Cyclic Spell-Out, Phonological Phrasing and Focus

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Abstract

In this paper, I argue that phonological phrasing reflects syntactic cycle, by examining cross-linguistic data on focus and its effect on phonological phrasing. I show that the focus affects the phonological phrasing so that it may delete phonological phrase boundaries to the end of the sentence, but not to the beginning. I argue that those effects of focus receive a principled account in terms of Multiple Spell-Out that applies in a cyclic manner within a bottom-up derivational approach to narrow syntax (Chomsky 2000, 2001a,b, Collins 2002, Uriagereka 1999, Epstein et at 1998).

1. Introduction

In recent literature on minimalist syntax (Chomsky 2000, 2001a,b, Collins 2001, Uriagereka 1999, Epstein et at 1998), it is argued that Spell-Out (S-O) applies in a cyclic manner. Since S-O is an operation that maps a derivation of narrow syntax to the phonological component, it is predicted that there are phonological phenomena that reflect syntactic cycle.

In this paper, I argue that phonological phrasing reflects syntactic cycle (also see Dobashi 2003). More specifically, I show that restructuring of phonological phrases that is triggered by the presence of focus may affect the phonological phrases (p-phrases) that exist at the point of S-O of the focus. In other words, "forthcoming" p-phrases that will be created later cannot be affected by the presence of focus.

In this paper, I do not argue for or against any specific proposal about cyclic S-O, but rather argue for a general idea about cyclic S-O. This paper is organized as follows. In section 2, I introduce data and give a descriptive generalization. In section 3, I give an account for the generalization. In section 4, I briefly discuss some theoretical issues and conclude the discussion.

2. Data and Generalization

It is well known that focus causes the restructuring of phonological phrases. To the best of my knowledge, the three types of restructuring shown in (1) are attested while the one shown in (2)

is not:

(1) a. (... A ...) (... B ...) (... <u>C</u> ...) (... D ...) (... E ...)

      (... A ...) (... B ...) (... <u>C</u> ...   D ...) (... E ...)

   b. (... A ...) (... B ...) (... <u>C</u> ...) (... D ...) (... E ...)

      (... A ...) (... B ...) (... <u>C</u> ... ...   D ...   ... E ...)

   c. (... A ...) (... B ...) (... <u>C</u> ...) (... D ...) (... E ...)

      (... A ...) (... B ...   ... <u>C</u> ...) (... D ...) (... E ...)

(2)   (... A ...) (... B ...) (... <u>C</u> ...) (... D ...) (... E ...)

      (... A ...   ... B ...   ... <u>C</u> ...) (... D ...) (... E ...)

I have underlined the focused constituents and have inserted parentheses to indicate p-phrases. In (1a), the focus deletes one p-phrase boundary on its right. In (1b), it deletes all the p-phrase boundaries to the end of the sentence. In (1c), it deletes one p-phrase boundary on its left. However, as far as I know, there is no language where the focus deletes all the p-phrase boundaries to the beginning of the sentence. In what follows, I show some examples for each type shown in (1).

   First of all, let us consider the (1a)-type examples, where a focus deletes a p-phrase boundary on its right. Sandawe (Dalgish 1979, Dempwolff 1916, Eaton 2002, Elderkin 1989, Kagaya 1990) has a downstep between words:

(3)   (Sándá) (sóbá ˈ thíímé-sù)

        sanda   fish   cook-3f.sg.future

      'Sanda will cook the fish'   (Elderkin 1989: (3.64))

Here, the pitch levels of the high tones of *Sándá* and *sóbá* 'fish' are the same, but the pitch level of *thíímé-sù* is lower. Assuming that the downstep applies within a p-phrase but not across a phonological boundary, there is a p-phrase boundary between *Sándá* and *sóbá*, but not between *sóbá* and *thíímé-sù*.

   If the subject is focused, then we have a sequence of downsteps to the end of the sentence:

(4) (?útè)   (<u>sándá</u>-á   ˈ   sóbá ˈ thíímé)

   yesterday   Sanda-Nom   fish   cooked

      'Yesterday she cooked the fish'   (Elderkin 1989:96)

Here, *sóbá* has a lower pitch level than *sándá-á*, and *thíímé* has a lower pitch level than *sóbá*. Note that it is not clear at this point whether all the p-phrase boundaries are deleted after the focused subject, since there is no phonological boundary between object and verb even in normal

phrasing (3). Note also that in (4), restructuring does not affect the phonological phrasing before the focus.

If *ʔútè* 'yesterday,' instead of *sándá* 'Sanda,' is focused, then the following phonological phrasing shows up:

(5) (<u>ʔútè</u>-sà   ᵎ   sándá)   (sóbá ᵎ thíímé)

    yesterday-3f.sg   Sanda   fish   cooked

     'Sanda cooked the fish yesterday'   (Elderkin 1989:96)

Here, the downstep is observed between *ʔútè-sà* and *sándá*, and between *sóbá* and *thíímé*, but not between *sándá* and *sóbá*. That is, only one p-phrase boundary that is on the right of the focused constituent is deleted. The restructuring pattern in Sandawe conforms to the pattern in (1a).

One of the other languages that conform to the pattern in (1a) is KiYaka, discussed by Kidima (1990, 1991).

Let us next consider the (1b)-type of examples, where a focus deletes all the p-phrase boundaries to the end of the sentence. One of the languages that fall within this type is Hungarian. A diagnostics of phonological phrasing is *l*-palatalization:

(6)   *l*-palatalization   (Kenesei and Vogel 1989: 157)

   l → j / ___ j

This rule applies between a base and suffix within a word as in (7a) and within a compound as in (7b):

(7)   a. tol-ja   → to[jj]a 'he pushes it'   (Kenesei and Vogel 1989: 157)

    b. szél-jegyzet → szé[jj]egyzet 'margin note'

This rule also applies between words:

(8)   jó*l* jár   (Kenesei and Vogel 1989: 158)

    well walks   'he fares well' (lit.'he walks well')

Here and below, the italicized *l* is palatalized and the bold-faced **l** is not.

Now, let us consider the following example.

(9)   Mari beszélgetett olaszu**l** Jánossal   (Kenesei and Vogel 1989:159)

    Mary spoke   Italian John-with

    'Mary spoke in Italian with John.'

Here, the bold-faced **l** is not palatalized even though it is followed by *j*, indicating that there is a p-phrase boundary that blocks *l*-palatalization. However, consider the following example with a

focus in the preverbal position:

(10)   Mari   <u>a kastélyban</u> beszélgetett olaszu*l* Jánossal   (Kenesei and Vogel 1989:158)

         Mary   the castle-in   spoke   Italian John-with

            'In the castle Mary spoke Italian with John'

Here, the underlined *a kastélyban* 'the castle-in' is focused, and the italicized *l* undergoes palatalization because of the following *j*. Given that *olaszul* and *Jánossal* are in the same positions in (9) and (10), the emergence of *l*-palatalization in (10) indicates that the phonological phrasing is restructured due to the presence of the focus and the p-phrase boundary is deleted. The following data shows that the focus affects the phonological phrasing to the end of the sentence:

(11) a. tegnap   Péter <u>a parkban</u> kérdezte az ango*l*   játékró*l*   Jánost

        yesterday Peter the park-in   asked   the English toy-about John-acc.

         'Yesterday Peter asked John about the English toy in the park.'

                                                          (Kenesei and Vogel 1989:165)

Here, the underlined *a parkban* 'the park-in' is focused, and the *l* of *angol* 'English' as well as that of *játékról* 'toy-about' undergoes palatalization, indicating that the focus eliminates all the p-phrase boundaries to the end of the sentence.

    Even though p-phrases that follow the focus are restructured, those that precede a focus do not undergo restructuring:

(12) a. Jásossa**l**   Júlia <u>a parkban</u> játszott tegnap   egy meccset

        John-with Julia the park-in played yeterday a match-acc

        'Julia played a match with John in the park yeterday' (Kenesei and Vogel 1989:165)

   b. a parkban   Pá**l**   <u>játekból</u> verte nyakon Pétert

       the park-in   Paul   playfully hit   neck-on Peter-acc.

       'Paul playfully hit Peter on the neck in the park.'   (Kenesei and Vogel 1989:165)

In (11a), *a parkban* 'the park-in' is focused, and in (b), *játekból* 'playfully' is focused. And the boldfaced **l**'s which are located before the focus do not undergo *l*-palatalization even though they immediately precede *j*. Therefore, restructuring in Hungarian conforms to the pattern in (1b).

    One of the other languages that conform to type (1b) is Japanese, as discussed by Nagahara 1994.

    Let us finally consider type (1c). One of the languages that fall within this type is Italian.   The

relevant phonological rule that applies within a p-phrase is *Raddoppiamento Sintattico* (RS). Nespor and Vogel's (1986:166) formulation of RS is as follows: RS applies in a sequence of two words (w1 and w2) to lengthen the initial consonant of w2 if a) the consonant in question is followed by a sonorant, specifically a vowel or other nonnasal sonorant, and b) if w1 ends in a vowel which is the main stressed syllable of w.

   Now, let us consider the following example, where there is no focus:

(13)   (porteró)   (tre   caffé)   (Frascarelli 2000: 26)

           bring-FUT-1sg   three coffees

             'I will bring three cups of coffee.'

Here, the initial consonant of *tre* 'three' is not lengthened even though it is preceded by a vowel because a p-phrase boundary intervenes between them. However, if *tre* is focused, the initial consonant *t*, which is italicized below, is lengthened, indicating that the p-phrase boundary is deleted:

(14)   (porteró   <u>tre</u>   caffé)   (Frascarelli 2000: 26)

          bring-FUT-1sg three coffees

            'I will bring three cups of coffee.'

And crucially, the deletion of the p-phrase boundary does not extend to the beginning of the sentence, as the following contrast shows:

(15) a. Normal: (non so)   (quello che faró)   (dopo la lezione)

      b. Focus: (non so)   (quello che faró   <u>do</u>po la lezione)

                  not know-1sg what that do-FUT-1sg   after the lesson

              'I don't know what I will do after the lesson.'   (Frascarelli 2000: 26)

In (15b), *dopo* 'after' is focused, and the preceding phonological boundary is deleted. Therefore, the initial consonant of *dopo* is not lengthened in (15a), but it is lengthened in (15b). However, the initial consonant of *quello* 'what' is not lengthened in either case, indicating that focus deletes only one phonological boundary that precedes it, but does not delete all the boundaries to the beginning of the sentence.

   English (Frascarelli 2000:42), European Portuguese (Frota 2000), and Chichewa (Kanerva 1990) also conform to the pattern of (1c).

    As I mentioned at the beginning of this section, the pattern where the focus affects phonological phrasing to the beginning of the sentence does not seem to exist. If so, we have the following symmetry and asymmetry:

(16) a. Symmetry: The restructuring triggered by F may have an effect on a left or right

phonological boundary of a phonological phrase that contains F.

b. Asymmetry: The restructuring triggered by F may have an effect to the end of the

sentence, but not to the beginning of the sentence.

In the next section, I give a principled account for (16) in terms of Multiple Spell-Out.
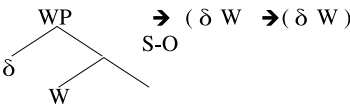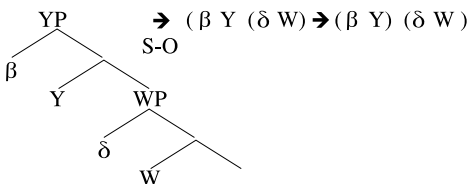
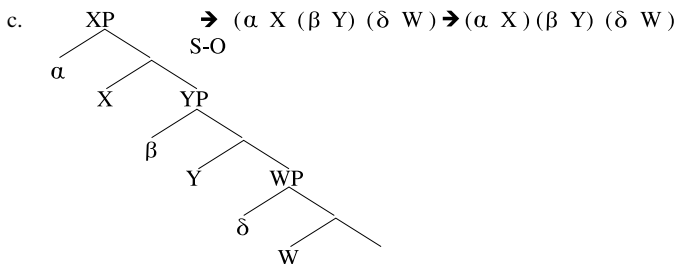## 3. Analyses

I adopt the following basic assumptions:

(17)   a. Syntactic derivations proceed in a bottom-up fashion.

b. Linear order is defined in terms of asymmetric c-command.

(Kayne 1994, Chomsky 1995)

c. Spell-Out applies in a cyclic manner. (Uriagereka 1999, Chomsky 2000, 2001a.b.)

d. A phonological phrase is created at each Spell-Out. (Dobashi 2003)

I make the following specific assumptions concerning the creation of p-phrases:

(18)   a. When Spell-Out applies, a left boundary "(" of a p-phrase is created.

(Seidl 2001, cf. Halle and Idsardi 1995)

b. A constraint EXHAUSTIVITY requires that a right boundary be created in

accordance with the Strict Layer Hypothesis. (Truckenbrodt 1995, 1999)

In order to see how (17) and (18) work, let us consider the following derivation:

(19) a.   WP   ➔ (δ W ➔(δ W)
                              S-O
         δ
             W

  b.   YP   ➔ (β Y (δ W) ➔(β Y) (δ W)
                              S-O
       β
           Y   WP

             δ
               W

c.   XP   ➔ (α X (β Y) (δ W) ➔ (α X) (β Y) (δ W)

S-O

(tree diagram: XP branches to α and X, YP; YP branches to β, Y and WP; WP branches to δ and W)

In (19a), S-O applies to WP. Then a left boundary is created, resulting in "(δ   W", and EXHAUSTIVITY requires to create a right boundary, resulting in a p-phrase "(δ   W)." Similarly, p-phrases (β   Y) and (α   X) are created at the point of S-O in (19b) and in (19c), respectively.

As we have seen in the previous section, focus triggers restructuring of p-phrases. I assume that such restructuring applies when a focused element F is contained in a spelled-out phonological string:

(20) F triggers restructuring of phonological phrasing when it is spelled-out.

Focus gives an instruction to PF so that the existing phonological phrasing is modified.
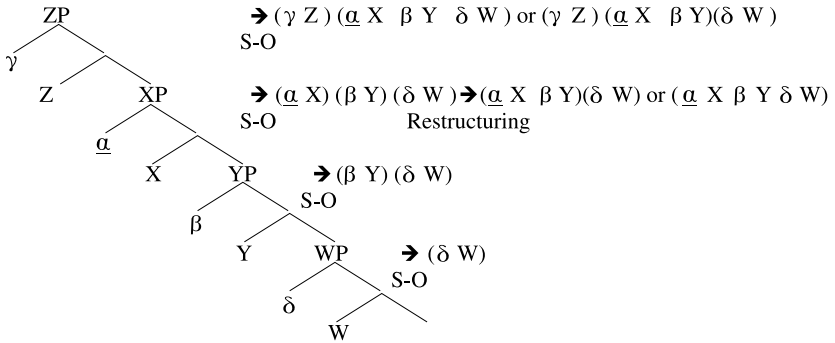
I assume that the restructuring occurs in one of the following three ways when F is spelled-out:

(21) *P-Phrase Restructuring at the spell-out of F:*
   a. A p-phrase boundary that would be created on the right of the spelled-out string is
       deleted.
   b. All the p-phrase boundaries that have already been created are deleted.
   c. The left bracket is deleted.

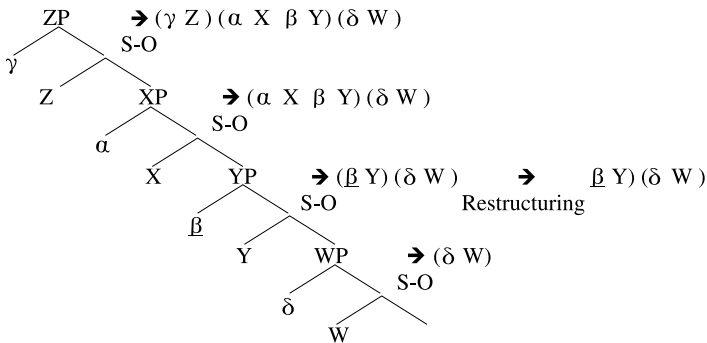Let us first consider (21a) and (21b). Suppose that α is focused in (22) (I have underlined the focused element):

(22) *Spell-Out of F deletes the bracket(s) on its right.*

ZP   ➔ (γ Z) (<u>α</u> X   β Y   δ W) or (γ Z) (<u>α</u> X   β Y)(δ W)
                            S-O

γ

 Z   XP   ➔ (<u>α</u> X) (β Y) (δ W)➔(<u>α</u> X   β Y)(δ W) or (<u>α</u> X β Y δ W)
                           S-O   Restructuring

<u>α</u>

  X   YP   ➔ (β Y) (δ W)
                          S-O

       β

      Y   WP   ➔ (δ W)
                              S-O

           δ

              W

First, WP is spelled-out and a p-phrase (δ   W) is created. Second, YP is spelled-out, and a p-phrase (β   Y) is created. Third, XP, which contains a focused α , is spelled-out, resulting in a p-phrase (<u>α</u>   X).   At this point, the existing p-phrase boundaries undergo restructuring because of the focused α . If the restructuring applies in accordance with (21a), we obtain (<u>α</u> X   β   Y) (δ   W). If it applies in accordance with (21b), we obtain (<u>α</u>   X   β   Y δ   W). Fourth, ZP is spelled-out, resulting in a p-phrase (γ   Z). Note that at this point, the focused α cannot affect the p-phrasing that results from S-O of ZP because restructuring induced by α has already taken place in the earlier stage.

    Let us next consider (21c). Suppose that β is focused in (23):

(23)   *Spell-Out of F deletes the left boundary.*

ZP   ➔ (γ Z) (α X   β Y) (δ W)
            S-O

γ

 Z   XP   ➔ (α X   β Y) (δ W)
                   S-O

    α

    X   YP   ➔ (<u>β</u> Y) (δ W)   ➔   <u>β</u> Y) (δ W)
                       S-O   Restructuring

     <u>β</u>

    Y   WP   ➔ (δ W)
                          S-O

        δ

          W

The derivation of (23) proceeds as follows: First, WP is spelled-out and a p-phrase (δ   W) is formed. Second, YP is spelled-out and (<u>β</u>   Y) is formed. Since β is focused, the left

boundary is deleted at this point.[1] Third, XP is spelled-out and the left boundary is created. Then, a p-phrase (α   X   β   Y) results. I assume that it does not result in two p-phrases (α   X) and (β   Y) because of a certain economy condition that prevents an unmotivated insertion of a p-phrase boundary.[2] That is, we can get a legitimate phonological phrasing that satisfies EXHAUSTIVITY without inserting an additional p-phrase boundary. Fourth, ZP is spelled-out, resulting in a p-phrase (γ   Z). Note that since the p-phrases are created and modified as S-O applies, it is impossible for F in β to affect the p-phrasing that results from S-O of ZP which has not taken place when F is spelled-out.

As we have seen in the previous section, the restructuring (21a) is exemplified by Sandawe, (21b) by Hungarian, and (21c) by Italian.

4. Some Theoretical Implications and Conclusion

If the analysis presented so far is correct, the symmetry and asymmetry in (16), repeated below, are not just a coincidence.

(16) a. Symmetry: The restructuring triggered by F may have an effect on a left or right
                    phonological boundary of a phonological phrase that contains F.
  b. Asymmetry: The restructuring triggered by F may have an effect to the end of the
                    sentence, but not to the beginning of the sentence.

(16a) and (16b) receive a principled account in terms of syntactic derivation and cyclic application of Spell-Out. Especially important is the asymmetry in (16b), or the non-existence of the restructuring to the beginning of the sentence. If phonological phrasing were formulated on the basis of syntactic representation, it would be surprising to have such asymmetry since the syntactic structure of a whole sentence, from the beginning to the end, should be available on a representation when the restructuring applies. That is, it would be equally possible to formulate the restructuring to the beginning as well as to the end in a representational approach. Also, if syntactic derivation goes from top to bottom, it would be predicted that the opposite of (16b) is correct since Spell-Out would apply from the top of the sentence: The phonological string that has been spelled-out before a focus F includes F and what precedes F, but not what follows F. Therefore, the asymmetry in (16b) argues for a bottom-up derivational approach to syntax.

Here, I assume that the effect of focus overrides the EXHAUSTIVITY requirement.

*P-PHRASE in the sense of Truckenbrodt(1999 228): Avoid p-phrases

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