

Foot and Accent: New Evidence from Japanese Compound Accentuation*

Haruo Kubozono	Armin Mester
Osaka U. of Foreign Studies	UC Santa Cruz
UC Santa Cruz	

*In collaboration with Junko Itô, UC Santa Cruz

1. Introduction

In this paper we would like to propose a new foot-based analysis of compound accentuation in Tokyo Japanese.

It is generally agreed that the accentuation of compound nouns in Japanese is determined by the phonological structure of their second member, which we call 'N2' on the handout. As shown in (1a), the standard theory assumes that different compound accent patterns result depending on whether this second member is 'short', i.e. one-foot long, or 'long', i.e. longer than one foot (Hirayama 1960, McCawley 1968, Poser 1984/90). We argue against this standard view, proposing instead that a crucial boundary must be drawn between two-foot and three-foot second members, as illustrated in (1b), while the accentuation shown by one-foot and two-foot second members can be generalized as a single rule.

(1) (a) Standard analysis (McCawley 1968, Higurashi 1983, Tsujimura & Davis 1987, Poser 1990) vs. (b) New analysis

In compound nouns [N1N2]:

(a) $\frac{\text{short N2: F}}{\text{long N2 : FF}}$ FFF	(b) $\frac{\text{short N2: F}}{\text{long N2: FF}}$ <hr style="width: 100%;"/> overlong N2: FFF
---	---

2. 'Short' vs. 'long' N2

2.1 Compound nouns with a 'long' N2 (N2 > 2 μ)

Let us first discuss the distinction between short and long second members. It is agreed in the literature that second members consisting of three or more moras show two compound accent patterns depending on their lexical accentuation. If the second member is unaccented or accented on either of the final two moras, the compound accent is placed on its initial syllable as exemplified in (2). If, on the other hand, this member is accented on other moras, its accent is kept as the compound accent as shown in (3). In both cases, the accentuation of the first member does not count at all: this member is deaccented (if it is lexically accented) and thereby loses its prosodic independence.

- (2) Compound accent on the initial syllable of N2 (≠ N2 accent)
- me' + kusuri → me (gu')(suri) "eye medicine, eyewash"
 - syo'o + gakkoo → syoo (ga'k)(koo) "little school, elementary school"
 - isi' + atama' → isi (a')(tama) "stone head, hard head"
 - sato + koko'ro → sato (go')(koro) "village heart, homesickness"
 - de'nki + kamiso'ri → denki (ka'mi)(sori) "electric razor"
- (3) Compound accent = N2 accent
- huyu + ke'siki → huyu (ge')(siki) "winter view"
 - ya'mato + nade'siko → yamato (nade')(siko) "Japanese woman"
 - yume' + monoga'tari → yume monoga')(tari) "dream story"
 - yama' + hototo'gisu → yama hototo')(gisu) "mountain quail"

The two compound accent patterns described in (2) and (3) can be generalized if one considers the foot structure of the second members. Namely, if one constructs foot structure from right to left, as proposed by Poser (1990), all the instances in question can be seen as involving a compound accent on the penultimate foot of the second members. This leads us to the generalization in (4), which states that if the second member consists of two feet, compound accent falls on the penultimate foot.

(4) Analysis

[N1 N2] where N2 = 2F, compound accent on the penultimate foot.

2.2 Compound nouns with a 'short' N2 ($N2 \leq 2 \mu$)

Let us next consider compound nouns with a short second member. Compound nouns with a monomoraic or bimoraic second member are known to exhibit one of the three accent patterns given in (5) through (7). Namely, they are unaccented as in (5), accented on the last syllable of the first member as in (6), or accented on the initial syllable of the second member as in (7). If we construct foot structure at the stem level, the compound accent in (6) can be analyzed as being on the penultimate foot whereas the compound accent in (7) is on the final foot.

(5) Unaccented compounds

- ratai + ga' → ratai) (ga) "nude body picture, nude picture"
 ga'rasu + tama' → garasu) (dama) "glass bead"

(6) Compounds accented on the final syllable of N1 (N2=native, Sino-Japanese or foreign)

- a. N2 = final-accent
- te'muzu + kawa' → temuzu') (gawa) "Thames River"
 itokiri + ha' → itokiri') (ba) "thread-cutting tooth, eyetooth"
 sotugyoo + siki' → sotugyo'o) (siki) "graduation ceremony"
 sika'go + si' → sikago') (si) "Chicago City"

b. N2= unaccented

- abura + musu → abura') (musu) "cockroach, plant louse"
- watari + tori → watari') (dori) "migratory bird"
- sanka + tetu → sanku') (tetu) "oxidation iron, iron oxide"

c. N2=initial-accent

- setomono + i'ti → setomono')(iti) "porcelain market"
- sakura + ka'i → sakura') (gai) "cherry tree shellfish, *Nitidotellina nitidula*"
- syuutyaku + e'ki → syuutyaku')(eki) "terminal station"
- yoyaku + se'ki → yoyaku') (seki) "reserved seat"
- ne'kutai + pi'n → nekuta'i) (pin) "necktie pin"

(7) Compounds accented on the initial syllable of N2

- momen + i'to → memen) (i'to) "cotton thread"
- faasuto + ki'su → faasuto) (ki'su) "first kiss"

The three accent patterns described in (5) through (7) can be related to the lexical accentuation of the second member. Chew (1964) and Poser (1990) suggest the correlation schematized in (8), where the three compound patterns show a largely one-to-one correspondence with the three accent patterns of the second member. In this analysis, the three compound accent patterns are equally unmarked.

(8) Correlation between the lexical accent of 'short' N2 and Compound (N1N2) accent:

Chew (1964), Poser (1990)

N2	N1N2	unaccented (5)	N1-final (6)	N2-initial (7)
final-accent		+		
unaccented			+	
initial-accent				+

I reexamined this question in my previous work, where I made an exhaustive list of nominal morphemes consisting of one or two moras and examined their accentual behavior in compound constructions. This statistical analysis reveals that the pattern in (6) is the most general pattern which is preferred irrespective of the lexical accentuation of the second member. This is summarized in (9). This leads us to the generalization in (10), which states that default compound accent falls on the penultimate foot if the second member consists of one foot.

- (9) Revised correlation between the lexical accent of 'short' N2 and compound accent (Kubozono 1988, 1994a): default accent = N1 final

N2	N1N2	unaccented (5)	N1-final (6)	N2-initial (7)
final-accent		+	+	
unaccented			+	
initial-accent			+	+

- (10) Generalization:

If N2=F, default compound accent on the last syllable of N1, i.e. on the penultimate foot

2.3 Summary: Unified analysis of short and long N2

The discussion up to this point is summarized in (11). Namely, compound accent on the penultimate foot represents the default accentuation of compound nouns with a one-foot or two-foot long second member. Seen in this light, a major difference between the two types of second members, short vs. long, can be reduced to the precise location of the accent within the penultimate foot when this particular foot is bimoraic. If the second member is short, the default accent falls on the second mora of the penultimate foot, as in (12a), whereas it falls on the first mora if the second member is long as in (12b). This difference can be explained by the interaction of several alignment constraints which as a whole align the accent with the boundary between the first and second members.

- (11) If N2=F or FF, default compound accent on the penultimate foot

- (12) Difference between short N2 and long N2

a. N2=F: ... (σ σ ')_F # ()_F

b. N2=FF: ... ()_F # (σ ' σ)_F ()_F

⇒ Align the accent with the boundary between N1 and N2

3. 'overlong' N2 (N2 > 4 μ , i.e. N2 > 2F)

Having seen that compound nouns with a short and a long second member can be generalized into a single principle, let us now turn to compounds with an overlong second member, which exhibit quite a different accentual pattern from the cases we have already seen.

If the second member consists of five or more moras and is accented word–medially, this accent survives as the compound accent, as exemplified in (13). This accent pattern can be accounted for by the standard analysis since it can be handled in the same way as the instances given in (3).

(13) N2=medially–accented

- a. (=3c) yume' + monoga'tari → yume monoga'tari
- b. (=3d) yama' + hototo'gisu → yama hototo'gisu
- c. howa'ito + kurisu'masu → howaito kurisu'masu "white Christmas"
- d. si'ritu + syooga'kkoo → siritu syooga'kkoo "private elementary school"

However, the standard analysis does not work in most other cases. If the second member is unaccented, for example, the literature reports two accent patterns given in (14). In (14a) a compound accent is placed on the initial syllable of the second member. This is the pattern correctly predicted by the standard analysis which we saw in (2). In (14b), in contrast, no accent is added to the second member, thus yielding an unaccented compound. In this second case, the accentuation of the second member is inherited by the whole compound while the first member is deaccented as in other cases.

(14) N2=unaccented, 3F–long, loanword

- a. me'tiru + arukooru → metiru a'rukooru "methyl alcohol"
cf. (2a) me' + kusuri → me gu'suri
- b. nyu'u + karedonia → nyuu karedonia, *nyuu ka'redonia "New Caledonia"
minami + kariforunia → minami kariforunia, *minami ka'riforunia "southern California"

With these two accent patterns in mind, Yasuo Iwai and I did some fieldwork two years ago and examined how unaccented loanwords behave when they form the second member of compound nouns. We analyzed over one hundred unaccented, three–foot–long loanwords. This statistical study has shown that the pattern in (14b), i.e. *nyuu karedonia* and *minami kariforunia*, is by far the more general pattern. In fact, the compound noun in (14a), *metirua'rukooru*, is one of the very few examples that obey the traditional rule.

(15) Iwai & Kubozono (1993): (14b) » (14a)

This result suggests that compound nouns with a five–mora or longer second member behave differently from those with a shorter second member. When combined with the compound accent pattern in (13), this is suggestive of the generalization given in (16), namely that compound nouns with an overlong second member keep the accentuation of this member whether it is accented or unaccented.

(16) Generalization

- If N2 is overlong (i.e. $N2 > 2F$),
the accentuation of N2 (presence and location of accent) is kept by the whole compound.

This generalization helps us to explain several accent patterns which have been known to exist but reported but are yet to be unexplained in the literature. In (17a), for example, unaccented second members of other origins— native Japanese, Sino-Japanese, or mixed stems— yield unaccented compounds . The generalization in (16) also accounts for the pattern in (17b), where finally-accented second members keep their accent to produce finally-accented compounds. Although these second members tend to be pronounced as an unaccented word by younger generations, informants who treat the second member as finally-accented produce finally-accented compounds.

(17) Other evidence

a. N2=unaccented stem of other origin (McCawley 1968, Okuda 1975)

kuromitu + tokoroten → kuromitu tokoroten "gelidium jelly with cane syrup"

nankyoku + tankentai → nankyoku tankentai "Antarctic expedition"

de'nsi + kenbikyoo → densi kenbikyoo "electronic microscope"

nise + garasudama → nise garasudama "fake glass bead"

b. N2=finally-accented stem (Okuda 1975)

tihoo' + saibansyo' → tihoo saibansyo' "district court"

gakusyuu + sankoosyo' → gakusyuu sankoosyo' "study book"

4. Conclusion

In conclusion, we have argued that the compound accent pattern shown by short second members and the pattern shown by long second members can be generalized whereas overlong second members form a distinct prosodic class. If the second member is either one foot or two feet long, both the first and the second members lose their prosodic independence to produce a single prosodic word. The default compound accentuation in this case is the one with a compound accent on the penultimate foot. On the other hand, if the second member is three feet long, the accentuation of this element is kept by the whole compound. In this second case, the first member loses its prosodic independence, but the second member does not. In this sense, the second member behaves as if it forms a prosodic word on its own.

(18) a. 'short'/'long' N2: [N1 N2]_{prwd}

b. 'overlong' N2: [N1 [N2]_{prwd}]_x

References

- Chew, J.J. (1964) Accent in Japanese compounds. In J.K. Yamagiwa (ed.) *Papers of the CIC Far Eastern Language Institute* 85–87. Ann Arbor: Committee on Institutional Cooperation.
- Higurashi, Y. (1983) *The Accent of Extended Word Structure in Tokyo Standard Japanese*. Tokyo: EDUCA Inc.
- Itô, J. (1990) Prosodic minimality in Japanese. In Deaton, K., M. Noske and M. Ziolkowski (eds.) (1992) *CLS 26–II: Papers from the Parasession on the Syllable in Phonetics and Phonology*. Chicago. 213–239.
- Itô, J. & R.A. Mester (forthcoming) Weak layering and word binarity. To appear in *Linguistic Inquiry*.
- Iwai, Y. & H. Kubozono (1993) "The Japanese compound accent rules reconsidered". Paper presented at the annual meeting of the Phonetic Society of Japan.
- Kubozono, H. (1988) *The Organization of Japanese Prosody*. Ph.D. dissertation, University of Edinburgh. [Kurosio Publishers, Tokyo: 1993].
- Kubozono, H. (1994a) "Some remarks on the correlation between lexical accent and compound accent in Japanese". ms. UC Santa Cruz.
- Kubozono, H. (1994b) "Extrametricity and compound accentuation in Japanese". ms. UC Santa Cruz.
- McCawley, J.D. (1968) *The Phonological Component of a Grammar of Japanese*. The Hague: Mouton.
- Mester, R.A. (1990) Patterns of truncation. *Linguistic Inquiry* 21–3, 478–485.
- Okuda, K. (1975) *Accentual Systems in the Japanese Dialects: A Generative Approach*. Hiroshima: Bunkahyoon–syuppan.
- Poser, W. (1984) *The Phonetics and Phonology of Tone and Intonation in Japanese*. Ph.D. dissertation, MIT.
- Poser, W. (1990) Evidence for foot structure in Japanese. *Language* 66, 78–105.
- Tsujimura, N. & S. Davis (1987) The accent of long nominal compounding in Tokyo Japanese. *Studies in Language* 11–1, 199–217.
- Vance, T. (1987) *An Introduction to Japanese Phonology*. New York: State University of New York Press.

E-mails kubozono@ling.ucsc.edu
mester@ling.ucsc.edu