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Interactions between Quantifier Scope and Topic/Focus*

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Abstract: This paper explores interactions between quantifier scope and topic/focus. More specifically, it is demonstrated that quantifier raising (as in English) can be accounted for as a consequence of covert topic/focus movement to higher projections. First, the *delta QP* hypothesis is proposed, which is characterized by (a) a universal principle of movement to Δ projection to satisfy [+topic] and [+focus] features and (b) parameterized strength of these features. Following Lambova's (2004) account of Bulgarian, these features are strong and thus NPs with these features must undergo movement prior to Spell-Out. On the other hand, these features are weak in English and therefore movement must take place after Spell-Out. This follows the absence of Topic/Focus obligatory movement in English. Second, it will be shown that the above proposal indeed corresponds to the scope interpretations of quantifiers under specific topic and focus allocation. Finally, it is shown that the *delta QP* hypothesis makes accurate predictions for Bulgarian quantifiers.

1. Introduction: Scope Inversion and Quantifier Raising

Despite its semantic nature, quantifier scope and its inversion have been considered to be syntactic phenomena due to their interactions with syntactic constraints. Scope principle and quantifier raising have been proposed to syntactically account for quantifier scope and its inversion (May 1977, 1985). In Quantifier Raising, covert movement of quantifiers flips their interpretations.

To the best of my knowledge, however, no language has been reported to have overt Quantifier Raising. This is in contrast to *wh*-movement, another instance of A' -movement which shows variations across languages. *Wh*-movement is fully covert in some languages (*e.g.* Chinese, *c.f.* Huang 1982), overt exclusively for one *wh*-element (*e.g.* English, *c.f.* Ross 1967) and overt for multiple *wh*-elements (*e.g.* Slavic languages, *c.f.* Bošković 1998). This variation, along with the parallelism between overt and covert movement, constitutes the notion that *wh*-elements are covertly raised even when they are not overtly raised. On the other hand, quantifier raising has not been demonstrated to have overt realization in any language. Nonetheless, there is evidence that Quantifier Raising is a syntactic phenomenon, whereby covert move-

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ment of quantifiers follows syntactic constraints that also apply to other movement operations (May 1985), even though Quantifier Raising appears to be universally covert.

In the following section, overt topic/focus movement in Bulgarian will be introduced. Whereas topic/focus movement is not traditionally recognized as a phenomenon that is directly associated with quantifier raising, the goal of this paper is to present evidence that covert topic/focus movement can provide an account of quantifier inversion alternative to quantifier raising. For the rest of this paper, a very simple version of the Scope Principle (*c. f.* May 1985) below is assumed.

(1) **Scope Principle**

An operator A may have scope over an operator B iff A c-commands B.

2. Topic/Focus Movement in Bulgarian

Bulgarian exhibits overt movement to indicate topic and focus (Rudin 1988). That is, topic and focus are represented by the word order.

- The linear order of NPs is dependent on Focus/Topic.¹
- An NP (or NPs) with *topic* comes to the sentence initial position.
- NPs with *focus* follow NPs with *topic* when existent.
- This linear order configuration is obligatory. Whenever an NP receives a topic or focus, it should be in the sentence initial position

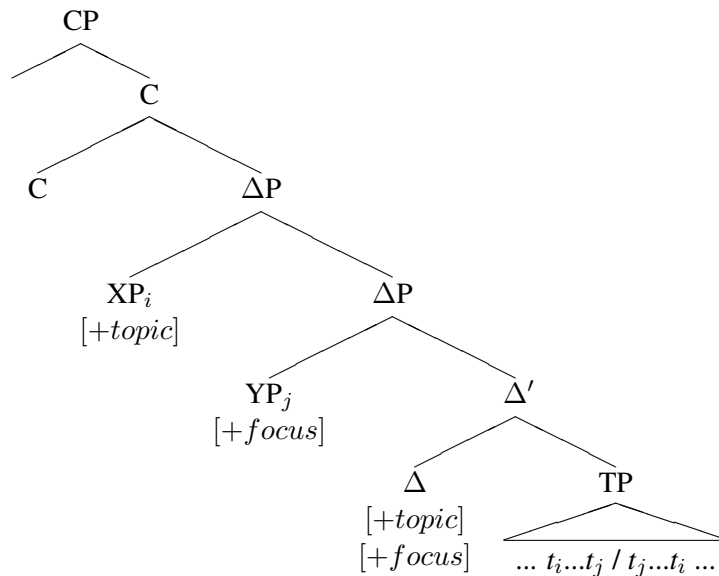
In order to account for the word order described above, Lambova (2004) proposes the following.

- Between CP and IP, there is a head Δ and its projections with [+topic] and [+focus] features as in (2).
- An NP with topic has a [+topic] feature and a focalized NP has a [+focus] feature.
- In order to satisfy these features,
 - a topicalized NP with [+topic] overtly moves to the first spec position of the Δ P.
 - a focalized NP with [+focus] moves to the second spec position of the Δ P.

¹ In this paper, the term “focus” refers to Contrastive Focus (*c. f.* Rooth 1992).

Quantifier Scope and Topic/Focus

(2)



3. Proposal: Covert Movement to Δ in English

While Bulgarian exhibits overt topic/focus movement, here the Δ QP hypothesis is proposed, in which English has the covert counterpart of topic/focus movement:

- The structure of English is the same as Bulgarian as in (2).
- Movement to satisfy [+topic] and [+focus] is covert in English.

In addition, the following is a part of the hypothesis:

- Quantifier inversion can only be a consequence of [+topic] or [+focus] on the wider-scoped quantifiers.

The Δ QP hypothesis accounts for the typical example of quantifier inversion as in (3b), whose non-inversion interpretation is in (3a), with respect to focus and topic configuration.

- (3)
- a. There exists a linguistic student who likes every subfield of linguistics. ($\exists > \forall$)
 - b. For every subfield of linguistics, there is a linguistics student who likes it. ($\forall > \exists$)

According to the delta QP hypothesis, (3a) is possible when:

- Neither [+topic] or [+focus] is involved, OR

Toshikazu Ikuta

- *some linguistics student* has [+topic], and thus covertly moves to the first [SPEC, ΔP], OR
- *some linguistic student* has [+focus], therefore moves to the second [SPEC, ΔP], *every subfield of linguistics* does not have [+topic] and thus stays *in-situ*.

On the other hand, (3b) is possible, when:

- *every subfield of linguistics* has [+topic], and thus covertly moves to the first [SPEC, ΔP], OR
- *every subfield of linguistics* has [+focus], therefore moves to the second [SPEC, ΔP], *some linguistics students* does not have [+topic] and thus stays *in-situ*.

Note that wide scope for [+topic] is not merely a theory internal stipulation but is well grounded by the fact that (3b) can be paraphrased as (4).

- (4) As for every topic in linguistics, there is a linguistics student who likes it.

Furthermore, interpreting *some students* as a topic conflicts with $\forall > \exists$ scope.

- (5) # As for linguistics students, for every topic in linguistics, there is some linguistics student who likes it.

4. Predictions and Consequences

4.1. Weak Crossover

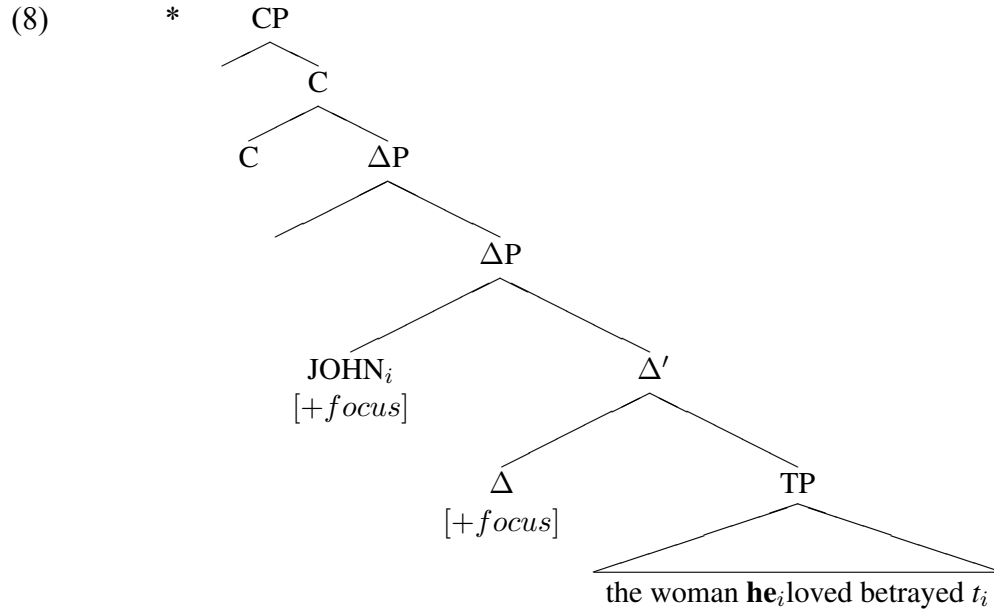
Chomsky (1976) observes the weak crossover effect where (6) becomes worse when *John* is focused, as in (7):

- (6) The woman he_i loved betrayed $John_i$.

- (7) The woman he_i loved betrayed $JOHN_i$.

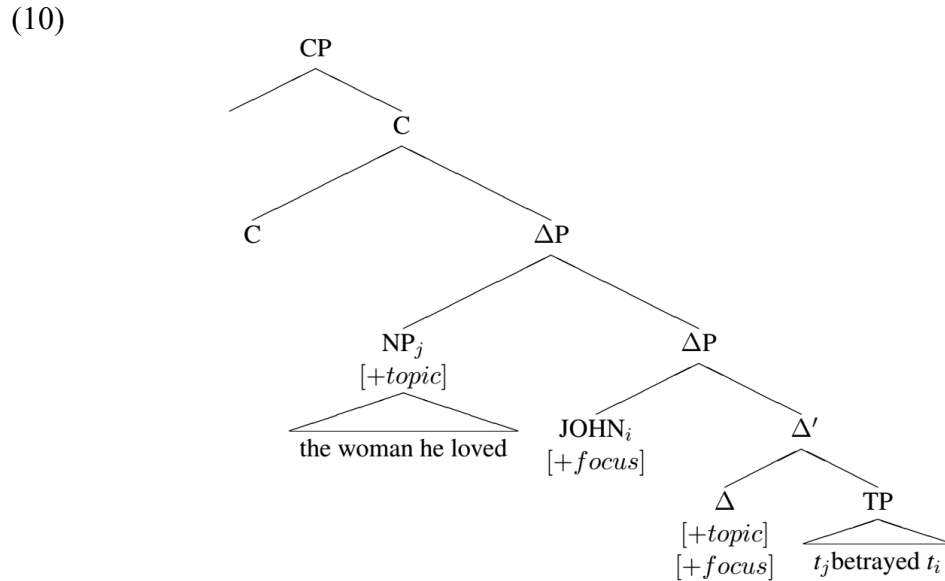
Chomsky's (1976) account for this phenomenon was that a focalized NP moves to a higher position at LF, yielding the weak crossover effect. Similarly, in the current ΔQP hypothesis, *JOHN* moves up to the second [Spec, ΔP] position.

Quantifier Scope and Topic/Focus



The ΔQP hypothesis makes the further prediction that focalizing *woman* would rescue weak crossover. Indeed, (9), whose LF representation is shown in (10), is at least less ungrammatical than (7).

(9) I remember the woman John really loved for a long time and she left him. The woman **he_i** loved betrayed JOHN_i in addition to Bill.



4.2. Bulgarian Quantifiers

The Delta QP hypothesis makes another prediction that overt topic/focus movement determines quantifier interpretations in Bulgarian. Although Lambova's theory apparently makes this (accurate) prediction, quantifier scope is not discussed in Lambova (2004).

In (11), there is no movement to [SPEC, Δ P] involved. *One student* c-commands *every field of linguistics*. Importantly, there is no scope ambiguity in (11). That is, there is no option for scope inversion. Higher scope for *one student* is the only interpretation ($\exists > \forall$). This implies that there is no covert movement to [SPEC, Δ P] in Bulgarian, unlike English.

- (11) Edin student xaresva vsjaka oblast na lingvistikata.
 one student like every field of linguistics
 'One student likes every field of linguistics.'

When the object *every field of linguistics* takes higher scope, it needs to be overtly moved to [SPEC, Δ P]. In (12), *every field of linguistics* has [+topic] and has higher scope ($\forall > \exists$).

- (12) (Što se otnasja do oblasti,
 what REFL relates to field,
 vsjaka oblast na lingvistikata, edin student ja xaresva .
 every field of linguistics one student CLITIC like
 'As for fields, for every field of linguistics there is one student who likes it.'

It is also predicted that *one student* can have [+topic] and *every field of linguistics* [+focus] and that *one student* has higher scope ($\exists > \forall$).

- (13) (Što se otnasja do studentite,
 what REFL relates to students,
 edin student, vsjaka oblast na lingvistikata ja xaresva
 one student every field of linguistics CLITIC like
 'As for students, there is one student who likes every field of linguistics.'

In Bulgarian, negation also interacts with topic/focus on NPs. In (14), negation takes higher scope than *every field of linguistics* ($\neg > \forall$), where not all the fields of linguistics are liked by Hristo. Inverted scope is not available, where no field of linguistics is liked by Hristo

- (14) Hristo ne xaresva vsjaka oblast na lingvistikata.
 Hristo NEG like every field of linguistics
 'Hristo does not like every field of linguistics.'

Quantifier Scope and Topic/Focus

In order to have inverted scope, *every field of linguistics* has to have [+topic] or [+focus]. In (15), *every field of linguistics* is topicalized and the sentence unambiguously has higher scope for negation ($\forall > \neg$).

- (15) (Što se otnasja do oblasti,
what REFL relates to field,
vsjaka oblast na lingvistikata, Hristo ne xaresva.
every field of linguistics Hristo NEG like
'As for fields, Hristo likes no field of linguistics.')

4.3. Hungarian Quantifiers

Hungarian has been shown to also have overt quantifier movement. Szabolcsi shows similar word order effect in Hungarian (examples below adopted from Szabolcsi 1997, p. 118).

- (16) a. Sok ember mindenkít felhívott.
many man everyone-ACC up-called
'Many men phoned everyone.' (*many men > everyone*)
b. mindenkít Sok ember felhívott.
everyone-ACC many man up-called
'Many men phoned everyone.' (*everyone > many men*)
- (17) a. Hatnál több ember hívott fell mindenkít.
six-than more man called up everyone-ACC
'More than six men phoned everyone.' (*more than six men > everyone*)
b. Mindenkít Hatnál több ember hívott fell.
everyone-ACC six-than more man called up
'More than six men phone everyone.' (*everyone > more than six men*)

Although the Δ QP hypothesis is based on Bulgarian word order, it is suggested that the Δ QP hypothesis can account for other languages whose quantifier interpretations are word order dependent.

4.4. English Topicalization

It is not the case that English has no option to overtly move phrases with [+topic] and [+focus]. English topicalization can be seen as below (Chomsky, 1977).

- (18) This book, I really like.

If English topicalization were completely parallel to Bulgarian and Hungarian topic and focus movement, (19) would be unambiguous.

(19) Every field of linguistics, some student likes.

It needs to be postulated that English topicalization is not an overt realization of otherwise covert topic movement and therefore does not affect quantifier interpretation. Notice that topicalization is not obligatory in English. It may suggest that topicalization is not driven by the same feature in Bulgarian and Hungarian overt obligatory movement.

5. Conclusion

This paper presents an alternative account for quantifier inversion in English (and other languages which have it). Although quantifier inversion has been treated as a phenomenon that happens under no influence of topic and focus, it may rather be a consequence of covert topic and focus movement. While complete evidence to reject quantifier raising is not present, this paper demonstrates the strong tendency in English for quantifier interpretation to be affected by topic and focus. English quantifier interpretation is parallel to Bulgarian and Hungarian where topic and focus are overtly realized by word order and quantifier interpretation is determined by the order.

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