

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

Heejeong Ko, Stony Brook University

(heejeong.ko@stonybrook.edu, <http://alum.mit.edu/www/heejeong>)

1 Goals of the Study

- I show that arguments externally merged at the edge of a Spell-out domain show peculiar ordering restrictions with respect to their domain-mates: **Edge Generalization**.
- I derive the Edge Generalization from a PF-Syntax interface condition, and provide novel evidence that **both strong phases (v*Ps) and weak phases (VPs) constitute Spell-out domains** (cf. Chomsky 2001).
- Arguments for my claim come from a variety of ordering restrictions in scrambling: **subject scrambling** out of vP, **object scrambling** out of VP, distribution of **secondary predicates** and the **scope of the aspectual adverb 'again'**.

2 The Subject Puzzle: Restrictions on the distribution of the subject

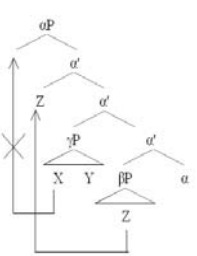
- The subject may intervene between the object and the object-oriented NQ (NQ_{obj}) [1], whereas the object may not intervene between the subject and the subject-oriented NQ (NQ_{subj}) [2]. (see Park and Sohn 1993, Lee 1993, Gill 2001, Kang 2002, Ko 2005 for Korean [K]; Haig 1980, Kuroda 1983, Saito 1985, Miyagawa 1989, Fujita 1994 for Japanese [J], a.o.)
- Maykcwu-lul**_i John-i t_i **sey-pyeng** masiessta
Beer-Acc J-Nom 3-CL_{bottle} drank
'John drank three bottles of beer' [K]
 - ***Haksayngtul-i**_i maykcwu-lul_j t_i **sey-myeng** t_j masiessta
Students-Nom beer-Acc 3-CL_{person} drank
'Three students drank beer.' [K]
- Crucially, however, a vP-external item (e.g. high adverbs) may intervene between the subject and its NQ: [3] => the claim that the subject cannot scramble seems untenable (cf. Saito 1985)
- Haksayngtul-i**_i *pwunmyenghi* t_i **sey-myeng** maykcwu-lul masiessta
Students-Nom evidently t_i 3-CL_{people} beer-Acc drank
'Evidently, three students drank beer.' [K] (Ko 2005)
- Question:** If the subject may undergo scrambling [3], why is it impossible for the subject to strand its NQ over the object [2]?

3 Proposal: The Edge Generalization

I propose that restrictions on subject scrambling is explained by the interactions of two factors at the syntax-PF interface:

- Cyclic Linearization (CL):** The linear ordering of syntactic units is fixed *once and for all* at the end of each Spell-out - the cyclic Spell-out applies to Spec, head, and complement of the Spell-out domain head (Fox & Pesetsky 2005).
- Search Domain Condition (SDC):** A probe can search for a goal only in its c-command domain (Chomsky 2001).

(4) **The Edge Generalization:** A consequence of CL and SDC
If X and Y are dominated by a specifier (non-complement) γ P of a Spell-out domain α P, X and Y cannot be separated by a α P-internal element Z that is not dominated by γ P.



If X and Y are externally merged in the Spec of α P as a constituent, their domain-mate Z either precedes X and Y, or follows both of them. X and Y cannot be attracted by α due to SDC (elements within γ P are not in the search domain of α). Hence, X and Y cannot move over Z within α P. If α P is a Spell-out domain, the orderings at α P must be preserved in the higher domains due to CL. Hence, the edge elements, X and Y are not separable by their domain-mate Z.

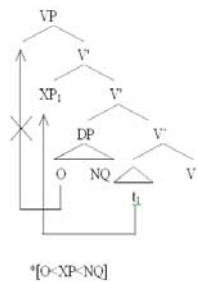
4 Analysis of the Subject Puzzle

The Subject Puzzle is an instance of Edge Generalization!

The subject and NQ_{subj} are externally merged at the edge of vP. Thus, vP-internal elements (e.g. object) may precede or follow the subject and NQ_{subj} at vP, but may not intervene between them (SDC). Given that the orderings at vP must be preserved after Spell-out (CL), the subject and its NQ cannot be separated by a vP-internal item in the higher domains, either.

vP-external elements, on the other hand, are externally merged outside vP. Thus, the subject may move over vP-external items without causing an ordering contradiction between vP and CP.

5 Object Scrambling at the VP edge



(5) **VP-Edge Generalization:**

If VP is a Spell-out domain, we predict that the object externally merged at the edge of VP cannot be separated from the NQ_{obj} by its domain-mate (e.g. VP-internal elements), just like the subject merged at the vP edge is inseparable from its NQ by its domain-mate (e.g. vP-internal elements).

6 Prediction I: Resultative Predicates

- The distribution of Japanese resultative secondary predicates with respect to object-oriented floating quantifiers shows that the prediction for VP-Edge Generalization (5) is borne out.

Base-position of resultative predicates:

- NI-resultative predicates may modify the object, but not the subject of transitive verbs:
- John-ga **aisukuriimu-o** **kotikoti-ni** kooraseta
J-Nom ice cream-Acc solid-NI froze
'John froze the ice cream solid' [J] [obj-resultative]
 - *John-ga **teeburu-o** **kirei-ni** huita
J-Nom table-Acc clean-NI wiped
'John wiped the table in his clean state' [J] [subj-resultative]
(NB. (7) is grammatical when *kireini* modifies the object *teeburu-o*)
 - NI-resultative predicates may modify the subject of unaccusative verbs, but not the subject of unergative verbs:
 - John-ga **dorodarake-ni** natta
J-Nom muddy-NI became
'John became muddy' [J] [unaccusative-resultative]
 - *John-ga **kutakuta-ni** odotta
J-Nom exhausted-NI danced
'John danced until exhausted' [J] [unerg.-resultative]
 - Takezawa (1993): Resultatives are base-generated within VP. Given the mutual-command condition of predication (Miyagawa 1989), resultatives may modify the object in VP, but not the subject in IP: [_{IP} Subj [_{VP} O X-ni V]].

Prediction: Given the Edge Generalization, the transitive object (or unaccusative subject) and its NQ will be inseparable by a resultative predicate since they are domain-mates: [10-11]

- *John-ga **kuruma-o** **makka-ni** **ni-dai** nutta
J-Nom car-Acc red-NI 2-Cl painted
'John painted two cars red' [J] [O<Resultative<NQ_{obj}]
- *Shatu-ga **dorodarake-ni** **san-mai** yogoreta
Shirt-Nom muddy-NI 3-Cl became.dirty
'Three shirts became dirty with dirt' [J] [unaccusative S]

Implications: Object scrambling is not free. **Object scrambling is constrained by the same mechanism as subject scrambling, showing the Edge effect.** Previous accounts relying on "ban on subject scrambling" or "ECP-style approach to subject movement" would not account for the uniform behavior between the subject [1-3] and the object shown here [10-11].

7 Prediction II: Depictive Predicates

- Koizumi (1994) shows that the subject-oriented depictive (SDP) may be base-generated outside of a verbal projection. The object-oriented depictive (ODP) must be base-generated inside "VP". => VP-preposing, *soo-suru proform* tests, etc.

Prediction of the Edge Generalization: If Koizumi's claim is correct, we predict that SDP may intervene between the subject and NQ_{subj} (just like high adverbs in (3)), but ODP cannot (just like the object in (2)). This is indeed the case!

- Gakusee-ga **hadaka-de** 3-nin katuo-o tabeta
Student-Nom naked 3-Cl bonito-Acc ate
'Three students ate the bonito naked' [J] [S<SDP<NQ]
- *Gakusee-ga **nama-de** 3-nin katuo-o tabeta
Student-Nom raw 3-Cl bonito-Acc ate
'Three students ate the bonito raw' [J] [S<ODP<NQ]

8 Prediction III: Scope of 'again'

- Scope of 'again': repetitive and restitutive readings

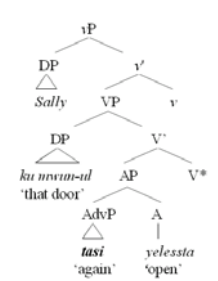
(14) Sally-ka ku mwun-ul *tasi* yelessta
S-NOM that door-Acc again opened
'Sally opened that door, and she had done that before' (repetitive)
'Sally opened that door, and the door had been in the state of being open before' (restitutive)

(15) The syntax of 'again' *tasi* in Korean
(cf. Von Stechow 1996, Beck and Johnson 2004)

a. Repetitive 'again'



b. Restitutive 'again'



Prediction of the Edge Generalization: When *tasi* 'again' intervenes between the object and the NQ_{obj}, the sentence will retain only the repetitive reading. Restitutive *tasi* cannot intervene between the object and object-oriented NQ (they are domain-mates): the VP-Edge Generalization holds again!

(16) Nay-ka **eyspuleyo** **kikyey-lul** *tasi* **han-tay** saolkkeyyo
I-Nom espresso machine-Acc again I-CL buy
'I will buy an espresso machine' [K] (*?restitutive, √repetitive)

9 Implications for argument structure

IO and DO are base-generated in a separate domain (they are not domain-mates), contra Pytkänen 2002: The facts [17-18] can be best explained under the high applicative approach to IO.

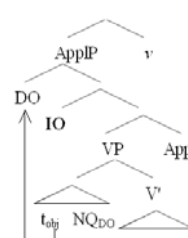
(17) IO may separate DO and DO-oriented NQ

John-i **chayk-ul** Mary-eykey **sey-kwon** cwuessta
J-Nom book-Acc Mary-Dat 3-CL gave
'John gave three books to Mary'

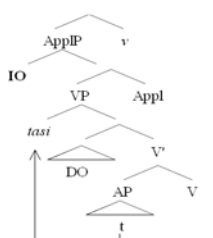
(18) Restitutive 'again' may intervene between IO and DO

John-i **Mary-eykey** *tasi* **daimondu panci-lul** sacwuessta
J-Nom M-Dat again diamond ring-Acc bought
'John bought a diamond ring to Mary again' [(?)restitutive, repetitive]

(19) Structure of (17)



(20) Structure of (18)



(See Ko 2005 for arguments against the low applicative approach to IO in K/J)

10 Conclusion

Edge Generalization: arguments externally merged at the edge of a Spell-out domain cannot be separated by their domain-mates: The subject and its NQ cannot be separated by a vP-internal element (e.g. object, low adverbs, ODP), and the object and its NQ cannot be separated by a VP-internal element (e.g. resultative predicates, restitutive 'again').

Both v*P and VP constitute Spell-out domains, and the Spell-out domain must include Specs as well as the Complement of the Spell-out domain head (Fox and Pesetsky 2005; cf. Uriagereka 1999, Nissenbaum 2000, Chomsky 2001).

Scrambling is not free, but is triggered by a probe-goal Search, just like other types of feature-driven movement.

Selected References

- Beck, Sigrid and Kyle Johnson. 2004. Double objects again. *Linguistic Inquiry* 35: 97-124.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. Michael Kenworthy, 1-52. Cambridge, Mass.: MIT Press.
- Fox, Danny, and David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics: Object Shift*, ed. Katalin É. Kiss, 311(2): 1-46.
- Ko, Heejeong. 2005. Syntactic edges and linearization. Doctoral dissertation, MIT, Cambridge, Mass.
- Koizumi, Masatoshi. 1994. Secondary predicates. *Journal of East Asian Linguistics* 3:25-79.
- Miyagawa, Shigeru. 1989. *Structure and case marking in Japanese: Syntax and Semantics* 22. San Diego, Calif.: Academic Press.
- Nissenbaum, Jon. 2000. *Investigations of covert phrase movement*. Doctoral dissertation, MIT, Cambridge, Mass.
- Saito, Mamoru. 1985. Some asymmetries in Japanese and their theoretical implications. Doctoral dissertation, MIT, Cambridge, Mass.
- Von Stechow, Armin. 1996. The different readings of *again*: a structural account. *Journal of Semantics* 13: 87-138.
- Takezawa, Koichi. 1993. Secondary predication and locative-goal phrases. In *Japanese syntax in comparative grammar*, ed. Nobuko Hasigawa, Tokyo: Kanso.
- Uriagereka, Juan. 1999. Multiple spell-out. In *Working minimalist*, ed. Epstein, S. and N. Hornstein, 251-282. Cambridge, Mass.: MIT Press.