The intonation and phrasing of declarative sentences in Seoul Korean: a preliminary study

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1 Introduction

In the joint research I conducted with K. Mimatsu (Mimatsu and Utsugi 2002; hereafter M&U), the fundamental structure of Seoul Korean prosody is examined. The data examined in M&U was only a part of what has actually been recorded. Although the rest of the collected data has been recorded as a preliminary survey, it will provide good material for the study of Seoul Korean prosody. Thus, in this paper, I describe these data[1].

The next subsection overviews previous studies on Seoul Korean prosody, focusing on Jun (1993) and subsequent studies[2].

1.1 Previous studies

One of the most influential studies on Seoul Korean prosody is a work by S.-A. Jun (Jun 1993). In this work, she introduces a framework of Intonational Phonology into the area of Seoul Korean prosody and establishes a model for the prosody. In her model, Seoul Korean prosody consists of two levels of phrase, the Accentual Phrase (AP) and the Intonational Phrase (IP). The AP is a phrase determined by tones[3]. When a phrase consists of two syllables or fewer, it has LH tones. When it consists of four syllables or more, it has LHLH tones. The IP is a phrase that consists of several APs and ends in a boundary

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[1] I would like to thank Prof. Kunihiro Mimatsu for permitting me to use the data originally recorded for joint research.

[2] For studies before Jun (1993), see M&U.

[3] What is more, AP is a domain for the lenis obstruents voicing in her model. According to her model, the lenis obstruents are voiced inside an AP and are voiceless at the initial position of an AP.

tone.

This model has been applied to a prosodic labeling convention called K-ToBI (Korean ToBI), which shares the essential framework with other ToBI (Tones and Break Indices) systems such as the original ToBI developed for English prosody (Silverman et al. 1992) and J_ToBI for Japanese prosody (Venditti 1995). K-ToBI has been revised a few times, and the latest version (Version 3.1) was presented in 2000 (Jun 2000). In the K-ToBI system, tones are labeled in the similar way to Jun (1993) in the phonetic tone tier. For example, LHLH tones of an AP in Jun (1993) are labeled L +H L+ Ha in K-ToBI[4].

Although K-ToBI has the same basic idea as Jun's original model, it has a number of differences from the original model, which reflects findings after Jun (1993). For example, while the original model identifies only one type of tone at the AP boundary, such as H, K-ToBI distinguishes two tones, Ha and La. In addition, while Jun (1993) states that the H tone at the AP-medial position appears on the second syllable of the AP, K-ToBI identifies the +H tone that can sometimes appear on the third syllable instead of in the normal position of the second syllable.

Jun (1993)'s model is examined by M&U, which investigates the pitch and duration of declarative sentences in Seoul Korean. As for pitch, the data obtained from the experiments agree with Jun's model, in which the Accentual Phrase has two tonal peaks. M&U call these two peaks the "phrase-medial peak (*kuchuu* peak)" and the "phrase-final peak (*kumatsu* peak)"[5]. As for duration, however, it is revealed that Jun's model cannot explain the rhythmic patterning of Seoul Korean, which suggests that another model is needed for the rhythm.

1.2   Purpose

This paper describes the full data originally recorded for M&U. The description especially concerns intonation and phrasing. In addition, I point out certain findings and problems of previous studies, based on this description.

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[4]In the K-ToBI system, Ha means a H tone at the AP boundary. The tones that appear in the IP boundary are labeled as tones with "%," H% and L%.

[5]These peaks correspond to "+H" and "Ha" in K-ToBI, respectively. However, while the labels in K-ToBI represent tones, M&U's terms represent peaks in the F0 contours at the phonetic level. In this paper, I use the terms "phrase-medial peak" and "phrase-final peak" in referring to the peaks in the contours and use of "+H" and "Ha" when I refer to the corresponding tones in the K-ToBI system.

2　Method

The data analyzed in this paper are the same as those in M&U. Therefore, the method described in this section is nearly equivalent to that described in M&U. However, there are two exceptions. First, the speech materials consist of 30 sentences in this paper, while there are 10 sentences in M&U. This difference is due to M&U analyzing only the part of the full material. Second, the analyzing procedures are different since the material is newly analyzed for this paper.

2.1　Material

The material in this survey consists of 30 sentences, which are shown in Appendix A[6]. Sentences No. 1 to 10 correspond to those in M&U.

　　In the selection of material, three points are considered. First, /s/, /h/, aspirated obstruents and tense obstruents are avoided in the most material since it is well known that they radically raise F0 (e.g. Jun 1996, Nagato 2003), which is not the focus of this study. Second, sentences with open syllables are preferred. This biased selection is intended especially for M&U, in which the influence of syllable structure assumed by Lee (1973) is controlled[7]. Third, sentences that end with the so-called *hay*-form[8] are selected in the most of the material. This selection relates to segmentation. Since one of the purposes of M&U was to investigate rhythm, including segments in which segmentation is difficult, such as glides, is avoided. Thus, the *hay*-form, which has no glide, was appropriate for M&U rather than the *hayyo*-form, the more polite form, which has a glide

2.2　Subjects .

The subjects in this study are the following 2 native speakers of Seoul Korean. Their majors are neither linguistics nor phonetics.

HJG, born in 1973, male
PIG, born in 1971, female

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　　[6]Korean is transliterated in the Yale system of romanization (Martin et al. 1967) in this paper. Phonetic representations are transcribed in the broad transcription of IPA with square brackets.

　　In the phonetic transcription, [*] represents tense obstruents. [ɔ], [ɯ], [ɕ], [ʨ], and [ʥ] in this paper correspond to what is sometimes transcribed by other researchers as [ʌ] or [ʌ], [i], [ʃ], [ʧ], [ʤ], respectively. As for lenis obstruents, transcription is somewhat inconsistent since they have voiceless and voiced allophones, and the distribution of these allophones is sometimes inconsistent (see Footnote 3). In Appendix A, they are transcribed as voiceless sounds at the word-initial position, and as voiced sounds at the word-medial position, which sometimes disagree with the actual allophones since they vary by subject and by token. Except for Appendix A, they are transcribed with the representative actual allophones in each case.

　　[7]Lee (1973) states that the placement of stress, which he assumes in Seoul Korean, is predicted by the syllable structure of the first syllable.

　　[8]The *hay*-form is a form of a speech level uttered when talking with intimate speakers.

2.3 Recording procedures

Recordings were made on digital audio tape (DAT), using a DAT-corder (Sony TCD D-7) and a dynamic microphone (AKG D112), in a recording booth in the Phonetics Laboratory of the University of Tsukuba. The recordings were sampled at 48,000 Hz.

A set of cards from which to read the material was made as follows. First, each sentence of the material was printed in Hangul (Korean characters) on three cards; thus, a total of 90 cards (30 sentences × 3) were printed. Then, these cards were randomized. After this, 10 dummy cards were added to the 90 cards, 5 cards at the top and 5 cards at the bottom. The dummy cards were included to avoid the instable state of speech intensity. Thus, the full set of cards consisted of 100 cards: 90 cards and 10 dummy cards.

Before the recordings, the subjects were requested to practice reading the cards. They were instructed to read the cards at a natural speech rate, without pauses within a sentence, with declarative intonation. No explanation about the purpose of the recordings or the material was provided. Therefore, our purpose was unknown. In addition, no special interpretations for sentence meanings, and no context, were specified.

The recordings were made 8 times per set of cards. Thus, 24 tokens were obtained per sentence. This considerable number of tokens was planned since inter-speaker and intra-speaker variation was expected. To reduce the load for the subjects, the recordings were made over two days.

2.4 Editing and analyzing procedures

The data digitized at 48,000 Hz were downsampled to 16,000 Hz and saved as wave files, using PRAAT (Version 4.1.20), the free software produced by P. Boersma and D. Weenink (University of Amsterdam). The files were then analyzed using PRAAT.

Among the 24 tokens per sentence, only 10 tokens were analyzed. These 10 tokens included the second token to the sixth token in the recordings made on the first day, and the first token to the fifth token in the recording made on the second day. The first token in the recordings of the first day was excluded because it was pronounced with a higher intensity than the other tokens[9].

The data were analyzed as follows. First, they were segmented, referring to wide-band spectrograms and intensity contours. After this, F0 was esti-

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[9]For PIG's data, the first token of the second day was also excluded for the same reason. Thus, for her data, the second token to the sixth token was analyzed in the recording made on the second day.

mated only to vowels and nasals[10], which was segmented as described above. This estimation was made using the autocorrelation method based on Boersma (1993). Then, F0 contours were drawn as shown in Appendix B. As seen in these figures, each figure includes the contour of every token of the same sentence. The F0 (the vertical axis) is shown in the logarithmic scale, and the time (the horizontal scale) was normalized.

3　Results

Appendix B shows the F0 contours of the data. Of the two groups of contours in a figure, the lower contours show HJG's data, and the upper contours show PIG's data. As for <18>, <19>, <20>, <21>, <24>, <25>, <26>, and <27>, only the second phonological phrase is shown since this part is the focus of this paper.

As can be seen from these figures, the F0 contours of Seoul Korean have a few peaks in a sentence. Among these peaks, the discussion in 4.1 concerns phrase-medial peaks, and that in 4.2 concerns phrase-final peaks. In addition to these peaks, it can be seen that there is global downtrend of contours. In addition, the sentence-final predicates show a gradual falling without peaks when they are short.

In <13>, <17>, and <20> in HJG's data and <7>, <8>, and <15> in PIG's data, two different types of contour are distinguished, which I call Type A and Type B. For these sentences, each type is also shown separately in Appendix B.

Appendix C shows the tones and phrasings of the data. The tones annotated here correspond to those in the phonetic tone tier of K-ToBI. When a tone is unclear or optional, it is parenthesized.

The phrasing in Appendix C shows the AP phrasing in Jun's model. If more than one interpretation is possible, I show every possible interpretation rather than deciding on one interpretation since it will be more useful for descriptive purposes. When there are two different types as noted above, the annotations are shown separately. IPs are not shown in this table since IP boundaries inside the sentence are hardly seen in the data probably because they are short sentences with simple syntactic structures with instructions not to pause. However, despite these instructions, there are a few cases in which there are pauses, which results in perceiving an IP boundary. This case is noted in Appendix C.

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[10]Exceptionally, for the sentence-initial nasals and the nasals after a pause, F0 was not estimated because their F0 perturbation was not stable.

4 Discussion

This section points out certain findings and problems of previous studies, based on the data described in the last section.

4.1 Phrase-medial peaks

As noted in the introduction, it has been pointed out that a phrase-medial peak normally appears on the second syllable of an AP when the AP has 4 or more syllables. This feature is also identified in the current data. For example, peaks appear on the second syllable of [nɔmunado] in <6>, and of [tɔgoriɾɯl] in <26>.

This feature is not influenced by the morphological structure. A phrase-medial peak appears on the second syllable of an AP even when the second syllable is located in a suffix. For instance, *kanulako* ([kanɯɾago]) in <24>, which consists of a stem *ka* and a suffix *nulako*, has a peak on the second syllable [nɯ] even though it is a part of the suffix. Similarly, *kasinulako* ([kaɕinɯɾago]) in <25> has a peak on [ɕi] and *muleytaka* ([muɾedaga]) has a peak on [ɾe]. These results suggest that phrase-medial peaks are not specified at the lexical level.

Similar results are also seen in *tal.ilako* ([taɾiɾago]) of <19> and *pok.ilako* ([pogiɾago]) of <21>. Interestingly, these phonological words have the same pitch pattern as those of <18> (*talilako*) and <21> (*pokilako*), respectively, even though their morphological organization is different. Since other phonetic features seem also to be identical between each sentence of the pairs, their phonetic representations may be completely identical.

4.2 Ha and La at the AP boundary

In <8> of PIG's data, we can find two types of contour, in which one (Type A) can be interpreted as two APs, and the other (Type B) can be interpreted as one AP, namely, dephrasing. Interestingly, when I listened to all of the tokens of this sentence in PIG's data, I heard the intermediate pattern between the two types. This intermediate type can also be identified from the figure. In the 4th syllable [do] of PIG's contours in Figure 10, while a few contours have a lower pitch and a few contours have a higher pitch, some contours have a middle pitch. This continuousness challenges Jun's, and probably most of the Intonational Phonologist's, premise that the levels of phrase boundary are discrete.

However, there is another interpretation of the phrasing of the sentence in question, which I support here. The two types of contour can be interpreted as having the same phrasing, namely two APs. With this interpretation, the

first AP of Type B has a La tone instead of a Ha tone at the boundary. This interpretation of phrasing is supported by the fact that the initial consonant of the second AP in the type B is voiceless.

Although this interpretation avoids the continuousness of the phrase boundary, it cannot avoid the continual nature of this sentence itself. I believe this continuous nature is attributed to the continuousness between Ha and La.

4.3 Compounds

The data shown in the results include a number of compounds, which manifest interesting behavior. Table 1 shows the number of APs in compounds.

Table 1: The number of APs in compounds. When there are two phrasing possibilities, both possibilities are shown.

Sentence	Word	the number of APs	
		HJG	PIG
<12>	*moca-keli*	1 or 2	2
<14>	*petu-namu*	2	1
<15>	*namu-tali*	2	1 or 2
<27>	*min-cekoli*	2	1

As Table 1 shows, some compounds clearly have an AP boundary inside. These phrasings are noteworthy since an AP normally consists of one or more words, not morphemes[11].

However, there is another interpretation in which compounds with an AP boundary inside are not actually compounds but phrases. This interpretation is possible since the genitive particle is sometimes omitted in consecutive nouns in Korean. For example, *namutali* in <15> can be regarded as the phrase, *namu tali*, in which the genitive particle after *namu* is omitted[12]. Whether consecutive nouns such as *namutali* are compounds or phrases is in question.

The same question is also involved with *wuli cip* in <29>, which is pronounced as one AP. This consecution is normally regarded as a phrase in Korean orthography[13]. However, it can be interpreted as a compound.

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[11] An AP boundary at the morpheme boundary of a compound is also found in Japanese (Kubozono 1993: 19ff.).

[12] For <12>, <14> and <17>, however, this interpretation may be problematic since Korean does not have *keli* (<12>), *petu* (<14>) and *min* (<17>) as independent words.

[13] In Korean orthography, a space is inserted between the nouns of a phrase, while no space is inserted between the morphemes of a compound.

4.4　Negative adverb *an*

Sentences <16> and <17> are potentially homonymous sentences. While the predicate of the former sentence is the verb, *anca.yo* (sit down), without an adverb, that of the latter sentence consists of the negative adverb, *an*, and the verb, *ca.yo* (sleep).

Interestingly, HJG distinguishes these two sentences in a few tokens, while those in most of HJG's data and all of PIG's data are identical. In the tokens in which <17> is distinguished from <16>, an AP boundary is inserted immediately after the negative adverb. However, this exceptional pronunciation might be unnatural, resulting from the intentional differentiation of the two sentences under unusual laboratory conditions even though I, who is a non-native speaker of Korean, have difficulty to judge whether the sentence in question is really unusual or not. Further investigation is needed.

4.5　Variability of pitch

In the figures shown in Appendix B, it can be seen that some parts are quite constant while others are variable. For example, in HJG's <5>, the peak height of [nɔmuna] is more variable than that of [nɔmu]. This variability may be due to factors that vary the range of pitch, which include downtrend such as declination and downstep, and other factors such as emphasis. Even though these factors seem to be important in Seoul Korean prosody, few studies have been conducted. Further research is necessary.

5　Conclusion

In this preliminary study, I have described the data on Seoul Korean prosody, with special reference to intonation and phrasing. In addition, several findings and issues are discussed. The findings are summarized as follows.

- A phrase-medial peak appears in the second syllable of an AP, as stated in previous studies. Its location is not concerned with the morphological structure.

- It is likely that the relation between Ha and La at the AP boundary is continuous rather than discrete.

In addition, I raise some issues on Seoul Korean prosody based on the data, which concern compounds, the negative adverb, *an*, and the variable nature of pitch. My future study will examine these issues.

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Appendix

A Material

The following illustrates the material used in the recordings. For each sentence, the broad transcriptions of IPA, transliterations (the Yale system of romanization) with glosses and translations are shown. Abbreviations used for glosses are as follows. NOM: nominative case particle, ACC: accusative case particle, DIR: directional particle, TOP: topic particle, QT: quotative particle, SH: subject honorific suffix, DC: declarative sentence-type suffix, PAST: past tense suffix, POL: polite speech level suffix (so-called *hayyo*-form), INT: intimate speech level suffix (so-called *hay*-form).

A <1> [nabiɟa nara]
        napi-ka   nal-a.
        butterfly-NOM fly-INT

        "A butterfly flies."
   <2> [nabiɟa naraɟa]
        napi-ka   nalaka.   .
        butterfly-NOM fly away (INT)

        "A butterfly flies away."
   <3> [nabiɟa naradaɲɔ]
        napi-ka   nalatany-e.
        butterfly-NOM fly around-INT

        "A butterfly flies around."

B <4> [nɔdo nɔmu nɔɟɯɾɔwɔ]
        ne-to   nemu nekulew-e.
        you-also too   generous-INT

        "You, also, are too generous."
   <5> [nɔdo nɔmuna nɔɟɯɾɔwɔ]
        ne-to   nemuna nekulew-e.
        you-also too   generous-INT

        "You, also, are too generous."
   <6> [nɔdo nɔmunado nɔɟɯɾɔwɔ]
        ne-to   nemunato nekulew-e.
        you-also too   generous-INT

        "You, also, are too generous."

C <7> [padaɾo ka]

pata-lo   ka.
sea-DIR go (INT)

"I go to the sea."

<8>   [padarodo ka]
pata-lo-to   ka.
sea-DIR-also go (INT)

"I also go to the sea."

<9>   [padaro ʨadʑu ka]
pata-lo   cacwu ka.
sea-DIR often   go (INT)

"I often go to the sea."

<10>   [padarodo ʨadʑu ka]
pata-lo-to   cacwu ka.
sea-DIR-also often   go (INT)

"I also often go to the sea."

D   <11>   [modʑaga modʑara]
moca-ka   mocala.
hat-NOM insufficient (INT)

"Hats are not enough."

<12>   [modʑagoriga modʑara]
mocakeli-ka   mocala.
hat stand-NOM insufficient (INT)

"Hat stands are not enough."

E   <13>   [namuga pojɔ]
namu-ka   po.y-e.
tree-NOM be seen-INT

"We can see a tree."

<14>   [pɔdɯnamuga pojɔ]
petunamu-ka po.y-e.
willow-NOM be seen-INT

"We can see a willow."

<15>   [namudariga pojɔ]
namutali-ka   po.y-e.
wooden bridge-NOM be seen-INT

"We can see a wooden bridge."

F   <16>   [nanɯn andʑajo]

na-nun anc-ayo.
I-TOP sit down-POL

"I sit down."

<17> [nanɯn an ʨajo]
na-nun an ca-yo.
I-TOP not sleep-POL

"I don't sleep."

G <18> [iɡɔsɯn taɾiɾaɡo he]
ikes-un tali-la-ko ha-y.
this-TOP bridge-be-QT say-INT

"We call this 'tali (bridge)'."

<19> [iɡɔsɯn taɾiɾaɡo he]
ikes-un tal-ila-ko ha-y.
this-TOP moon-be-QT say-INT

"We call this 'tal (moon)'."

H <20> [iɡɔsɯn poɡiɾaɡo he]
ikes-un poki-la-ko ha-y.
this-TOP example-be-QT say-INT

"We call this 'poki (example)'."

<21> [iɡɔsɯn poɡiɾaɡo he]
ikes-un pok-ila-ko ha-y.
this-TOP happiness-be-QT say-INT

"We call this 'pok (happiness)'."

I <22> [ʨibedo kiɾɯmi moʥaɾa]
cip-ey-to kilum-i mocala.
house-at-also oil-NOM insufficient (INT)

"Oil is not enough also in the house."

J <23> [padado mɯɾi moʥaɾa]
pata-to mul-i mocala.
sea-also water-NOM insufficient (INT)

"Water is not enough also in the sea."

K <24> [isaɾɯl kanɯɾaɡo pap*as*ɔ]
isa-lul ka-nulako papp-ass-e.
move-ACC go-as a result of busy-PAST-INT

"I was busy moving out."

<25> [isaɾɯl kaɕinɯɾaɡo pap*ɯɕɔt*e]

　　　　　isa-lul　　　ka-si-nulako　　　　　pappu-sy-ess-ta-y.
　　　　　move-ACC go-SH-as a result of busy-SH-PAST-DC-INT

　　　　　"(I heard that someone was) busy moving out."

L　　<26>　[nanɯn tɕɔgorirɯl tɕoaɦe]
　　　　　na-nun cekoli-lul　　coaha-y.
　　　　　I-TOP　cekoli-ACC like-INT

　　　　　"I like *cekoli* (Korean jackets)."

　　　<27>　[nanɯn mintɕɔgorirɯl tɕoaɦe]
　　　　　na-nun mincekoli-lul　　coaha-y.
　　　　　I-TOP　mincekoli-ACC like-INT

　　　　　"I like *mincekoli* (simple Korean jackets)."

M　　<28>　[muredaga sogɯmɯl tʰajo]
　　　　　mul-eytaka sokum-ul tha-yo.
　　　　　water-into　salt-ACC put-POL

　　　　　"I put salt in the water."

N　　<29>　[pobenɯn uri tɕibe ɔps*ɔ]
　　　　　popay-nun　　wuli cip-ey　　eps-e.
　　　　　treasure-TOP our　house-at not exist-INT

　　　　　"There is no treasure in our house."

　　　<30>　[uri abɔdʑinɯn mɔcis*ɔ]
　　　　　wuli apeci-nun　　mesiss-e.
　　　　　our　father-TOP handsome-INT

　　　　　"My father is handsome."

B　F0 contours

The following shows the F0 contours[14]. F0 (vertical axis) is shown in a logarithmic scale, and time (horizontal axis) is normalized. In each figure, the lower contours show HJG's data, and the upper contours show PIG's data. As for <18>, <19>, <20>, <21>, <24>, <25>, <26>, and <27>, only the second phonological phrase is shown since this part is the focus of this paper.

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[14]Larger-sized figures are available from the author's web site.
http://www.ipe.tsukuba.ac.jp/~s995023/
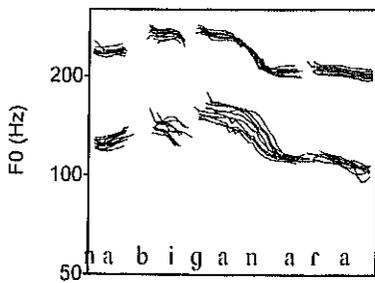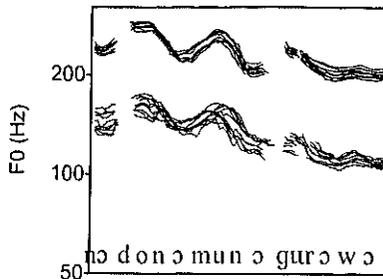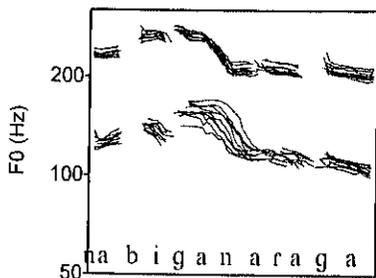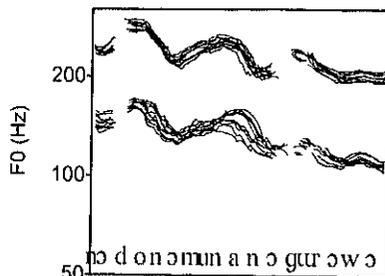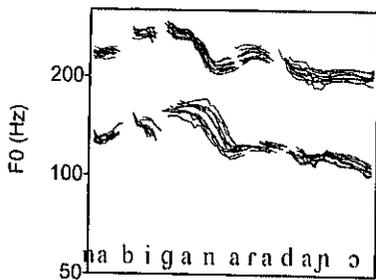
Figure 1: <1>

Figure 2: <2>
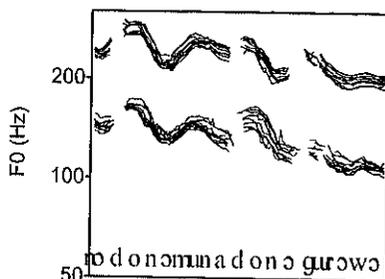
Figure 3: <3>

Figure 4: <4>
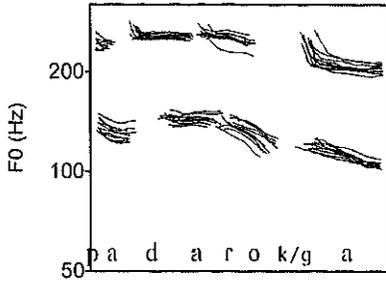
Figure 5: <5>

Figure 6: <6>

Time (normalized)
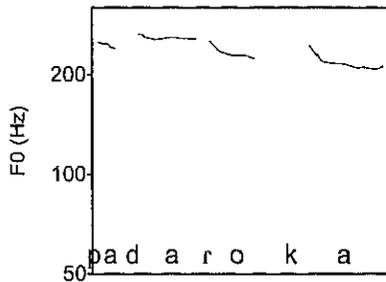Figure 7: <7>
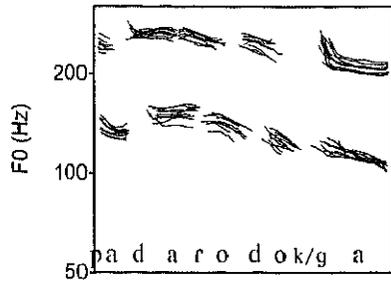
Time (normalized)
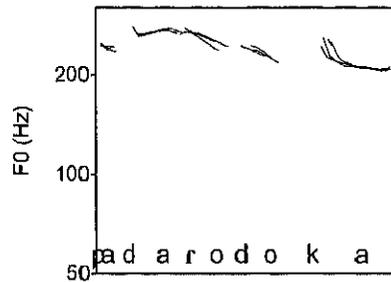Figure 10: <8>
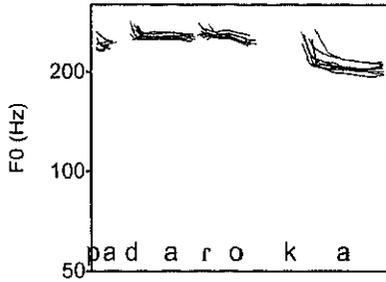
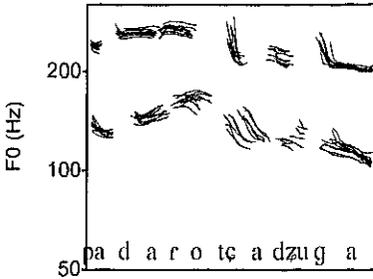Time (normalized)
Figure 8: <7> PIG Type A
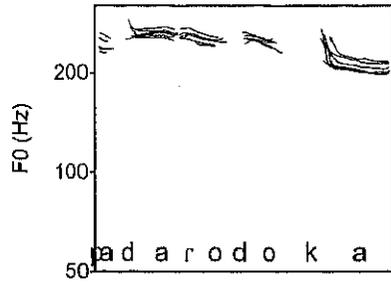
Time (normalized)
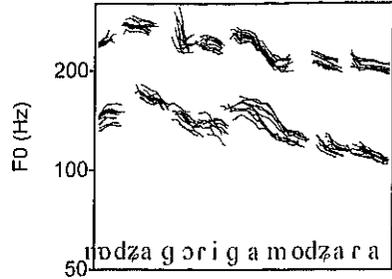Figure 11: <8> PIG Type A

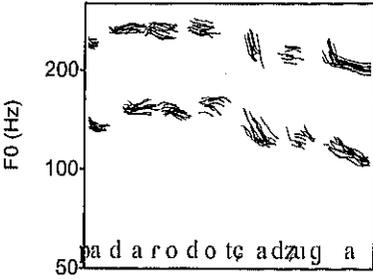Time (normalized)
Figure 9: <7> PIG Type B
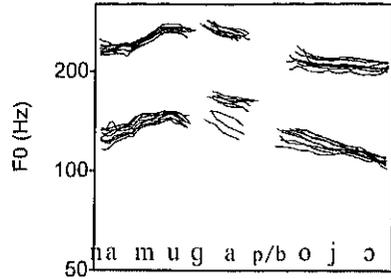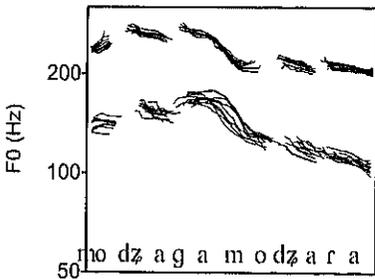

Time (normalized)
Figure 12: <8> PIG Type B

Time (normalized)
Figure 13: <9>

Time (normalized)
Figure 16: <12>

Time (normalized)
Figure 14: <10>

Time (normalized)
Figure 17: <13>

Time (normalized)
Figure 15: <11>
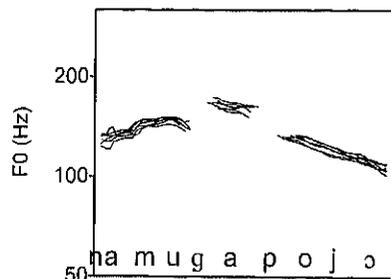
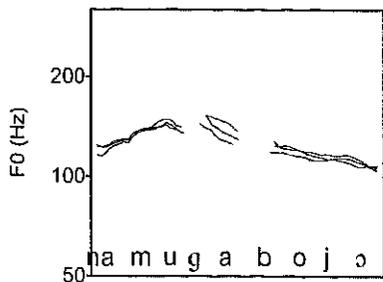Time (normalized)
Figure 18: <13> HJG Type A

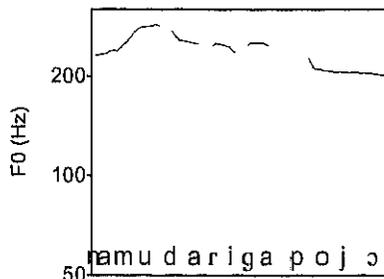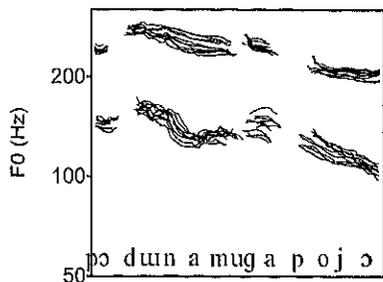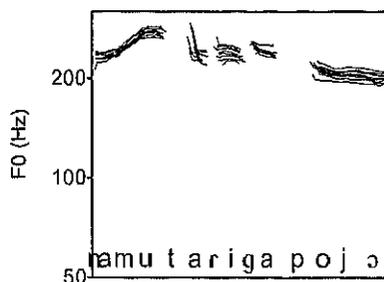Figure 19: <13> HJG Type B

Figure 22: <15> PIG Type A

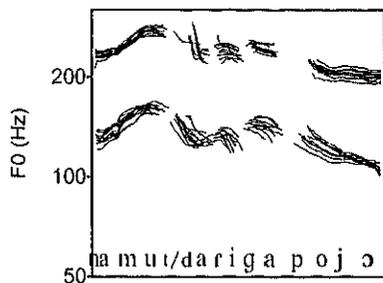Figure 20: <14>

Figure 23: <15> PIG Type B

Figure 21: <15>
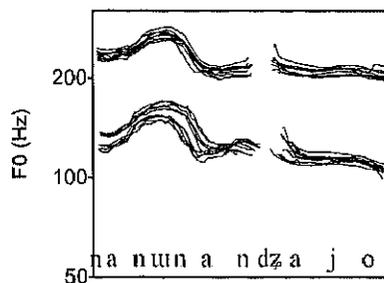
Figure 24: <16>

Figure 25: <17>

Figure 26: <17> HJG Type A

Figure 27: <17> HJG Type B

Figure 28: <18>

Figure 29: <19>

Figure 30: <20>

Figure 31: <20> HJG Type A
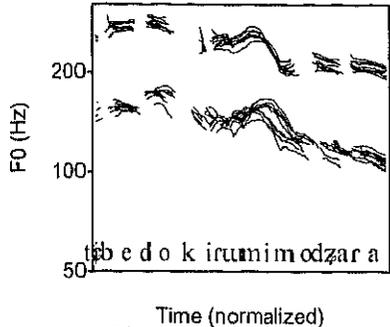
Figure 34: <22>
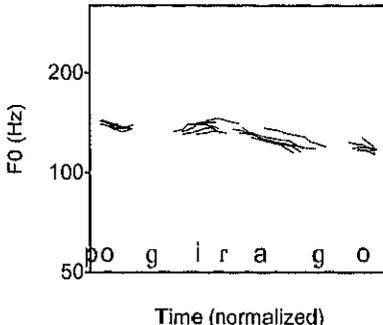
Figure 32: <20> HJG Type B
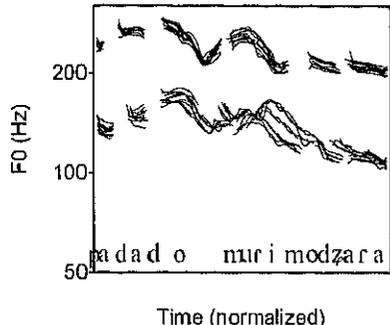
Figure 35: <23>
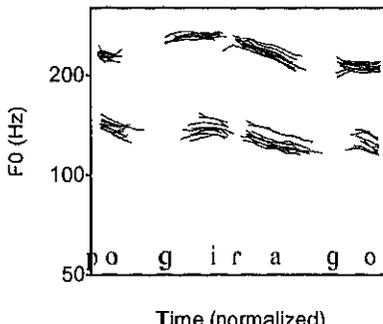
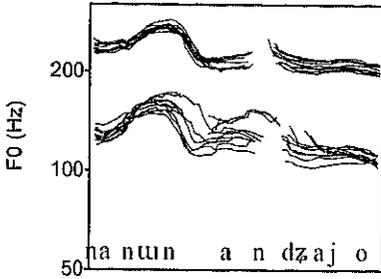Figure 33: <21>
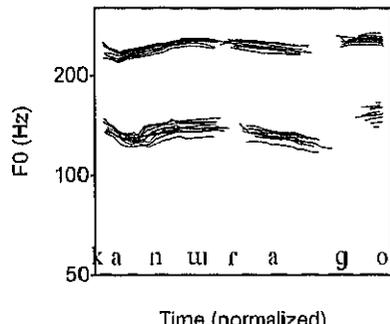
Figure 36: <24>
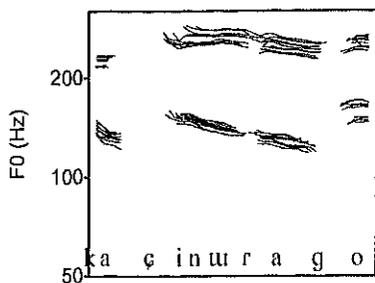
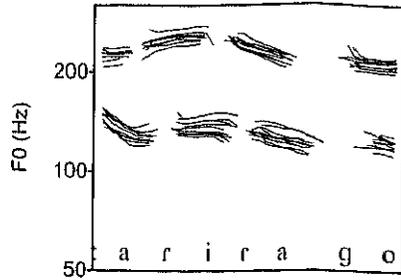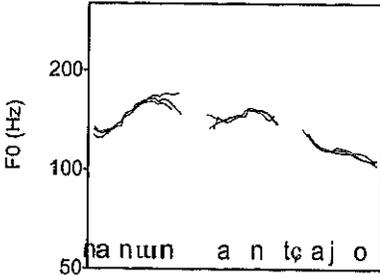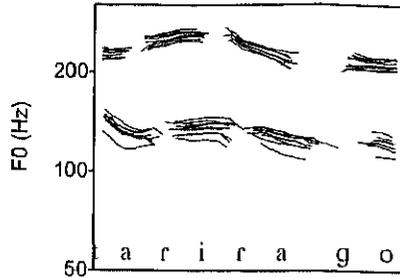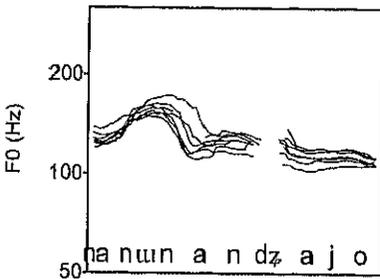Time (normalized)
Figure 37: <25>
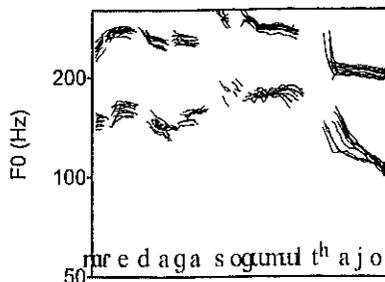
Time (normalized)
Figure 40: <28>
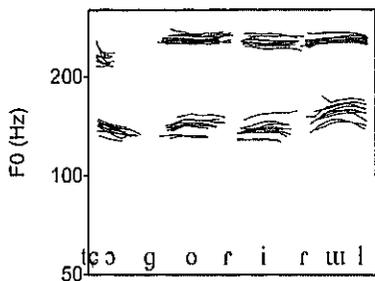
Time (normalized)
Figure 38: <26>
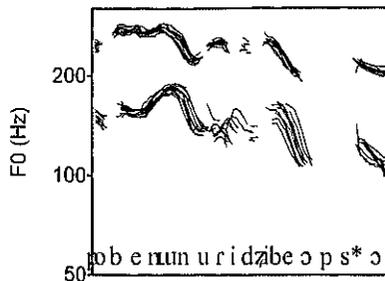
Time (normalized)
Figure 41: <29>

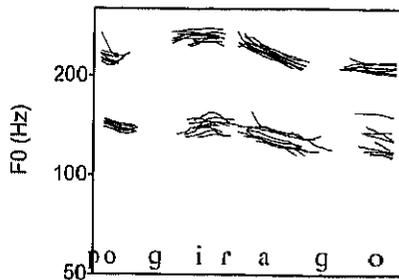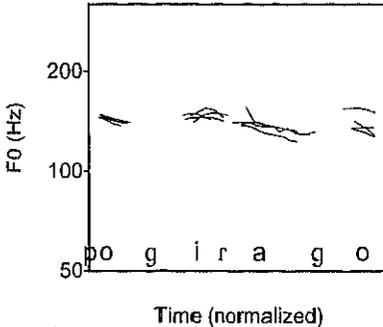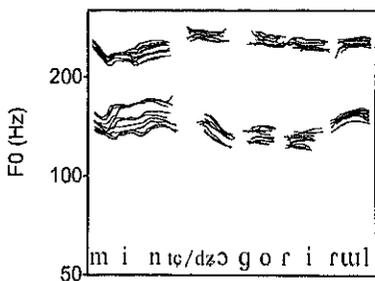
Time (normalized)
Figure 39: <27>
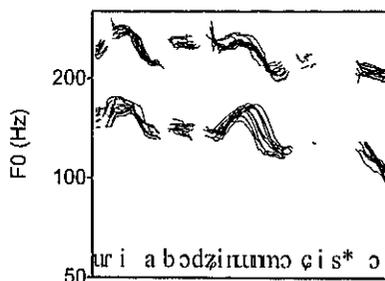
Time (normalized)
Figure 42: <30>

C   Phrasing and tones

The following shows the tones and phrasings of the data. The tones annotated here correspond to those in the phonetic tone tier of K-ToBI. When a tone is unclear or optional, it is parenthesized. The phrasing corresponds to the AP phrasing in Jun (1993)'s model. If more than one interpretation is possible, I show every possible interpretation. When there are two different types as noted in the section 3, the annatations are shown separately.

	Subject	Type	Phrasing and Tones	# of Tokens
<1>	HJG		{nabiga} {nara} 　L　　Ha　　L　L% or {nabiga nara} 　　L　　+H　　L%	10
	PIG		{nabiga} {nara} 　L +HHa　　L　L%	10
<2>	HJG		{nabiga} {naraga} 　L　　Ha　L　　L% or {nabiga naraga} 　　L　　+H　　L%	10
	PIG		{nabiga} {naraga} 　L +HHa　　L　　L%	10
<3>	HJG		{nabiga} {nara　daɲɔ} 　L　　Ha　　L　(+H)　L%	10
	PIG		{nabiga} {naradaɲɔ} 　L +HHa　　L +H　L%	10
<4>	HJG		{nɔdo} {nɔmu} {nɔgɯrɔwɔ} 　L　Ha　　L　Ha　　L +H　L% or {nɔdo nɔmu} {nɔgɯrɔwɔ} 　　L +H L+ Ha　　L +H　L%	10
	PIG		{nɔdo} {nɔmu} {nɔgɯrɔwɔ} 　L　Ha　　L　Ha　　L +H　L%	10
<5>	HJG		{nɔdo} {nɔmuna} {nɔgɯrɔwɔ} 　L　Ha　　L　　Ha　　L +H　L%	10
	PIG		{nɔdo} {nɔmuna} {nɔgɯrɔwɔ} 　L　Ha　　L　　Ha　　L +H　L%	10
<6>	HJG		{nɔdo} {nɔmunado} {nɔgɯrɔwɔ} 　L　Ha　　L　+H L+Ha　　L +H　　L%	10

	PIG		{nɔdo} {nɔmunado} {nɔɟɯrɔwɔ}	10
			L　Ha　　L +H　L+ Ha　　L +H　　Lℓ	
<7>	HJG		{padaro ɡa}	10
			L +H　　Lℓ	
	PIG	Type A	{padaro} {ka }	9
			L +H Ha　　L Lℓ	
		Type B	{padaro} {ka }	1
			L +H La　　L Lℓ	
			or {padaro ka}	
			L +H　　Lℓ	
<8>	HJG		{padarodo} {ɡa }	10
			L +H　La　　L Lℓ	
			or {padarodo ɡa}	
			L +H　　Lℓ	
	PIG	Type A	{padarodo} {ka }	7
			L +H L+Ha　　L Lℓ	
		Type B	{padarodo} {ka }	3
			L +H L+La　　L Lℓ	
			or {padarodo ka}	
			L +H　　Lℓ	
<9>	HJG		{padaro} {tɕadʑu ɡa}	10
			L　Ha　　L (+H) Lℓ	
			or {padaro} {tɕadʑu} {ɡa }	
			L　Ha　　L Ha　　L Lℓ	
	PIG		{padaro} {tɕadʑu} {ɡa }	10
			L +H Ha　　L Ha　　L Lℓ	
			or {padaro} {tɕadʑu ɡa}	
			L +H Ha　　L +H Lℓ	
<10>	HJG		{padaro　do} {tɕadʑu　ɡa}	10
			L +H (L+)Ha　　L (+H) Lℓ	
			or {padaro　do} {tɕadʑu} {ɡa}	
			L +H (L+)Ha　　L Ha　　Lℓ	
	PIG		{padarodo} {tɕadʑu} {ɡa }	10
			L +H　Ha　　L Ha　　L Lℓ	
			{padarodo} {tɕadʑu ɡa}	
			L +H　Ha　　L +H Lℓ	

<11> HJG   {moʤaga} {moʤara}   10
                             L   Ha   L   L%
                        or {moʤaga moʤara}
                             L   +H   L%

         PIG   {moʤaga} {moʤa ra}   10
                             L   +H Ha   L   (+H) L%

<12> HJG   {moʤagɔriga} {moʤara}   10
                             L   +H   L+Ha   L   L%
                        or {moʤa} {gɔriga} {moʤara}
                             L   Ha   L   Ha   L   L%
                        or {moʤa} {gɔriga moʤara}
                             L   Ha   L   +H   L%

         PIG   {moʤa} {gɔriga} {moʤa ra}   10
                             L   Ha   L   Ha   L   (+H) L%

<13> HJG   Type A   {namuga} {pojɔ}   7
                             L   Ha   L L%
                        or {namuga pojɔ}
                             L   +H   L%

                 Type B   {namuga bojɔ}   3
                             L   +H   L%
                          {namuga} {bojɔ}
                             L   +H La   L L%

         PIG   {namuga} {pojɔ}   10
                             L   +H Ha   L L%

<14> HJG   {pɔdɯ} {namuga} {pojɔ}   10
                             L   Ha   L   Ha   L L%
                        or {pɔdɯ} {namuga pojɔ}
                             L   Ha   L   +H   L%

         PIG   {pɔdɯnamuga} {pojɔ}   10
                             L   +H   L+   Ha   L L%

<15> HJG   {namu} {dariga} {pojɔ}   10
                             L   Ha   L   Ha   L L%
                        or {namu} {dariga pojɔ}
                             L   Ha   L   +H   L%

         PIG   Type A   {namudariga} {pojɔ}   1
                             L   +H   La   L L%

	Type B	{namu} {tariga} {pojɔ}	9
		L Ha　　L Ha　　L Lʔ	
		or {namu} {tariga pojɔ}	
		L Ha　　L +H　L%	
<16> HJG		{nanɯn} {an ʥajo}	10
		L Ha　　L+H L%	
PIG		{nanɯn} {anʥa jo}	10
		L Ha　　L (+H)L%	
<17> HJG	Type A	{nanɯn} {an } {tɕajo}	3
		L Ha　　L+Ha　L Lʔ	
		or {nanɯn} {an tɕajo}	
		L Ha　　L+H　L%	
		There is a pause before [an], at which an IP boundary possibly exists.	
	Type B	{nanɯn} {an ʥajo}	7
		L Ha　　L+H　L%	
PIG		{nanɯn} {anʥa jo}	10
		L Ha　　L (+H)Lʔ	
<18> HJG		{igɔsɯn} {tari ragoɕie}	10
		L　Ha　　L +H　L%	
		or {igɔsɯn} {tari rago} {ɕie }	
		L　Ha　　L +H La　L L%	
PIG		{igɔ sɯn} {tari ragoɕie}	10
		L(+H)Ha　　L +H　L%	
		or {igɔ sɯn} {tari rago} {ɕie }	
		L(+H)Ha　　L +H La　L L%	
<19> HJG		{igɔsɯn} {tari ragoɕie}	10
		L　Ha　　L +H　L%	
		or {igɔsɯn} {tari rago} {ɕie }	
		L　Ha　　L +H La　L L%	
PIG		{igɔ sɯn} {tari ragoɕie}	10
		L(+H)Ha　　L +H　L%	
		or {igɔ sɯn} {tari rago} {ɕie }	
		L(+H)Ha　　L +H La　L L%	
<20> HJG	Type A	{igɔsɯn} {pogirago} {ɕie }	4
		L　Ha　　L +HL+Ha　L Lʔ	
	Type B	{igɔsɯn} {pogirago ɕie}	6
		L　Ha　　L +H　L%	

	or {igɔsɯɯn} {pogirago} {fie }	
	L　Ha　　　L +H　La　　L L%	
PIG	{igɔ sɯɯn} {pogirago fie}	10
	L(+H) Ha　　　L +H　　L%	
	or {igɔ sɯɯn} {pogirago} {fie }	
	L(+H) Ha　　L +H　La　L L%	
<21> HJG	{igɔsɯɯn} {pogirago fie}	10
	L　Ha　　L +H　　L%	
	or {igɔsɯɯn} {pogirago} {fie }	
	L　Ha　　L +H　La　L L%	
PIG	{igɔ sɯɯn} {pogirago fie}	10
	L(+H) Ha　　L +H　　L%	
	or {igɔ sɯɯn} {pogirago} {fie }	
	L(+H) Ha　　L +H　La　L L%	
<22> HJG	{tɕibedo} {kirɯɯmi} {modʑara}	10
	L　Ha　L　Ha　L　L%	
	or {tɕibedo} {kirɯɯmi modʑara}	10
	L　Ha　L　+H　L%	
PIG	{tɕibedo} {kirɯ mi} {modʑa ra}	10
	L +H Ha　L (+H) Ha　L (+H) L%	
<23> HJG	{padado} {muri} {modʑara}	10
	L　H%　L　Ha　L　L%	
	or {padado} {muri modʑara}	10
	L　H%　L　+H　L%	
	There is a pause and/or final lengthening after	
	[padado], at which an IP boundary clearly exists.	
PIG	{padado} {muri} {modʑa ra}	10
	L +H Ha　L　Ha　L (+H) L%	
<24> HJG	{isarɯɯl} {kanɯɯrago} {pap*a s*ɔ}	10
	L　Ha　　L +H L+Ha　L (+H) L%	
PIG	{isarɯɯl} {kanɯɯra go} {pap*a s*ɔ}	10
	L+HHa　　L +H (L+) Ha　L (+H) L%	
<25> HJG	{isarɯɯl} {kaɕinɯɯrago} {pap*ɯɕɔt*e}	10
	L　Ha　L +H　L+Ha　L +H　L%	
PIG	{isarɯɯl} {kaɕinɯɯrago} {pap*ɯɕɔt*e}	10
	L+HHa　L +H　L+Ha　L +H　L%	
<26> HJG	{nanɯɯn} {tɕɔgori rɯɯl} {tɕɔa fie}	10
	L　Ha　　L +H L+Ha　　L (+H) L%	

PIG   {nanɯn} {tɕɔgori   rɯl} {tɕoa   ɦe}   10
            L   Ha   L +H (L+) Ha   L (+H) L%

<27> HJG   {nanɯn} {min} {tɕɔgori rɯl} {tɕoa   ɦe} 10
            L   Ha   L Ha   L   +H L+Ha   L (+H) L%

In a few tokens, a pause is identified after [nanɯn],
at which an IP boundary possibly exists.

PIG   {nanɯn} {mindʑɔgori   rɯl} {tɕoa   ɦe}   10
            L   Ha   L   +H   (L+) Ha   L (+H) L%

<28> HJG   {muredaɡa} {soɡɯmɯl} {tʰajo}   10
            L +HL+ Ha   H   Ha   H   L%

or {muredaɡa} {soɡɯmɯl tʰajo}
           L +HL+ Ha   H   +H   L%

PIG   {muredaɡa} {soɡɯmɯl} {tʰajo}   10
            L +HL+ Ha   H   Ha   (H) L%

or {muredaɡa} {soɡɯmɯl tʰajo}
           L +HL+ Ha   H   +H   L%

<29> HJG   {pobenɯn} {uri   dʑi   be} {ɔps*ɔ}   10
            L   Ha   L (+H) (L+) Ha   L   L%

In one token, a pause is identified after [pobenɯn],
at which an IP boundary possibly exists.

PIG   {pobenɯn} {uri dʑi be} {ɔps*ɔ}   10
            L +H Ha   L+H(L+) Ha   L   L%

<30> HJG   {uri} {abɔ dʑinɯn} {mɔɕi   s*ɔ}   10
            L Ha   L (+H) L+ Ha   L (+H) L%

PIG   {uri} {abɔdʑinɯn} {mɔɕi s*ɔ}   10
            L Ha   L+H   Ha   L +HL%

朝鮮語ソウル方言における平叙文
のイントネーションと句形成
－予備的研究－

宇都木 昭

　本稿は、筆者がかつて三松国宏氏と行った共同研究（三松・宇都木 2002）の過程でとった録音資料を改めてまとめたものである。三松・宇都木 (2002) においては、実際にとった録音のうちの一部分のみを分析・考察の対象としたが、残りのものも今後の研究にとって貴重な資料となりうると思われる。そこで本稿では、今後の研究のための予備的研究として、全録音資料の分析結果を提示した。

　今回提示したのは、録音した各文の F0 曲線のほか、句形成と音調の記述である。この記述は、K-ToBI にならって行った。

　さらに、これらのデータから予備的な考察も試みた。特に明らかになったのは、以下の二点である。

- 先行研究において指摘されているように、句中ピークはアクセント句の第二音節に現れる。この傾向は、形態構造の違いによっても変わることはない。

- アクセント句境界に現れる Ha と La は、連続的関係にあるようである。

　また、今回の分析を通じ、複合語、否定副詞 *an*、およびピッチの変動性に関して重要な課題が見出された。今後は、これらの課題をより詳しく検討していく必要があろう。

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