

Verb Phrase Movement as a Window into Head Movement

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1 Background

Languages with V°-to-T° movement and *vP* topicalization exhibit VERB COPYING:

- (1) [liknot et ha-praxim] hi kanta.
buy.INF ACC the-flowers she bought
'As for buying the flowers, she bought (them).' [Hebrew, Landau 2006]
- (2) [lavar o carro] o João lavou t_{VP}.
wash.INF the car, the João wash.PST.3SG
'Wash the car, João did.' [Portuguese, Bastos 2001]
- (3) [Dumat' o ženit'be] on dumaet...
think.INF about marriage he thinks...
'He does think about marriage...' [Russian, Abels 2001]
- (4) [Leer el libro rápido] Juan lo ha leído.
read.INF the book quickly, Juan CL has read
'As for reading the book fast, Juan has read it fast.' [Spanish, Vicente 2007]

The general approach to this phenomenon relies on the copy theory of movement (Chomsky 1995):

- One copy of the verb is in T° (or some other inflectional position).
- (At least) one additional copy of the verb root is generated by moving *vP* to the left periphery.



What remains unclear is *why* two copies of the verb get to be pronounced.

- Phrasal material moved out of the topicalized *vP* cannot be pronounced in the fronted *vP* (Nunes 2004, Gärtner 1998):

- (6) a. [*vP* Elected t_i], John_i was.

- b. * [*vP* Elected John], John was.

- Even in Spanish, as shown in (7), where a copy of the verb (*entregada*) is pronounced in the fronted *vP*, a copy of the subject (*la medalla*) cannot be (Vicente 2007):

- (7) [Entregada (*la medalla) al ganador]_k, la medalla_i ha
awarded.PASS.FEM the medal to.the winner, the medal.FEM has
sido entregada t_k.
been awarded.PASS.FEM
'Awarded to the winner, the medal has been.'
[Spanish, based on Vicente 2009:171, (20)]

The view received from Nunes (2004) is that this has to do with reducing the number of copies of any element for the purposes of linearization.

- Pronouncing multiple copies of *John* in (6) or *la medalla* in (7) results in a linearization problem. The subject cannot be linearized relative to itself, and so the copy in the topicalized *vP* must be eliminated.
- But, for some reason, pronouncing multiple copies of the verb stem *etreg-* does not result in the same problem.

The central intuition here is that this has something to do with the kind of movement involved:

- Whereas subject movement is derived by phrasal movement, movement of the verb is derived by head movement.
- Head movement forms words, whereas phrasal movement does not obviously do so. Consequently, Nunes proposes it is possible that we can ignore some copies within words.
- Getting these differences to work out, however, requires several uncomfortable stipulations about what can be deleted and when.

I propose that if head movement is not modeled under the copy theory of movement, we have a straightforward way of explaining verb-copying verb phrase topicalization in a Nunes (2004)-like theory of copy reduction.

- Under a copy-theoretic model, we are forced to ignore some copies for the purpose of linearization. This is implemented with Nunes's MORPHOLOGICAL REANALYSIS, but there is no principled way of determining when this will apply.
- If head movement is not derived by copying but instead involves some other mechanism, we reduce the number of copies of the verb generated to begin with, thereby obviating the need to stipulate which copies are ignored for linearization.
- Therefore, under approach discussed here, there is no need to stipulate anything like Morphological Reanalysis of certain copies. Adopting a non-movement approach to head movement derives the correct results.

Here I use Harley's (2004) CONFLATION approach for concreteness, though other non-movement or PF theories of head movement should work just as well.

- As long as movement of heads does not generate copies of the head, we can avoid some of the difficulties of Nunes's approach

Contents:

- §2 **Conflation and phonological features**
An outline of Conflation, an alternative approach to head movement.
- §3 **Chain reduction**
A review of Nunes's (2004) theory of chain reduction and how it accounts for remnant movement.
- §4 **Head movement and chain reduction**
Remnant ν P movement in two different approaches to head movement.
- §5 **Excursus on Germanic**
Germanic does not behave like the languages in (1)–(4).
- §6 **Conclusion**
Some final thoughts.

2 Conflation and phonological features

Since Chomsky (2001:37) suggested that head movement may not be derived in the same way as phrasal movement, several authors have developed implementations of head movement that do not rely on movement, *per se*.

- The idea is that head movement can be modeled without appeal to the operation MOVE (Copy + Merge).
- Chomsky himself proposes that head movement might be a PF operation.
- Other recent implementations (Brody 2000, Harley 2004, Platzack 2013) are still properly syntactic, but do not rely on head movement being derived by the operation Move.¹

For this poster, I adopt CONFLATION (Hale and Keyser 2002, Harley 2004, 2013), where features are passed up the tree as structure is built.²

- I use this primarily for concreteness and because it requires relatively little modification for my purposes.

Morphologically complex elements are not formed by Move under this approach.

- An object like with a PF form $Z^{\circ}+Y^{\circ}+X^{\circ}$ must have a syntax
[_{XP} ... X° [_{YP} ... Y° [_{ZP} ... Z° ...]]]

Assume that a head can come with a set of (morpho)phonological features – I'll call them π .

- We can think, perhaps, of the phonological features as those features that trigger lexical insertion in post-syntactic theories of morphology (e.g., Vocabulary Insertion in Distributed Morphology); see Platzack 2013.

Key assumptions for Hale and Keyser's (2002) Conflation (based on Harley 2004):

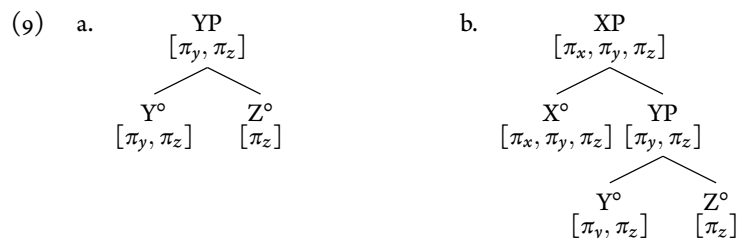
- (8) a. The label of any constituent has ALL the features of the head, including some representation of a phonological matrix π .
- b. Conflation occurs when a constituent α is merged with a sister head β whose set of features is 'defective'. The features π_{α} are merged into π_{β} .

¹ Approaches that reduce verb movement to remnant ν P movement, such as Müller 2004, also exist, but if head movement is reduced to phrasal movement, then the ideas in this poster will not work out.

² See also Zwart 2001 for a similar though different idea.

- c. For Economy reasons, the conflated set of features is only pronounced once, in its uppermost position.

This means that as the tree is built via Merge, the features π are passed up the tree, on the assumption that the label of a phrase shares all of the features of the head.



The result is that all of the phonological features wind up on a single head.

- A head can acquire the phonological features of its sister. Above, the phonological features $[\pi_z]$ on Z° merge into Y° .
- The resulting features on Y° , $[\pi_y, \pi_z]$, merge into X° .
- Assumption (8c) ensures that the features on X° are pronounced to the exclusion of those on both Y° and Z° .

The upshot of all this is that the phonological features of one head come to be associated with another without appealing to the operation Move.

- This means that movement (in the form of Move) is not necessary for the features of one head to be displaced to another position.

3 Chain Reduction

One of the more worked-out approaches to dealing with the pronunciation of multiple copies comes from Nunes (2004).

- The basic idea is that individual links in a chain usually count as non-distinct for the purposes of linearization.
- Consequently, it is not usually possible to linearize them with respect to one another and superfluous links must be deleted.

- Under certain circumstances, some extra links will be preserved, typically for morphological reasons.

This is implemented by the operation CHAIN REDUCTION:

- (10) CHAIN REDUCTION:
Delete the minimal number of constituents of a nontrivial chain CH that suffices for CH to be mapped into a linear order in accordance with the LCA. [Nunes 2004:27, (44)]

3.1 The basics

Nunes's approach relies critically on the copies of an element being part of the same chain.

- If movement is really copying, then there must be a reason that traces of movement (typically) remain unpronounced.
- Nunes's proposal is that two or more copies of the same element cannot be linearized with respect to one another.
- For the purposes of linearization, copies are non-distinct. Following IRREFLEXIVITY, an item may neither precede nor follow itself (If α precedes β , then $\alpha \neq \beta$).
- In order to satisfy irreflexivity and avoid a linearization paradox, copies are deleted.
- The highest copy is typically preserved because it is assumed that that copy will have (more) uninterpretable features checked.

Thus, in (11), the two copies of $John_i$ cannot both be pronounced because $John_i$ would have to both precede and follow itself.

- (11) [$John_i^?$ [was [elected $John_i^?$]]]

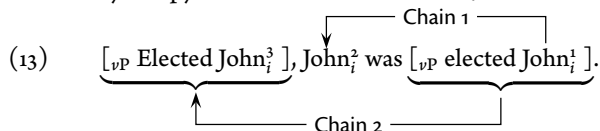
- $John^1$ is deleted by CR in order to avoid the paradox.
- $John^2$ is preserved on the assumption that it checks more features.

3.2 Remnant movement and multiple chains

Nunes notes, following criticism by Gärtner (1998), that chain reduction does not properly explain why *John* goes unpronounced in the *vP*-topicalization example in (12a). On its own, it predicts (12b).

- (12) a. Elected, John was.
 b. * Elected John, John was.

- As shown in (13), this is because the copy *John*³ in the topicalized *vP* does not form a chain with the copy of *John*² in the subject position (indices added for clarity – copy reduction cannot see these):



- Because of this, chain reduction cannot license the deletion of *John*³ in the topicalized *vP*.
- But they must get reduced. It's not just that they aren't both pronounced: These are all copies of *John* and are, therefore, non-distinct. They should cause a linearization paradox under Nunes' theory.

As a response, Nunes proposes Chain Reduction is actually somewhat BLIND.

- In order to linearize *John*² and *John*¹, Chain Reduction receives the instruction to delete the copy of *John* that is the sister of *elected*.
- Notice that this applies to both copies *John*¹ and *John*³ – they are both sisters to *elected*!
- Consequently, both copies delete, resulting in (12a).

This handles phrasal movement, but as we'll see below it becomes problematic for the data discussed above.

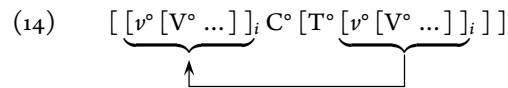
4 Head movement and chain reduction

I propose here that if head movement is modeled with Conflation (or some other form of non-movement), the facts about verb-copying VPF will fall out from Nunes's (2004) Chain Reduction.

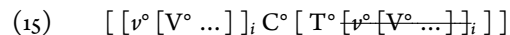
- Head movement under the CTM requires us to stipulate that certain copies of the verb are invisible to linearization.
- This gets the right result, but there is no principle underlying when this is allowed to happen.
- If we adopt Conflation, no stipulations of this sort are necessary.

4.1 With Conflation

If we assume head movement is derived via conflation, there is only one chain containing the verb: The chain of *vP* movement.



- Since there is only one chain, there are only two copies of the verb in the output of the narrow syntax: The copy of the verb in the base position, and the copy of the verb in the fronted *vP*.
- Chain Reduction therefore predicts that the lower copy of the *vP* should be deleted, stranding *T*^o.

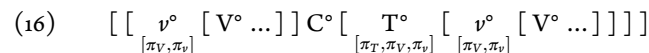


The languages which display verb-copying VPF are themselves verb movement languages.

- These are languages in which verbs appear in an inflectional position outside of the verb phrase.
- We can assume, following (8b), that these inflectional heads carry defective π features and thus require Conflation.

However, under Conflation, this is not actual movement of the verb itself, just conflation of the phonological features.

- This means that the ν° in the fronted *vP* will bear the features of V° .
- T° will bear the features of ν° and V° .



When it comes time for Chain Reduction to occur, the lower copy of *vP* will be deleted since it is the lower copy of the topicalized *vP*:

$$(17) \quad [[\underset{[\pi_V, \pi_\nu]}{\nu^\circ} [V^\circ \dots]]] C^\circ [\underset{[\pi_T, \pi_V, \pi_\nu]}{T^\circ} [\underset{[\pi_V, \pi_\nu]}{\nu^\circ} [V^\circ \dots]]]]$$

- Even though νP is reduced, features from ν° and V° conflate onto T° before this happens.
- T° is not part of the moved material, so it is not targeted by Chain Reduction. This strands T° with the phonological features from ν° and V° , leaving them to be pronounced.

This means that there are now two heads with conflated phonological features: T° and the ν° in the topicalized VP.

- Following (8c), lexical material is inserted into the uppermost head with conflated material.
- Assuming uppermost to be determined by c-command, these positions should be T° and ν° .³
- When lexical insertion happens, the features on T° will trigger the insertion of the verb in T° , and the features on ν° in the fronted νP will trigger the insertion of the infinitive.

Thus, Conflation explains straightforwardly how multiple copies of the verb are pronounced in νP topicalization.

- νP movement generates an extra copy of the verb root.
- Conflated features are pronounced on the uppermost head in TP and the fronted νP .
- νP topicalization is not a case of remnant νP movement under Conflation because since there is no head *movement*. We do not have to deal with linearizing multiple chains.

4.2 With syntactic head movement

If head movement carried out through Copy + Merge, verb-copying verb phrase topicalization involves multiple chains.:

- The νP movement chain.

³ We might need to be more careful with what *uppermost* means, but if we assume that it is calculated with reference to structural adjacency that appears to be part of the derivation of Conflation, T° is not in a local relationship with the ν° in the topicalized νP .

- The head movement chain(s).

$$(18) \quad [[\underbrace{[[V^{5+\nu} [V^4 \dots]]]}_{\uparrow} C [V^{3+\nu+T} [\underbrace{[V^{2+\nu} [V^1 \dots]] }_{\downarrow}]]]]]$$

First, Chain Reduction predicts that the lower copy of νP should be reduced.

- This takes care of copies V^2 and V^1 , since they are inside of this νP .

This leaves V_5 and V_3 , the copies that are apparently pronounced under verb-copying verb phrase topicalization.

- Since these are copies of the same element, they should not be able to be linearized with respect to one another. If irreflexivity holds, then one of these copies should need to be reduced.
- However, as we saw in the passive example in (13), V^5 does not form a chain with V^3 . Thus, neither copy licenses the reduction of the other.
- Despite the fact that they should cause a linearization paradox, the structure is still pronounceable.

To further complicate matters, the posited blindness of Chain Reduction actually predicts that V^5 should be reduced.

- Under Nunes's system, we expect V^5 to be reduced because V^3 will license the the reduction of V^2 (assuming that Chain Reduction targets the V° that is a sister to ν°).
- This is a direct result of what Nunes says for passive subjects in remnant movement (13).
- Indeed, reduction of V^5 would solve the linearization paradox, but it makes the wrong empirical prediction!

So there are two problems:

- The two copies of the verb should not be linearizable.
- It is predicted that one copy should be reduced when neither is.

Nunes's approach to multiple copies in remnant movement relies on the idea that the certain complex heads can be MORPHOLOGICALLY REANALYZED.

- This causes material internal to a (morphological) word to become invisible to the linearization process, and therefore, invisible to Chain Reduction.
- Nunes thus proposes that the the $V^{\circ}+\nu^{\circ}+T^{\circ}$ complex in the topicalized νP is morphologically reanalyzed.
- This means that V^3 is rendered invisible to chain reduction and therefore there is no reason to reduce V^2 . Since V^2 is not targeted for reduction, V^5 is not targeted for reduction.

The problem is that there is no way to predict what will be morphologically reanalyzed and what will not be (Bastos 2001:117).

- It cannot be that V° -to- T° movement always invokes reanalysis, since V° -to- T° movement triggers the deletion of the verb when there is no νP topicalization:

(19) *O João lavou lavar o carro.
the João washed wash.INF the car.

- Why should $V^{\circ}+\nu^{\circ}+T^{\circ}$ be reanalyzed only when there is verb phrase topicalization?
- Reanalyzing $V^5+\nu$ instead is similarly problematic.⁴

Ultimately, reanalysis is invoked only when it is necessary to explain why two things are pronounced.

- Nunes proposes that if morphological reanalysis occurs, then multiple copies of a head will be pronounced.
- But his analysis actually works in reverse: If two copies are pronounced, then the conclusion is that one of them must have been Morphologically Reanalyzed.
- Without any independent evidence that reanalysis occurs, this is practically equivalent to simply stating which copies will be pronounced – the problem that we are trying to explain!

⁴ Bastos (2001:126) proposes that $V^5+\nu$ is reanalyzed, claiming that the post-syntactic process that introduces infinitival morphology in the fronted νP induces Morphological Reanalysis of the verb. The problem with this is that passive morphology is doubled when passive νP s are fronted, and it is not possible to have infinitives in this case (7). Furthermore, if the verb underwent reduction, it would not need to receive the infinitival morphology in the first place. Landau (2006) suggests that pronunciation of the verb in the fronted νP in Hebrew is the result of a phonological requirement that the verb receive a characteristic intonation associated with topicalization, but it is not clear that this generalizes beyond Hebrew.

4.3 Summary: Why non-movement is better than movement

The reason the Conflation approach fares better than the copy-theoretic approach is because the latter generates so many additional copies of the verb.

- Under the copy-theoretic approach, we have to remove certain copies of the verb from the linearization computation to avoid linearization paradoxes.
- The Conflation approach sidesteps this by generating fewer copies of the verb. The linearization paradoxes do not arise.

Under the CTM, we are forced to stipulate which copies are removed from the computation.

- This is what Morphological Reanalysis does, but there is no principled way of determining which copies will be reanalyzed and which will not.
- The CTM approach basically requires us to state that some copy will be reanalyzed and to stipulate which one.

Thus, this is not just a parsimony argument! The Conflation approach is not just simpler than the the copy-theoretic approach.

- Under Conflation, verb-copying verb phrase topicalization is predicted without any need for Morphological Reanalysis.
- Phonological features percolate up the tree. But the heads to which they percolate remain distinct since they are not copies.
- Since the heads are distinct (not copies), we do not run into the linearization paradoxes that are found if head movement is copy theoretic.

Approaches other than Conflation should work similarly, although they may need further modification.

- If head movement is at PF, as Chomsky (2001) suggests, then this should work just as well assuming that PF movement is not copying.

- I'm am less sure about an approach like Brody's (2000) Mirror Theory – it remains unclear to me how phrasal movement of part of the head-complement structure would interact with the principle Mirror – but in principle this ought to work, too, since heads do not move.
- Platzack's (2013) Agree- and EPP-based formulation of head movement effects works similarly to Conflation. However, it relies on an EPP feature on one of the heads to trigger pronunciation of the head chain on that head. Some modification would need to be made to allow for double pronunciation of the verb. It is not clear to me that this is formulable without losing some of the key insights of Platzack's approach.

5 Excursus on Germanic

Germanic languages present a problem in that V₂ typically requires movement of the verb to C° in matrix clauses.

- Yet, when there is *v*P movement, main verbs do not get stranded in C°.
- Instead, there is *do*-support.⁵

- (20) [Einen guten Charakter besitzen] tut der Klaus auf alle Fälle.
 a good character own.INF does.PRES the Klaus in any cases
 'Klaus has a good character in any case.' [German, Bayer 2008]
- (21) [Vaskede bilen] gjorde / *vaskede Jasper *t_{VP}*.
 wash.PST car.DEF do.PST / wash.PST Jasper
 'Wash the car, Jasper did.' [Danish, Houser et al. 2006]

This is actually a problem regardless of whether head movement is modeled under the CTM or under some non-movement approach.

- Nothing about either theory obviously accounts for the Germanic facts, but *v*P topicalization and verb movement are somehow incompatible in these languages.
- It is unclear why verb movement to C° in Germanic should behave differently from verb movement to T° in other languages.

⁵ Germans appear to vary with regard to whether they find (20) acceptable.

⁶ This would also block head movement in copy-theoretic approaches. However, copy-theoretic approaches may have other options open to them. In LaCara (In Prep), I discuss the possibility that freezing effects can explain the Germanic data if head movement is derived by copying.

Under the Conflation approach, we expect the features associated with V to conflate all the way up to C° in V₂ contexts as the tree is built.

- Furthermore, assuming German has V°-to-T° movement (Vikner 1995), features should normally conflate to T° as well.
- There must be some way of account for the lack of verb movement in Germanic VPF constructions.

A simple solution that is compatible with Conflation is to posit that an auxiliary is necessary to license VPF in Germanic (Houser et al. 2011).⁶

- When there is no other auxiliary, the numeration will have to include *do* (*tun* in German, *gøre* in Danish) or the derivation will not converge (see Haddican 2007).
- Assuming that *do* is inserted above *v*°, it will block main verb movement to T°.

It would remain a mystery, however, why main verbs cannot be stranded as in other languages.

- Why shouldn't any of the languages in (1)–(4) have the same requirement?
- Why should the auxiliary–main verb distinction matter here?

6 Conclusion

If head movement is treated as copying, then the analysis of verb-copying verb phrase topicalization runs into a number of confounds to Nunes's (2004) theory of Chain Reduction.

- There is no principled way to account for why multiple copies of the verb can be pronounced.
- Can Morphological Reanalysis be dispensed with in other conditions?

Theories that treat head movement effects as the result of some non-movement process fare much better because they do not generate as many copies of the verb.

- I have shown here that Harley's (2004) Conflation approach to head movement allows us to avoid the stipulations required of the copy-theoretic approach assumed by Nunes.

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