Movement and Binding in Phonology [*]

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The goal of our joint work was to show the existence of some parallelism in the behavior of movement between syntax and phonology and to argue an "intermodular" effect of the principles found in GB framework. We also contended that for such principles to work well, movement in phonological context should leave behind a *trace* as well as in syntactic one. The topics we were concerned with were in accordance with current issues of the phonological theory: stress movement in the Nakizin dialect of Japanese, on which Haraguchi (1988) first shed light; Rhythm Rule in English, which has been discussed in Halle and Vergnaud (1987, henceforth H & V) and various works; and other segmental phenomena in Turkish, Khalkha Mongolian, English, and Japanese. Below, we shall briefly survey the topics in the order given above, mainly restricting the discussion to the former two.

First, Nakizin verbs have two types of tone pattern: initial-head accented and second-head accented. [1] Typical examples are *nu-「kuutamaaru」n* as the former case and *?araata 「miru」n* as the latter, and they have the following metrical structure respectively: [2]

(1) a.
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   . *  . . .
  .:.(*  . * *)
 (* *)(* *)(*)
 nuku tama run
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b.
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   . *  . . .
  .:.(*  . * *)
 (* *)(* *)(*)
 ?ara tami run
```
Line 2
Line 1
Line 0

(1b), as it stands, does not reflect the correct pattern (i.e. H-tone begins at *mi*), so that move α applies to shift the main stress to *mi*, not to *run*. [3] This is accounted for by the following assumptions:

(2) Move α leaves behind a trace.

(3) a. Empty Category Principle (ECP)

A trace is 0-subjacent to its antecedent.

b. β is n-subjacent to α iff there are fewer than n+1 barrieres for β that excludes α.

(cf. Chomsky (1986b))

(4)   Blocking Category Formation (BCF)

   $\dot{*}$ $\dot{*}$ $\dot{*}$ $\dot{*}$ $\overset{*}{\dot{*}}$ $\rightarrow$ $[_* \ [_* \ [_* \ [_* \ *]]]]$ Line 2
    Line 1

(A Blocking Category (BC) is binary and its formation begins from the head)

(5) α is a barrier if α is a BC or a word/phrase boundary.

(6)   a. $[.[[t \ . \ *] \ .]]$ b. $[.[[t \ . \ .] \ *]]$

    ?ara tami run

In the output representations with barriers in (6a-b), (6a) does not violate the ECP (the trace is 0-subjacent), but (6b) does (the trace is 1-subjacent). Thus, main stress falls on *mi*, not on *run*.

Alternatively, we can also account for the behavior of the stress movement seen above, given the following assumptions:

(7)   a. Binding Theory Condition (A)

       An anaphor is bound in its binding domain.

     b. α binds β iff α is coindexed with β and α is more prominent with respect to β. [4]

     c. The binding domain for an anaphor α is the least domain containing α and a possible binder (i.e. possible landing site) of α. [5]   (cf. Chomsky (1986a))

(8)   a. $. \ <t \ . \ *> \ .$ b. $. \ <t \ . \ .> \ *$

    ?ara tami run

Here, the trace *t* is an anaphor and is bound by the * in its binding domain in (8a), but not in (8b). Thus, (8b) violates the BTC (A), and so its movement is blocked.

Second, consider the following English Rhythm Rule:

(9)   a. bàmbòo póle $\rightarrow$ bàmbòo póle

     b. Tìppecanòe River $\rightarrow$ * Tìppecanòe River

In what environment does the Rhythm Rule apply? We can answer the question by assuming the Binding Theory Condition (B) as below:

(10)   a. BTC (B)

       A nonanaphor is free in its binding domain.

     b. The binding domain for a nonanaphor α is the least Complete Metrical Domain (CMD).

     c. Construction of a CMD of α

i. α : head
ii. any element other than α : complement
iii. maximal
iv. subject to the parameter settings specified for the grid construction in the particular language

(cf. Chomsky (1986a))

(11) a.

bamboo pole → bamboo pole

b.

Tippecanoe River → Tippecanoe River

In the input representations in (11), the right member of <<* *>> is a nonanaphor and is bound by the possible binder (i.e. the left member), so both of (11a-b) inputs violate the BTC (B) and undergo move α. In the output representations, it is not bound in (11a-b) and so they does not violate the BTC (B).

Now let us examine whether or not they violate the BTC (A) and the ECP:

(12) a.

bamboo pole

b.

Tippecanoe River

The trace is an anaphor and is bound in its binding domain, so in both cases the BTC (A) is not violated. Note, however, that the trace in (12a) is 0-subjacent to its antecedent whereas the one in (12b) is 1-subjacent. Therefore, movement in (12b) is blocked by the ECP.

Finally, we suggested the existence of anaphors and nonanaphors in the segmental field. In particular, we pointed out that a segment may behave like an anaphor or nonanaphor with respect to certain rules such as vowel harmony in Turkish and Khalkha Mongolian, plural and preterite suffix (i.e. -ed) allomorphy in English, and Onbin Rule in Japanese.

Footnotes

* This report is based on our joint work presented at the Ninth Annual Meeting of the Tsukuba English Linguistic Society.

[1] Nakizin words also have another tone pattern: unaccented, but we will not discuss the matter here.

[2] We follow Halle and Vergnaud (1987) in representing metrical structure by "bracketed grids". Our parameter settings for Nakizin, not discussed in H & V and different from Haraguchi (1988)'s, are: line 0 [+ BND, + HT, right, left to right]; line 1 [- BND, + HT, left]. The metrical structure constructed by the settings then undergoes Tone Association (Haraguchi (1988)): H-toned sequence begins at the main-stressed syllable; and Vowel Lengthening (Nakasone (1983)): Stressed syllabes tend to be lengthened.

[3] The class of words grouped as second-head accented is determined underlyingly to undergo move a.

[4] The more distant a is from the head position specified, the more prominent a is assumed to be.

[5] The binding domain for an anaphor is in conformity with the domain BCF determines.

[6] We assumed following H & V that English has Extrametricality and Accent Rule and that the parameter settings for the language are: line 0 [+ BND, + HT, left, left to right]; and lines 1 and 2 [- BND, + HT, right]. Furthermore, *Tippecanoe River* is assumed to undergo Stress Enhancement.

Selected References

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