

Exhaustivity and the Typology of Floating Quantifiers

I argue on the basis of reciprocal binding, weak cross-over, and scope facts that Japanese and Korean floated numeral quantifiers (FNQs) are stranded only through A-bar movement of their associated nominal phrase (NP/DP). I follow Kuroda (1983) and Miyagawa (1989) in arguing that objects in OSV order and passive/unaccusative subjects in SXV order are generated as deep objects that strand associated FNQs through movement (Sportiche 1988). However, the A-bar properties of FNQ stranding suggest that such movement is not A-movement, as often assumed. Korean case-marked FNQs and exhaustive quantifiers (e.g., *zenbu* ‘all’) in Japanese and Korean show a different pattern, however. I argue that these elements, as well as exhaustive floating quantifiers in other languages (e.g., *all*, *both*, **some*, **two*) are adverbial elements (Dowty & Brody 1984, Bobaljik 1995, Brisson 1998). I establish a dichotomy of floating quantificational elements in which adnominal non-exhaustive quantifiers can be stranded by A-bar movement (1a), while non-exhaustive quantificational elements “float” adverbially (1b). Nominal associates of this latter type of floating quantifier (FQ) are generally A-moved. The latter property is due to the existence of a null pronominal within adverbial FQs (Doetjes 1997), which would cause a cross-over violation if the associated NP were A-bar moved. This null *pro* also explains the semantic compositional meaning and agreement morphology of these elements. I show this adverbial/adnominal, exhaustive/non-exhaustive, A-movement/A-bar movement dichotomy to be quite robust cross-linguistically.

A-bar stranding of Japanese and Korean NQs. Though object fronting in Japanese and Korean could in principle allow binding of a reciprocal (2a), the presence of an FNQ eliminates this possibility (2b) (Bošković & Takahashi 1998). Since only A-movement generally creates new binding possibilities, I argue that FNQ stranding in (2b) arises through A-bar movement. (Similar facts hold throughout for Korean, unless otherwise noted.) Second, recall that weak cross-over (WCO) only arises with A-bar movement. In Japanese, short A-scrambling (3b) obviates WCO (3a) (Hoji 1985). But stranding of an FNQ produces WCO (3c), suggesting that A-bar movement is the only option in this case. (A hanging-topic type pause after the object ameliorates the WCO effect.) Therefore, though the derivation of OSV order is ambiguous between A and A-bar movement of the object, an FNQ disambiguates in favor of A-bar. This same WCO pattern arises with subjects of unaccusatives and passives in SX(#-subj)V order, suggesting that subject movement in these cases is also A-bar. A third argument that adnominal FQs can be stranded only under A-bar movement comes from the scope of *zen’in* ‘all’ with respect to negation. (This argument applies only to Japanese.) Miyagawa (2001) argues that short A-scrambling satisfies the EPP by moving an element (not necessarily the subject) to Spec-TP. Thus a sentence with OSV order could in principle be derived in two ways: The object could be A-scrambled to Spec-TP (4a), or A-bar scrambled to a position above a subject in Spec-TP (4b). (5a) shows that this structural ambiguity does arise: The subject can have scope both below and above negation. However, if the object’s quantifier is stranded, the subject must scope over negation (5b; Yamashita 2001). This indicates that the subject occupies Spec-TP, with the scrambled object in a higher position (4b). The same effect arises with unaccusatives (6) and passives. Therefore, FNQ stranding again disambiguates in favor of A-bar movement.

Case-marked NQs in Korean. Ko (2005) argues that Korean FQs are stranded adnominals and that restrictions on subject scrambling follow from a theory of cyclic linearization (Fox & Pesetsky 2004). However, when these FNQs are case marked, ordering restrictions disappear. As an explanation, Ko proposes that case-marked FNQs are adverbial (adverbial case-marking is independently possible in Korean), while bare FNQs are adnominal. If this is true, then Korean bare-FNQ stranding should show the same pattern as Japanese FNQs with respect to WCO, but case-marking should eliminate WCO. This prediction is borne out (7). Thus, if Ko’s characterization is correct, Korean WCO facts support the A-bar restriction on adnominal FNQs and the existence of adverbial FQs.

Exhaustivity. Like case-marked Korean FNQs, floating exhaustive quantifiers like Japanese *zenbu* ‘all’ and Korean *motwu* ‘all’ lack of WCO and other A-bar effects. This same exhaustive/non-exhaustive split holds in, e.g., Russian (8), where I argue that exhaustive quantifiers like *vse* ‘all’ float adverbially and non-exhaustive *malo* ‘few’ adnominally. For example, (8) shows that *vse* can appear in multiple adverbial position, while *malo* is restricted to what appears to be theta position. Many A/A-bar movement tests also distinguish these two types of FQ (Madariaga 2005). Furthermore, floating quantifiers in English (*all*, *both*, *each*) and French (*tou(te)s*, *chacun*) are uniformly exhaustive and have been persuasively argued to be adverbial when floated (Bobaljik 1995, Brisson 1998). I tie this exhaustivity split to the movement possibilities of weak and strong quantifiers.

Examples

- (1) a. [Gakusei-o]_i sensei-ga [_{VP} [t_i huta-ri] sikatta]. (A-bar scrambling) ‘The teacher scolded two students.’
student-ACC teacher-NOM 2-CL scolded
b. [Gakusei-o]_i sensei-ga [_{VP} [zenbu *pro*_i] [_{VP} t_i sikatta]]. (A-scrambling) ‘The teacher scolded all the students.’
student-ACC teacher-NOM all scolded

(examples continued on pg. 2)

(2) **Reciprocal Binding in Japanese**

- a. Gakusei₁-o otagai₁-no sensei-ga sikatta. b. *Gakusei₁-o otagai₁-no sensei-ga huta-ri sikatta.
student-ACC e.o-GEN teacher-NOM scolded student-ACC each.other-GEN teacher-NOM 2-CL scolded
'Each other's teacher scolded the two students.'

(3) **Quantifier float forces WCO in Japanese.**

- a. *Rainen [*pro*₁ osieta sensei]-ga donna gakusei₁-o san-nin yatou no?
next-year *pro* taught teacher-NOM which student-ACC 3-CL will-hire Q
b. Donna gakusei₁-o san-nin rainen [*pro*₁ osieta sensei]-ga *t*₁ yatou no?
which student-ACC 3-CL next-year *pro* taught teacher-NOM *t* will-hire Q
c. *Donna gakusei₁-o rainen [*pro*₁ osieta sensei]-ga *t*₁ san-nin yatou no?
which student-ACC next-year *pro* taught teacher-NOM *t* 3-CL will-hire Q
'Which three students₁ will the teacher who taught them₁ hire next year?'

- (4) a. [_{TP} Object₁ [_{VP} Subject *t*₁ V-NEG]] b. [_{CP} Object₂ [_{TP} Subject₁ [_{VP} *t*₁ *t*₂ V-NEG]]]

(5) **Structural ambiguity and the scope of zen'in.**

- a. Hon-o 2-satu zen'in-ga kawa-nakat-ta (yo). b. Hon-o zen'in-ga 2-satu kawa-nakat-ta (yo).
book-ACC 2-CL all-NOM buy-NEG-PAST (EXCL) book-ACC all-NOM 2-CL buy-NEG-PAST (EXCL)
'All didn't buy two books.' (∇>NEG, NEG>∇) 'All didn't buy two books.' (∇>NEG, *NEG>∇)

- (6) a. Booru-ga mit-tu zen'in-ni atar-anakat-ta (yo). b. Booru-ga zen'in-ni 3-tu atar-anakat-ta (yo).
ball-NOM 3-CL all-DAT hit-NEG-PAST (EXCL) ball-NOM all-DAT 3-CL hit-NEG-PAST (EXCL)
'Three balls didn't hit all.' (NEG>∇, ∇>NEG) 'Three balls didn't hit all.' (∇>NEG, *NEG>∇)

(7) **WCO with Korean unmarked FQs (7c); No WCO with case-marked (adverbial) FQs (7d).**

- a. *Kutul-ul kaluch-in sensayngnim-i etten haksayng-(tul)-ul sey-myeng koyonghal-kka?
they₁-ACC teach-RC teacher-NOM which student₁-PL-ACC 3-CL hire-Q
b. ?Etten haksayng-(tuk)-ul sey-myeng kutul-ul kaluch-in sensayngnim-i *t*₁ koyonghal-kka?
which student₁-PL-ACC 3-CL they₁-ACC teach-RC teacher-NOM *t* hire-Q
c. *Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i *t*₁ sey-myeng koyonghal-kka?
which student₁-PL-ACC they₁-ACC teach-RC teacher-NOM *t* 3-CL hire-Q
d. ?Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i *t*₁ sey-myeng-**ul** koyonghal-kka?
which student₁-PL-ACC they₁-ACC teach-RC teacher-NOM *t* 3-CL-ACC hire-Q
'Which three students₁ would the teachers who taught them₁ hire?'

(8) **Russian exhaustive (A-movement) and non-exhaustive (A-bar movement) floating quantifiers.**

- a. Komnat (*malo) bylo (*malo) provetreno (malo). 'There were few rooms ventilated.'
rooms_{GN.PL} (*few) was_{NEUT.SG} (*few) aired (few)
b. Komnaty (vse) dolžny byt' (vse) provetreny (vse). 'The rooms must be all ventilated.'
rooms_{NOM.PL} (all_{NOM.PL}) due to-be (all) aired (all)

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