

Asymmetry in Scrambling and Cyclic Spell-Out
Heejeong Ko, MIT (heejeong@mit.edu)

A series of works in the framework of *Derivation by Phase* (Chomsky 1999) has argued that certain information is sent by the syntax to other components at each *Phase* — for example, that syntax communicates with the phonology at the end of each phase via *Spell-out* (Chomsky 2001, Nissenbaum 2001). This approach suggests that **Linearization** in particular is *cyclically* determined by syntax. Though some evidence from languages with rigid word order supports this prediction (Fox and Pesetsky 2003), it is has not been clear whether evidence for cyclic linearization can be found in scrambling languages. This paper provides such evidence. In particular, I show that cyclic Spell-out offers an explanation for **asymmetries between external and internal arguments in Korean and Japanese (K/J) scrambling** (Saito 1985, Lee 1989, Miyagawa 1989). I also demonstrate that cyclic Linearization accounts for **asymmetric distribution between adverbial phrases with respect to floating quantifiers (FQ)**.

In K/J, an object (O) may undergo scrambling and license a FQ across a subject (S), as in (1a). In contrast, S cannot license a FQ across O, as in (1b). This asymmetry was attributed to the claim that S never undergoes scrambling, unlike other arguments (Saito 1985). Recent literature, however, provides contradictory evidence, showing that S does undergo scrambling after all. In particular, *clause-external* scrambling of an embedded S is possible as long as no parsing difficulty arises (Sohn 1995). As illustrated in (1c), S may scramble even *clause-internally* and license a FQ across the high adverb ‘why’, which was argued to be directly merged in [Spec,CP] (Ko 2003). If both S and O may scramble and license a FQ, it remains puzzling why the asymmetry in (1) holds.

I argue that this asymmetry between S and O results from the architecture of the grammar, which requires Linearization at each Phase (vP and CP). More specifically, **I propose that K/J scrambling is constrained by the Linearization principle (2)**, which was defended by Fox and Pesetsky (2003) for Scandinavian languages and English. Following Sportiche (1988), I assume that NP and FQ are originally merged as sisters. Following Chomsky (1999), I assume that movement cannot happen without an attracting *probe*.

Consider first (3a), the derivation of (1a). At the vP phase, O undergoes scrambling. After Spell-out of vP, the initial ordering (**O<S<FQo<V**) is established. At the next phase CP, O undergoes further scrambling. After spell-out of CP, the new ordering (**O<adv<S<FQo<V**) obtains. Crucially, this new ordering conforms to (2), because it does not contradict the previous ordering established at vP. Compare this with (3b), the derivation of (1b). Given that there is no attracting head higher than S within vP, S cannot undergo scrambling within the vP phase. When vP is spelled-out after scrambling of O, the ordering (**O<S<FQs<V**) is stored at PF. At the next phase CP, S may undergo scrambling like other items, but the movement should satisfy (2). That is, O should precede both S and FQs at the CP phase, as in the vP phase. If O intervenes between S and FQs (**S<O<FQs**) after Spell-out of the CP phase as in (3b), it contradicts the previous ordering (**O<S<FQs**) established at vP, creating the unacceptability. The order in (1c), on the other hand, is possible if O does not scramble within vP, as described in (3c).

While *unergative/transitive* S cannot license a FQ across low adverbs (e.g. manner/instrumental adverbs), an *unaccusative* S may (Miyagawa 1989). More interestingly, however, this asymmetry disappears when a high adverb is substituted for the low adverb (e.g. ‘probably’, ‘why’, see also (1c)). This asymmetry is predicted by (2). Consider a low adverb merged within vP (L-Adv), as in (4). S in unaccusative VP moves from VP to vP (or to IP). Due to this movement, S and FQs are ordered with respect to L-Adv before the first Spell-out. Thus, L-adv may intervene between S and FQs, as in (4a). S in a unergative/transitive vP, in contrast, is merged in [Spec,vP], and thus cannot move within the vP. As a result, the ordering at vP requires that L-adv always either precede or follow both S and FQs, as in (4b). That is, L-adv cannot intervene between S and FQs, just like O in (3b). When an adverb is merged outside of vP (H-adv, see (5)), S may always scramble and add new ordering with respect to the H-Adv at the CP phase, satisfying (2). Hence, H-adv may intervene between S and FQs, regardless of the construction types: (5a,b).

- (1) a. **Maykcwu-lul_i** way ku hakpumo-ka t_i **sey-byeng** masi-ess-ni?
 Beer-Acc_i why that parent-Nom t_i three-CL drink-Past-Q
 ‘Why did the parent drink three bottles of beer?’ (Korean)
- b. ***Hakpumo-ka_i** way maykcwu-lul_j t_i **sey-meyng** t_j masi-ess-ni? ‘Why did three parents drink beer?’
- c. **Hakpumo-ka_i** way t_i **sey-meyng** maykcwu-lul masi-ess-ni? ‘Why did three parents drink beer?’
- (2) **Linearization Principle:** The linear ordering of syntactic units is affected by Merge and Move *within* a Spell-out Domain (*phase*), but is fixed *once and for all* at the end of each Spell-out Domain.
- (3) a. [_{CP} O [_{CP} why ... [_{vP} Θ [_{vP} S Θ FQo V]]]] (NB: ‘Θ’ and ‘S’ stand for a trace)
- b. *[[_{CP} S [_{CP} why ... [_{vP} O [_{vP} S FQs Θ V]]]]
- c. [[_{CP} S [_{CP} why ... [_{vP} S FQs O V]]]]
- (4) a. [_{CP} [_{vP} S L-adv [_{vP} S FQs V]]]: unaccusatives
- b. [_{CP} [_{vP} L-adv [_{vP} S FQs (L-adv) V]]]: unergatives/transitives
- (5) a. [_{CP} S H-adv [_{vP} S [_{vP} S FQs V]]]: unaccusatives
- b. [_{CP} S H-adv [_{vP} S FQs V]]: unergatives/transitives