

Unifying Long Head Movement with Phrasal Movement: A New Argument from Spellout

Karlos Arregi and Asia Pietraszko

1. The place of Long Head Movement in the typology of movements

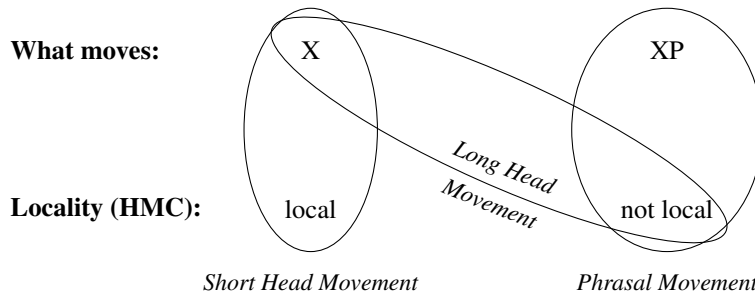
Long head movement (LHM) shares properties of both short head movement (Short HM) and phrasal movement. While it specifically targets heads, it does not obey the strict locality conditions that Short HM is subject to, such as the Head Movement Constraint (HMC, Travis 1984). A well-known case of LHM is V-fronting in Breton (Anderson 1981, Stephens 1982, Borsley et al. 1996, Schafer 1994, Roberts 2010, Jouitteau 2012). In the following example, the moved verb *hadet* crosses the auxiliary *neus* (all Breton examples are in Standard Breton, unless otherwise noted):

- (1) *Long head movement (V-fronting) in Breton*
- \swarrow
Hadet neus <hadet> hon familh ar gwinizh.
planted 3.have <planted> our family the wheat
 ‘Our family has planted wheat.’

Schafer 1994:197

As represented in the following figure, LHM thus occupies a specific place in the typology of movements:

- (2) *LHM in the typology of movement types*



In movements other than LHM, there is a correlation between what moves and locality: heads move locally (obeying the HMC), but phrases do not. Given this correlation, there is no obvious place in the theory for LHM, which has mixed properties. We present an argument that LHM and phrasal movement are instances of the same operation (Move, or Internal Merge).

The argument is based on the novel observation that V-fronting in Breton has the same spellout possibilities as VP-fronting crosslinguistically (section 2). As represented below, these possibilities are deletion of the lower copy (*simple* fronting), doubling, and *do*-support:

- (3) *VP-fronting and V-fronting have the same spellout options crosslinguistically*

	VP-fronting	V-fronting
Simple:	[_{VP} verb ...] ... ∅	[_V verb] ... ∅
Doubling:	[_{VP} verb ...] ... verb	[_V verb] ... verb
Do-support:	[_{VP} verb ...] ... do	[_V verb] ... do

* Karlos Arregi, The University of Chicago, karlos@uchicago.edu. Asia Pietraszko, University of Rochester, asia.pietraszko@rochester.edu. We'd like to thank audiences at the Morphology and Syntax Workshop at the University of Chicago and at WCCFL 38 for useful feedback.

In sections 3–5, we develop an analysis of these facts based on the hypothesis that LHM and phrasal movement are instances of the same operation. Although the parallel above is evidence for the unification of LHM and phrasal movement, it is *not* an argument to conflate head and phrasal movement more generally. Instead, the spellout evidence tells us that, while LHM and phrasal movement *are* the same operation, Short HM is a different operation (section 6). This in turn means that Short HM and LHM must be distinct operations, as proposed in Hein 2018, Harizanov & Gribanova 2019, and Arregi & Pietraszko, to appear.

2. Breton V-fronting is the same operation as phrasal movement: a new argument

The three spellout possibilities in (3) are illustrated for VP-fronting in the following examples:¹

- (4) **Simple:** *Single V in fronted position (compound tenses)*
 [VP **gemt** den særligt godt] tror jeg nu ikke de har <VP>
 [VP **hidden** it particularly well] think I now not they have <VP>
 ‘I don’t think they have hidden it very well.’ Danish (Mikkelsen 2011:86)
- (5) **Doubling:** *Infinitival V copy in fronted position, unfronted finite V copy*
 [VP **ogłądać** mecz] **ogłada-ł**am <VP>
 [VP **watch.INF** game] **watch-PST.1SG** <VP>
 ‘Watch the game, I did.’ Polish
- (6) **Do-support:** *Infinitival V copy in fronted position, unfronted finite do*
 [VP **watch** the game] I **did** <VP> English

V-fronting in Breton displays exactly the same range of spellout options. Simple fronting occurs in compound tenses, while simple tenses trigger doubling or *do*-support. The choice between the latter two is lexically determined and varies across dialects, with a strong preference for *do*-support (Jouitteau 2012):²

- (7) **Simple in compound tenses (perfect, passive)**
 [V **Hadet**] neus <V> hon familh ar gwinizh.
 [V **planted**] 3.have <V> our family the wheat
 ‘Our family has planted wheat.’ Schafer 1994:197
- (8) **Doubling in simple tenses for some verbs/dialects**
 [V **Mont**] a **yan** <V> d’ ar jardin.
 [V **go.INF**] PRT **go.PRS.1SG** <V> at the garden
 ‘I’m going into the garden.’ Quimperlé Breton (Jouitteau 2012:136)
- (9) **Do-support in simple tenses for all verbs/dialects**
 [V **Koll**] a **reas** <V> ar martolod e gasketenn.
 [V **lose.INF**] PRT **do.IPFV** <V> the sailor his cap
 ‘The sailor lost his cap.’ Stephens 1982:112

The parallel between VP-fronting and V-fronting holds even down to inflectional detail:

- | | | | | |
|------|---------------------|---|-------------|-----------------|
| (10) | Simple: | [_{V(P)} verb.PTCP ...] | ... aux.FIN | ∅ |
| | Doubling: | [_{V(P)} verb.INF ...] | ... | verb.FIN |
| | <i>Do</i> -support: | [_{V(P)} verb.INF ...] | ... | do.FIN |

¹ We follow the Leipzig Glossing Rules (<https://www.eva.mpg.de/lingua/resources/glossing-rules.php>). The abbreviation ‘PRT’ in some Breton examples is for a second-position particle (see e.g. Schafer 1994).

² The reason why we are not comparing V-fronting to VP-fronting in Breton is that the latter has been shown to not exhibit connectivity effects characteristic of movement (in particular, between the fronted main verb and the clause-internal auxiliary in compound tenses). See Anderson 1981, Stephens 1982:162–192, and Schafer 1994:232–269 for the argument and different analyses.

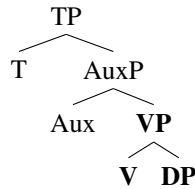
In simple fronting of both V and VP, the fronted verb is a participle in a compound tense and the finite auxiliary is stranded in a clause-internal position. Doubling involves a fronted infinitive and a finite form of the same verb clause-internally – again for both V- and VP-fronting. Finally, *do*-support is the same as doubling for both V- and VP-fronting, except that the clause-internal finite verb is a finite form of *do*.

This close parallel in the spellout options for V- and VP-fronting strongly suggest LHM and phrasal movement are the same operation Move, the difference being only in the type of constituent that's targeted. In the following sections, we account for all these parallels based on a particular implementation of this hypothesis.

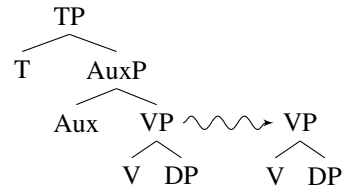
3. Simple fronting under Aux: Move of V(P)

Simple fronting under auxiliaries is an automatic consequence of analyzing V- and VP-fronting as instances of Move. Under the Copy Theory of Movement (Chomsky 1993, Nunes 2004), Move is a composite operation consisting of three components: Copy of the movement target, Merge of the new copy in a higher position, and marking the lower copy for deletion (on the latter see Saab 2008, 2017 and Arregi & Pietraszko, to appear). In the representations below, the copy marked for deletion is subscripted with \emptyset . The following is the derivation of simple VP-fronting sentences such as (4):

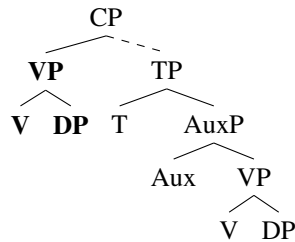
(11) *VP starts as complement of Aux*



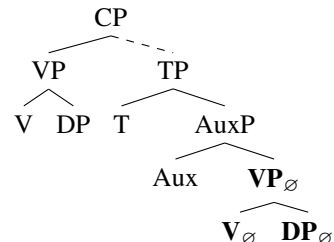
(12) *Copy VP*



(13) *Merge new copy in higher position*

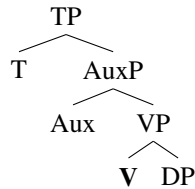


(14) *Mark lower copy for deletion*

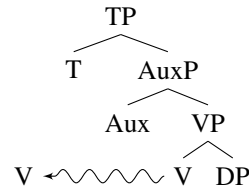


Simple V-fronting, such as (7), has the same derivation, except that Move applies to V, not VP:

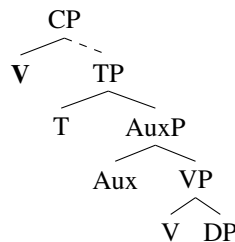
(15) *V starts as the head of VP*



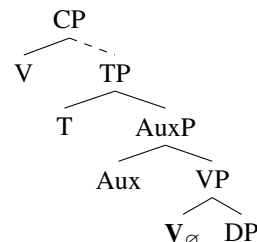
(16) *Copy V*



(17) *Merge new copy in higher position*



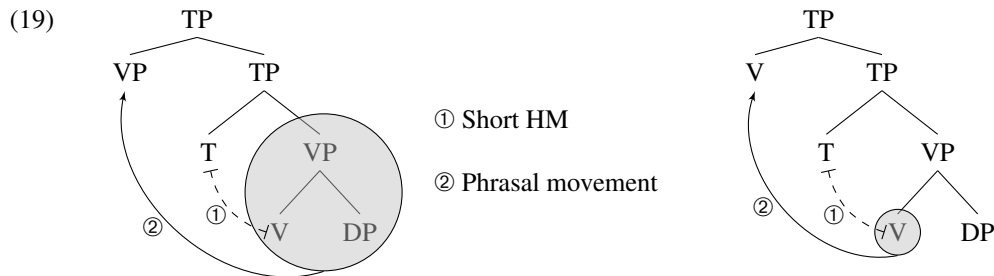
(18) *Mark lower copy for deletion*



Thus, simple fronting is the direct result of Move: Only the fronted copy of the verb surfaces because Move involves non-pronunciation of lower copies.

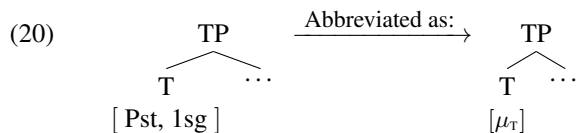
4. Doubling: Move of V(P) after Short HM of V to T

The doubling spellout option for V(P)-fronting involves two surface copies of the verb: the fronted one in nonfinite form, and a clause-internal finite form. Based on Nunes 2004, Saab 2008, and Arregi & Pietraszko, to appear, we assume that this is the result of a particular type of interaction between Move and Short HM:

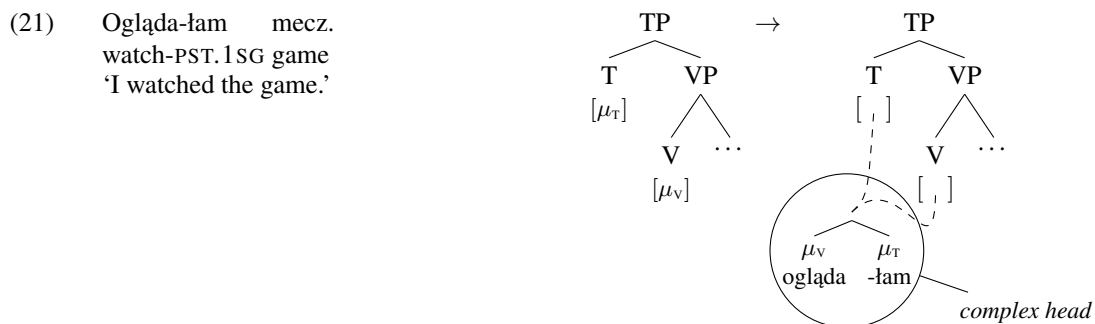


Due to this interaction, a copy of V is pronounced in the fronted position, and another one in T.

We implement this analysis in terms of a formalization of Short HM as Generalized Head Movement (GenHM, Arregi & Pietraszko 2018, to appear). This theory is based on the idea that Short HM targets a subset of the features on a terminal node, not the entire node. This subset is referred to as the *phonological signature* in Harley 2004, or *morphological features* in our previous work, represented here as μ . These features are the ones responsible for the exponence of the terminal, and exclude purely syntactic features such as EPP. For any syntactic terminal X , μ_X is its set of morphological features, as illustrated here for a past tense first singular T:



GenHM relates two heads by concatenating their μ features, as exemplified below with a Polish finite verb:



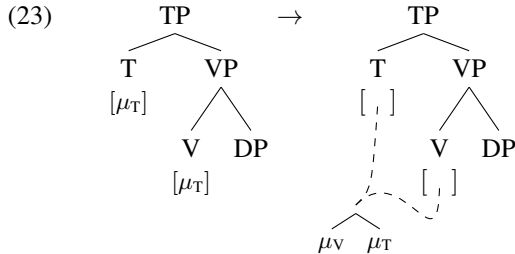
As represented above, GenHM is not copying or displacement, but feature sharing. A single object (the *complex head*) formed with the morphological features of the two terminals is associated with both terminals (V and T above). The shared complex head is pronounced in one of the associated positions, which is determined parametrically: in V in English, and in the highest terminal in Polish (T in this case). This unification of head raising and lowering is argued for in our work cited above.

GenHM in combination with Move derives doubling in VP- and V-fronting in a uniform way. Consider first VP-fronting in Polish:

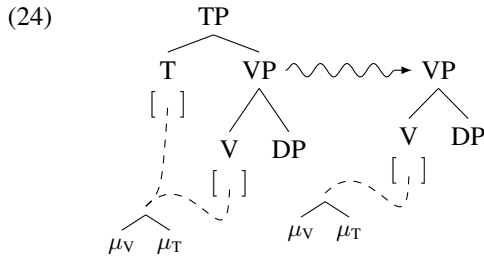
- (22) $\left[\begin{array}{l} \text{VP} \\ \text{VP} \end{array} \right. \left. \begin{array}{l} \text{oglądać} \\ \text{watch.INF} \end{array} \right. \text{mecz} \left. \begin{array}{l} \text{ogląda-łam} \\ \text{watch-PST.1SG} \end{array} \right. \langle \text{VP} \rangle$
 ‘Watch the game, I did.’

Polish

The first step is GenHM relating V and T:

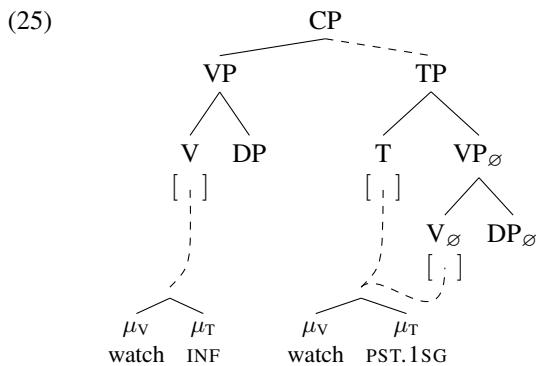


If the derivation ended here, one copy of the verb would surface, as in examples without fronting (21). To derive VP-fronting, Move first creates a copy of VP:



At the point that Move applies to VP, the morphological feature set of V is not just μ_V , but the $\mu_V\text{-}\mu_T$ complex. The copy of VP created by Move involves copying the entire VP structure down to the features in all its terminals, which include the $\mu_V\text{-}\mu_T$ complex in V. Thus, Move creates two copies of the verbal complex head, which is ultimately responsible for the doubling effect.

Next, Move merges the new copy of VP at the root, and marks the lower copy for deletion:



The result is two copies of the verb, that is, two copies of the complex head: one in the fronted VP, and a clause-internal one pronounced in T. In both simple fronting (14) and in doubling (25), the lower V copy is marked for deletion, so its morphological features are not pronounced in V. In simple fronting, this is the only position the morphological features of V are associated with, so no clause-internal copy of the verb is pronounced. What’s different in doubling is that μ_V is linked to T, which is not part of the constituent marked for deletion. The complex head is therefore pronounced clause-internally in T.

Another important aspect of doubling is that the fronted copy of the verb has infinitival form. In much previous work, this is taken to be due to the absence of inflectional material in this copy (e.g. Landau 2006, Jouitteau 2012). In Arregi & Pietraszko, to appear, we argue that infinitival inflection in V(P)-fronting is in fact the spellout of μ_T in the fronted position, albeit in a defective form. The trigger

for this defective spellout is that in the fronted V(P), μ_T is not associated with T:

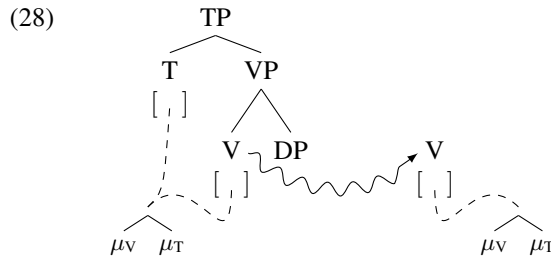
- (26) *Defective spellout*³
 If μ_X is not linked to X, it's spelled out defectively.

In the clause-internal copy of VP, μ_T is linked to T, and is thus spelled out normally. On the other hand, μ_V is linked to V in both copies of the moved element, and is thus pronounced normally in both, giving rise to doubling. We will see in the next section that defective spellout may target μ_V as well, resulting in *do*-support instead of doubling.

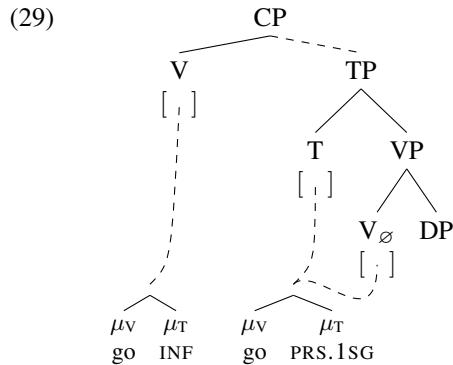
Doubling in V-fronting, illustrated in (27), has the same derivation, except that Move applies to V, not VP:

- (27) **Mont a yan** d' ar jardin.
go.INF PRT go.PRS.1SG at the garden
 'I'm going into the garden.' Quimperlé Breton (Jouitteau 2012:136)

After the initial step of GenHM between V and T, Move targets the V head alone. At the point that Move applies, V is associated with the μ_V - μ_T complex head, which therefore is copied by Move:



Move then merges the new copy of V at the root, and marks the lower one for deletion:



As with VP-fronting, a copy of the verb surfaces in the fronted position and another one in T, but μ_T is spelled out defectively as an infinitive in the fronted copy, as it's not linked to T in that position.

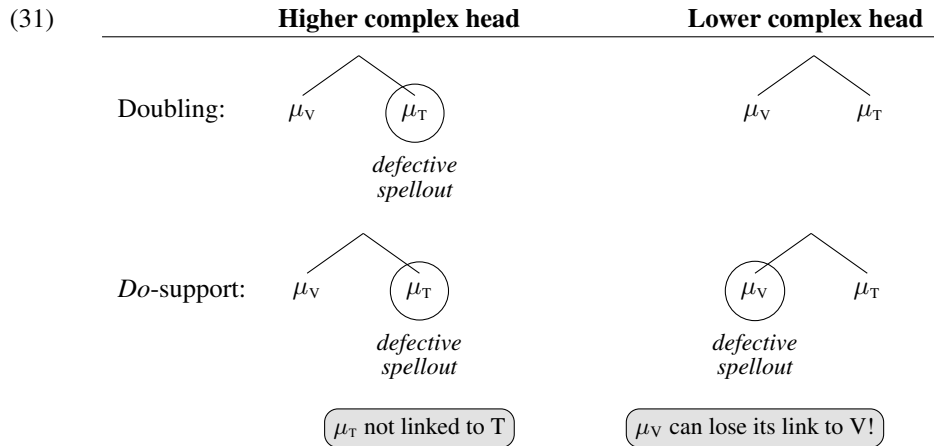
To summarize, the analysis accounts for all the parallels found in the doubling versions of V- and VP-fronting:

(30) <i>property of V(P)-fronting</i>	<i>explanation</i>
fronted verb is an infinitive	μ_T not linked to T in higher complex head
clause-internal verb is finite	μ_T is linked to T in lower complex head
the verb is doubled	μ_V is linked to V in both complex heads

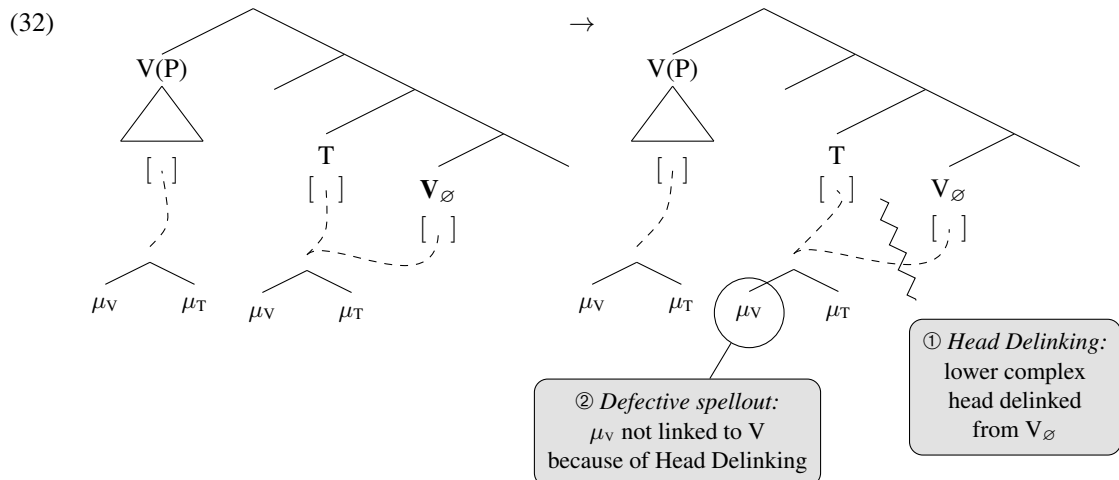
³ This is an informal statement of the analysis proposed in Arregi & Pietraszko, to appear. In that work, morphological nodes (μ) are assigned an *orphan* feature [O] when not linked to their corresponding syntactic terminals, and this feature can be targeted by morphological rules that have an effect on exponence.

5. *Do*-support: It's just doubling!

We propose that the *do*-support spellout option has the same syntax as doubling, with one difference in spellout: The lower copy of V is spelled out defectively as *do*. The difference between doubling and *do*-support is schematized in the following table:



We proposed above that μ_T is pronounced defectively (as infinitival inflection) when it's not linked to T. Similarly, μ_V can be pronounced defectively (as *do*), when it's not linked to V. As shown in the previous section, the reason why μ_T is not linked to T in the fronted copy is that Move targets a constituent that does not contain T (V or VP). The reason why μ_V is not linked to V in the lower copy under *do*-support must be different, since after GenHM and Move, μ_V is linked to V in both positions. However, the lower μ_V is linked to a V that's marked for non-pronunciation. We propose that, in some cases, a complex head is *delinked* from unpronounced nodes:



(33) *Head Delinking*⁴
 Delink a complex head from X_\emptyset .

In Arregi & Pietraszko, to appear, we argue that whether or not a language has *do*-support is an idiosyncratic property of verbs in that language. This is different from the commonly held view that *do*-support correlates with the absence of V-to-T movement in a given language (Breton, for instance, is a language with V-to-T movement and *do*-support). Our analysis of the observed variation in *do*-support is in terms of the Head Delinking rule: Languages with *do*-support are defined as languages in which

⁴ This is a simplification of our analysis in Arregi & Pietraszko, to appear, where we account for a wider range of *do*-support constructions in a number of languages.

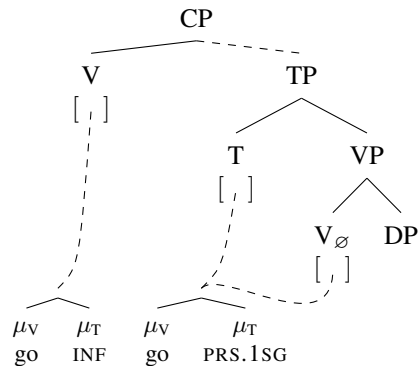
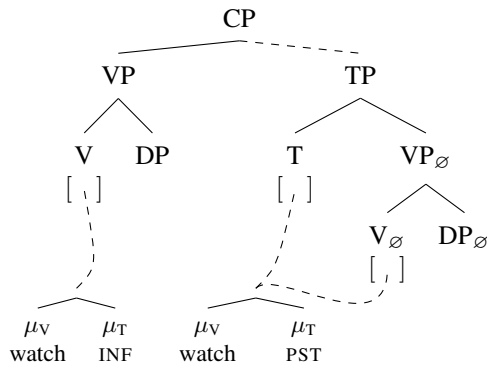
Head Delinking applies to all verbs. Languages without Head Delinking exhibit doubling in parallel configurations. The third language type predicted by this analysis is one in which some verbs trigger delinking and others don't. This is precisely the case in Breton, where both doubling and *do*-support are observed in V-fronting, depending on what verb is used.

In sum, *do*-support is doubling with delinking and defective pronunciation of clause-internal μ_V :

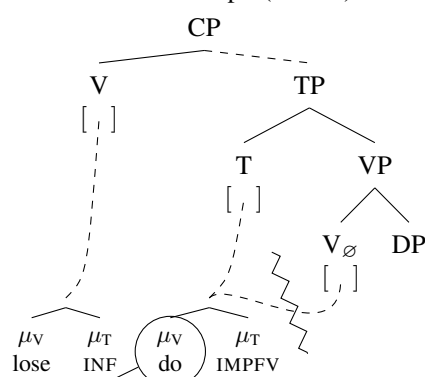
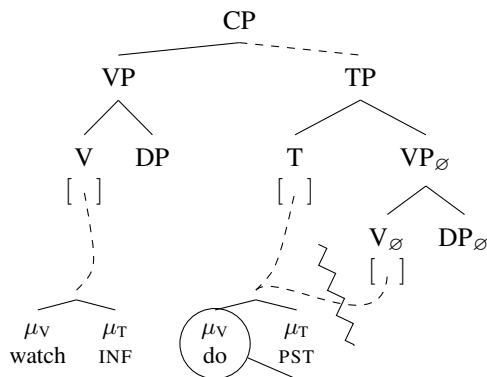
(34)	<i>VP-fronting</i>	<i>V-fronting</i>
<i>No delinking</i>	Doubling in Polish	Doubling in Breton
<i>Delinking</i>	<i>Do</i> -support in English	<i>Do</i> -support in Breton

The following four derivations correspond to each of the cells in the preceding table:

- (35) *VP-fronting without delinking*
ogładać mecz **ogłada-ł**
watch.INF game **watch-PST.1SG**
 'Watch the game, I did.' (Polish)
- (36) *V-fronting without delinking*
Mont a **yan** d' ar jardin.
go.INF PRT **go.PRS.1SG** at the garden
 'I'm going into the garden.' (Quimperlé Breton)



- (37) *VP-fronting with delinking*
Watch the game, I did.
 (English)
- (38) *V-fronting with delinking*
Koll a **reas** ar martolod e gasketenn.
lose.INF PRT **do.IPFV** the sailor his cap
 'The sailor lost his cap.' (Breton)



defective spellout as *do*:
 μ_V not linked to V

Head Delinking is triggered by all verbs in English, by most verbs in Breton (which thus has limited doubling), and by no verb in Polish (which has doubling across the board).

6. From typology of displacements to ontology of movement operations

The preceding pages demonstrate that LHM and phrasal movement show closely parallel behavior in their spellout, which, as we argued, justifies their unification as the same operation, namely Move.

Other parallels between LHM and phrasal movement have previously been taken as evidence that *all* types of head displacement, including Short HM, are instances of the same operation (i.a. Borsley et al. 1996, Roberts 2010). The conclusion we draw from these data is different: As argued above, LHM and phrasal movement are instances of Move, while Short HM is a different operation, namely GenHM.

Arriving at one of these conclusions or the other depends on how the attested typology of movements is mapped onto an ontology of syntactic operations. Recall the typology of movements we discussed in section 1:

(39) *A typology of movements*

	Short HM	LHM	Phrasal Movement
Target:	X	X	XP
Locality:	local	not local	not local

Based on just the two properties of target and locality, the following two ontologies may be posited:

(40) *Target-based ontology*

	Short HM	LHM	Phrasal Movement
Target:	X	X	XP
Locality:	local	not local	not local
	<i>Head Movement</i>		<i>Phrasal Movement</i>

(41) *Locality-based ontology*

	Short HM	LHM	Phrasal Movement
Target:	X	X	XP
Locality:	local	not local	not local
	<i>GenHM</i>	<i>Move</i>	

If operations are defined based on the type of the moved element (target), as in (40), Short HM and LHM are classified as the same operation, to the exclusion of phrasal movement. If, on the other hand, the classificatory principle is the type of locality involved (41), then LHM and phrasal movement are instantiations of the same operation, to the exclusion of Short HM. In this paper, we assume the locality-based ontology, with the operations being Move and GenHM, respectively.

The evidence for unifying LHM and phrasal movement presented here has different implications for the theory of movement, depending on the ontology assumed. In a target-based ontology, Short HM and LHM are assumed to be the same operation, hence the unification of the latter with phrasal movement entails the unification of *all* displacements under a single operation, as proposed, for instance, in Matushansky 2006, Roberts 2010, and Preminger 2019. In the locality-based ontology adopted here, it is still possible to maintain the two different operations of Move and GenHM, as evidence for unifying LHM and phrasal movement simply supports the classification presupposed by the ontology. The latter kind of approach is defended in Hein 2018, Harizanov & Gribanova 2019, and Arregi & Pietraszko, to appear.

The reason to adopt a locality-based ontology and therefore a distinction between Short HM and other types of movement (LHM and phrasal movement) is that the overarching unification entailed by the target-based ontology leads to wrong predictions. More specifically, there are a number of differences between Short HM and phrasal movement discussed in previous literature (other than locality and target) that speak against this unification. First, there are specific configurations that lead to doubling in the case of Short HM, but not phrasal movement. The type of remnant movement configuration described in section 4 is one of them, but there are others (see Nunes 2004, Saab 2008, 2017, LaCara 2016, and Harizanov & Gribanova 2017). Second, the two types of movement display different behavior with respect to the identity condition on ellipsis (i.a. McCloskey 1991, Goldberg 2005, Saab 2008, Gribanova 2013, in preparation). Finally, Short HM has a downward version, but phrasal movement doesn't (see

Harizanov & Gribanova 2019, Arregi & Pietraszko, to appear).

On the other hand, a locality-based ontology allows for these differences between Short HM and phrasal movement. It furthermore makes the prediction that LHM should align with phrasal movement with respect to the three properties described above, a prediction that remains to be verified. In any case, in light of the differences between Short HM and phrasal movement, parallels between LHM and phrasal movement are ultimately an argument for a locality-based ontology of movement operations.

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