

Word Boundaries as Environments in Rules

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Reference

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WORD BOUNDARIES AS
ENVIRONMENTS IN RULES*
Morris Halle,
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For David Perlmutter, but for whom?

The Russian dialects that are spoken in the area south of the latitude of Moscow are subject to a process known as *akan'e* which consists of the neutralization of all oppositions among unstressed nonhigh vowels. These vowels merge into [a] in position after a "hard" consonant or at the beginning of a word. Given the notation that is currently in use, these facts would likely be formalized as in (1):

$$(1) \text{ a. } \begin{bmatrix} +\text{syl} \\ -\text{stress} \\ -\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{back} \\ +\text{low} \\ -\text{round} \end{bmatrix} / \begin{bmatrix} -\text{syl} \\ +\text{back} \end{bmatrix} \text{ —} \\ \text{ b. } \begin{bmatrix} +\text{syl} \\ -\text{stress} \\ -\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{back} \\ +\text{low} \\ -\text{round} \end{bmatrix} / \# \text{ —}$$

which then would be abbreviated by the usual conventions as in (2):

$$(2) \begin{bmatrix} +\text{syl} \\ -\text{stress} \\ -\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{back} \\ +\text{low} \\ -\text{round} \end{bmatrix} / \left\{ \begin{bmatrix} -\text{syl} \\ +\text{back} \\ \# \end{bmatrix} \right\} \text{ —}$$

Rules which, like (2), treat consonants on a par with word boundaries have suggested to some scholars that word boundaries should be characterized as [-syllabic].¹

The suggestion fails to explain why word boundaries should be equated with "hard" consonants rather than "soft" consonants. Moreover, there are attested cases in languages where word boundary functions on a par with a vowel. In Southern Paiute, for example, morpheme final consonants are deleted before vowels and at the end of the word (cf. Chomsky and Halle, 1968, 346).

$$(3) [-\text{syl}] \rightarrow \phi / \text{ — } \left\{ \begin{matrix} +\text{V} \\ \# \end{matrix} \right\} \begin{matrix} (a) \\ (b) \end{matrix}$$

One could hardly wish to argue that Southern Paiute differs from Russian in that its word boundaries are [+syl-

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¹ The most recent instance of this suggestion that I have come across in print is in Lass (1971).

labic], whereas those of Russian are [-syllabic].² There is a much simpler answer to the whole question, and it emerges clearly as soon as we reformulate rules (1a) and (3a) so as to show that they apply only within a word; i.e. as (4a) and (4b) respectively:

$$(4) \text{ a. } \begin{bmatrix} +\text{syl} \\ -\text{stress} \\ -\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{back} \\ +\text{low} \\ -\text{round} \end{bmatrix} / \# \text{ X } \begin{bmatrix} -\text{syl} \\ +\text{back} \end{bmatrix} \text{ --- Y\#}$$

$$\text{ b. } [-\text{syl}] \rightarrow \phi / \# \text{ Y --- } + [+ \text{syl}] \text{ X } \#$$

Once this is done, the correct generalizations in the two cases under discussion become obvious. It is not that word boundary functions on a par with any particular class of phonemes, but rather that initial word boundary functions on a par with any environment that must be located to the left of the segment subject to the rule, whereas final word boundary functions on a par with any environment located to the right of the segment undergoing the rule. This fact is captured by the parenthesis convention which allows us to combine (4a) and (1b) into (5a), and (4b) and (3b) into (5b).

$$(5) \text{ a. } \begin{bmatrix} +\text{syl} \\ -\text{stress} \\ -\text{syl} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{back} \\ +\text{low} \\ -\text{round} \end{bmatrix} / \# \left(\text{X } \begin{bmatrix} -\text{syl} \\ +\text{back} \end{bmatrix} \right) \text{ --- Y \#}$$

$$\text{ b. } [-\text{syl}] \rightarrow \phi / \# \text{ Y --- } (+ [+ \text{syl}] \text{X}) \#$$

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² A rule deleting a vowel before a morpheme beginning with a vowel and at the end of a word is found in the phonology of Latvian; see M. Halle and V. J. Zeps (1966).