

## Multiple Scrambling, Headless $\nu$ P-Movement, and Cyclic Linearization

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**Synopsis:** Japanese allows multiple scrambling (MS), which is traditionally analyzed as involving multiple instances of single scrambling. This paper examines scope and binding under MS and argues for the headless  $\nu$ P-fronting account of MS in line with Koizumi (2000). A typical objection to this account based on the Proper Binding Condition (PBC) is shown to dissolve under Takita's (2010) Cyclic Linearization account of the PBC effects in Japanese.

**Scope under MS:** In a double object construction, a subject takes scope over an indirect object as in (1a). Scrambling the indirect object results in ambiguity as in (1b) ((1) is from Agbayani et al. (2015:69)):

- (1) a. 3-tu-no ginkoo-ga Toyota-dake-ni monku-o itta.  
 3-CL-GEN bank-NOM Toyota-only-DAT complaint-ACC said  
 'Three banks made complaints only to Toyota.' three > only; \*only > three  
 b. Toyota-dake-ni 3-tu-no ginkoo-ga t<sub>1</sub> monku-o itta.  
 Toyota-only-DAT 3-CL-GEN bank-NOM complaint-ACC said  
 'Only to Toyota<sub>1</sub>, three banks made complaints t<sub>1</sub>.' three > only; only > three

MS of the direct object and the indirect object does not result in ambiguity ((2a) is from Agbayani et al. (2015:69)). Irrespective of the order of the scrambled elements, the sentences are unambiguous:

- (2) a. Toyota-dake-ni monku-o 3-tu-no ginkoo-ga t<sub>1</sub> t<sub>2</sub> itta.  
 Toyota-only-DAT complaint-ACC 3-CL-GEN bank-NOM said  
 'Lit. Only to Toyota<sub>1</sub> complaints<sub>2</sub>, three banks made t<sub>2</sub> t<sub>1</sub>.' three > only; ??only > three  
 b. Monku-o Toyota-dake-ni 3-tu-no ginkoo-ga t<sub>1</sub> t<sub>2</sub> itta.  
 'Lit. Complaints<sub>2</sub> only to Toyota<sub>1</sub>, three banks made t<sub>2</sub> t<sub>1</sub>.' three > only; \*only > three

The contrast between (1b) and (2) is surprising if MS involved multiple application of scrambling, as is widely assumed, since the IO would c-command the subject as a consequence of MS.

I propose in line with Koizumi (2000) that MS is derived via headless  $\nu$ P-fronting: what undergoes movement in MS is the  $\nu$ P which contains elements that the standard analysis assumes undergo scrambling and the trace of the verb. MS of the indirect object and the direct object is derived as follows (moved elements are underlined):

- (3) a. [ $\nu$ P Subj [ $\nu'$  [ $\nu$ P IO DO t<sub>v</sub>] V+ $\nu$ ]] b. [ $\tau$ P Subj [ $\tau'$  [ $\nu$ P t<sub>Subj</sub> [ $\nu'$  [ $\nu$ P IO DO t<sub>v</sub>] t<sub>v</sub>]] V+ $\nu$ +T]]  
 c. [ $\text{CP}$  [ $\nu$ P t<sub>Subj</sub> [ $\nu'$  [ $\nu$ P IO DO t<sub>v</sub>] t<sub>v</sub>]] [ $\text{CP}$  [ $\tau$ P Subj [ $\tau'$  t <sub>$\nu$ P</sub> V+ $\nu$ +T]] C]]

Within  $\nu$ P, V undergoes movement to  $\nu$ . After T is introduced, the Subj and the V+ $\nu$  complex move out of  $\nu$ P. Finally, headless  $\nu$ P-fronting takes place. Note that the IO never c-commands the Subj throughout the derivation. Therefore, MS of the indirect object and the direct object does not affect scope interpretation.

This analysis makes a further prediction. Suppose the indirect object and the direct object are quantificational elements. Hoji (1985) argues the IO-DO order is the base order in Japanese, since the IO takes wide scope when it precedes the DO, while the sentence is ambiguous with the DO-IO order derived via VP-internal scrambling. Given this, the headless  $\nu$ P-fronting approach predicts that, when we have the IO-DO order under MS, the sentence should be unambiguous with the indirect object taking wide scope because the IO c-commands the DO. When we have the DO-IO order, on the other hand, the sentence should be ambiguous because the DO-IO order is derived via VP-internal scrambling. The prediction is borne out, as (4) shows. (4a) has the structure in (3c), and (4b) has the structure in (5):

- (4) a. 3-tu-no kaisya-ni<sub>1</sub> hon-dake-o<sub>2</sub> Mary-ga t<sub>1</sub> t<sub>2</sub> okutta.  
 3-CL-GEN company-DAT book-only-ACC Mary-NOM sent  
 'Lit. Three companies<sub>1</sub> only books<sub>2</sub> Mary sent t<sub>1</sub> t<sub>2</sub>.' three > only; \*only > three  
 b. Hon-dake-o<sub>2</sub> 3-tu-no kaisya-ni<sub>1</sub> Mary-ga t<sub>1</sub> t<sub>2</sub> okutta.  
 'Lit. Only books<sub>2</sub> three companies<sub>1</sub> Mary sent t<sub>1</sub> t<sub>2</sub>.' three > only; only > three

- (5) [ $\text{CP}$  [ $\nu$ P t<sub>Subj</sub> [ $\nu'$  [ $\nu$ P DO IO t<sub>DO</sub> t<sub>v</sub>] t<sub>v</sub>]] [ $\text{CP}$  [ $\tau$ P Subj [ $\tau'$  t <sub>$\nu$ P</sub> V+ $\nu$ +T]] C]]

**Binding under MS:** Binding also confirms the proposed analysis. *Karezisin* is an anaphor that requires a local masculine antecedent. Thus, (6a) is excluded because *Taroo*, the only masculine noun phrase, is not close enough to the anaphor. (6b) shows that scrambling can create a new binding relationship. On the other hand, (6c) shows that MS cannot do so. This contrast is expected if MS involves  $\nu$ P-fronting, because movement of predicate phrases is known to fail to create a new binding relationship (Huang 1993, Heycock 1995).

