Phase, accent, and the derivation of prosody in Korean

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This paper proposes an analysis of Korean prosody using the framework recently developed from the *phase* and *multiple spell-out* theory of minimalist syntax (e.g. Kahnemuypour 2004, Kratzer & Selkirk 2007, Ishihara 2007). I argue that the prosodic domain derived from the multiple spell-out serves as a domain of stress assignment and other segmental phonological rules in Korean. At the PF level, I explain the intonation of Korean in terms of pitch accents and boundary tones, much like the case of Bengali (Hayes & Lahiri 1991).

Prosodic domains in Korean are motivated by phonological rules such as *n*-insertion, lenis stop voicing, and nasal assimilation. Previous approaches to Korean phrasing contained problems such as the inability to accommodate the possible range of phrasing patterns (Indirect Syntactic Approach; Silva 1989, Cho 1990) or the lack of algorithm to derive the phrasing (Intonational Approach; Jun 1993). Some of the recent studies on the syntax-phonology interface propose that a default prosodic domain is constructed as part of a multiple spell-out operation. Specifically, Kratzer & Selkirk (2007) suggest that the highest phrase within the spell-out domain of a phase corresponds to a prosodic major phrase in phonological representation. In addition, they assume that semantic properties play a role in the computation of the phrase stress through F-marking (Féry & Samek-Lodovici 2006).

The predictions made by such a proposal on Korean have been tested on three different constructions. (i) **SOV**: The Korean examples in (1) illustrate that the object NP is realized with the phrasal stress. This confirms the prediction that the phrasal stress will always go on the direct object, the highest phrase within VP, rather than the verb. (ii) **Applicative**: Researchers have different opinions as to where in the syntactic hierarchy the Applicative is base-generated, particularly about whether it is outside or inside the VP. In Korean, it has been argued that the indirect object (IO) is merged outside the VP (Ko 2005). In view of the claim adopted in this paper that the derivation of phrasing mirrors syntactic structures, we would then expect a prosodic boundary between the IO and the VP. This prediction is borne out in the example (2), which illustrates that the IO resists to be prosodically grouped with the subject or object NP. (iii) **Indefinite pronouns:** They do not have phrasal stress even when they are the highest phrase within a spell-out domain (3). In contrast, *wh*-pronominal objects in Korean stay in situ and receive a phrasal stress (4). I propose that the absence of phrasal stress on the indefinite-pronoun is because of the discourse-based constraint DESTRESS-GIVEN (Féry & Samek-Lodovici 2006), which prohibits the G-marked pronouns from being placed in a prosodically strong position in the prosodic domain.

Factors affecting phrasing and language-specific phonological patterns come into play at PF after the multiple spell-out: (1) **Prosodic weight**: The unparsed verb is encliticized to the preceding prosodic domain at PF (5a), but forms its own prosodic domain, if heavy (5b). (2) **Speech rate**: In fast speech, the verb is encliticized and becomes part of the domain for segmental rule applications (6a), but forms its own prosodic domain in slow speech (6b). (3) **Tone insertion**: A default pitch accent H* is placed on the phrasal stress, and a boundary H tone is added in the Seoul dialect. This analysis radically departs from Jun (1993)'s proposal where the Accentual Phrase (AP) is characterized by the *underlying* tonal patterns of LHLH and HHLH in Seoul and LHL and HHL in Chonnam. These tones, however, do not contribute any meanings, so should be introduced at PF. Also, as I argued elsewhere, the initial H tone in HHLH or HHL is merely a consequence of pitch perturbation due to the phrase-initial laryngeal consonants, so should not be treated as a tone. Thus I argue that the AP tonal patterns are not primitive but can be derived from the combination of pitch accent placed on the phrasal head and boundary tones.

The current analysis of Korean prosody provides an improved analysis of Korean prosody with an algorithm that eliminates the limitations of previous approaches. It also adds support for the claim that multiple spell-out determines core aspects of prosodic phrasing and phrase stress assignment, and language-particular differences are achieved through PF operations (Kratzer & Selkirk 2007, Revithiadou & Spyropoulos 2004, Pak 2006). There are many other issues that need to be further investigated for a more comprehensive modeling of Korean prosody using the theoretical framework adopted here. This study will serve as the groundwork on which further studies can be built.

<u>Examples</u>

(1) Phrasal stress goes to the object NP, the highest phrase within the VP.
    a. yeonghwuni-ga [$_{VP}$ [$_{NP}$[<u>yengmwúnhak-ul</u>**]** cengongha-n-ta] $_v$] $_{vP}$.
      Yeonghun-N$_{OM}$ English -A$_{CC}$ major in
      'Yeonghun majors in English Literature.'
    b. tokki-ga [$_{VP}$ [$_{NP}$[<u>pibímbap</u>**]**   mek-ess-e-yo] $_v$] $_{vP}$.
      rabbit-N$_{OM}$ mixed-rice-A$_{CC}$ ate
      'The rabbit ate mixed-rice.'

(2) Indirect object forms a separate prosodic domain in all-new context.
    a. (na-nun) (senwu-hanthey) (chayk-ul seykwen   cwu-ess-ta).
       I-T$_{OP}$ Sunwoo-D$_{AT}$ book-A$_{CC}$ three-volumes gave
       'I gave three books to Sunwoo'
    b. *(na-nun senwu-hanthey) (chayk-ul seykwen   cwu-ess-ta).
       I-T$_{OP}$ Sunwoo-D$_{AT}$ book-A$_{CC}$ three volumes gave
    c. *(na-nun) (senwu-hanthey chayk-ul) (seykwen   cwu-ess-ta).
       I-T$_{OP}$ Sunwoo-D$_{AT}$ book-A$_{CC}$ three-volumes gave

(3) Indefinite pronouns are G-marked thus cannot be prosodically prominent.
    a. aki-ka [$_{VP}$ [$_{NP}$[<u>mwel</u>$_G$]   mek-éss-ta-ten-tey] $_v$] $_{vP}$.
      baby-N$_{OM}$ something ate-DC-IN
     '(I heard) that the baby ate something'
    b. aki-ka [$_{VP}$ [$_{NP}$[<u>lamyén-ul</u>] mek-ess-ta-ten-tey] $_v$] $_{vP}$.
      baby-N$_{OM}$ ramen-A$_{CC}$ ate- DC-IN
     '(I heard) that the baby ate ramen'

(4) *Wh*-pronouns receive phrasal stress.
   aki-ka [$_{VP}$ [$_{NP}$[<u>mwél</u>] mek-ess-ni] $_v$] $_{vP}$?
   baby-N$_{OM}$ what ate-Q
   'What did the baby eat?'

(5) Unparsed verb is encliticized at PF but may form its own domain if phonologically heavy.
    a. (unjíni-nun) (sensáyngnim-kkey) ((sagwá-lul)   <u>hay-ess-ta</u>)
      Eunjin-N$_{OM}$ teacher-D$_{AT}$ apology-A$_{CC}$ did
     'Eunjin apologized to the teacher'
    b. (sensáyngnim-un) (sakwá-lul)   (<u>patátuli–si-ess-ta</u>).
      teacher- N$_{OM}$ apology-A$_{CC}$ accepted
     'The teacher accepted (her) apology'

(6) Speech rate is a relevant factor in phrasing.
    a. tokki-ga   ((<u>pibímbam</u>)   mek-ess-e-yo)   *Nasal assimilation applies in fast speech*
      rabbit-N$_{OM}$ mixed-rice-A$_{CC}$ ate
      'The rabbit ate mixed-rice.'
    b. tokki-ga   (<u>pibímbap</u>)   (mek-éss-e-yo)   *Nasal assimilation blocked in slow speech*
      rabbit-N$_{OM}$ mixed-rice-A$_{CC}$ ate