

## The syntax-prosody interface in Korean: resolving ambiguity in questions

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- (1) *acwumeni-ka nwukwu-lul manna-syeoss-eyo*  
auntie-SBJ someone/who-OBJ met-SH.PST-POL
- a. 'Auntie met someone.'
  - b. 'Did auntie meet someone?'
  - c. 'Who did auntie meet?'

In Korean, the string in (1) has three different English readings: a declarative statement (1a), a polar question (1b), and an open question (1c). This ambiguity arises from an interaction between three features of Korean: *wh*-in-situ word order for questions; the dual role of *content pro-forms* (CPFs, e.g. *nwukwu* 'someone/who', *encey* 'sometimes/when') as indefinite pronouns and *wh*-interrogatives; and the use of the sentence ending *-eyo* in polite speech style for both declarative and interrogative moods (Yeon and Brown, 2011). The declarative reading (1a) has the sentence-final intonation HL%, whereas the two question readings (1b, 1c) both have sentence-final question intonation LH% (Jun, 2005).

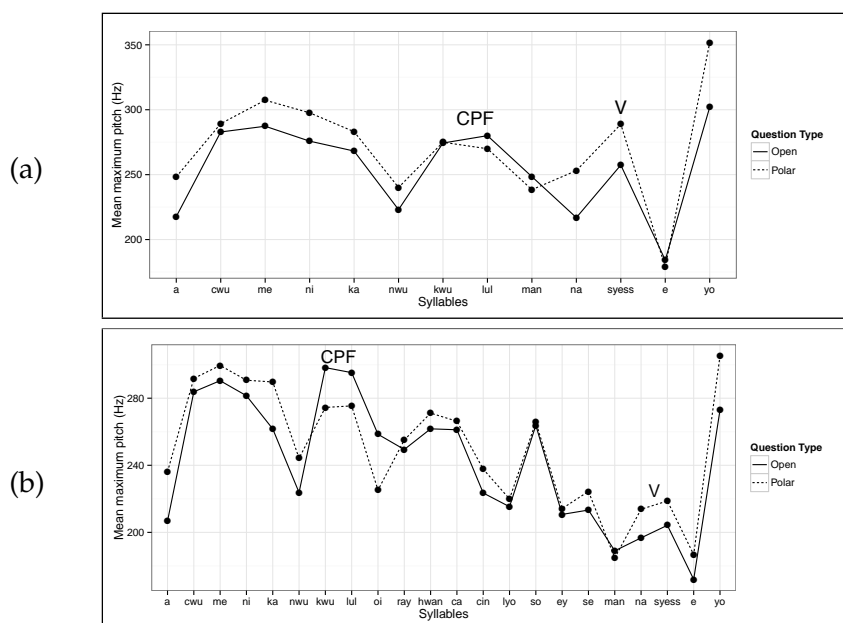
The difference in meaning between the two question readings is analysed as alternation in scope of focus (Lambrecht, 1996). In the polar reading 'Did auntie meet someone?', the predicate 'met someone' is in focus, whereas in the open reading 'Who did auntie meet?' only the CPF 'who' is in focus (Dalrymple and Nikolaeva, 2011).

Native speakers resolve the ambiguity prosodically, but accounts of the prosodic mechanism vary. Jun and Oh (1996) associate disambiguation with the placement of accentual phrase boundaries, for Kim (2000) the association is with pitch prominence, and for Yun (2012), post-focal pitch compression. However, Jun & Oh's account is unsatisfactory for questions where the CPF is not adjacent to the verb, Yun's account is based on perception studies of acoustically altered stimuli, and Kim's account uses linguistic intuition rather than experimental evidence. To gather additional evidence, a speech production experiment was carried out with 9 native speakers of Seoul Korean. Participants were given background information which indicated either a polar or open reading for a question, and were then asked to produce the question with the appropriate intonation for the context.

Acoustic analysis of the experimental data shows that Jun & Oh's model using accentual phrase boundaries holds where the CPF and the verb are adjacent ( $p_{\chi^2} > 99.5\%$ ), although in over 30% of cases the observed pattern is counter to prediction. However, where a constituent interposes between CPF and verb, Jun & Oh's model does not hold.

Comparison of the mean maximum pitch of each syllable in the open and closed readings shows a difference between the two readings (Figure 1). Open readings (solid line) show expanded pitch range towards the end of the CPF, whereas polar readings (dashed line) show expanded pitch range at the verb (V). This is seen both without (Figure 1a) and with (Figure 1b) a constituent intervening between CPF and verb. The evidence shows alignment of the right edges of the focused element and the expanded pitch range, and also post-focus dephrasing. This is consistent with Jun & Oh's, Kim's, and Yun's accounts of focus expression in Korean, as

Figure 1: Mean maximum pitch values



one effect of post-focal dephrasing is to reduce the likelihood of an accentual phrase boundary occurring. Expanded pitch range spreads leftwards from the right hand edge of the focused constituent. However, expanded pitch range is not seen across the whole extent of syntactic focus for either reading: this is shown most clearly in the polar reading with an intervening constituent (Figure 1b, dotted line), where syntactic focus begins at the sixth syllable *nwu* and continues to the end of the utterance.

The LFG analysis builds on previous work by the author (2015). Syntax-prosody interface rules are proposed, adapting Mycock & Lowe's (2013) model of the interface in English, where the principle of interface harmony (Dalrymple and Mycock, 2011) applies at the interface between the s-string and the p-string, which represent the syntactic and phonological elements of an utterance respectively. The c-structure features *QSem* and *DF\_Focus* are assumed to represent the scope of question semantics and focus respectively, and cascade rules govern where these features appear in the s-string. Corresponding p-structure features *QSem* and *DF\_Focus* are associated with prosodic marking taken from the experimental evidence and from Jun's (2005) account of Korean sentence prosody. The proposal includes a novel operator ( $\mathcal{R}$ ) for p-structure rules, to be used where there is a one-to-one correspondence between a p-structure constituent and a p-structure unit. This is required to represent prosodic expression of focus where there is no nuclear pitch accent, which is the case in Korean.

These rules are then applied to language data from the experiment to produce a formal LFG analysis of the Korean phenomenon for sentences with and without an intervening constituent between CPF and verb. Figures 2 and 3 give the analyses of the focused elements of the open and polar readings respectively of sentences without an intervening constituent.

In the open question, the scope of focus is the NP of the CPF, and the c-structure feature **DF\_Focus** cascades to the right edge set of the NP's rightmost s-string unit 'nwukwul'. The prosodic expression of focus, expanded pitch range, spreads leftwards from the p-string unit [ɾul]. Interface harmony is maintained by the alignment of the right edges of the exponents of focus in the p-string and s-string.

In the polar question, the predicate VP is in focus. The c-structure feature **DF\_Focus** cascades to the right edge set of the VP's rightmost s-string unit 'mannasyeseyo'. Expanded pitch range spreads leftwards from the p-string unit [yo:]. Again, interface harmony is maintained by the alignment of the right edges of the exponents of focus in the p-string and s-string.

In both readings, the entire sentence carries question semantics which cascades to the right edge of the s-string and is marked by question intonation at the right edge of the p-string, once again maintaining interface harmony.

The analysis provides an account of prosodic disambiguation in Korean. It also demonstrates that Mycock and Lowe's model for the English syntax-prosody interface can be applied to Korean, making evidence-based language-specific amendments to the c- and p-structure rules.

## References

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Figure 3: Short polar question: 'Did auntie meet someone?'

