Quantifier-Raising a head

Tommy Tsz-Ming Lee
University of Southern California

Background: (a) The theoretical status of **H**ead **M**ovement is a matter of debate. An empirical question that has figured prominently is *whether HM can have semantic effects*. Lechner (2007, 2017), Szabolcsi (2011) and Matyiku (2017) argues that HM of elements like modals, aspectual verbs and negative auxiliary can enrich their scope, but Hall (2015) and McCloskey (2016) argues against this stance. (b) **Q**uantifier **R**aising is proposed as a syntactic explanation to scope ambiguities (May 1977, 1985). While extensive studies have been carried on quantifiers over entities, little has been said on *whether QR can equally target quantifiers over worlds or times*.

Proposal: This paper provides an <u>affirmative</u> answer to both *whether*-questions above, with evidence from Cantonese aspectual verbs: **(i)** I defend a head movement analysis of aspectual verbs in Cantonese, which creates an otherwise absent scope possibility; **(ii)** building on (i), I argue that the movement is best analyzed as an overt instance of QR. I conclude that <u>Quantifier-Raising a head is possible</u>.

Argument for (i): Aspectual verbs like *hoici* 'begin' (also *gaizuk* 'continue') 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 (cf. Szabolcsi 2011).

(1) a. [SUBJ 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** [SUBJ 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. [SUBJ 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** [SUBJ Aaming/ keoi] haau-dou hou singzik
      begin   Aaming/ he   get-able good result

Analysis: (1b) is derived from (1a), where *hoici* undergoes HM (=3). HM of *hoici* in (2b) is independently ruled out by Scope Economy (Fox 2000) for its semantic vacuity.

(3)	Deriving (1b) from (1a) under a HM approach

begin [TP only Aaming __ [VP tSUBJ get-good-result]]

(4)	Deriving (1b) from (1a) via subject lowering

[TP __ begin [VP [only Aaming] get-good-result]]

Alternative accounts: (1b) is derived via subject lowering (=4). (2b) is ruled out because only quantificational elements can be lowered without violating Scope Economy. Hence, no HM is needed to derive the word order in (2b). However, (5) poses a challenge to this account:

(5) **hoici** [TOP cyunbou-jan]   [SUBJ 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.'

(5) can be derived via HM of *houci* in one step (=6) but not subject lowering. In (6), 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.

(6)	Derivation of (5) under a HM approach

begin [TOP everyone] [SUBJ Aaming] __ [VP ...]

(7)	(Attempted) derivation of (5) under a lowering approach

__ [SUBJ Aaming] begin [TOP everyone] __ [VP ...]

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:

(8) *[VP haau-dou hou   singzik] Aaming hoici   *t*VP
        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 of aspectual verb in (1b) and (5), and hence HM can have semantic effects.

Data for (ii): This HM is best characterized as Quantifier Raising. **First**, it patterns with English QR in terms of (i) its observance to Scope Economy (e.g. (1b) vs. (2b)), (ii) its optionality (both (1a) and (1b) are well-formed), (iii) a variable landing site (e.g. (1a) and (5)). **Second**, aspectual verbs can be regarded as quantifiers over times (Szabolcsi 2011), of type of generalized quantifiers $<<i,t>,t>$. Following Kusumnoto's (2005) framework, the semantics of *hoici* can be given in (9). Note that 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.

(9) $[\![hoici_1]\!] = \lambda P_{<i,t>}. \exists t' \exists t'' [t' < t_1 \leq t'' \wedge \neg P(t') \wedge P(t'')]$
        Read as: There exist two times t' and t'' s.t. t' < t_1 ≤ t'' and P is false at t' and P is true at t''.

Third, deontic modal verbs, standardly regarded as quantifiers over worlds, display a similar pattern as aspectual verbs in (10), where the pre-subject position is only available if the subject is quantificational, readily explained by the current proposal.

(10)a. [SUBJ (dak) Aaming] **hoji** zou   fan   *only > may; may > *only*
       only Aaming **may** early sleep   '(Only) Aaming is allowed to sleep early'
   b. **hoji** [SUBJ *(dak) Aaming] zou   fan   **only > may; may > only*
      may   only Aaming   early sleep   'It is allowed that (only) Aaming sleeps early.'

Implications: (i) HM of aspectual verbs provides novel evidence for the syntactic status of HM, in support to Harizanov & Gribanova's (2018) classification of HM: the case above exemplifies syntactic HM, while verbal cluster formation in Cantonese arguably involves head-head adjunction (Tang 2003), potentially post-syntactic amalgamation. (ii) Scope Economy applies equally to both overt and covert movement, independently argued for in Matyiku (2017). The proposal thus eliminates an asymmetry on movement constraints. (iii) The proposed movement also captures the distribution of some adverbs like *jau* 'again,' where the initial position for *jau* is regulated by Scope Economy in a similar vein:

(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.'

The phrasal status of adverbs suggests the proposed movement applies to both head/phrase. Cheng & Vicente (2013) and Lee (2017) suggest that A'-movement also applies to heads (i.e. verbs) and they observe standard movement constraints. The QR and A'-movement cases point to a possibility of unifying head and phrasal movement in syntactic theories.

Selected references: † **Cheng**, L. L.-S. & L. **Vicente**. 2013. "Verb Doubling in Mandarin Chinese." *JEAL* 22 (1): 1–37. † **Harizanov**, B. & V. **Gribanova**. 2018. 'Whither Head Movement?' *NLLT*. doi:https://doi.org/10.1007/ s11049-018-9420-5. † **Lechner**, W. 2007. 'Interpretive Effects Of Head Movement'. Ms., lingBuzz/000178. † **Matyiku**, S. M. 2017. 'Semantic Effects of Head Movement : Evidence from Negative Auxiliary Inversion' Ph.D. diss. Yale U. † **Szabolcsi**, A. 2011. 'Certain Verbs are Syntactically Explicit Quantifiers'. *The Baltic international yearbook of cognition, logic and communication* 6:1–26.