapping. In this paper, building on new data of multiple left branch extraction in Croatian, I aim to deepen our understanding of left branch extraction and reformulate the Left Branch Condition in prosodic terms.\*

**Keywords:** Left Branch Condition, left branch extraction, Croatian, prosody, interface

### 1. Introduction

This paper concerns the Left Branch Condition (LBC) in (1), which rules in movement of a full *wh*-phrase such as in (2a) but rules out left branch extraction (LBE) such as (2b).

- (1) Left Branch Condition (LBC) (Ross 1986: 127)  
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.
- (2) a. Whose father did you see?  
b. \*Whose did you see father?

The LBC is problematic both conceptually and empirically. Firstly, it is formalized as a syntactic rule, yet not *minimalistic* in the sense that (i) it refers to the linear notion of “leftmost,” and (ii) it refers to the specific category “NP” (cf. Shiobara 2016 for detailed discussion on this). Empirically, some languages such as Latin and most Slavic languages allow LBE, and

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hence do not obey the LBC (Ross 1986: 145-146). LBE examples in Serbo-Croatian are shown in (3).

(3) Serbo-Croatian

- a. [Čijeg]<sub>i</sub> si vidio [<sub>t</sub> oca]?  
 whose are seen *t* father                      ‘Whose father did you see?’
- b. [Ta]<sub>i</sub> je vidio [<sub>t</sub> kola].  
 that is seen *t* car                                ‘That car, he saw. (Not this car.)’
- c. [Lijepe]<sub>i</sub> je vidio [<sub>t</sub> kuće].  
 beautiful is seen *t* houses                    ‘Beautiful houses, he saw.’

(cf. Bošković 2005: 14-15)

Furthermore, Shiobara (2016) points out English exceptions to LBC, and cites Japanese exceptions to LBC:

- (4) a. \*Whose<sub>i</sub> did he decide to throw away [<sub>t</sub> letters]?  
 b. ?Whose<sub>i</sub>, I am wondering, [<sub>t</sub> letters] did he decide to throw away?
- (5) This will be his<sub>i</sub> perhaps [<sub>t</sub> last book].                      (Shiobara 2016: 150)

(6) Japanese

- a. \*[Dare-no]<sub>i</sub> Taro-ga [<sub>t</sub> tegami]-o sutetano?  
 who-Gen. Taro-Nom. *t* letter-Acc. discarded<sup>1</sup>  
 ‘lit. Whose Taro discarded *t* letter?’
- b. [Dare-kara-no]<sub>i</sub> Taro-ga [<sub>t</sub> tegami]-o sutetano?  
 who-from-Gen. Taro-Nom. *t* letter-Acc. discarded  
 ‘lit. From who Taro discarded a letter *t*?’ (Takahashi and Funakoshi 2013: 237)

- (7) [Tanaka sensei no]<sub>i</sub>, tabun kore-ga [<sub>t</sub> saigo-no chosho-ni] naru daro.  
 Tanaka-Prof. Gen. probably this-Nom. *t* last-Gen. book-Dat. become it.seems  
 ‘It seems that this will probably become Prof. Tanaka’s last book.’

(Yatabe 1996: 304)

Putting aside the issue of whether these examples involve syntactic movement of the left branch element or not, the point is that there is an element intervening between the fronted left branch

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<sup>1</sup> The following abbreviations are used in the glosses: Acc = accusative; Dat = dative; Gen = genitive; Nom = nominative.

element and its associated noun, e.g. *I am wondering* in (4b), *perhaps* in (5), *Taro-ga* in (6b), and *tabun kore-ga* in (7).

In this paper, based on my previous work (Shiobara 2016, 2019a,b), I continue to argue that left branch extraction should be analyzed in terms of syntax-prosody and syntax-semantics interfaces. In Section 2, I briefly review previous studies on left branch extraction focusing on my own work. In Section 3, I illustrate how the examples of Croatian left branch extraction can be analyzed in interface terms, and attempt to reformulate the Left Branch Condition accordingly.<sup>2</sup> Section 4 concludes the discussion.

## 2. Previous studies on left branch extraction

Since Shiobara (2016), I have been critically reviewing syntactic approaches to left branch extraction (LBE) such as Bošković (2005) and Takahashi and Funakoshi (2013). In Shiobara (2016, 2019a,b), based on new data from English, Japanese and Croatian, I argued that LBE should be analyzed in terms of syntax-phonology and syntax-semantics interface conditions.

First, focusing on the fact that it is often the case in English and Japanese that what intervenes between the left branch element and its associated noun is an omissible, parenthetical expression, which is prosodically weak and independent of the rest of the sentence (e.g. *I am wondering* in (4b), *perhaps* in (5), and *tabun kore-ga* in (7)), Shiobara (2016) argued that LBE is phonologically conditioned in English and Japanese as in (8):

(8) LBE is possible only when the result of LBE exhibits a strong-weak-strong prosodic contour, as illustrated in (9). (cf. Shiobara 2016: 47)

(9)  $\alpha$  (α: extracted element) (ibid.)

Croatian LBE examples being added, Shiobara (2019a,b) went on to argue that LBE is semantically conditioned as well. In Croatian LBE, a semantic focus is placed in sentence-initial position, and prosodic prominence (namely high tone) is observed both on the sentence-initial element and its associated noun. For the Croatian examples in (3), this is illustrated as in (10):

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<sup>2</sup> Since my informant identifies herself as a native speaker of “Croatian,” I refer to the language I look at in this paper as Croatian from here on. Croatian and Serbian are no different in terms of left branch extraction this paper is looking at.

(10)		(semantic focus)	(prosodic prominence)
	[XP] <sub>i</sub> ... [ t <sub>i</sub> N ]	XP (and N)	XP and N
e.g. (3a)	whose car	whose car	whose, car
(3b)	that car	that	that, car
(3c)	beautiful houses	beautiful houses	beautiful, houses

To take (3b) for example, the semantic focus is on the demonstrative *ta* ‘that’ while high tone is observed not only on the demonstrative but also on its associated noun *kola* ‘car.’ As a result, the sentence exhibits the high-low-high (HLH) melody. I observed that Croatian LBE is closer to Japanese LBE rather than to English LBE in the sense that prosodically weak elements are not restricted to parenthetical phrases, and argued that the cross-linguistic variation observed in LBE could be reduced to general prosodic patterns of the language: position-based (English) vs. HL (tone melody)-based (Japanese, Croatian).

The interface approach to LBE pursued so far in Shiobara (2016, 2019a,b) is not without problems. First, the Croatian sentences analyzed so far are simple and limited despite the fact that the language exhibits a variety of word orders. Secondly, the generalization summarized in (10) is sketchy and yet to be formulated theoretically. The next section will tackle these problems.

### 3. More on Croatian left branch extraction

#### 3.1. Properties of the Croatian language and their analyses

First, some of the general properties of Croatian relevant to the present study are summarized in (11):

- (11) a. The basic order is (S)VO, but it is head-final in the nominal domain.  
(Nakajima and Nomachi 2019, *WALS online*)
- b. A *wh*-phrase normally comes at the front of the sentence. (Nakajima and Nomachi 2019)
- c. Prosodic prominence is realized not only as loudness but also as high pitch.  
(Nakajima and Nomachi 2019: 10)

As seen in (11a), the basic order of Croatian is the same as that of English. As for the placement of *wh*-phrases, Stjepanović (2010) argues that in contrast to English or Bulgarian,

*wh*-phrases in Croatian do not move to [Spec, CP]. Instead, they move to a focus position below C, as evidenced by the lack of superiority effects in multiple *wh*-questions (Stjepanović 2010: 505, citing Bošković 2002, see e.g. (18) below). Furthermore, unlike Bulgarian, not all *wh*-phrases need to move to the sentence-initial position in multiple *wh*-questions (cf. Culicover 1997: 188-191, Pesetsky 2000: 21, fn.22, see e.g. (19a), (20a-d) below). Prosodically, Croatian is similar to Japanese in the sense that it employs high tone to mark prosodic prominence (see section 2).

Other properties of Croatian relevant specifically to left branch extraction (LBE) are summarized in (12):

- (12) a. The word order is freer than English, and what appears between the sentence-initial element and its associated noun is not restricted to parentheticals.  
(Shiobara 2019a, see section 2)
- b. A prosodically weak element such as *be* appears in the 2<sup>nd</sup> position and encliticizes onto the preceding element. (Nakajima and Nomachi 2019: 145)

The observational fact in (12a) is from my work with a Croatian informant reported in Shiobara (2019a). As for the 2<sup>nd</sup> position clitic, I follow Stjepanović (1998, 2010) and adopt a (weak) phonology approach to the “2<sup>nd</sup>” position. Look at the contrast in (13):

- (13) a. U Rio de Žaneiru ostali su dve godine.  
in Rio de Janeiro stayed are two years  
‘In Rio de Janeiro they stayed two years.’
- b. \*U Rijju ostali su dve godine.  
‘In Rio they stayed two years.’ (Stjepanović 1998: 534)

The difference between (13a) and (13b) is in the length of the sentence-initial PP. In (13a), the clitic *su* ‘are’ is correctly in the second position of *its intonational phrase*, whereas that in (13b) is not. Note that the PP in (13a) is followed by a pause. In fact, if the pause is not present, the sentence is bad (Stjepanović 1998: 534, fn.12). Under Stjepanović’s phonological approach to the 2<sup>nd</sup> position clitic, the observation is generalized as follows:

- (14) # X Cl (Cl...) (# = intonational phrase boundary; Cls are suffixed onto X)  
(cf. Ibid.: 535)

Below are some of the Croatian examples elicited from my informant (2019.3.9). (In the examples below, the left branch element and its associated noun are shown in squares.)

- (15) a. Čijeg oca si vidio?  
whose father are seen 'Whose father did you see?'
- b. Čijeg si vidio oca? (= (3a))  
whose are seen father 'Whose father did you see?'  
(informant's comments: "Sounds poetic")
- (16) a. Vidio je ta kola.  
seen is that car 'He saw that car.'
- b. Ta kola je vidio.  
that car is seen 'That car, he saw.'  
(informant's comments: "focus on *that* car")
- c. Ta je vidio kola. (= (3b))  
that is seen car 'That car, he saw.'  
(informant's comments: "focus on *that* car")
- (17) a. Vidio je lijepo kuće.  
seen is beautiful houses 'He saw beautiful houses.'
- b. Lijepo kuće je vidio.  
beautiful houses is seen 'Beautiful houses, he saw.'  
(informant's comments: "Sounds poetic")
- c. Lijepo je vidio kuće. (= (3c))  
beautiful is seen houses 'Beautiful houses, he saw.'  
(informant's comments "Sounds poetic")

The example in (15a) is a typical *wh*-interrogative question where the object *wh*-phrase is fronted to the sentence-initial position. The (a) sentences in (16) and (17) exhibit the basic (S)VO order. In (15b), only the left branch element *čijeg* 'whose' is fronted leaving the associated noun *oca* 'father' behind, resulting in HLH melody (cf. Shiobara 2019a). In (16b) and (17b), the focused element is fronted to the sentence-initial focus position. In (16c) and (17c), only the left branch element is fronted leaving the associated noun behind. For (16), the informant comments on (b) and (c) that the determiner *ta* is focused. That is to say, the sentences mean that it was *that* car, not any other car, that he saw. For (15b), (17b) and (17c), the informant notes that they sound "poetic," suggesting that they deviate from the normal word order. Prosodically, the LBE sentences in (15b) and (17c) exhibit HLH melody



Let us look at multiple *wh*-questions involving LBE.

- (20) a. **Čiji** gost je svirao **koje** glazbalo?  
 whose guest is played which instrument  
 ‘Whose guest played which instrument?’
- b. **Čiji** je gost svirao **koje** glazbalo?
- c. **Koje** glazbalo je svirao **čiji** gost?  
 (informant’s comments: “emphasis on the object”)
- d. **Koje** je glazbalo svirao **čiji** gost?  
 (informant’s comments: “emphasis on the object”)
- e. \***Čiji** je **koje** svirao gost glazbalo?
- f. \***Čiji** je **koje** svirao glazbalo gost?

First of all, (20a) is the sentence volunteered by the informant, and (20b-d) are accepted by the same informant. Notice that unlike (19b), the reverse OVS order as in (20c) is totally acceptable under the condition that “object is emphasized.” Given the contrast between (19b) and (20c), I can only speculate that the length of the *wh*-phrase (object) affects its placement: the longer the *wh*-object is, the more likely it can be fronted.

As is seen in (20b) and (20d), the *be*-verb can intervene between the fronted *wh*-word and its associated noun, resulting in the LBE configuration. Note further that not every kind of LBE is allowed. As is seen in (20e) and (20f), when the dependencies between the left branch element and its associated noun are crossing or nested, the sentences are totally unacceptable.<sup>5</sup>

In terms of prosody, the problem with *wh*-questions is that they often have their own prosodic contour (as in English and Japanese, cf. Ishihara 2003), and hence make it difficult to look into whether or not the result sentence exhibits HLH melody particular to LBE sentences. Next, let us turn to multiple focus fronting of nouns with an adjectival modifier, where, presumably, only the focused NP is prosodically prominent.

- (21) a. **Japanski gosti** su svirali **tradicionalnu glazbu**.  
 Japanese guests are played traditional music  
 ‘Japanese guests played traditional music.’
- b. **Japanski gosti** svirali su **tradicionalnu glazbu**.

<sup>5</sup> At this point, however, we do not know whether the problem with (20e,f) has to do with the multiple LBE dependencies alone or with an LBE dependency crossing a *wh*-phrase. This is yet to be tested. (Thanks are due to Chris Tancredi for pointing this out.)

- (22) a. Tradicionalnu glazbu su svirali Japanski gosti.  
(informant's comments: "focus on *traditional music*")
- b. Tradicionalnu glazbu svirali su Japanski gosti.
- (23) a. Japanski su gosti svirali tradicionalnu glazbu.  
(informant's comments: "focus on *Japanese*")
- b. ?Japanski su svirali gosti tradicionalnu glazbu.
- (24) Tradicionalnu su glazbu svirali Japanski gosti.
- (25) a. ?\*Japanski su svirali tradicionalnu glazbu gosti.
- b. ?Japanski su svirali tradicionalnu gosti glazbu.

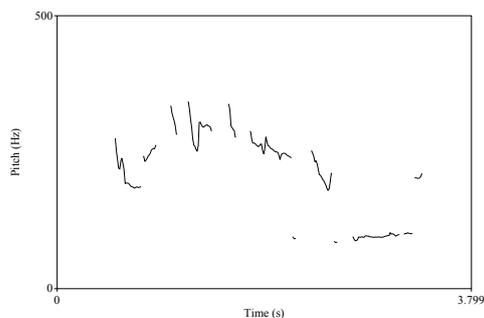
The examples in (21) were volunteered by my informant, and exhibit the basic SVO order. Those in (22) show the reverse OVS order where the object is focused, and they are also accepted. Depending on whether the fronted NP is followed by a prosodic pause or not, the main verb may follow (22a) or precede the *be*-verb (22b) (cf. (13)).

The LBE examples are shown in (23) and (24). Although the *be*-verb may intervene between the left branch adjective and its associated noun, the main verb cannot as is shown in (23b). Given the contrast between (23a) and (23b), I speculate that the 2<sup>nd</sup> position clitic, *su* 'be' in this case, moves and is placed within the subject NP *Japanski gosti* 'Japanese guests,' in these examples. That is to say, these apparent LBE examples do not involve left branch "extraction" of an adjective.<sup>6,7</sup>

<sup>6</sup> Thanks are due to Tomokazu Takehisa for discussion on this.

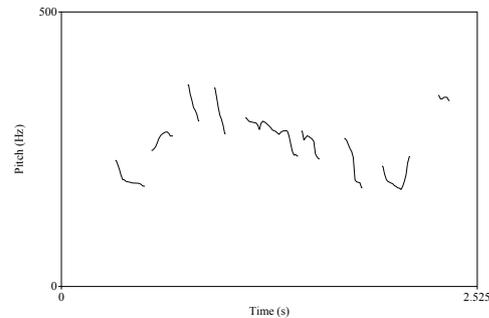
<sup>7</sup> The following is the pitch contour I got for (23a) and (23b), which does not really show any significant difference between the two:

(i) a. Pitch of (23a)



Jap... su gosti svirali tra... glazbu.

b. Pitch of (23b)



?? Jap... su svirali gosti tra... glazbu.

As is the case with multiple *wh*-questions, the examples involving crossing or nested dependencies are ruled out as shown in (25).<sup>8</sup>

### 3.3. Prosodic reformulation of the Left Branch Condition

Based on the Croatian examples we have seen, the configuration of left branch extraction, i.e. the case where an element intervenes between a left branch element and its associated N, is divided into two types. One is “real” left branch extraction where an element is syntactically extracted/moved into the sentence-initial position leaving its associated noun behind. This is exemplified by (3), (15b), (16c), and (17c). The assumption is that such movement is allowed in Croatian, in line with e.g. Bošković (2005), Grebenyova (2005), Stjepanović (2010), and Despić (2019) (see Shiobara 2019b for supporting data and discussion).

The other is “apparent” left branch extraction, where the whole NP sits in the sentence-initial position and a clitic moves into the “2<sup>nd</sup>” position in prosody in accordance with (14). As a result, the clitic intervenes between the sentence-initial, left branch element and its associated noun. This is exemplified by multiple left branch extraction cases such as (20b), (20d), (23a), and (24).

I further argue that what I called “exceptions” to Left Branch Condition (LBC) in English (Shiobara 2016) belong to the latter type. That is to say, English does not allow syntactic extraction of a left branch element, and thus seems to obey the traditional version of LBC in (1). Instead, in (4b) and (5) for example, the parenthetical expression is inserted later only in production. This is in line with Chomsky et. al.’s statement that “parenthetical expressions, which are frequently elliptical, are generated independently and interpolated or juxtaposed only in production” (Chomsky et al. 2019: 24).

Japanese seems to be somewhere between English and Croatian. It is similar to Croatian in that the intervening element is not limited to parentheticals. For example in (6b), and (7), a nominative NP intervenes between the fronted possessive and its associated noun. However, left branch extraction in Japanese is not as free as in Croatian, as is evidenced by the ill-formedness of (6a). As for the contrast in (6a) and (6b), Shiobara (2016) argued that the left branch element in (6b) *dare-kara-no* is longer than that of (6a) *dare-no*, which contributes to prosodic prominence of the left branch element. The difference in the degree of freedom of left branch extraction between Japanese and Croatian remains to be further investigated.

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<sup>8</sup> A question remains as to why the sentence with nested dependencies (25a) is worse than that with crossing dependencies (25b). In terms of processing, the opposite normally holds.

Given these observations, the LBC can be reformulated as a condition on the syntax-prosody interface (cf. Shiobara 2019b):

- (26) Left branch extraction is filtered out at the syntax-prosody interface unless the resulting sentence exhibits a high-low-high melody.

This basically captures the same observational fact as the generalization in (10). The examples of multiple left branch extraction we saw in section 3.2 are not subject to the condition in (26), because they are the case of “apparent” left branch extraction where no syntactic extraction is involved.

## 5. Conclusion

Building on my previous work (Shiobara 2016, 2019a,b), this paper argued that the left branch condition (LBC) and its exceptions, i.e. left branch extraction, should be reanalyzed in terms of interfaces. In addition, I argued that all cases of left branch extraction in English, and some in Japanese and Croatian, are apparent in the sense that no syntactic extraction is involved there. Instead, a clitic or a parenthetical phrase is interpolated into the NP intervening between the sentence-initial “apparent” left branch element and its associated noun. The real cases of left branch extraction are conditioned prosodically, as was formulated in (26).

The next step is to further consider why the extent to which left branch extraction happens is different between Japanese and Croatian. For this purpose, looking at apparent multiple left branch extraction in Japanese might be promising.

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