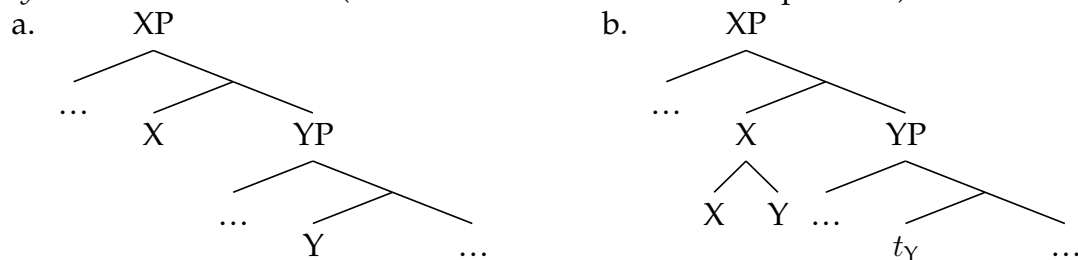


# Whither head movement?

Vera Griбанова and Boris Harizanov  
*Stanford University*

- Head movement as head-to-head adjunction applying in the syntax:

(1) *Syntactic head movement* (where Y is the head of X's complement)



- This version of the operation has been used to model phenomena related to both
  - (i) word order (verb-initiality, V2, etc.), and
  - (ii) word formation (affixation, compounding, etc.).
- The result: great strides in descriptive adequacy + a single operation for both (i) & (ii).
- However, pursuit of greater explanatory adequacy (esp., within the Minimalist Program) has brought to the fore certain theoretical issues with (1):
  - a) the landing site in (1) does not c-command the site of origin (unlike XP-movement)
  - b) most cases of (1) do not have discernible semantic effects (unlike XP-movement)
  - c) (1) violates the Extension Condition (unlike XP-movement)
  - d) (1) cannot skip a head (unlike XP-movement)
- Numerous attempts to reduce at least some instances of (1) to other mechanisms:
  - head movement as post-syntactic X-movement: Chomsky 2000, 2001, Boeckx and Stjepanović 2001, Harley 2004, Schoorlemmer and Temmerman 2012, Platzack 2013
  - head movement as syntactic X-movement + post-syntactic rebracketing: Matushansky 2006, Harizanov 2014a,b
  - head movement as syntactic X-movement + reprojection: Fanselow 2003, Surányi 2005, Georgi and Müller 2010
  - head movement as a species of agreement: Roberts 2010
  - head movement as syntactic remnant XP-movement, i.e. X-movement does not exist: Koopman and Szabolcsi 2000, Müller 2004
- Our contention:
  - phenomena (i) and (ii) are characterized by diverse properties (section 1); we argue against the traditional approach of modeling them with a single operation.
  - we derive (i) and (ii) by distinct (independently needed) mechanisms (section 2):
    1. purely syntactic **head movement** (Internal Merge in syntax)
    2. morphological **amalgamation** (Morphological Merger in post-syntax)

## 1 Two types of “head movement”

- Syntactic head movement
  - does not form words
  - can “skip” heads
  - can have interpretive effects
- Post-syntactic amalgamation
  - forms words
  - affects structurally adjacent heads
  - does not have interpretive effects
- These clusters of properties can be understood if head movement involves Internal Merge in the syntax while amalgamation involves Morphological Merger in the post-syntax.

### 1.1 Word formation

- The traditional syntactic head-adjunction view of head movement (as in (1)) predicts a correlation between word formation and raising (the “size-height correlation”).
- If a head has undergone head movement, it should grow morphologically; if a head is part of a head adjunction structure, it should have undergone syntactic head movement.

#### 1.1.1 Raising with word formation and the “size-height correlation”

- The formation of a word often correlates with raising of one or more of its constituents.<sup>1,2</sup>
- In French, the formation of a word containing V and finite T is accompanied by raising of V from its base position to a higher structural position (Pollock, 1989):

- |   |   |
|---|---|
| <p>(2) a. <i>Jean ne parlait pas français</i><br/>         Jean NE speak.3SG not French<br/>         ‘Jean was not speaking French.’</p> <p>b. *<i>Jean ne pas parlait français</i><br/>         Jean NE not speak.3SG French</p> | <p>(3) a. <i>ne pas regarder la television</i><br/>         NE not to watch the television<br/>         ‘not to watch television’</p> <p>b. *<i>ne regarder pas la television</i><br/>         NE to watch not the television</p> |
|---|---|

- However, numerous cases exist where this correlation is not borne out (Brody 2000; Abels 2003; Adger et al. 2009; Harley 2013).

#### 1.1.2 Raising without word formation

- Raising of a head to a higher structural position may not result in the formation of a more complex morphological word, as in the raising of the finite verb to C in German:

- (4) a. *Ich glaube daß Fritz Dieses Auto in München geklaut hat.*  
 I believe that Fritz this car in Munich stolen has.  
 ‘I believe that Fritz stole this car in Munich.’ (auxiliary in T)
- b. *Dieses Auto hat Fritz in München geklaut.*  
 this car has Fritz in Munich stolen  
 ‘Fritz stole this car in Munich.’ (auxiliary in C)

- Other potential cases: English subject-auxiliary inversion, embedded subject-aux inversion Irish English (McCloskey 2006).

<sup>1</sup>By “word formation” we mean formation of a morphological word in the sense of Embick and Noyer 2001.

<sup>2</sup>By “raising/lowering of X” we mean the pronunciation of X in a position higher/lower than its base position.

### 1.1.3 Word formation without raising

- The formation of a complex morphological word may not be accompanied by raising of any of its constituents (and may instead involve lowering, e.g. of T to V in Danish):
  - (5) The finite verb (V+T) in Danish root clauses is in C (a V2 pattern) (Vikner 1995:47)
    - a. *Vi ved at Peter ofte **drikker** kaffe om morgenen.*  
 we know that Peter often drinks coffee in morning.DEF  
 ‘We know that Peter often drinks coffee in the morning.’
    - b. *Peter **drikker** often kaffe om morgonen.*  
 Peter drinks often coffee in morning.DEF  
 ‘Peter often drinks coffee.’
  - (6) but stays low, in its base position, in non-root clauses: (Vikner 1995:145)
    - a. *Jeg spurgte hvorfor Peter ofte/ikke **havde** læst den.*  
 I asked why Peter often/not had read it  
 ‘I asked why Peter had often/not read it.’
    - b. \**Jeg spurgte hvorfor Peter **havde** ofte/ikke læst den.*  
 I asked why Peter had often/not read it
- Other potential cases: at least one variety of Korean (Han et al. 2007), Faroese (Rohrbacher 1994), Swedish (Vikner 1995), Norwegian (Vikner 1995), and the Spanish nominal domain (Lipták and Saab 2014).

### 1.1.4 Summary

- “Head movement phenomena” may involve word formation or not:<sup>3</sup>
  - **Syntactic head movement**: raising without word formation (1.1.2);
  - **Post-syntactic amalgamation**
    - \* type A: word formation accompanied by **raising** (1.1.1);
    - \* type B: word formation accompanied by **lowering** (1.1.3);

- .....
- An aside: of course, these three types of head movement phenomena may cooccur:
    - Syntactic head movement can cooccur with amalgamation (5);
    - type A amalgamation can cooccur with type B amalgamation: e.g., V in Irish raises to T and C lowers to T across TP-adjoined adverbials (McCloskey 1996).
      - (7) *Deiridis an chdad Nollaig eile **go+dtiocfadh** se anios.*  
 they.used.to.say the first Christmas other C+would.come he up  
 ‘They used to say that next Christmas he would come up.’
  - We discuss these interactions in sections 2.2 and 2.1, respectively.

<sup>3</sup>By “head movement phenomena” we mean phenomena traditionally modeled by (1).

## 1.2 Locality

- Syntactic head movement is subject to the same locality constraints as XP-movement, while amalgamation requires structural adjacency (a constraint which subsumes the HMC).

### 1.2.1 Word formation requires structural adjacency

- In the case of raising, amalgamation applies to heads that are structurally adjacent:<sup>4</sup>

(8) *Head Movement Constraint* (Travis 1984)

An  $X^0$  may only move into the  $Y^0$  which properly governs it.

- In the case of lowering, amalgamation also applies to heads that are structurally adjacent (as evident in Embick and Noyer's (2001) formulation of Lowering: "the head X lowers to Y, the head of its complement").

### 1.2.2 Raising without word formation is less local

#### V-to-C without V-to-T

- The finite verb in Danish moves to the C domain in root clauses (see 1.1.3); presumably, this happens in Faroese, Swedish, and Norwegian as well.
- No evidence that the verb stops off within TP (Vikner 1995, p. 143-147).
- The derivation of V2 in languages without independent V-to-T involves head movement which violates the Head Movement Constraint.

#### "Long" head movement

- In Bulgarian, a participle follows a finite auxiliary and precedes its arguments:

(9) a. *bjah pročel knjigata*  
had read the.book  
'I had read the book'

b. *razbrah če e pročel knjigata*  
understood.1.SG that is read the.book  
'I understood that he has read the book'

- Bulgarian also allows participle fronting: the participle appears displaced from its thematic VP-internal position to the clause-initial pre-Auxiliary position.

(10) a. *pročel bjah knjigata*  
read had the.book  
'I had read the book'

b. *razbrah če pročel e knjigata*  
understood.1.SG that read is the.book  
'I understood that he has read the book'

<sup>4</sup>We assume that two heads are structurally adjacent if one of them heads the complement of the other.

- Participle fronting in Bulgarian can cross more than one auxiliary:

- (11) a. *šte sām pročel knjigata*  
will have read the.book  
'I will have read the book'
- b. *pročel šte sām knjigata*  
read will have the.book

- Participle fronting can also escape both non-tensed and tensed clauses (Harizanov 2016):

- (12) a. *zagazil može [ da e ]*  
gotten.in.trouble might to be  
'he might've gotten in trouble'
- b. *zaspali si pomislih [ če bjaha decata veče ]*  
fallen.asleep REFL I.thought that were the.children already  
'I thought the children had already fallen asleep'

- Since it violates the HMC, this participle fronting (and similar-looking phenomena in other languages) has been called “long” head movement (Lema and Rivero 1990).<sup>5</sup>
- For arguments that participle fronting in Bulgarian is V-movement and not VP-remnant movement, see Lema and Rivero 1990:341, Rivero 1991:322-3, Wilder and Cavar 1994:5, Lambova 2004:237, Harizanov 2016, a.o.

## Summary

- The cases discussed here do not obey the HMC and, instead, are characterized by the locality associated with XP-movement (relativized minimality, islands).
  - These cases of syntactic head movement also have in common that they do not participate in word formation (see 1.1) and often have interpretative effects (see 1.3).
- .....

- Of course, as defined by Travis (1984), the HMC is supposed to account for why it is the verb in T that moves to C in German rather than a lower verb...
- T-to-C in German and English does appear to obey the HMC. On our view this is an accident: C just happens to attract the head of its complement, TP.
- The movement patterns with syntactic movement with respect to all other diagnostics—word formation (section 1.1) and interpretive effects (section 1.3).

<sup>5</sup>Since, in many of the languages reported to exhibit long head movement, the intervening auxiliaries are phonologically weak, it is difficult to exclude an alternative analysis in which the non-finite verb does not undergo syntactic movement but the phonologically weak auxiliary undergoes prosodic inversion to the right. However, a prosodic inversion analysis is much less likely in a language like Bulgarian, in which (i) a participle appears before an auxiliary that is not an enclitic (10a), and (ii) a participle appears before an enclitic auxiliary that is already supported (10b). This supports a genuine syntactic movement analysis (Harizanov 2016).

### 1.3 Interpretive effects

- Syntactic head movement has the potential to yield semantic effects, like XP-movement, while post-syntactic amalgamation does not.<sup>6</sup>
- To the extent we find interpretive effects, they consistently involve syntactic head movement: they do not involve word formation and may violate the HMC.<sup>7</sup>

#### 1.3.1 Direct arguments

- Direct arguments involve expansion of scope or c-command possibilities.

#### Szabolcsi 2011 on Shupamem (Grassfield Bantu)

- English: 2 possible readings for scope of *begin* w.r.t. *only*:
  - (13) a. In May only Mary began to get good roles.
  - b. interpretation 1: Only Mary is such that she began to get good roles.
  - c. interpretation 2: It began to be the case that only Mary was getting good roles.
- Shupamem: aspectual raising verbs move to a clause-initial position, yielding expanded scope with respect to a lower *only* adverbial:
  - (14) a. *Ndúú Maria ká jéʃǎ jìngět ndáá líʔ.*  
       only Maria PST begin have.INF good roles  
       ‘Only Mary is such that she began to get good roles.’ (only>>begin)
  - b. *Á ká jéʃǎ ndúú Maria jìngět ndáá líʔ.*  
       it PST begin only Maria have.INF good roles  
       ‘It began to be the case that only Mary got good roles.’ (begin>>only)
- The scope-expanding movement in (14b) involves raising and no word formation.
- *begin* moves around the subject into a matrix clause: patterns with XP-movement wrt locality (see Szabolcsi 2011, 12–14 for arguments against alternative analyses).

#### NPI licensing (McCloskey, 1996; Ladusaw, 1979, 1980)

- The head movement of T to C drags Neg along and licenses the NPI; it involves raising but no word formation.
  - (15) a. \* Which one of them does anybody not like?
  - b. Which one of them doesn’t anybody like?

#### Lechner (2007)

- The head movement of a modal to a higher position licenses the so-called “split-scope” reading from the higher position; this movement involves raising but no word formation.

<sup>6</sup>We leave aside cases in which it appears that the relevant interpretive effect can be attributed to the featural encoding of the head triggering movement, rather than the movement itself (e.g., illocutionary force associated with V2 (Wechsler, 1991), discourse effects associated with LHM in Bulgarian (Lambova, 2004), and others).

<sup>7</sup>We present a partial summary of these arguments here and do not evaluate them, taking them instead at face value. For a fuller discussion, see Jim’s talk and forthcoming paper as well as our paper.

### 1.3.2 An indirect argument

- Certain instances of head movement result in otherwise unpredicted applications of *MaxElide*: Hartman 2011 (English), Gribanova To appear (Russian).

(16) *MaxElide*: choose the largest possible ellipsis domain within a parallelism domain.

(17) PARALLELISM: For ellipsis of EC [elided constituent] to be licensed, there must exist a constituent—the parallelism domain—which reflexively dominates EC, which is semantically identical to an antecedent constituent, modulo focus-marked constituents. (Takahashi and Fox, 2005)

- If a phrase moves out of a potential ellipsis site, the parallelism domain must be large enough to include the binder and the bindee; otherwise, the variable inside the ellipsis domain would be free, and non-identical to its antecedent counterpart.<sup>8</sup>
- This forces the parallelism domain (underlined in (18) for phrasal movement) to be larger than it otherwise would be, and consequently limits *MaxElide* to the choice of a larger ellipsis site than would be required if no movement had occurred.

(18) a. NO PHRASAL MOVEMENT (*when* is an adjunct):  
Mary wants to leave, but I don't know when (she will).  
b. PHRASAL MOVEMENT OF *who*:  
He might talk to someone, but I don't know who (\*he might).  
c. someone  $\lambda y$ . he might talk to y but I don't know who  $\lambda x$ . [TP he might [VP talk to x]]

- Extending the logic to head movement (Hartman, 2011):

(19) a. Mary wants to leave, but I don't know when (she will).  
b. when  $\lambda x$ . [TP x [TP she  $\lambda y$ . will [y leave]]]]

(20) a. Mary wants to leave. Really? When (\*will she)?  
b. when  $\lambda x$ . will  $\lambda z$ . [TP x [TP she  $\lambda y$ . z [y leave]]]]

- Contrast between matrix and embedded clauses  $\sim$  availability of  $T \rightarrow C$ .
- Head movement to C expands the parallelism domain in matrix clauses, leading to the application of *MaxElide* to a larger domain.
- Predicated on the assumption that  $T \rightarrow C$  leaves a trace for parallelism domain calculation;
- therefore  $T \rightarrow C$  takes place in the narrow syntax.
- ...this is exactly the kind of head movement we expect to be syntactic!

### Summary

- The head movements that have interpretive effects, like XP-movement, do not involve word formation and may not obey the Head Movement Constraint.

<sup>8</sup>This holds as long as we also assume Heim's (1997) ban on meaningless co-indexation, which makes sure that the free variable in the antecedent and elided constituent are not accidentally co-indexed.



## 1.4 Summary

- In both syntactic head movement and post-syntactic amalgamation, a head  $X$  is pronounced in a position that is distinct from its syntactically motivated base position.

- **Syntactic head movement**

The head  $X$  is never pronounced lower than its base position (movement is always upward; i.e. there is no lowering that does not result in affixation).

### Examples

- English subject-aux inversion
- Germanic  $V_2$ , including Danish
- Bulgarian participle fronting
- Shupamem verb fronting
- Hebrew bare infinitive fronting (Landau 2006)
- Breton long head movement (Borsley and Kathol 2000)
- Russian Neg-to-Pol (Gribanova, To appear)

### Properties

1. the higher  $\neq$  the bigger ( $X$  stays the same size)
  2. does not produce head-adjunction structures (that map to words)
  3. driven by non-morphological properties of the heads involved
  4. does not obey the HMC (i.e. can skip heads)
  5. can have interpretive effects (including discourse consequences)
- **Post-syntactic amalgamation**

**Type A:**  $X$  is pronounced higher than its base position

- French V-to-T
- English Aux-to-T
- Russian V-to-Asp (Gribanova, 2013)

**Type B:**  $X$  is pronounced lower than its base position

- Irish C-to-T
- English, Danish, Faroese T-to-V
- Russian T-to-Asp (Gribanova, 2013)

### Properties

1.  $X$  grows in size (morphemes are added to it)
2. produces head-adjunction structures (that map to words)
3. driven by morphological properties of the heads involved
4. obeys the HMC
5. does not have interpretive effects

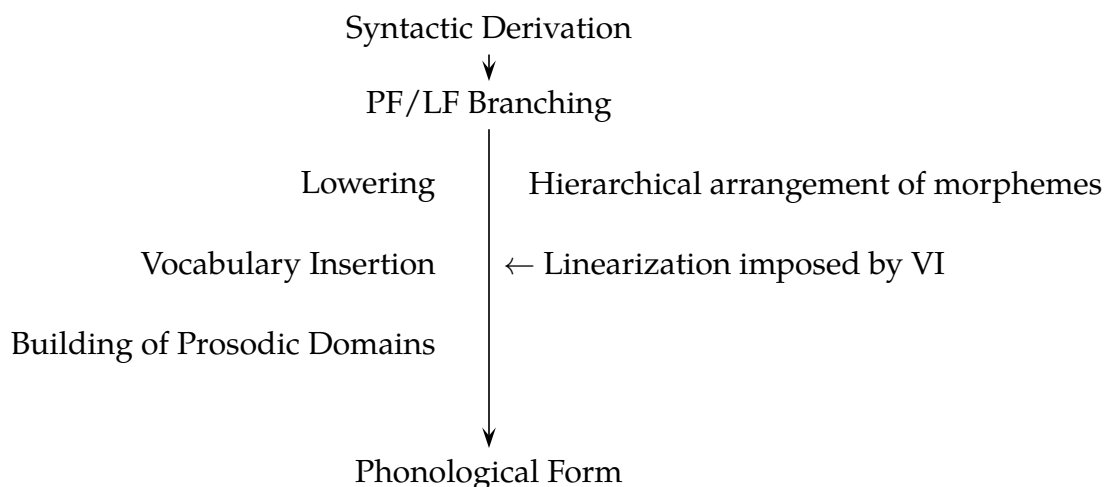
### Theoretical consequences

- Post-syntactic amalgamation has the properties that were problematic for the traditional, purely syntactic view of head movement qua head-adjunction.
- Genuine head movement in the narrow syntax retains its similarity to phrasal movement.
- This split provides a foundation for resolving the theoretical issues raised in the intro.



## 2 Post-syntactic head amalgamation

- PF operations (based on Embick and Noyer 2001, fig. 1):



### 2.1 Lowering and Raising at PF

- **Lowering:**

- takes as input the output of syntax;
- forms a complex head by adjoining a head to the next head down.

(21) *Post-syntactic head lowering* (where Y is the head of X's complement)  
 $[XP \dots X [YP \dots Y [ZP \dots ]]] \rightarrow [XP \dots [YP \dots [Y Y X] [ZP \dots ]]]$

- Lowering accounts for amalgamation of type B: word formation where one of the amalgamated heads is pronounced lower than its base position.
- **Raising**, the upward counterpart of Lowering:

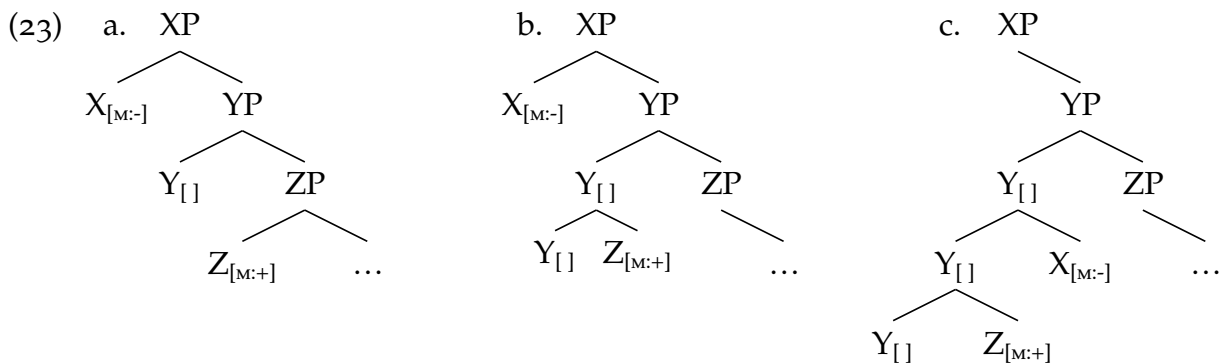
- takes as input the output of syntax;
- forms a complex head by adjoining a head to the next head up.

(22) *Post-syntactic head raising* (where Y is the head of X's complement)  
 $[XP \dots X [YP \dots Y [ZP \dots ]]] \rightarrow [XP \dots [X Y X] [YP \dots [ZP \dots ]]]$

- Raising accounts for amalgamation of type A: word formation where one of the amalgamated heads is pronounced higher than its base position.
- Raising and Lowering work together to form complex heads (which map to morphophonological words) out of separate syntactic heads.<sup>9</sup>

<sup>9</sup>We leave open the possibility that this state of affairs could be streamlined further—i.e. that there is a single operation, *Amalgamate*, which does all of the relevant work; we leave this to future investigation.

- Assumptions about the post-syntactic operations Raising and Lowering:
  1. Heads are considered for amalgamation cyclically, from the bottom up (in line with what we already think to be true of other post-syntactic processes, such as VI).
  2. A head can be endowed with the binary morphological feature  $[M]$ :<sup>10</sup>
    - $[M: +]$ : apply Raising
    - $[M: -]$ : apply Lowering
    - absence of the  $[M]$  feature: do nothing
    - if the configuration is such that Raising or Lowering cannot be applied, the derivation crashes.
- An example, in which the complex head is pronounced in the position of Y: (an example of this is the Irish verbal complexes, as discussed in section 1.1)



- Traversing the output of syntax (23a) bottom-up, we consider the heads Z, Y, and X in this order.
- Z is specified as  $[M: +]$  and is adjoined to Y; Y is specified as  $[ ]$  so we keep going; X is specified as  $[M: -]$  and is adjoined to Y.
- Beneficial consequences:
  1. the formulation is able to capture the observation that the resulting complex may in principle be pronounced at any point along the extended projection, apparently parametrized by language;<sup>11</sup>
  2. the bottom-up, cyclic derivation ensures that the default result of amalgamation will conform to the Mirror Generalization;<sup>12</sup>
  3. the HMC is embedded in the definition of Raising and Lowering (following standard assumptions about Lowering; e.g. Embick and Noyer 2001).<sup>13</sup>

<sup>10</sup>This is essentially a morphological selection feature; though implementations differ, similar ideas can be found in Roberts 2010; Rizzi and Roberts 1989.

<sup>11</sup>The distribution of the values of the  $[M]$  feature is a matter of lexical specification and is language-specific. It follows from this that only specifications that lead to convergence would be actually attested.

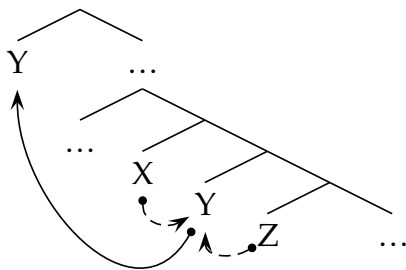
<sup>12</sup>A top-down application traversal of the tree would predict occurrences of anti-scopal affix order — exactly the opposite of the prevailing tendency crosslinguistically.

<sup>13</sup>We leave for future work the possibility of deriving this part of the definition of Raising and Lowering from some deeper property of the PF component of grammar. See also footnote 9.

## 2.2 Interactions with syntactic head movement

- Syntactic head movement and amalgamation can interact (see section 1.1).
- Our model predicts that all such interactions are limited to cases where the output of syntactic head movement serves as the input to amalgamation.
- Syntactic head movement is Internal Merge in the syntax.
  - In BPS, the distinction between  $X^0$  and XP is reduced to contextual relations.
  - Without additional stipulations, Merge applies equally to  $X^0$  and XP.<sup>14</sup>

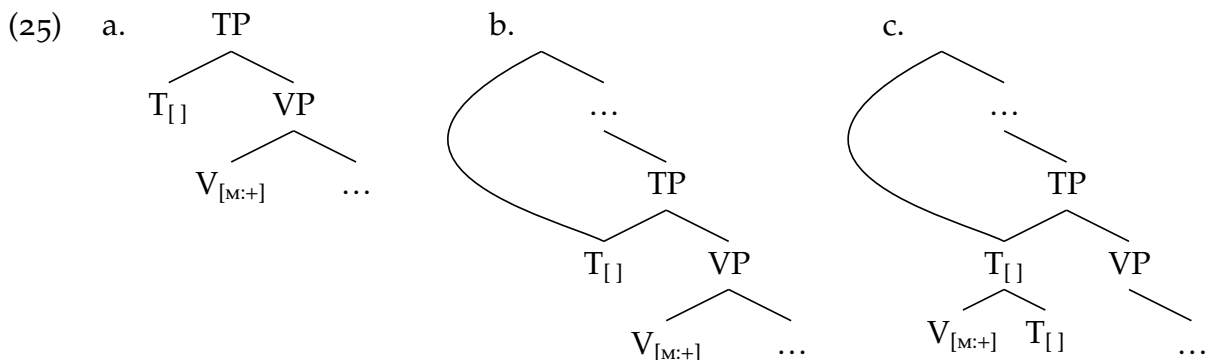
(24) Syntactic movement of Y, followed by post-syntactic raising/lowering of X and/or Z to the low occurrence of Y:



- if Z is a finite verb that post-syntactically raises into the low occurrence of Y, which is T  $\Rightarrow$  German V2;
- if X is a T that post-syntactically lowers into the low occurrence of Y, which is a V  $\Rightarrow$  Danish V2.

### The derivation of German V2 in detail

- In root clauses, T first undergoes syntactic movement (precedence and specifiers/adjuncts are not represented).
- Since V is specified as  $[M:+]$ , it then raises to (amalgamates with) the low occurrence of T.

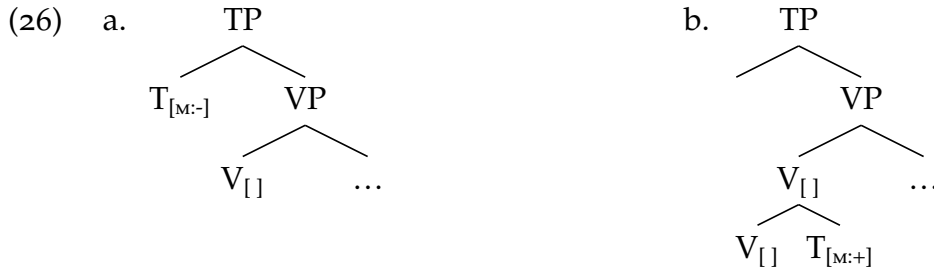


- Finally, the complex T is pronounced only in the highest position in which it occurs.
- Lowering and Raising must derivationally precede copy linearization in order for this to go through.

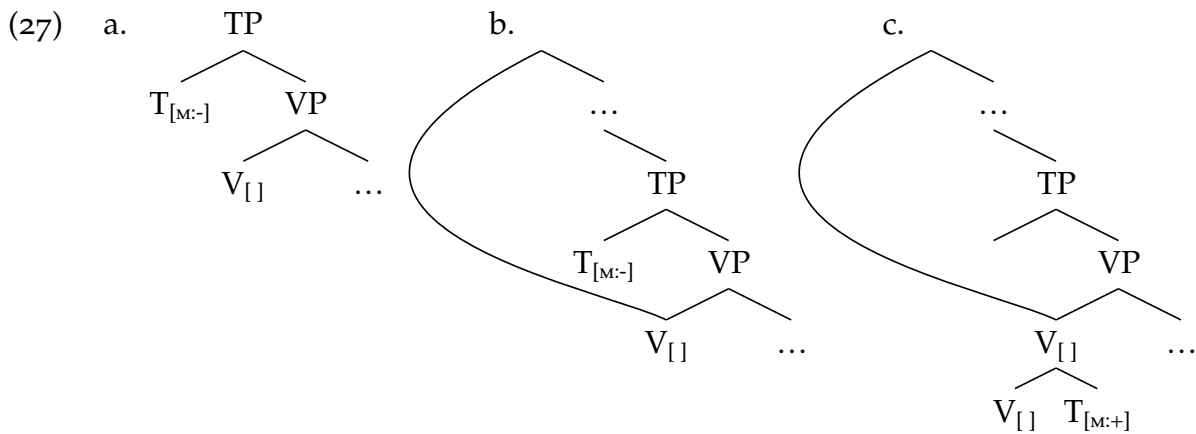
<sup>14</sup>The Extension Condition further dictates that all instances of Internal Merge, including Internal Merge of strictly minimal items, involve merger with the root, which, without further assumptions, would result in movement to Spec (cf. Kayne 1991, Fukui and Takano 1998, Toyoshima 2001, Matushansky 2006, Vicente 2007, Harizanov 2016). Other options may be possible but we do not pursue the issue here since it does not affect the main point.

**The derivation of Danish V2 in detail**

- T is specified as [M:-] and lowers post-syntactically to V, as seen in embedded clauses:



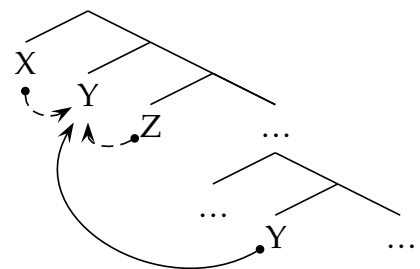
- In root clauses, V first undergoes syntactic movement and, then, T lowers to the low occurrence of V (as in embedded clauses):



- The resulting complex T is pronounced in the highest position in which it occurs.

.....

- (28) Syntactic movement of Y, followed by post-syntactic Raising/Lowering of X,Z to the high occurrence of Y:



- If Z is an aux that post-syntactically raises into the high occurrence of Y, which is a T ⇒ English Aux-to-T;
- if a head X post-syntactically lowers into the high occurrence of Y ⇒ LHM of Y + cliticization of X onto Y.

.....

- Another set of cases involves syntactic movement of an item and subsequent lowering or raising of the occurrences of that item itself (see the appendix).

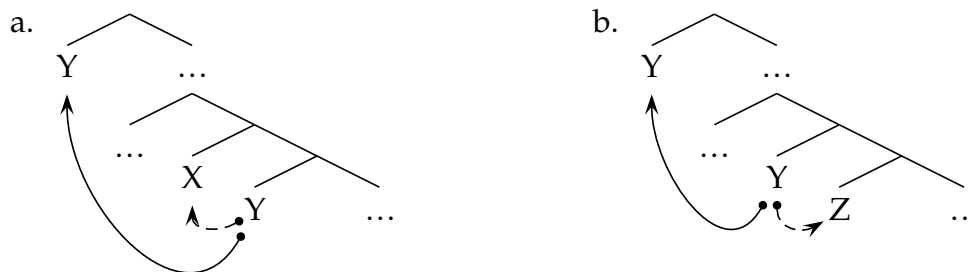
### 3 Future directions

- Our contention is that many of the theoretical issues that arise with regard to the traditional, syntactic head movement qua head adjunction can be resolved if we recognize that word formation and word order permutations are governed by distinct operations in distinct modules of grammar.
  - **Syntactic head movement:** raising without word formation;
  - **Post-syntactic amalgamation**
    - \* type A: word formation accompanied by **raising**;
    - \* type B: word formation accompanied by **lowering**;
- Opportunities to re-think (empirically and theoretically) phenomena in which traditional head movement has played a significant role:
  - Interactions between amalgamation and other post-syntactic processes such as Linearization, Chain Reduction, Vocabulary Insertion, etc.?
  - Interaction between amalgamation and XP-movement:
    - \* e.g., in predicate clefting (LaCara)...
    - \* as basis for a principled and general theory of doubling (see Appendix).
  - Interactions with ellipsis:
    - \* unpacking the verbal identity condition (Lipták)...
    - \* why does Danish have V-to-C but not verb-stranding verb phrase ellipsis?

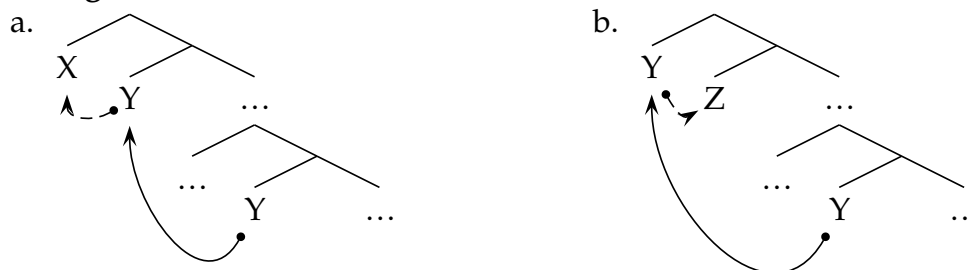
#### A Additional predicted interactions

- The interactions between syntactic head movement and post-syntactic amalgamation that we considered in section 2.2 involve syntactically raising  $\alpha$  and post-syntactically amalgamating a head  $\beta$  into (the low or high occurrence of)  $\alpha$ .
- Another set of interactions involve syntactically raising  $\alpha$  and post-syntactically amalgamating  $\alpha$  into some other head  $\beta$ :

(29) Syntactic movement of Y, followed by post-syntactic raising (a) or lowering (b) of the **low** occurrence of Y:



- (30) Syntactic movement of Y, followed by post-syntactic raising (a) or lowering (b) of the **high** occurrence of Y:



## Acknowledgments

Many of the ideas developed here have their origins in conversations with Jim McCloskey, who should really be a co-author. Thanks, Jim! We are also grateful to Beth Levin, Omer Preminger, Sandy Chung and the participants in the Stanford Head Movement Seminar (Winter 2015) taught by Boris Harizanov.

## References

- Abels, Klaus. 2003. Auxiliary adverb word order revisited. *University of Pennsylvania Working Papers in Linguistics* 9.
- Adger, David, Daniel Harbour, and Laurel Watkins. 2009. *Mirrors and microparameters: Phrase structure beyond free word order*. Cambridge, UK: Cambridge University Press.
- Boeckx, Cedric, and Sandra Stjepanović. 2001. Head-ing toward PF. *Linguistic Inquiry* 32:345–355.
- Borsley, Robert D., and Andreas Kathol. 2000. Breton as a V2 language. *Linguistics* 38:665–710.
- Brody, Michael. 2000. Mirror theory: syntactic representation in perfect syntax. *Linguistic Inquiry* 31:29–56.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. R. Martin, D. Michaels, and J. Uriagereka, 89–155. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale. A life in language*, ed. M. Kenstowicz, 1–52. Cambridge, Mass.: MIT Press.
- Embick, David, and Rolf Noyer. 2001. Movement operations after syntax. *Linguistic Inquiry* 32:555–595.
- Fanselow, Gisbert. 2003. Münchhausen-style head movement and the analysis of verb second. *UCLA Working Papers in Linguistics* 13:40–76.
- Fukui, Naoki, and Yuji Takano. 1998. Symmetry in syntax: Merge and demerge. *Journal of East Asian Linguistics* 7:27–86.
- Georgi, Doreen, and Gereon Müller. 2010. Noun-phrase structure by reprojection. *Syntax* 13:1–36.
- Gribanova, Vera. 2013. Verb-stranding verb phrase ellipsis and the structure of the Russian verbal complex. *Natural Language and Linguistic Theory* 31:91–136.
- Gribanova, Vera. To appear. Head movement and ellipsis in the expression of Russian polarity focus. *Natural Language and Linguistic Theory*.

- Han, Chung-hye, Jeffrey Lidz, and Julien Musolino. 2007. V-raising and grammar competition in Korean: Evidence from negation and quantifier scope. *Linguistic Inquiry* 38:1–47.
- Harizanov, Boris. 2014a. Clitic doubling at the syntax-morphophonology interface: A-movement and morphological merger in Bulgarian. *Natural Language & Linguistic Theory* 32:1033–1088.
- Harizanov, Boris. 2014b. On the mapping from syntax to morphophonology. Doctoral Dissertation, University of California, Santa Cruz.
- Harizanov, Boris. 2016. Head movement to specifier positions in Bulgarian participle fronting. Presented at the 90th Annual Meeting of the Linguistic Society of America (LSA 90). Washington, DC., January 2016.
- Harley, Heidi. 2004. Merge, conflation, and head movement: The First Sister Principle revisited. In *Proceedings of the North East Linguistic Society 34*, ed. Keir Moulton and Matthew Wolf, volume 1, 239–254. University of Massachusetts at Amherst: Graduate Linguistic Student Association.
- Harley, Heidi. 2013. Getting morphemes in order: Merger, affixation, and head movement. In *Diagnosing syntax*, ed. Lisa Lai-Shen Cheng and Norbert Corver, 44–74. Oxford: Oxford University Press.
- Hartman, Jeremy. 2011. The semantic uniformity of traces: Evidence from ellipsis parallelism. *Linguistic Inquiry* 42:367–388.
- Heim, Irene. 1997. Predicates or formulas? Evidence from ellipsis. In *Proceedings of SALT VII*, ed. Aaron Lawson and Enn Cho, 197–221. Cornell University: CLC Publications.
- Kayne, Richard S. 1991. Romance clitics, Verb movement, and PRO. *Linguistic Inquiry* 22:647–686.
- Koopman, Hilda Judith, and Anna Szabolcsi. 2000. *Verbal complexes*. Cambridge, Massachusetts: MIT Press.
- Ladusaw, William. 1980. On the notion ‘affective’ in the analysis of negative-polarity items. *Journal of Linguistic Research* 1:1–16.
- Ladusaw, William A. 1979. Polarity sensitivity as inherent scope relations. Doctoral Dissertation, University of Massachusetts, Amherst, Amherst, MA.
- Lambova, Mariana. 2004. On triggers of movement and effects at the interfaces. In *Triggers*, ed. Anne Breitbarth and Henk van Riemsdijk, 231–258. Berlin: Mouton de Gruyter.
- Landau, Idan. 2006. Chain resolution in Hebrew V(P)-fronting. *Syntax* 9:32–66.
- Lechner, Winfried. 2007. Interpretive effects of Head Movement. URL <http://ling.auf.net/lingBuzz/000178>, Ms. National and Kapodistrian University of Athens, March 2007.
- Lema, José, and María Luisa Rivero. 1990. Long head movement: HMC vs. ECP. In *Proceedings of the 20th Annual Meeting of the North East Linguistic Society*, ed. Juli A. Carter, 337–347. Amherst, MA: GLSA.
- Lipták, Anikó, and Andrés Saab. 2014. No N-raising out of NPs in Spanish: ellipsis as a diagnostic of head movement. *Natural Language and Linguistic Theory* 32:1247–1271.
- Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37:69–109.
- McCloskey, James. 1996. On the scope of verb movement in Irish. *Natural Language and Linguistic Theory* 14:47–104.
- McCloskey, James. 2006. Questions and questioning in a local English. In *Crosslinguistic research in syntax and semantics. negation, tense and clausal architecture*, ed. Rafaella Zanuttini, Héctor Campos, Elena Herburger, and Paul H. Portner, 87–126. Georgetown University



- Press.
- Müller, Gereon. 2004. Verb-second as vP-first. *The Journal of Comparative Germanic Linguistics* 7:179–234.
- Platzack, Christer. 2013. Head movement as a phonological operation. In *Diagnosing syntax*, ed. Lisa Lai-Shen Cheng and Norbert Corver, 21–43. Oxford: Oxford University Press.
- Pollock, Jean-Yves. 1989. Verb movement, UG and the structure of IP. *Linguistic Inquiry* 20:365–424.
- Rivero, María Luisa. 1991. Long head movement and negation: Serbo-Croatian vs. Slovak and Czech. *The Linguistic Review* 8:319–351.
- Rizzi, Luigi, and Ian Roberts. 1989. Complex inversion in French. *Probus* 1:1–30.
- Roberts, Ian. 2010. *Agreement and head movement*. Cambridge, MA: MIT Press.
- Rohrbacher, Bernhard. 1994. The germanic VO languages and the full paradigm: A theory of V to I raising. Doctoral Dissertation, University of Massachusetts-Amherst.
- Schoorlemmer, Erik, and Tanja Temmerman. 2012. Head movement as a PF-phenomenon: Evidence from identity under ellipsis. In *Proceedings of the 29th West Coast Conference on Formal Linguistics*, ed. Jaehoon Choi, E. Alan Hogue, Jeffrey Punske, Deniz Tat, Jessamyn Schertz, and Alex Trueman, 232–240. Somerville, MA: Cascadilla Proceedings Project.
- Surányi, Balázs. 2005. Head movement and reprojection. *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae. Sectio Linguistica. ELTE Tomus* 26:313–342.
- Szabolcsi, Anna. 2011. Certain verbs are syntactically explicit quantifiers. In *Formal semantics and pragmatics: Discourse, context, and models*, volume 6 of *The Baltic International Yearbook of Cognition, Logic and Communication*. <http://cognition.lu.lv/symp/6-call.html>.
- Takahashi, Shoichi, and Danny Fox. 2005. MaxElide and the re-binding problem. In *Proceedings of Semantics and Linguistic Theory*, ed. Effi Georgala and Jonathan Howell, volume 15, 223–240. Ithaca, NY: CLC Publications.
- Toyoshima, Takashi. 2001. Head-to-spec movement. In *The minimalist parameter*, ed. Galina M. Alexandrova and Olga Arnaudova, 115–136. Amsterdam and Philadelphia: John Benjamins.
- Travis, Lisa. 1984. Parameters and effects of word order variation. Doctoral Dissertation, Massachusetts Institute of Technology.
- Vicente, Luis. 2007. The syntax of heads and phrases: A study of verb (phrase) fronting. Doctoral Dissertation, Leiden University.
- Vikner, Sten. 1995. *Verb movement and expletive subjects in the Germanic languages*. Oxford: Oxford University Press.
- Wechsler, Stephen. 1991. Verb second and illocutionary force. In *Views on phrase structure*, ed. Katherine Leffel and Denis Bouchard, 177–191. Netherlands: Springer.
- Wilder, Chris, and Damir Cavar. 1994. Word order variation, verb movement, and economy principles. *Studia Linguistica* 48:46–86.

Department of Linguistics  
Stanford University  
Margaret Jacks Hall, Building 460  
Stanford, CA 94305-2150  
{bharizan,gribanov}@stanford.edu