

NONFINALITY IN JAPANESE PHONOLOGY

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Abstract: This paper demonstrates that a constraint known as nonfinality allows us to provide a principled account of several seemingly unrelated phonological phenomena in Japanese. This constraint essentially make illicit those forms that contain the head of a word in the word-final position. We specifically argue that it is the head *syllable* of a word that cannot appear word-finally in Japanese. Our analysis is sharply contrastive with the traditional treatment of Japanese as a 'mora language'. In a sense we argue against this traditional view, claiming instead that the syllable plays at least as important a role as the mora in the language.

Keywords: nonfinality, Japanese phonology, constraint, syllable, mora, compound accent, truncation, Optimality Theory

1. INTRODUCTION

This paper demonstrates that the Nonfinality constraint in Optimality Theory provides a principled account of several seemingly unrelated phonological phenomena in Tokyo Japanese. Nonfinality, as formulated in (1), makes illicit those forms that contain the head of a word in word-final position (Prince and Smolensky, 1993):

(1) Nonfinality: No prosodic head of Pr(osodic) W(or)d is final in PrWd.

We specifically argue that it is the head *syllable* of a word that cannot appear word-finally in Japanese. Our analysis is sharply contrastive with the traditional view that only the mora, not the syllable, serves as an essential unit in Japanese phonology.

2. COMPOUND ACCENTUATION

The first phenomenon we analyze is that of compound accentuation. In noun-noun compounds the lexical accent of the second noun tends to be retained (or parsed). However, this Parse-accent constraint is usually violated if the second noun is lexically accented on the final syllable (Kubozono, 1995, 1997). Consider compound nouns whose second member consists of two moras. In the compound nouns in (2a), for example, the second noun is lexically accented on the nonfinal syllable and keeps this accent in the resultant compound. In contrast, those nouns accented on the final syllable in (2b) and (2c) do not retain their lexical accent due to the nonfinality constraint. These compounds consequently attract a compound accent in the unmarked accent location, yielding the same accent pattern as compound nouns whose second member is lexically unaccented as in (2d). This unmarked compound accent pattern, incidentally, can be attributed to a constraint prohibiting any accented foot from occurring word-finally, i.e. Nonfinality-foot (Kubozono, 1997).

- (2) a. pe'rusya + ne'ko → perusya-ne'ko 'Persian cat'
 ni'waka + a'me → niwaka-a'me 'sudden rain, shower'
 maikuro + ba'su → maikuro-ba'su 'minibus'
- b. i'ndo + zo'o → indo'-zoo 'Indian elephant'
 ne'bada + syu'u → ne'bada'-syuu 'The State of Nevada'
 ne'kutai + pi'n → nekuta'i-pin 'necktie pin'
- c. a'kita + inu' → akita'-inu 'Akita dog'
 ni'waka + yuki' → niwaka'-yuki 'sudden snow'
 sotugyoo + siki' → sotugyo'o-siki 'graduation ceremony'
- d. hitokui + tora → hitoku'i-dora 'man-eating tiger'
 ka'buto + musu → kabuto'-musu 'helmet, bug; beetle'

The constraint in operation here is specifically a subset of the constraint in (1), which can be stated as follows:

- (3) Nonfinality (Syll): No ACCENTUAL head of PrWd is final in PrWd.

This analysis suggests that Nonfinality plays a crucial role in Japanese compound accentuation and indeed dominates Parse-accent and other constraints. This is shown in Tableaux (4) and (5) below, where the candidates in (4a) and (5c) best satisfy the constraint hierarchy respectively (cf. Kubozono, 1997; Shirose et al., 1997).

(4)

| pe'rusya + ne'ko | Nonfin(Syll) | Parse-Ac | Nonfin(Ft) | Edgemost |
|--------------------|--------------|----------|------------|----------|
| ☞ a. perusya-ne'ko | | | * | σ |
| b. perusya'-neko | | *! | | σ σ |

(5)

| a'kita + inu' | Nonfin(Syll) | Parse-Ac | Nonfin(Ft) | Edgemost |
|-----------------|--------------|----------|------------|----------|
| a. akita-inu' | *! | | * | |
| b. akita-i'nu | | * | *! | σ |
| ☞ c. akita'-inu | | * | | σ σ |

3. LOANWORD TRUNCATION

The second set of facts deals with a truncation pattern in Japanese turning long loanwords into their shortened counterparts. Some examples are given in (6), where < > indicates the truncated portion and /./ denotes a syllable boundary (Ito and Mester, 1992).

- (6) a. *ne.ga*.<ti.bu> 'negatives', *tyo.ko*.<ree.to> 'chocolate'
 de.mo<n.su.to.ree.syon> 'demonstration', *ro.ke*<e.syon> 'location'
 b. *te.re.bi*<zyon> 'television', *a.ni.me*<e.syon> 'animation'
 dai.ya.<mon.do> 'diamond', *paa.ma*.<nen.to> 'permanent'
 pan.hu.<ret.to> 'pamphlet', *roo.te*<e.syon> 'rotation'
 c. *ri.su.to.ra*.<ku.tya.rin.gu> 'restructuring', *baa.ten*.<daa> 'bartender'

What is of interest here is the fact that two types of truncated outputs are illicit:

- (7) a. trimoraic outputs consisting of 'light-syllable + heavy-syllable'
 **de.mon*.<su.to.ree.syon> 'demonstration', **ro.kee*.<syon> 'location'
 b. bimoraic outputs consisting of a single 'heavy-syllable'
 **dai*.<ya.mon.do> 'diamond', **paa*.<ma.nen.to> 'permanent',
 **pan*.<hu.ret.to> 'pamphlet', **roo*.<tee.syon> 'rotation'

If a loanword begins with a 'light-heavy' sequence, it takes the first two moras the second of which is the initial mora of the heavy syllable. Moreover, loanwords with an initial heavy syllable keep in the resultant form at least the first three moras, i.e. the initial bimoraic syllable plus one more mora.

Such limitations on truncation cannot be explained in a mora-based account, since other types of trimoraic and bimoraic outputs abound, as exemplified in (6a) and (6b) above. A high-ranking Nonfinality constraint on the head syllable, on the other hand, correctly blocks the truncated forms in which the syllabic head of the head foot would have to fall on a word-final heavy syllable. This is a rather straightforward subcase of the Nonfinality constraint formulated in (1):

- (8) Nonfinality (Syll): No SYLLABLE head of PrWd is final in PrWd.

The trimoraic forms in (7a) and the bimoraic forms in (7b) violate this constraint, whereas the bimoraic outputs in (6a), e.g. *ne.ga* 'negatives' and *de.mo* 'demonstration', and the trimoraic outputs in (6b), e.g. *te.re.bi* 'television' and *dai.ya* 'diamond', do not. This is shown in (9), where "()" indicates feet and the capitalized portion denotes the head syllable within the head foot:

- (9) a. *de.mon.su.to.ree.syon* → (DE.mo) vs. **de*.(MON) 'demonstration'
 b. *dai.ya.mon.do* → (DAI).ya vs. *(DAI) 'diamond'

The tableaux in (10) and (11) show how the correct output is selected in the two cases in (9). Crucially, Nonfinality ranks over Max-Seg (McCarthy and Prince, 1995), a constraint violated by every segment of the base (here, /demonstureesyon/ and /daiyamondo/) not present in the truncated form. In (10), the bimoraic candidate in (a) wins because it does not violate the more dominant constraint, Nonfinality (syllable), although it does violate the lower-ranked constraint, Max-Segment. The trimoraic candidate in (b) cannot be optimal since it violates the

undominated constraint. Similarly, the first candidate is optimal in (11) since its head syllable, *dai*, is not final in the prosodic word, whereas the head syllable of the second candidate appears word-finally and hence violates the more important constraint in the hierarchy.

| | demonsutoreesyon | Nonfinality(Syll) | Max-Seg (Base, Truncation) |
|------|------------------|-------------------|----------------------------|
| (10) | ☞ a. (DE.mo) | | <nsutoreesyon> |
| | b. de.(MON) | *! | <sutoreesyon> |

| | daiyamondo | Nonfinality(Syll) | Max-Seg (Base, Truncation) |
|------|---------------|-------------------|----------------------------|
| (11) | ☞ a. (DAI).ya | | <mondo> |
| | b. (DAI) | *! | <yamondo> |

4. CONCLUDING REMARKS

To summarize, we have considered two phenomena in Japanese, i.e. compound accentuation and loanword truncation. These two phenomena look entirely different and unrelated to each other; one is basically an accentual process, while the other is a morphological process. However, these two processes show a striking similarity if seen in terms of the constraints on the well-formedness of surface forms. Both compound accentuation and loanword truncation are subject to the Nonfinality constraint which prohibits the prosodic head of a word from occurring in the final position of the word.

The results of the present analysis are particularly interesting in two respects. First, it is now clear that the Japanese phenomena in question are subject to a general constraint known as Nonfinality, which has been shown to play an important role in many other languages. Second, and more important, the two processes examined in this paper are subject to the Nonfinality-syllable constraint by which the head syllable of the head foot cannot appear word-finally. This indicates that the syllable plays a very crucial role in generalizing phonological and morphological processes in Japanese. This casts doubt on the view generally accepted in the literature, that Japanese is a 'mora language' in which only the mora serves as an essential unit. We argue against this traditional view, claiming instead that the syllable plays at least as important a role as the mora in the language.

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REFERENCES

- Ito, J. and A. Mester (1992). Weak Layering and Word Binariness. *Linguistic Research Center Report No. 92-09*, University of California at Santa Cruz.

- Ito, J., Y. Kitagawa, and A. Mester (1996). Prosodic Faithfulness and Correspondence: Evidence from a Japanese Argot. *Journal of East Asian Linguistics* 5, 217-294.
- Kubozono, H. (1995). Constraint interaction in Japanese phonology: Evidence from compound accent. *PASC* 4, 21-38. University of California, Santa Cruz.
- Kubozono, H. (1997). Lexical markedness and variation: A nonderivational account of Japanese compound accent. *WCCFL* 15, 273-287.
- McCarthy, J. and A. Prince (1995). Faithfulness and Reduplicative Identity. *UMOP* 18, GLSA, Amherst, Mass., 249-384.
- Prince, A. and P. Smolensky (1993). *Optimality Theory: Constraint Interaction in Generative Grammar*. Technical Report #2, Rutgers Center for Cognitive Science, Rutgers University. (To appear, MIT Press).
- Shirose, A., H. Kubozono, and S. Kiritani (1997). The acquisition of compound accent in Japanese. Paper presented at the 16th ICL, Paris. Written version available in this volume.