

## Object Scrambling on the Edge: Evidence for VP as a Spell-out domain

**Proposal.** The idea that syntactic structure undergoes cyclic Spell-out has been pursued in a number of studies (Uriagereka 1999; Chomsky 2000, 2001; Nissenbaum 2000; Fox and Pesetsky 2005, *inter alia*). It has not been clear, however, what should be considered as a unit of cyclic Spell-out. Chomsky proposes that phases must be “propositions”: namely,  $v^*P$  and CP. Others, however, argue that Spell-out may also apply to maximal categories such as VP and PP (McGinnis 2001; Abels 2003; Fox and Pesetsky 2005, Lee-Schoenfeld (2005), *inter alia*). In this paper, I provide novel evidence for the latter hypothesis. Specifically, building on the claim that scrambling is constrained by *Cyclic Linearization* (Ko 2005; Fox and Pesetsky 2005), I propose that so-called *weak phases* (VPs) must undergo cyclic Spell-out, just as *strong phases* ( $v^*Ps$ ). I show that object scrambling is restricted by the properties of cyclic Spell-out, and that its interactions with secondary predicates can be explained by the current proposal.

**Puzzle.** In Korean and Japanese, the object (O) may scramble and license a Numeral Quantifier (NQ) across the subject (S), as in (1a). In contrast, S cannot license an NQ across O, as in (1b) (Haig 1980; Kuroda 1983; Lee 1993). This contrast has been taken as evidence that object scrambling may occur freely and license  $NQ_{obj}$ , in contrast to subject scrambling (Saito 1985). Crucially, however, object scrambling does not occur freely. As shown in (2), the object cannot be separated from its NQ by a resultative *-ni* phrase. If the object *kuruma-o* and *ni-dai* were able to scramble, as depicted in (3), we expect (2) to be grammatical, contrary to fact. Note that the paradigm in (2) cannot be explained by the mutual c-command condition (Miyagawa 1989) since the object and  $NQ_{obj}$  c-command each other in the base position (3). The paradigm in (2) is even more puzzling, given that *-ni* phrases may scramble individually (4), just like the object in (1a).

**Analysis.** I propose that the puzzling distribution of scrambled arguments can be explained by the assumption that  $vP$  and VP (as well as CP) constitute Spell-out domains. Crucially, scrambling is constrained by *Cyclic Linearization* (5), and thus the linear order at VP and  $vP$  must be consistent with each other. Consider first (6) for (1). As described in (6b), if O scramble to the edge of  $vP$ ,  $O < S$  order is established at PF. If S precedes O in the CP domain,  $S < O$  order is sent to PF. This yields an ordering contradiction, so (6b) cannot be pronounced. Note that (6b) contrasts with (6a), where scrambled O at the  $vP$  edge continue to precede S at CP. The same account extends to (2) if Spell-out applies to VP, as illustrated in (7a). In the VP domain,  $NQ_{obj} < X-ni$  is established at PF, but in the  $vP$  domain,  $X-ni < NQ_{obj}$  is sent to PF. Due to the ordering contradiction between  $vP$  and VP domains, (7a) cannot be pronounced at PF. Single scrambling of *X-ni* in (4) is allowed, since *X-ni* may scramble to the left of O and S before the Spell-out of VP and  $vP$ , as in (7b).

**Further Support.** More generally, the current proposal predicts that O and  $NQ_{obj}$  cannot be separated by any VP-internal element. As depicted in (8), a VP-internal XP would either follow O and  $NQ_{obj}$  (in *in-situ* position), or precede both of them (via movement to the edge). Given Cyclic Linearization, we expect that this ordering restriction in VP will be preserved in the  $vP$  domain as well. This prediction is borne out on various tests. **First**, just like the object, unaccusative subject and its NQ cannot be separated by *-ni* resultative phrase, as shown in (9). The account presented in (7a) straightforwardly extends to (9). **Second**, as shown in (10), the scope of *tasi* ‘again’ in Korean are ambiguous between *repetitive* (VP-external) and *restitutive* (VP-internal) reading. When ‘again’ intervenes between O and  $NQ_{obj}$ , however, it retains only the repetitive reading, as in (11). This is explained by the current analysis. As described in (12), the restitutive ‘again’ follows  $NQ_{obj}$  in VP (adopting Von Stechow 1996 for semantics of ‘again’). But in the  $vP$  domain, ‘again’ precedes  $NQ_{obj}$  in (11). The ordering contradiction between the  $vP$  and VP domains yields ungrammaticality of (11) with the restitutive reading. The repetitive ‘again’, in contrast, is merged outside VP domain, as illustrated in (13). Hence, orderings at  $vP$  and VP are constituent. **Third**, O and NQ cannot be separated by an idiom part related to the predicate, as in (14). This is again expected if the idiom part ‘to candle’ is base-generated within VP (as a complex predicate).

- (1) a. **Maykwu-lul**<sub>i</sub> (pwunmeynghi) John-i t<sub>i</sub> **sey-pyeng** masi-ess-ta  
Beer-Acc evidently John-Nom three-CL<sub>bottle</sub> drink-Past-Dec  
'(Evidently) John drank three bottles of beer'

b. ?\***Haksayng-tul-i**<sub>i</sub> (pwunmeynghi) maykwu-lul<sub>j</sub> t<sub>i</sub> **sey-myeng** t<sub>j</sub> masi-ess-ta  
Student-Pl-Nom evidently beer-Acc three-CL<sub>person</sub> drink-Past-Dec  
'(Evidently) three students drank beer.' [Korean; the same fact holds in Japanese]

(2) \*John-ga **kuruma-o** makka-ni **ni-dai** nutta  
John-Nom car-Acc red-NI 2-Cl painted  
'John painted two cars red' [Japanese]

(3) [NP-ga NP-o<sub>1</sub> X-ni<sub>2</sub> [VP t<sub>1</sub>] NQ<sub>obj</sub> t<sub>2</sub> V]]

(4) *Massiro-ni*<sub>i</sub> Mary-ga [John-ga kabe-o t<sub>i</sub> nutta to] itta  
White Mary-Nom [John-Nom wall-Acc painted C] said  
'Mary said that John painted the wall white' [Japanese]

(5) **Cyclic Linearization:** 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 phase (vP/CP) - the phase containing Spec, head, and Complement is shipped to PF (Fox and Pesetsky 2005).

(6) a. [<sub>CP</sub> O (adv) ... [<sub>vP</sub> t<sub>obj</sub> [S t<sub>obj</sub> NQ<sub>obj</sub> V v]]]: see (1a)  
*Linearize vP: O<S<NQ<sub>obj</sub><V; Linearize CP: O<(adv)<S<NQ<sub>obj</sub><V*  
b. ?\*[<sub>CP</sub> S<sub>2</sub> (adv) ... [<sub>vP</sub> O<sub>1</sub> [t<sub>subj</sub> NQ<sub>subj</sub> t<sub>obj</sub> V]]]: see (1b)  
*Linearize vP: O<S<NQ<sub>subj</sub><V; Linearize CP: S<(adv)<O<NQ<sub>subj</sub><V*

(7) a. \*[<sub>vP</sub> S O<sub>1</sub> X-ni<sub>2</sub> [<sub>VP</sub> t<sub>obj</sub> NQ<sub>obj</sub> t<sub>ni</sub> V v]: see (2)  
*Linearize VP: O<NQ<sub>obj</sub><X-ni<V; Linearize vP: S<O<X-ni<NQ<sub>obj</sub><V<v*  
b. [<sub>vP</sub> X-ni S [<sub>VP</sub> t<sub>ni</sub> [V t<sub>obj</sub> t<sub>ni</sub> V] v]: see (4)  
*Linearize VP: X-NI<O<V; Linearize vP: X-NI<S<O<V<v*

(8) [<sub>VP</sub> XP [<sub>DP</sub> O NQ] [V t<sub>XP</sub> V]]

(9) \***Gakusei-ga** kutakuta-ni **san-nin** tukareta  
Student-Nom exhausted-NI 3-Cl tired  
'Three students became tired' [Japanese]

(10) Sally-ka ku mwun-ul *tasi* yel-ess-ta [Korean]  
Sally-Nom that door-Acc again open-Past-Dec  
'Sally opened that door, and she had done that before' (*repetitive*)  
'Sally opened that door, and the door had been in the state of being open before' (*restitutive*)

(11) Nay-ka **eyspuleyo** **kikyey-lul** *tasi* **han-tay** sao-l-kkeyyo  
I-Nom espresso machine-Acc again 1-Cl buy-Fut-promise  
'I will buy an espresso machine again' [Korean] (repetitive reading, \*restitutive reading)

(12) \*[<sub>vP</sub> S O again [<sub>VP</sub> t<sub>obj</sub> NQ<sub>obj</sub> [<sub>AP</sub> t<sub>again</sub> A] V] v]: restitutive 'again' (11)  
*Linearize VP: O<NQ<sub>obj</sub><again; Linearize vP: S<O<again<NQ<sub>obj</sub>*

(13) [<sub>vP</sub> S O again [<sub>VP</sub> t<sub>obj</sub> NQ<sub>obj</sub> V] v]: repetitive 'again' (11)  
*Linearize VP: O<NQ<sub>obj</sub>; Linearize vP: S<O<again<NQ<sub>obj</sub>*

(14) \*John-i **haksayng-ul** *nokcho-lo* **sey-myeng** mantulessta  
John-Nom student-Acc candle-to 3-Cl made  
'John made three students tired' (make.candle=> make one tired) [Korean]