Head movement as a PF-phenomenon:
Head-ing toward PF (Boeckx & Stjepanović,) & Head movement as a PF-Phenomenon: Evidence from Identity under Ellipsis (Schoorlemmer & Temmerman,)

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1 Boeckx & Stjepanović: 'Head-ing toward PF'

Goal: Provide an empirical argument in favour of the PF approach on head movement based on pseudogapping constructions like:

(1)   Debbie ate the chocolate, and Kazuko did ~~eat~~ the cookies.

What we need to keep in mind:

- y-model of syntax (narrow syntax, LF, PF)

- Extension condition: Merge must always take place at the root of the tree (traditional head movement violates this condition!)

- Ellipsis: omission from a clause of one or more words that are nevertheless understood in the context of the remaining elements (Gapping, stripping, verb phrase ellipsis, pseudogapping, etc)

- Pseudogapping: ellipsis mechanism that elides most but not all of a non-finite verb phrase; at least one part of the verb phrase remains, which is called the remnant.

- Right node raising: denotes a sharing mechanism that sees the material to the immediate right of parallel structures being in some sense "shared" by those parallel structures

- overt object shift: movement of the object to [Spec,Agr$_O$] (split-VP-hypothesis: VP-Agr$_O$-VP)

- PF crash theory: A strong feature that is not checked in overt syntax causes a derivation to crash at PF. (Chomsky 1993)

- virus theory: A strong feature must be eliminated (almost) immediately upon its introduction into the phrase marker; otherwise, the derivation is cancelled. (Chomsky 1995a)

1.1 Lasnik's approach(es) to pseudogapping

Lasnik(1995): Pseudogapping results from VP-ellipsis, the remnant object having moved out of the VP, stranding the verb (with movement of the object being a case of overt raising to [Spec,Agr$_O$])
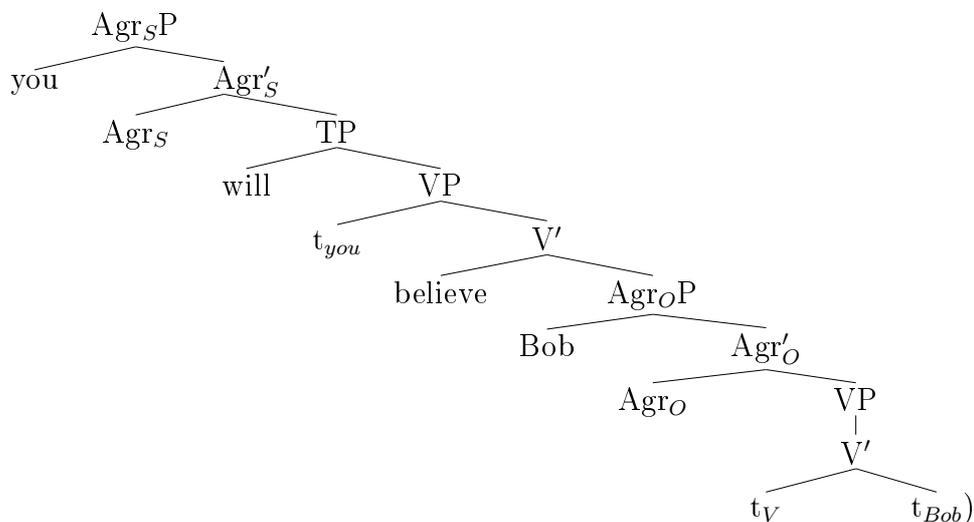
(2) Debbie ate the chocolate, and Kazuko did $[_{Agr_OP}$ the cookie$_i$ ~~$[_{VP}$ eat t$_i]$~~$]$

What does the tree structure look like?

(Help: structure of a basic sentence is given below:

(3) You will believe Bob.

(4) Clause structure of a basic sentence (split-VP-hypothesis):

What appears to be strange...

- the verb raises in nonelliptical sentences (respectively must raise if object shift is assumed, see below)

- the verb does not raise in pseudogapping constructions

(5)   no verb raising in nonelliptical sentences leads to ungrammaticality:
        *Kazuko will the cookie$_i$ eat t$_i$.
        (vs. Kazuko will eat$_i$ the cookie$_j$ t$_i$ t$_j$.)

Lasnik's solution

- two possibilities for a convergent derivation: V can raise (forced by a strong feature) or it can be part of the elided constituent

- this situation can be accounted for under under the PF crash theory of strong features

- the relevant strong feature is a feature of the lexical V (not the target position)

- possibility 1: V raises and satisfies the strong feature

- possibility 2: V stays put and the VP (containing V) is elided - the feature is elided, too, of course

- either way: there is no unchecked strong feature at PF

- possibility 3: V does not raise, nothing is elided - derivation crashes at PF because of the unchecked strong feature

Theory update

- Chomsky 1994 & 1995: Unchecked strong features are illegitimate LF objects + virus theory

- this theory makes it harder to explain the data but not impossible: a specific construal of overt movement is needed (Lasnik adopts Ochi (1999) which is based on Chomsky (1995)):

- overt movement = 2 operations
  (i) formation of a feature chain: raising the formal features of an element to the attractor)
  (ii) formation of a category chain = repair strategy: isolated features and other scattered parts of words may lead to the crash of the derivation because they are not subject to [C$_{HL}$'s]rules or end up as unpronounceable items at PF

Essentially, the idea/procedure remains the same given Ochi's view that the trigger of the formation of the category chain is the lexical item (it cannot be pronounced without its features):

- starting situation: the verb's strong feature moves

- possibility 1: the category moves, too, so it can be pronounced

- possibility 2: the verb remains put and elision takes place

- either way: the features are satisfied and no unpronounceable item ends up at PF

- possibility 3: the features move, the verb does not and the derivation proceeds - ungrammaticality results because the features of the verb are scattered

1.2   Problems of Lasnik's solution

- assumption: movement indeed is better viewed as attraction

- crucial is that the formation of the category chain is triggered by the lexical item

- Problem: How does that follow from the ban on scattered features? Why can't the features be the trigger of the subsequent movement of the category?

- this view is in line with Chomsky's (1995 & 1997) 'Link reduction'

Reinterpretation: Feature movement as mere long-distance agreement (Chomsky 2000)

- big problem: no actual feature displacement

- without scattered features Lasnik's argument becomes unstatable

- like Agree, pied piping seems to be motivated by some property of the target ([EP]P-feature)

- with that we end up where we started: Why does the verb move in nonelliptical sentences but does not move in elliptical ones?

- It does not suffice to claim that the relevant feature is absent!

- backdoor: the nature of overt movement is left unclear in Chomsky (2000) - it might be defined in a way which solves the problem (regarding the question 'What drives head movement?')

More trouble is to come...

- recall: Lasnik's proposal of elliptical sentences = overt object movement + verb remains in situ

- critique: nothing in Lasnik's system forces this

- resulting possible option: V-movement + object remains in situ which leads to

(6)   *Debbie got chocolate, and Kazuko got ~~chocolate~~ too.

What does the tree look like?

- moreover, V-movement must not be optional in standard cases

(7)   Debbie ate chocolate and Kazuko drank milk.

- in general, we end up with XP-movement being obligatory whereas X^0-movement is optional

A new approach (suggestion by a reviewer)

- starting point: the constructions we compared are not exactly parallel

(8)   Debbie ate the chocolate, and Kazuko did $[_{Agr_OP}$ the cookie$_i$ ~~$[_{VP}$ eat $t_i]$~~$]$

- the remnant is contrastively focused

(9)   *Debbie got chocolate, and Kazuko got ~~chocolate~~ too.

- the remnant is not focused

- suggestion: exchange the latter with an instant of right node raising

(10)   Debbie bought and Kazuko ate the chocolate.

- the verb is contrastively focused

- derivation of right node raising: V-raising and the objects stays put (=parallel to pseudogapping)

- result: movement of either verb or object is driven by focus

- problem 1: is focus really the driving force or rather the result of ellipsis?

- problem 2: there is compelling evidence that right node raising is a base-generated structure (Bošković 1996)) which destroys the parallelism between the two constructions/examples

Another argument against focus: Serbo Croatian

- SC allows for VP ellipsis even with different verbs in the conjuncts:

(11)   Marko pokazuje Petra   Mariji,   a   Ivan predstavlja$_i$
        Marko shows   Petar.ACC Marija.DAT and Ivan introduces
        ~~$[_{VP}$ t_i Petra Mariji]~~.

        'Marko is showing Petar to Marija, and Ivan is introducing him to her.'

- if it were about focus in English, the same should be possible

- here, focusing on the verb is possible; hence, raising is available and therefore wrongly predicts the following to be good

(12)   *Peter kissed Mary, and Tom hit$_i$ [$_{VP}$ t$_i$ Mary].

- result: the difference between the compared examples (see below) is real

(13)   Debbie ate the chocolate, and Kazuko did the cookie eat.

(14)   *Debbie got chocolate, and Kazuko got chocolate too.

Ruling out sentences like *Debbie got chocolate, and Kazuko got chocolate too*.

- Relativized Minimality approach

- Lasnik (1999): VP ellipsis is only licensed if the elided phrase (VP) is governed by an appropriate head (for Lasnik it's T)

- furthermore, there must not be any intervening lexical verbal heads between T and the elided VP

- if there is an intervener, ellipsis will not be licensed owing to 'some version of Relativized Minimality'

3 points of criticism

- **1:** the analysis is based on government which the Minimalist Program tries to do without

- **2:** no precise explanation how Relativized Minimality is violated, i.e. why an intervening verbal head matters here

- **3:** actually, there can be an intervening verbal head between the elided VP and T - SC:

(15)   Ivan je kupio automobil, a   i   Marija je kupila automobil
        Ivan is bought car   and too Marija is bought car
        'Ivan bought a car, and Marija did too.'

Derivation: VP-ellipsis of the lowest VP after the participle raises out of it (Stje-panović 1997); crucially, the landing site of the participle is not T (Bošković 1997)- the participle intervenes between T and the elided VP

- even in English this is possible: *have* between T and VP

(16)   Debbie might have done it, but Kazuko might have done it also.

- result: this account is dismissed

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1.3 Head movement as a PF Phenomenon

- 2 problems need to be solved
  (i) the stipulation of obligatory/optional movement
  (ii) the inconclusive evidence in favor of syntactic-feature-triggered head movement

- proposed solution: head movement (here V-movement) takes place after Spell-Out, in the phonological component

How does it work?

- XP-movement (like object shift) is driven by feature checking and necessarily takes place in the (narrow) syntax

- Head movement and ellipsis are both PF phenomena, i.e. they follow all syntactic operations

- both operations compete at PF and the choice depends on independent factors

Problems again

- besides moving the verb or eliding it, there is one more possibility: doing nothing to it, allowing, for instance, the following (Ellipsis configuration without elision)

  (17)   *Debbie ate chocolate, and Kazuko milk$_i$ drank t$_i$

- answer: Movement is still triggered in sowe way.

- The claim is that the trigger is not featural but might be morphological, or prosodic, or a mixture. (The authors emphasize that this might not be the full story.)

1.4 Conclusion

- arguments on the basis of pseudogapping have been provided that Chomsky's claim that head movement is a PF phenomenon might well be right

- In the case presented it provides a natural answer to the problems of Lasnik's otherwise accepted account of pseudogapping.

- A full-fledged theory of PF needs to be worked out.

- But it is desirable to view Head movement as a PF phenomenon because in core syntax it conflicts with otherwise well grounded principles (Attract, the elimination of strength, the Extension Condition).

2 Schoorlemmer & Temmerman

- same starting point: HM in narrow syntax is undesirable because it violates the Extension Condition, the moved head does not c-command its trace, etc.

- claim: argue on the base of the interaction between HM and ellipsis: identity requirements under ellipsis provide evidence that there are cases of HM that take place at PF

2.1 Verb-stranding VP-ellipsis

What is verb-stranding VP-ellipsis: It involves ellipsis of a verb phrase, except for the main verb. All other elements within the VP are elided.

Portuguese VPE: main verb overt

(18) O   João viu o   desastre na   televisão ontem   e   a   Maria também
      the João saw the accident on.the TV   yesterday and the Maria also
      viu.
      saw
      'João saw the accident on TV yesterday and Maria did too.'

Contrary: English VPE: main verb null

(19) Baz watched Black Swan, and Quentin did [$_{VP}$ ~~watch Black Swan~~] too.

Parallels between verb-stranding and 'regular' VP-ellipsis

- have the same distribution

- fulfill the same discourse functions

- show the same range of formal properties:
  (i) can apply inside islands
  (ii) can be used in coordinations
  (iii) can appear within one or more levels of sentential embedding
  (iv) can apply backwards

- inference: verb-stranding VP-ellipsis involves regular VP-ellipsis, preceded by movement of the verb to a higher position (T)

Verbal identity requirement: The stranded verb in the elliptical sentence must match the verb in the antecedent.
Examples: Irish

(20) a. Ar   chuir   tú isteach ar on phost. - Chuir.
          COMP.INTERR put.PAST you in   on the job   put.PAST
          'Did you apply for the job?' - 'Yes, I did.'
      b. *Níor **cheannaigh** siad ariamh teach ach **dhíol**.
          NEG buy.PAST   they ever   house but sell.PAST
          Intended: 'They never bought a house but they sold (a house).'

Note: The latter example is ruled out although both verbs have the same argument structure and a similar subcategorization frame.

2.2 Verbal identity under verb-stranding VP-ellipsis

- VIR is reminiscent of interpretation of elided elements:
  elided constituent has to be identified by means of a salient linguistic antecedent (identification or recoverability condition on ellipsis): only phrases whose content is recoverable from an antecedent can be elided

- Merchant (2001) formulates semantic identity between the elided constituent and the antecedent in terms of mutual entailment of ∃-closed expressions

Merchant's (2001) e-GIVENness: An expression can only be elided if it is e-GIVEN. A constituent is e-GIVEN when it has a salient antecedent and when this constituent and its antecedent mutually entail each other.
Example:

(21)   Abby [called me an idiot], after Ben did.
       = ...after Ben did [call me an idiot].
       ≠ ...after Ben did [insult me].

- the elided constituent can only be interpreted as [call me an idiot]

- *call me an idiot* entails *insult me* but not vice versa

- it follows that *call me an idiot* is not an appropriate antecedent for *insult me* (it is not e-GIVEN)

Goldberg's (2005) view on verbal identity

- VIR is reducible to the recoverability condition on elided elements: verb is interpreted as if it were among the elided material (despite the phonological realisation)

- overt verb of the elided VP and its correlate are identical; hence, they mutually entail each other (= stranded verb is e-GIVEN)

- VP-ellipsis and verb stranding VP-ellipsis only differ in that the verb undergoes HM out of the VP in the latter

- Goldberg (2005) among others proposes that the base position of V inside the ellipsis site is cause for the identity requirement

- **prediction:** only material of the verbal complex that originates in the ellipsis side should be subject to the identity requirement

- verbal root + derivational morphology originating within the elided VP vs. inflectional morphology associated with functional projections outside the VP

- indeed, differences in mood, tense, agreement, and finiteness between the two verbs are allowed in Irish:

(22)   Dúirt mé go   **gceannóinn** é agus **cheannaigh**
       said I   COMP buyCONDIT   it and buy.PAST
       'I said that I would buy it and I did.'

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Proposal

- the verb is inside the ellipsis site at LF because it has not yet undergone movement

- this implies that verb movement cannot take place in narrow syntax

- if verb movement and VP ellipsis take place at PF, V is inside VP throughout the derivation in narrow syntax

- result: only one copy of V is sent to LF, which is inside the ellipsis site

- and V is automatically interpreted like any other element in the ellipsis site

- HM out of VP at PF - V gets phonological realization

- Y-model: no effect of this movement at LF - V is inside the elided VP at LF and outside at PF

- this is taken to be evidence for HM at PF

The proposal in detail: Background: [E]-feature approach toward ellipsis

- [E] is a feature on a syntactic head that licenses ellipsis

- has effects at PF and LF:
  PF: non-parsing/non-pronunciation of the complement of its host head
  LF: ensuring that the content of the elided phrase is recoverable (complement of the host head must be e-GIVEN

So in VP-ellipsis the [E]-feature is on T. The three stages look as follows:

(23)   Abby called me an idiot after Ben did.

- SYNTAX: $[_{TP}$ Abby T_{past} $[_{VP}$ call me an idiot][after $[_{TP}$ Ben $T_{past.[E]}$ [call me an idiot]]]]

- PF: [Abby -ed [call me an idiot][after [Ben -ed [~~call me an idiot~~]]]]
  (first -*ed* is lowered onto *call*, the second is replaced by *did*)

- LF: $[_{TP}$ Abby PAST $[_{VP.A}$ ∃x.x call me an idiot] [after $[_{TP}$ Ben PAST $[_{VP.E}$ ∃x.x call me an idiot]]]]
  (requirement, that VP.E has to be e-GIVEN is fulfilled)

Remember Irish VP-ellipsis, for instance:

(24)   Ar   cheannaigh siad teach? - Cheannaigh.
         COMP.INTERR buy.PAST   they house   buy.PAST
         'Did they buy a house?' - 'Yes, they did.'

- at LF *cheannaigh* is still inside the VP.E, it needs to be identical with the verb in VP.A

- at PF the verb undergoes HM and escapes non-pronunciation

- the movement at PF has no effect at LF

- although the verb is pronounced outside the ellipsis site it has to be identical to the correlate in the antecedent

- consequently, PF-HM offers a straightforward account for the identity requirement in verb-stranding VPE

Let's reproduce the single steps for the Irish example above:

- SYNTAX: Antecedent:
  Elliptical clause:

- LF: VP.E has to be e-GIVEN

- PF: 1. mark the complement of [E] for non-pronounciation
  2. HM
  3. Actual pronounciation

Ruling out possible syntactic accounts of HM
Syntactic background: copy theory A constituent that is moved in syntax leaves a copy behind. So if the verb undergoes HM in narrow syntax the input for LF contains two copies of V:

(25)   [subject V+T [$_{VP-elided}$ V object]]

The question is: Can this structure be interpreted in a way that the verb is necessarily identical to its correlate in the antecedent? (Put differently: Is this structure compatible with the VIR?)
Proposal 1: Hartman (2010)

- the lower copy is interpreted as a bound variable at LF (like phrasal copies):
  $\exists P.P(object)$

- first consequence: since phrasal and head movement are treated equally, no differences between them should arise (which is not the case)

- second consequence: there should be no VIR
  The interpretation of the lower copy as a bound variable permits the moved phrase to be non-identical to its correlate under Merchants's approach.
  Put differently: what you compare at LF is
  Antecedent: ... [$_{VP}$ $\exists P.P(object)$]
  Ellided clause: ...[subject T+V [$_{VP}$ $\exists P.P(object)$]]
  [$_{VP.A}$ $\exists$P.P(object)] & [$_{VP.E}$ $\exists$P.P(object)] always mutually entail each other; therefore, VIR should not exist

Proposal 2: Bobaljik (2002)

- only the higher copy is interpreted at LF

- consequence: VIR is unresolved
  The verb would only be interpreted outside the VP, so why should it be subject to the VIR as the other elements inside the ellipsis site?

Proposal 3: Goldberg (2005)

- only the lower copy is interpreted at LF

- consequence 1: obligatory reconstruction of V in its base position

- consequence 2: VIR is ensured
  the only difference between V and other elements within the ellipsis site is that it has a uninterpreted copy outside VP which has a phonological realization

- problem 1: unclear, why HM should differ from phrasal movement with respect to (obligatory) reconstruction
  - The difference is stipulated without independent theoretical or empirical motivation

- problem 2: phrasal movement can and sometimes must reconstruct, too

- therefore, these items should also be subject to the identity requirement - but they are not; consider the sluicing example:

  (26)   a. John told many stories, but I don't know which stories about himself.
          b. ... but I don't know which stories about himself [$_{TP}$ ~~John told which stories about himself~~]

- *which stories about himself* is moved and leaves a copy inside the T-ellipsis site

- the anaphor needs to be bound by *John* (Principle A)

- this is only possible if the lower copy gets interpreted at LF: reconstruction!

- so the sluiced WH-phrase should be identical to its correlate, but it's not (*which stories about himself ≠ many stories*)

2.3   Conclusion and prospects

- argued that HM in verb-stranding VPE is a PF-phenomenon

- crucial observation: the moved verb is subject to identity requirement just like the elements inside the ellipsis site

- prediction: HM subject to the VIR should never have any semantic effects (needs to be substantiated)

- however, cases of HM with semantic effects have been described in the literature

- Maybe HM is possible at PF and in narrow syntax

- If yes, what motivates the apparent redundancy?

- Or can the semantic effects be made compatible with a PF-analysis?

3 References

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