

## Movement of quantificational heads

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Backgrounds: Head movement (HM) usually lacks semantic effects (Chomsky 2001, i.a.). Matushansky (2006:102-5) attributes the observation to the semantic types of heads (conventionally, <e,t> for predicates and <e> for nouns), whose interpretation is the same in either the launching or the landing position. It follows then that ordinary verb movement and noun incorporation should not display semantic effects. The explanation also predicts the opposite in that movement of quantificational heads like modals (<<s,t>,t>) should (at least can) impose semantic effects, a prediction borne out in Lechner (2007, 2017), Iatridou & Zeijlstra (2013) and Homer (2015). Building on Szabolcsi (2010, 2011), this talk addresses another type of quantificational heads, namely, aspectual verbs of type <<i,t>,t>.

Proposal: This talk suggests that movement of quantificational heads can have semantic effects (i.e. scope enrichment), *contra* Hall (2015) and McCloskey (2016) and previous attempts to dispel head movement from Narrow Syntax (e.g. Boeckx & Stejepanović 2001). The empirical evidence comes from aspectual verbs and modals in Cantonese, which can occur in both pre- and post-subject positions and they take scope at their surface positions. Additionally, such movement is regulated by an interface condition, namely, Scope Economy (Fox 2000).

Cantonese data: Aspectual verbs like *hoici* ‘begin’ can optionally precede the *quantificational* subject (=1a) or follow it (=1b). (1a) and (1b) unambiguously give distinct interpretations that is logically independent of each other. The same goes with (deontic) modals like *hoji* ‘may’.

- (1) a. [<sub>SUBJ</sub> dak Aaming] **hoici** haau-dou hou singik *only > begin; \*begin > only*  
only Aaming **begin** get-able good result  
‘Only Aaming is such that he begins to get good results.’  
b. **hoici** [<sub>SUBJ</sub> dak Aaming] haau-dou hou singzik *\*only > begin; begin > only*  
**begin** only Aaming get-able good result  
‘It begins to be that case that only Aaming is getting good results.’

However, without a quantificational subject, *hoici* cannot appear in a pre-subject position (=2b).

- (2) a. [<sub>SUBJ</sub> Aaming/ keoi] **hoici** haau-dou hou singzik  
Aaming/ he **begin** get-able good result  
‘Aaming/ he is such that he begins to get good results.’  
b. \***hoici** [<sub>SUBJ</sub> Aaming/ keoi] haau-dou hou singzik  
**begin** Aaming/ he get-able good result

**A HM analysis:** (1b) is derived from (1a), where *hoici* undergoes HM (=3). HM of *hoici* in (2b) violates Scope Economy (Fox 2000) as it does not alter the scope relation with the subject.

(3) Deriving (1b) from (1a) under a HM approach begin [ <sub>TP</sub> only Aaming — [ <sub>VP</sub> t <sub>SUBJ</sub> get-good-result]] ↑	(4) Deriving (1b) from (1a) via subject lowering [ <sub>TP</sub> — begin [ <sub>VP</sub> [ only Aaming ] get-good-result ]] ↑
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Against some alternative accounts: (1b) is derived via subject lowering (=4). (2b) is ruled out as only quantificational elements can be lowered without violating Scope Economy. Hence, no HM is needed to derive the word order in (2b). Yet, (5) poses a challenge to this account:

<p>(6) Derivation of (5) under a HM approach</p> <p>begin [<sub>TOP</sub> everyone ] [<sub>SUBJ</sub> Aaming ] __ [VP ... ]</p>	<p>(7) (Attempted) derivation of (5) under a lowering approach</p> <p>__ [<sub>SUBJ</sub> Aaming ] begin [<sub>TOP</sub> everyone ] __ [VP ... ]</p>
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- (3) **hoici** [<sub>TOP</sub> cyunbou-jan ] [<sub>SUBJ</sub> Aaming ] dou hou jansoeng begin > every; \*every > begin  
**begin** everyone Aaming all very appreciate  
 ‘It begins to be that case that Aaming is appreciative of everyone.’

I suggest that (5) is derived via HM of *houci* in one step (=6) but not via subject lowering. In (7), while the quantificational topic ‘everyone’ can be lowered, the non-quantificational ‘Aaming’ cannot (or it would violate Scope Economy). Also, if such lowering were allowed, (2b) would have been allowed as well, contrary to the fact.

Sentences involving (non-)quantificational subordinators lend further support to Scope Economy and speak against a subject lowering account. *Hoici* ‘begin’ can cross a universally quantifying subordinator (*faanhai* ‘whenever’), but not a non-quantificational one (*janwai* ‘because’).

- (8) ‘Whenever’-clause vs. ‘because’-clause (a. begin > whenever)  
 hoici [<sub>CP</sub> {a. <sup>OK</sup>faanhai /b. \*janwai} daa-fung ], hoimin dou \_\_ wui jau daailong  
 begin whenever because approach-typhoon sea all will have big.wave  
 ‘It begins to be the case that whenever/because typhoons approach, there will be big waves on the sea.’

Other alternatives include remnant VP movement (which involve VP-scrambling of the complement of *hoici* to a position sandwiched between the subject and *hoici*), but its availability is questionable, provided that VP-fronting (of the complement of *hoici*) is disallowed:

- (9) \*[<sub>VP</sub> haau-dou hou singzik ] Aaming hoici <sub>VP</sub>  
 get-able good result Aaming begin

Also, proposing multiple base positions for the verbs or the subjects cannot explain (2b) without stipulating a connection between the availability of base positions and the quantificational nature of the subject. I therefore conclude that scope enrichment is achieved via HM in (1b), (5), and (8). Accordingly, HM can have semantic effects.

Compositional issues: Following Szabolcsi (2011) in that aspectual verbs are quantifiers over times (of type of generalized quantifiers  $\langle\langle i, t \rangle, t \rangle$ ) and following Kusumoto’s (2005) framework on tense semantics, the semantics of *hoici* is given in (10). The built-in (time) variable  $t_1$  is bound by a higher null tense operator. In case of movement, *hoici* leaves a trace of lower type (i.e.  $i$ ), on a par with nominal quantifiers. The same extends to modals.

- (10)  $\llbracket hoici_t \rrbracket = \lambda P_{\langle i, t \rangle}. \exists t' \exists t'' [ t' < t_1 \leq t'' \wedge \neg P(t') \wedge P(t'') ]$   
 Read as: There exist two times  $t'$  and  $t''$  s.t.  $t' < t_1 \leq t''$  and  $P$  is false at  $t'$  and  $P$  is true at  $t''$ .

Implications: (i) Movement of quantificational heads provides further evidence for the syntactic status of HM, in support to Harizanov & Gribanova’s (2019) classification of HM. (ii) It also converges on recent attempts to unify head and phrasal movement (e.g. Harizanov 2019, i.a.) in the sense that both heads and phrases can undergo scope-shifting operations (presumably QR), and they are subject to the same interface condition (Scope Economy). (iii) The proposed

movement operation is not restricted to heads but extends to phrasal elements like the adverb *jau* ‘again,’ where the initial position for *jau* is also regulated by Scope Economy.

- (11) **jau** {dak jat-go-jan / \*Aaming}  $t_{jau}$  haau-dou hou singzik  
again only one-CL-person Aaming get-able good result  
‘It is again the case that only one person/ Aaming got good results.’

Given the observations in Cheng & Vicente (2013) and Lee (2017) that A’-movement applies to heads (i.e. verbs) and that these A’-head movements observe standard movement constraints, the proposed movement in this talk further paves the way to the possibility that movement operations are blind to phrase structural status (cf. Pesetsky & Torrego 2001, Preminger 2019).

Selected references:

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