

On the correlation of V(P) fronting and verb doubling/*do*-support*

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Claim: I claim that the typology of gap avoidance strategies in verbal fronting, i.e. verb doubling vs. *do*-insertion, can be derived by the interaction of the order of the post-syntactic operations head movement (HM) and copy deletion (CD) with the type of movement involved in verb fronting, i.e. remnant phrasal movement vs. \bar{A} -head movement. HM > CD consistently results in verb doubling, while CD > HM consistently leads to *do*-insertion except for when verb fronting involves \bar{A} -head movement which gives rise to exceptional verb doubling.

Outline

1. Introduction
2. A new pattern: Asante Twi and Limbum
3. Some properties of verbal fronting in Asante Twi and Limbum
4. Summary and prediction

1 Introduction

- Verbal fronting is a widespread phenomenon cross-linguistically and refers to a construction in which a verbal constituent (i.e. the verbal head or the whole verb phrase) has undergone movement into the left periphery of the clause. It often expresses verbal topicalization or focus. The fronted constituent is usually called the head while the following sentence is often referred to as the tail of the fronting.
- The phenomenon is well-known from German(ic) V(P) fronting as in (1)
 - (1) a. [gelesen] hat den Artikel wieder mal keiner
read.PTCP has the article again no-one
'As for reading, again no-one has read the article.'
 - b. [den Artikel gelesen] hat wieder mal keiner
the article read.PTCP has again no-one
'As for reading the article, again no-one has read (it).'
- However, in examples like (1), as in many examples of verbal fronting in the literature, there is another verbal element (an auxiliary or modal) in the sentence that is stranded by the fronting.

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- In the absence of such an element, two gap avoidance strategies can be observed in the world's languages: (i) A copy of the displaced verb appears in the tail as in Polish (2).

- (2) a. **wypić** (to) Marek **wypije** herbatę, ale nie wypije kawy
 drink.INF TO Marek will-drink tea but not will-drink coffee
 'As for drinking, Marek will drink tea, but he will not drink coffee.'
- b. [**wypić** herbatę] (to) Marek **wypije**, ale nie wypije kawy
 drink.INF tea TO Marek will-drink but not will-drink coffee
 'As for drinking tea, Marek will drink it, but he will not drink coffee.'

(Polish, Bondaruk, 2012: 55)

- Languages that show verb doubling in verbal fronting include Brazilian Portuguese (Bastos-Gee, 2009), Buli (Hiraiwa, 2005), Dagaare (Hiraiwa and Bodomo, 2008), Hebrew (Landau, 2006), Krachi (Kandybowicz and Torrence, 2016), Mani (Childs, 2011), Nupe (Kandybowicz, 2008), and many others.

- (ii) A semantically vacuous dummy verb appears in the tail as in German (3).

- (3) *German dummy verb insertion* (Diedrichsen, 2008: 221)

- a. **waschen tut** er das Auto nie
 wash.INF does he the car never
 'He never washes the car.'
- b. [das Auto **waschen**] **tut** er nie
 the car wash.INF does he never
 'Something that he never does is wash the car.'

- Languages that show dummy verb insertion (*do*-support) in verbal fronting include Dutch (Broekhuis and Corver, 2016), Norwegian (Lødrup, 1990), Skou (Donohue, 2004), Swedish (Källgren and Prince, 1989; Platzack, 2012), Wolof (Torrence, 2013b,a), and others.

- The type of repair is not dependent on whether the fronted constituent receives a focus or topic reading. As shown in (4), cross-classification of the two factors gives rise to a four-cell table, where each combination is attested by at least one language.

- (4) *Cross-classification of repair and information structural function*

	FOC	TOP
verb copy	Nupe, Buli	Polish, Hebrew
dummy verb	Hausa, Wolof	German, Swedish

- At first sight, there also seems to be no correspondence between the type of fronting (verb or verb phrase) and the type of repair (verb doubling or dummy verb insertion). Rather, if a language shows verb and verb phrase fronting, the repair seems to be the same for both (5).

(5) Typology of repair patterns in verbal fronting (incomplete)

	Fronted element		
	Verb	Verb phrase	Languages
I	verb copy	verb copy	Polish, ...
II	dummy verb	dummy verb	German, ...
III	verb copy	dummy verb	—
IV	dummy verb	verb copy	—

2 A new pattern: Asante Twi and Limbum

- However, new data from verbal fronting in Asante Twi suggest that it is possible to have two different repairs for the two types of fronting. In Asante Twi, verb fronting triggers verb doubling (6-a) whereas verb phrase fronting gives rise to dummy verb insertion (6-b). The interpretation is one of contrastive focus.

- (6) a. **sí(-é)** na Kofi á-**sí**/*á-yó dán.
 build-NMLZ FOC Kofi PRF-build/PRF-do house
 ‘Kofi has BUILT a house. (not e.g. bought one)’
- b. [dán **sí**](**-é**) na Kofi *á-sí/á-yó
 house build-NMLZ FOC Kofi PRF-build/PRF-do
 ‘Kofi has BUILT A HOUSE. (not e.g. bought a boat)’ (Asante Twi)

- The same pattern can be found in Limbum, where verb fronting leads to verb doubling (7-a) while verb phrase fronting triggers the insertion of a dummy verb *gī* ‘do’ (7-b). The interpretation is

- (7) a. á r-**yū** (cí) njínwè fō bí **yū**/*gī msāŋ
 FOC 5-buy (COMP) woman DET FUT1 buy/do rice
 ‘The woman will BUY rice.’
- b. á r-[**yū** msāŋ] (cí) njínwè fō bí *yū/**gī**
 FOC 5-buy rice (COMP) woman DET FUT1 buy/do
 ‘The woman will BUY RICE.’ (Limbum)

- However, an investigation into 47 languages that have been reported or documented to show some kind of verbal fronting and/or verb doubling/dummy verb insertion shows that the opposite pattern, namely verb doubling with verb phrase fronting and dummy verb insertion with verb fronting is unattested. Thus we end up with a three-out-of-four typology as shown in (8).

(8) Typology of repair patterns in verbal fronting

	Fronted element		
	Verb	Verb phrase	Languages
I	verb copy	verb copy	Hebrew, ...
II	dummy verb	dummy verb	German, ...
III	verb copy	dummy verb	Asante Twi, Limbum
IV	dummy verb	verb copy	—

- This observation gives rise to the following generalization (9).

(9) *Generalization I*

If a language shows both verb and verb phrase fronting it either exhibits the same repair strategy in both frontings (verb doubling or dummy verb insertion), or verb doubling in verb fronting and dummy verb insertion in verb phrase fronting. The reverse pattern is inexistent.

- Interestingly, the observation that pattern IV is unattested fits well with the observation that within the 47 investigated languages those that only allow either verb fronting, like Nupe (11), or verb phrase fronting, like Norwegian (12), but not both consistently show verb doubling in the former case and dummy verb insertion in the latter. An observation that is formulated as the generalization in (10).

(10) *Generalization II*

- If a language allows only verb fronting it exclusively shows verb doubling as repair.
- If a language allows only verb phrase fronting it exclusively shows dummy verb insertion as repair.

(11) *Nupe* (Kandybowicz, 2008: 79, 86)

- bi-ba** Musa à *(**ba**) nakàn (*ba/*bi-ba) o
RED-cut Musa FUT cut meat cut/RED-cut FOC
'It is CUTTING that Musa will do to the meat (as opposed to say, *cooking*.)'
- *[**du-du** cènkafa] Musa à **du** (cènkafa) o
RED-cook rice Musa FUT cook rice FOC
- *[cènkafa **du-du**] Musa à **du** (cènkafa) o
rice RED-cook Musa FUT cook rice FOC
'It is COOKING RICE that Musa will do.'

(12) *Norwegian* (Siri M. Gjersøe, p.c.)

- *å **lese gjør** han bøk-er hele dag-en
INF read do.PRES he book.PL-PL.INDEF whole day-DEF
'Reading he does to books all day.'
- [å **lese bøk-er**] **gjør** han hele dag-en
INF read book.PL-PL.INDEF do.PRES he whole day-DEF
'Reading books he does all day.'

3 Some properties of verbal fronting in AT and Limbum

3.1 Asante Twi

- \bar{A} -movement

Both verb and verb phrase fronting seem to involve \bar{A} -movement as they can cross finite clause

boundaries (13) and are sensitive to islands such as Complex NP Islands (14), Adjunct Islands (15), and the Coordinate Structure Constraint (16).¹

- (13) a. **sí**(-é) na Ama ká-a [sé Kofí á-**si** dán]
 build-NMLZ FOC Ama say-PST COMP Kofi PRF-build house
 ‘Ama said that Kofi has BUILT a house.’
 b. [dán **sí**](**-é**) na Ama ká-a [sé Kofí á-**yó**]
 house build-NMLZ FOC Ama say.PST COMP Kofi PRF-do
 ‘Ama said that Kofi has BUILT A HOUSE.’

(14) *Complex NP Island*

- a. ***sí**(-é) na mé-ń-té-e [atétésém bíará sɛ Kofí á-**si** dán]
 build-NMLZ FOC 1SG-NEG-hear-PST rumour.PL any COMP Kofi PRF-build house
 ‘I didn’t hear any rumours that Kofi has BUILT a house.’
 b. *?[dán **sí**](**-é**) na mé-ń-té-e [atétésém bíará sé Kofí á-**yó**]
 house build-NMLZ FOC 1SG-NEG-hear-PST rumour.PL any COMP Kofi PRF-do
 ‘I didn’t hear any rumours that Kofi has BUILT A HOUSE.’

(15) *Adjunct Island*

- a. ***sí**(-é) na Kofí nóm nsúó [ésánsé ɔ-a-**sí** dán].
 build-NMLZ FOC Kofi drink water because 3.SG-PRF-build house
 ‘Kofi drinks water because he has BUILT a house.’
 b. *?[dán **sí**](**-é**) na Kofí nóm nsúó [ésánsé ó-á-**yó**]
 house build-NMLZ FOC Kofi drink water because 3.SG-PRF-do
 ‘Kofi drinks water because he has BUILT A HOUSE.’

(16) *Coordinate Structure Constraint*

- a. ***nóm** na Kofí á-di bayéré ne á-**nóm** nsúó
 drink FOC Kofi PFV-eat yam and PFV-drink water
 ‘Kofi has eaten a yam and DRUNK water.’
 b. *[nsúó **nóm**](**-é**) na Kofí á-di bayéré ne á-**yó**
 water drink-NMLZ FOC Kofi PFV-eat yam and PFV-do
 ‘Kofi has eaten yam and DRUNK WATER.’

• *The fronted constituent is V(P), not v(P)*

The verb inside the fronted constituent can neither be marked with negation (17-a, c) nor with aspectual affixes (17-b, d). Taking the phrase structure proposed by Kandybowicz (2015) as a basis, where aspect is located between v and V , this implies that the fronted constituent is a $V(P)$ rather than a $v(P)$.

¹This contradicts Saah and Goodluck (1995), who show that Asante Twi does not exhibit island effects in question formation, relativization, and topicalization. However they only tested cases of \bar{A} -movement from argument positions the island insensitivity of which is, as Korsah and Murphy (2016) argue, due to Asante Twi having obligatory resumption with DP-movement, where resumption can obviate island effects (Borer, 1984). Under certain conditions, i.e. for inanimates, the resumptive pronoun can be deleted making it look like a gap. Consequently, verb doubling and *do*-support in Asante Twi cannot be treated on a par with resumption (i.e. as “verbal resumption”) because one would expect them, as overt resumptive elements, to render the dependency insensitive to islands, contrary to fact.

- (17) a. *n-sí(-é) na Kofí á-(n-)sí dán
 NEG-build(-NMLZ) FOC Kofi PRF-NEG-build house
 ‘Kofi has NOT BUILT a house.’
- b. *á-sí(-é) na Kofí á-si dán
 PRF-build-NMLZ FOC Kofi PRF-build house
 ‘Kofi has BUILT a house.’
- c. *[dán n-sí](-é) na Kofí á-(n-)yó
 house NEG-build-NMLZ FOC Kofi PRF-NEG-do
 ‘Kofi has NOT BUILT A HOUSE.’
- d. *[dán á-sí](-é) na Kofí á-(n-)yó
 house PFV-build-NMLZ FOC Kofi PRF-do
 ‘Kofi has NOT BUILT A HOUSE.’

• *Bare V, not remnant VP*

The object cannot appear neither pre-verbally (18-b) (or before the indirect object in ditransitive constructions (18-d)) nor after low VP-adverbs like *ntem* ‘quickly’ (19-b) which linearize verb phrase finally. There is thus no evidence for remnant VP-creating object movement. Consequently, verb fronting in Asante Twi cannot be remnant verb phrase fronting but must in fact be a case of \bar{A} -head movement (Koopman, 1984; Vicente, 2007, 2009).

- (18) a. Kofí á-si dán
 Kofi PRF-build house
 ‘Kofi has built a house.’
- b. *Kofí dán á-si
 Kofi house PRF-build
 ‘Kofi has built a house.’
- c. Kofí ma-a mmɔ́frá nó ḱrataká
 Kofi give-PST children DET book
 ‘Kofi gave the children a book.’
- d. *Kofí ma-a ḱrataká mmɔ́frá nó
 Kofi give-PST book children DET
 ‘Kofi gave a book to the children.’
- (19) a. Kofí á-si dán ntem
 Kofi PFV-build house quickly
 ‘Kofi has quickly built a house.’
- b. *Kofí á-si ntem dán
 Kofi PFV-build quickly house
 ‘Kofi has quickly built a house.’

• *The verb copy is a genuine repair*

The verb copy in verb fronting cannot be derived from cognate object constructions. Cognate objects are rare in Asante Twi. In fact, my informant could only think of one example involving the verb *sa* ‘dance’ (20-a). A similar construction with a cognate object of the verb *si* ‘build’ and the actual direct object *dán* ‘house’ in the same clause is ungrammatical (20-b).

- (20) a. Kofí sa a-sa
Kofi dance NMLZ-dance
'Kofi dances (a dance).'
- b. *Kofí si a-si dán
Kofi build NMLZ-building house

• *The dummy verb is a genuine repair*

The dummy verb in verb phrase fronting cannot be derived from an independent $\gamma\textcircled{\text{O}}$ -periphrase by moving a nominalized verb phrase complement of the dummy verb $\gamma\textcircled{\text{O}}$ into the left periphery. Example (21) attests to the fact that the putative base construction is ungrammatical.

- (21) a. *Kofí á- $\gamma\textcircled{\text{O}}$ dán sí(-é)
Kofi PFV-do house build-NMLZ
- b. *Kofí dán sí(-é) á- $\gamma\textcircled{\text{O}}$
Kofi house build-NMLZ PFV-do

A related *do*-support-like construction can be observed with *in situ* wh-questions where the questioned element could be a verb phrase. The placeholder verb in this case is $\gamma\acute{\text{e}}$ 'do' (22-a). Even if $\gamma\acute{\text{e}}$ could somehow turn into $\gamma\textcircled{\text{O}}$, this construction may not serve as the independent basis for verb phrase fronting either due to it being ungrammatical with a full nominalized verb phrase in place of the wh-word *déén* 'what' (22-b).

- (22) a. Kofí re- $\gamma\acute{\text{e}}$ déén?
Kofi PROG-do what
'What is Kofi doing?'
- b. *Kofí re- $\gamma\acute{\text{e}}$ dán sí(-é)
Kofi PROG-do house build-NMLZ

3.2 Limbum

• \bar{A} -movement

Both verb and verb phrase fronting may cross finite clause boundaries as shown in (23-b, c) and are sensitive to islands such as the Complex NP Island (24), the Adjunct Island (25), and the Coordinate Structure Constraint (26).

- (23) a. m̀è kwàshī m̀è-nε Nfor bí bō ndāp
1SG think 1SG-COMP Nfor FUT1 build house
'I think that Nfor will build a house.'
- b. á r-**bò** (cí) m̀è kwàshī [m̀è-nε Nfor bí **bō** ndāp]
FOC 5-build COMP 1SG think 1SG-COMP Nfor FUT1 build house
'I think that Nfor will BUILD a house.'
- c. á r-[**bò** ndāp] (cí) m̀è kwàshī [m̀è-nε Nfor bí **gī**]
FOC 5-build house COMP 1SG think 1SG-COMP Nfor FUT1 do
'I think that Nfor will BUILD A HOUSE.'

(24) *Complex NP Island*

- a. m̀è mū yō? [nsūŋ zǐ-nε Nfor bí bō ndāp]
1SG PST2 hear news 3SG-COMP Nfor FUT1 build house

‘I heard a rumour that Nfor will build a house.’

- b. *á r-**bò** (cí) m̀è m̄ yōʔ [nsūŋ zǎ-ne Nfor bí **bō** ndāp]
 FOC 5-build COMP 1SG PST2 hear news 3SG-COMP Nfor FUT1 build house
 ‘I heard a rumour that Nfor will BUILD a house.’
- c. *á r-**[bò ndāp]** (cí) m̀è m̄ yōʔ [nsūŋ zǎ-ne Nfor bí **gī**]
 FOC 5-build house COMP 1SG PST2 hear news 3SG-COMP Nfor FUT1 do
 ‘I heard a rumour that Nfor will BUILD A HOUSE.’

(25) *Adjunct Island*

- a. Nfor à m̄ v̄ ɲkàʔ kàʔ [àndzhōʔ í m̄ sī bō ndāp]
 Nfor 3SG PST2 come party not because he PST2 PROG build house
 ‘Nfor didn’t come to the party because he was building a house.’
- b. *á r-**bò** (cí) Nfor à m̄ v̄ ɲkàʔ kàʔ [àndzhōʔ í m̄ sī **bō** ndāp]
 FOC 5-build COMP Nfor 3SG PST2 come party not because he PST2 PROG build house
 ‘Nfor didn’t come to the party because he was BUILDING a house.’
- c. *á r-**[bò ndāp]** (cí) Nfor à m̄ v̄ ɲkàʔ kàʔ [àndzhōʔ í m̄ sī **gī**]
 FOC 5-build house COMP Nfor 3SG PST2 come party not because he PST2 PROG do
 ‘Nfor didn’t come to the party because he was BUILDING A HOUSE.’

(26) *Coordinate Structure Constraint*

- a. Nfor bí [bō ndāp k̀ir yū nt̀umnt̀um]
 Nfor FUT1 build house and buy motorbike
 ‘Nfor will build a house and buy a motorbike.’
- b. *á r-**yù** (cí) Nfor bí [bō ndāp k̀ir **yū** nt̀umnt̀um]
 FOC 5-buy COMP Nfor FUT1 build house and buy motorbike
 ‘Nfor will build a house and BUY a motorbike.’
- c. *á r-**[yù nt̀umnt̀um]** (cí) Nfor bí [bō ndāp k̀ir **gī**]
 FOC 5-buy motorbike COMP Nfor FUT1 build house and do
 ‘Nfor will build a house and BUY A MOTORBIKE.’

• *The fronted constituent is V(P), not v(P)*

As demonstrated below, neither negation (27) nor any tense (28) or aspect markers (29) may cooccur with the fronted verb (phrase). Assuming that tense and aspectual markers are located in T and *v* respectively this means that the fronted constituent cannot be of these categories. Rather, it must belong to a category that is lower in the phrase structure than both T and *v*. The fronted constituent in verbal fronting in Limbum is hence of the category V.

- (27) a. *á r-**[bò kàʔ]** (cí) Nfor bí **bō** ndāp (kàʔ)
 FOC 5-build NEG COMP Nfor FUT1 build house NEG
- b. *á r-**[bò ndāp kàʔ]** (cí) Nfor bí **gī** (kàʔ)
 FOC 5-build house NEG COMP Nfor FUT1 do NEG

- (28) a. *á r-**[bí b̀ò]** (cí) Nfor (bí) **bō** ndāp
 FOC 5-FUT1 build COMP Nfor FUT1 build house
- b. *á r-**[bí b̀ò ndāp]** (cí) Nfor (bí) **gī**
 FOC 5-FUT1 build house COMP Nfor FUT1 do

- (29) a. *á r-[ce b̀ò] (cí) Nfor (ce) b̀ò ndāp
 FOC 5-PROG build COMP Nfor PROG build house
 b. *á r-[ce b̀ò ndāp] (cí) Nfor (ce) gī
 FOC 5-PROG build house COMP Nfor PROG do

• *Bare V, not remnant VP*

As evidenced by (30) it is not possible to scramble the direct object across the indirect object in a ditransitive constructions. The order where the direct object precedes the indirect object is, like in English, only licit when the indirect object is a PP (31-a). However, in this DP-PP-construction, changing the order of both objects results in ungrammaticality again (31-b). A productive VP-evacuating is thus not available in Limbum. Therefore, verb fronting cannot be movement of a remnant VP. Rather, it must be the case that the fronted verb is a bare head with verb fronting being an instance of \bar{A} -head movement.

- (30) a. Nfor à mū fā Shey bzhī.
 Nfor 3SG PST2 give Shey food
 ‘Nfor gave Shey some food.’
 b. *Nfor à mū fā bzhī Shey.
 Nfor 3SG PST2 give food Shey
 ‘Nfor gave Shey some food.’
- (31) a. Nfor à mū fā bzhī nì Shey
 Nfor 3SG PST2 give food PREP Shey
 ‘Nfor gave some food to Shey.’
 b. *Nfor à mū fā nì Shey bzhī
 Nfor 3SG PST2 give PREP Shey food
 ‘Nfor gave some food to Shey.’

• *The verb copy is a genuine repair*

We find that Limbum indeed exhibits a few verbs that can take cognate objects. One example is the verb *bī* ‘dance’ (32). However, they can only occur with a handful of verbs and do not cooccur with the direct object of a transitive verb. It is, for instance, not possible for the transitive verb *b̀ò* ‘build’ to take a cognate object in addition to its direct object *ndāp* ‘house’ (33). The fronted verb hence cannot be a fronted cognate object.

- (32) Nfor bí bī bī
 Nfor FUT1 dance(V) dance(N)
 ‘Nfor will dance (a dance).’
- (33) *Nfor bí b̀ò (r-)b̀ò ndāp
 Nfor FUT1 build(V) 5-build(N) house

• *The dummy verb is a genuine repair*

A purported base construction with a dummy verb embedding a verb phrase that could be moved into the left periphery is ungrammatical (34).

- (34) a. *njínwè f̀ò bí gī (r-)yū msāŋ
 woman DET FUT1 do 5-buy rice

‘The woman will buy rice.’

- b. *Nfor à mū gī (r-)bò ndāp
 Nfor 3SG PST2 do 5-build house
 ‘Nfor built/did build a house.’

4 An analysis

Preliminaries

- I assume the Copy Theory of movement (Chomsky, 1993, 1995) under which verb doubling can be easily accounted for as being a consequence of spell-out of two copies of the verb (Abels, 2001; Nunes, 2004). Internal Merge thus involves the creation of a copy of an element (modulo its saturated features), which is then externally merged.
- Usually, only one link/copy in a movement chain is pronounced, namely the head of that chain, while the others are left unpronounced (Brody, 1995; Bobaljik, 1995; Groat and O’Neill, 1996; Pesetsky, 1997, 1998; Nunes, 2004). I thus assume an operation copy deletion (CD) that deletes superfluous copies post-syntactically. However, this operation is not triggered by a linearization conflict, but rather applies generally, identifying copies of an element and deleting them according to the definition in (35). For concreteness, I will postulate that copying of an element entails coindexing of the two resulting elements in order to mark them as copies of each other (these indices will be symbolized by superscripted lowercase letters).

(35) Copy Deletion (CD)

In a structure that contains multiple copies $X_1^i, X_2^i, \dots, X_n^i$ of a constituent X (i.e. several elements 1– n that share the same movement-assigned index i) delete every X_m^i that does not fulfill a. or b.

- X_m^i c-commands X_b^i and there is no other X_c^i such that X_c^i c-commands X_m^i , or
- X_m^i is a head (bearing a saturated structure-building feature [$\bullet F \bullet$]).

- Head movement (HM) is a post-syntactic operation (see e.g. Boeckx and Stjepanović, 2001; Hale and Keyser, 2002; Merchant, 2002; Schoorlemmer and Temmerman, 2012; Platzack, 2013; Zwart, 2016). I further assume that post-syntactic movement does not leave any copies (or traces) (Boeckx and Stjepanović, 2001; Sauerland and Elbourne, 2002).
- There is also \bar{A} -head movement in the syntax (Koopman, 1984; Landau, 2006; Vicente, 2007, 2009) such that a head can be moved into a specifier position.

Proposal

- Following a recent line of research on the order of application of operations in both syntax and post-syntax (Müller, 2009; Arregi and Nevins, 2012; Schoorlemmer, 2012; Georgi, 2014; Murphy and Puškar, 2015; Puškar, 2015; Assmann et al., 2015), I propose that there is a strict language-specific order of operations between copy deletion and head movement in the post-syntax.
- When HM applies before CD, V can head-move out of the low VP copy to T/C and evade deletion giving rise to verb doubling (counter-bleeding).

- When CD applies before HM, V is deleted as part of the low VP copy and subsequent head movement applies vacuously (bleeding). In order to express finiteness of the clause, a dummy verb is inserted into T/C to host inflectioal affixes.
- Languages where verb fronting is \bar{A} -head movement rather than remnant VP movement show verb doubling independent of the order of operations because by clause b. of copy deletion (35) prevents low copies in head position from being deleted.

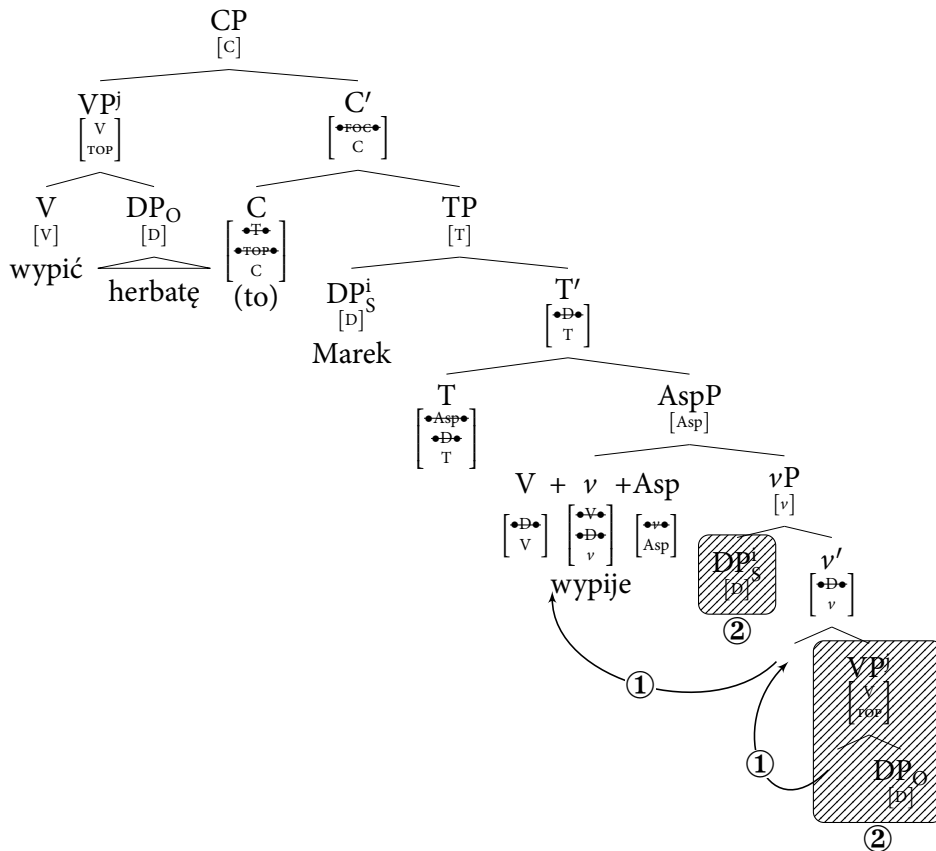
(36) Effect of order of operations in verbal fronting

Moved item	Order of post-syntactic operations		Surface
	HM > CD	CD > HM	
full verb phrase	verb doubling	dummy verb insertion	verb phrase fronting
remnant verb phrase	verb doubling	dummy verb insertion	verb fronting
bare verb	verb doubling	verb doubling	verb fronting

4.1 Verb phrase fronting

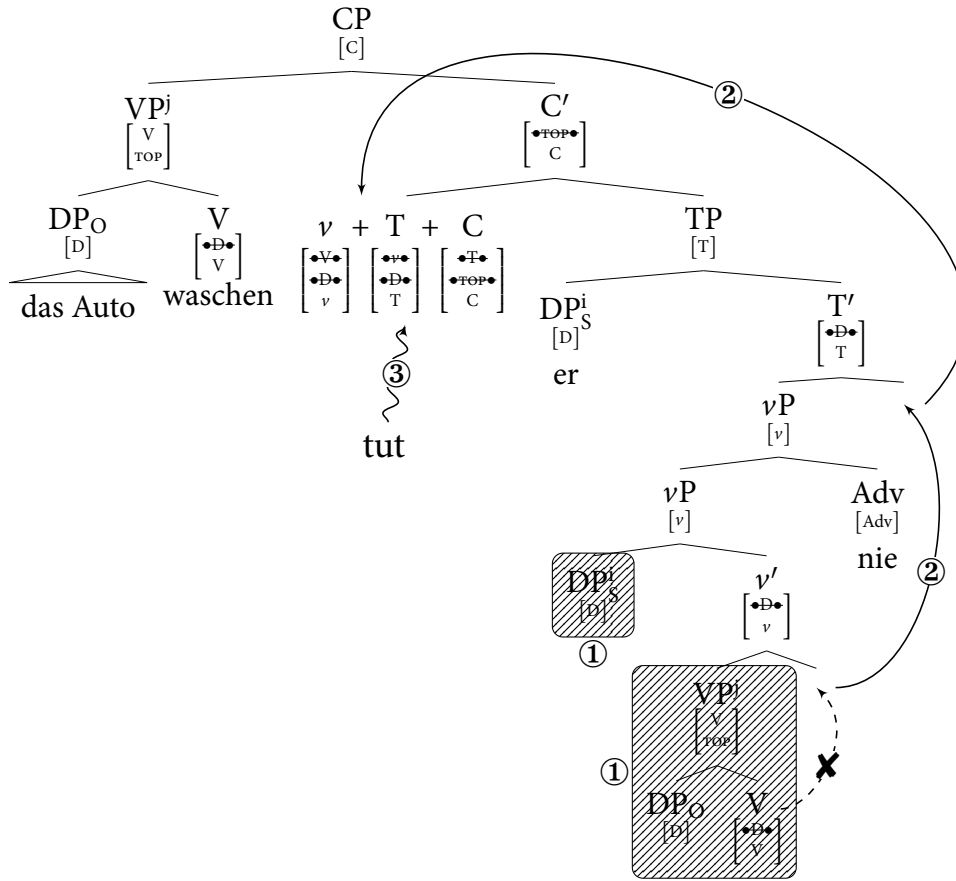
- If HM > CD, we find that given that V-to-some higher functional head movement exists in the language, the verb leaves the low copy of VP before it is deleted (counter-bleeding). There are thus two copies of V in the structure which results in verb doubling on the surface (37).

(37) *Polish verb phrase fronting: Post-syntax (HM > CD)*



- If CD > HM, the low copy of V is deleted as part of the lower VP copy, before it undergoes head movement (bleeding). A dummy verb is inserted as a host for inflection in T/C (38).

(38) German verb phrase fronting: Post-syntax (CD > HM)

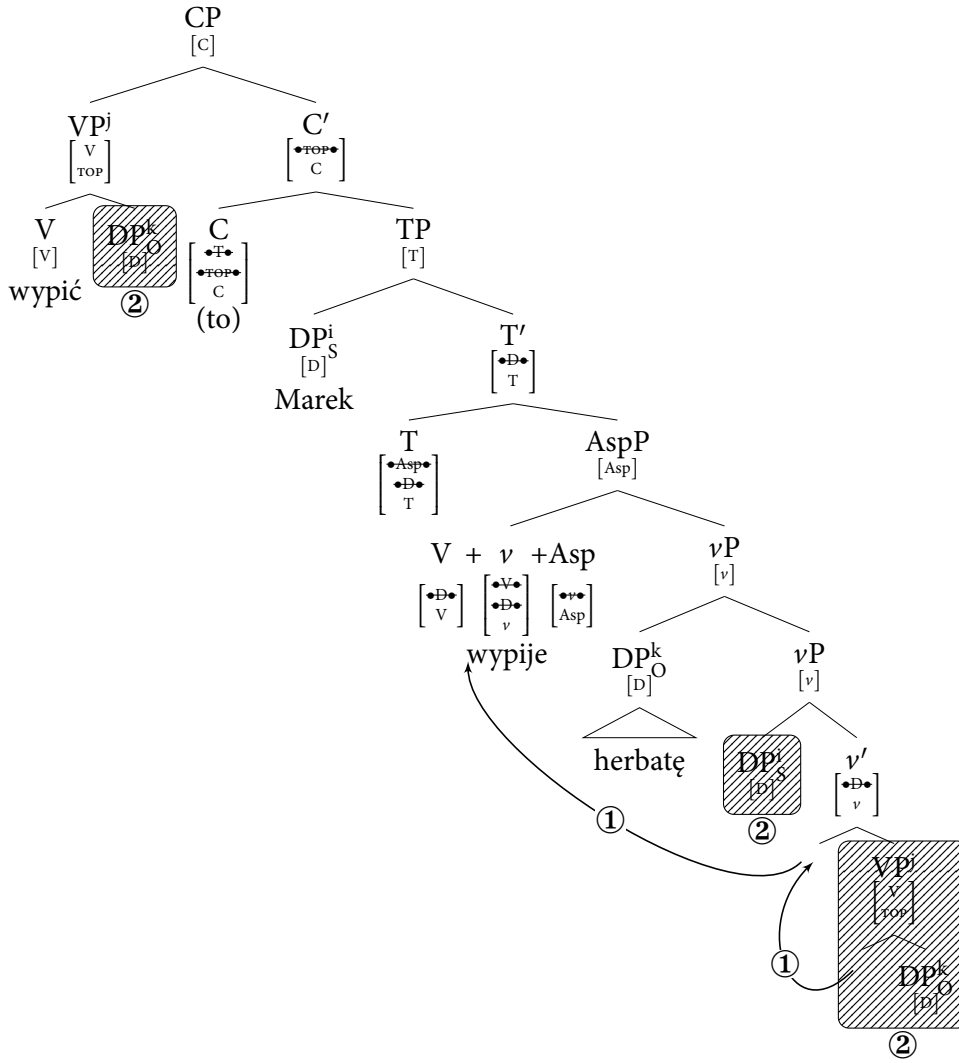


4.2 Verb fronting

4.2.1 Remnant VP movement

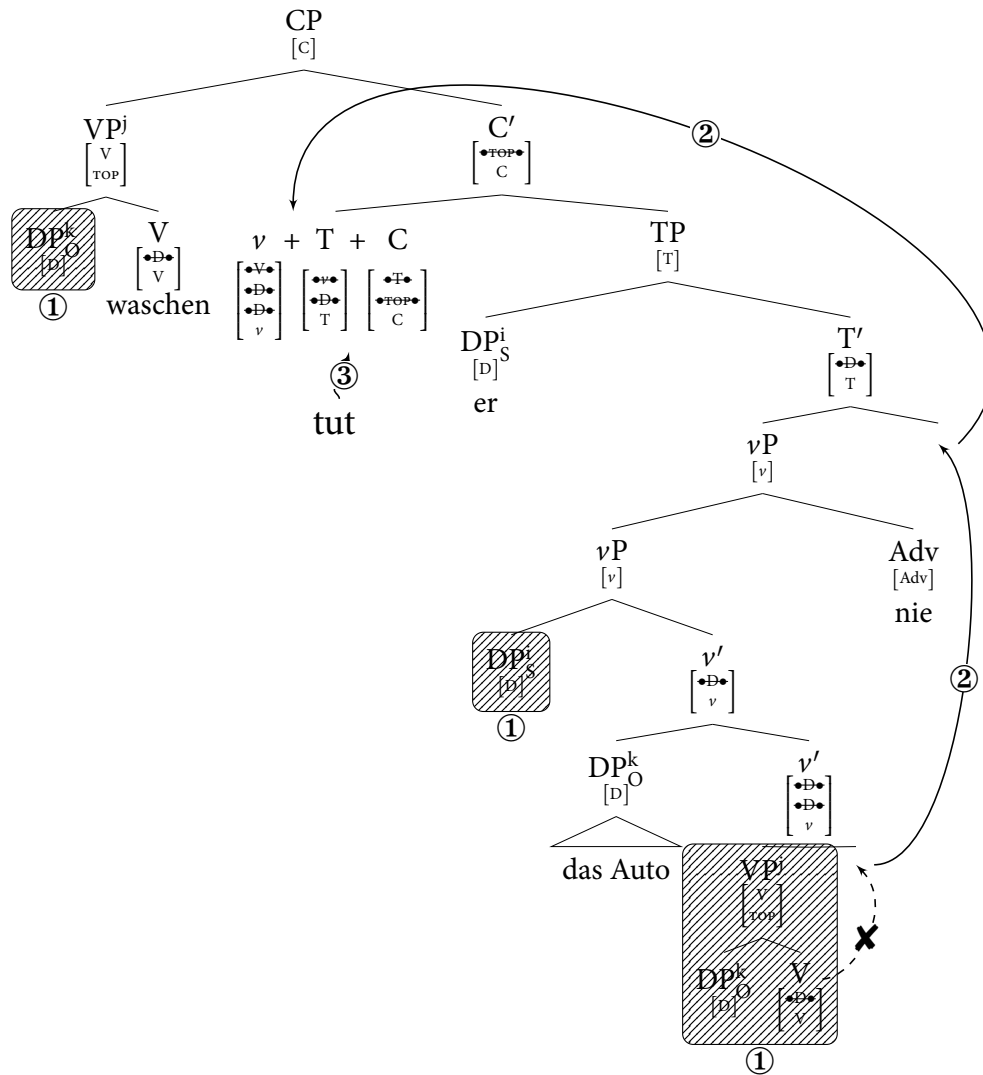
- Remnant VP movement behaves like full phrasal VP movement with the difference that there is an additional copy of the object outside the VP. If HM > CD, the low V copy leaves the low VP copy before deletion and verb doubling results (39).

(39) Polish verb fronting: Post-syntax (HM > CD)



- If CD > HM, the low V copy is deleted as part of the low VP copy and a dummy verb is inserted to act as a host for expression of finiteness (40).

(40) German verb fronting: Post-syntax (CD > HM)

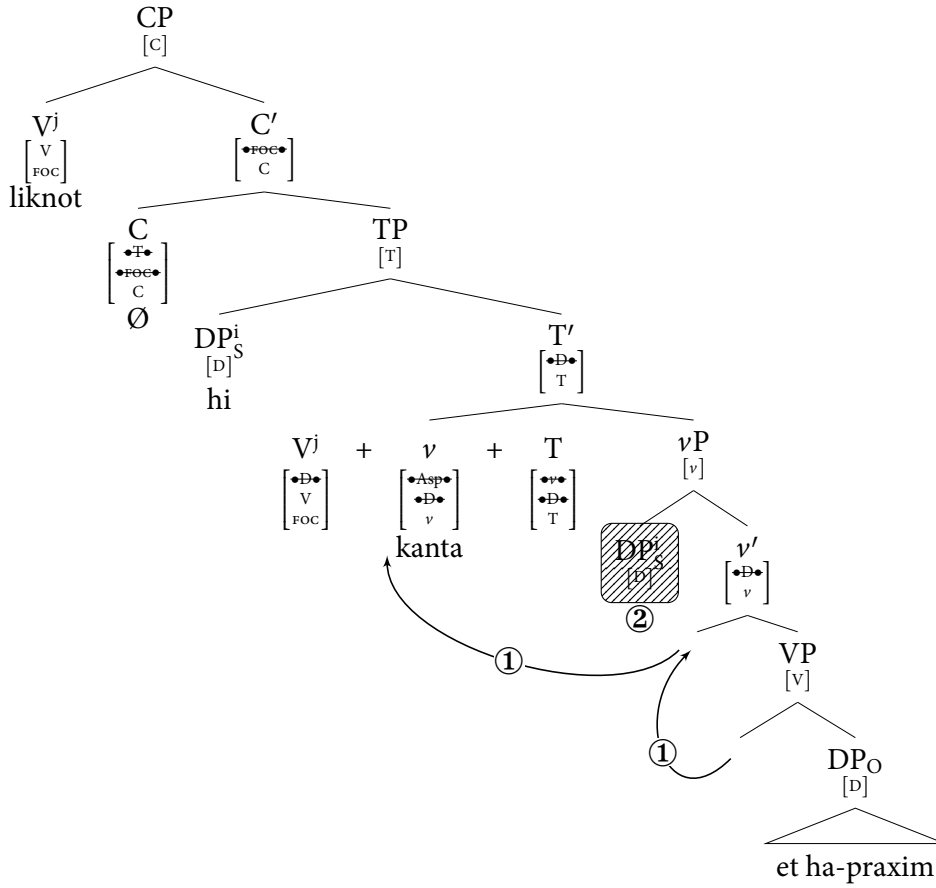
4.2.2 \bar{A} -head movement

- If HM > CD, verb doubling results because the low V copy bears a saturated structure-building feature [$\bullet\bar{D}\bullet$] and is therefore a head that is exempt from copy deletion. A language that has HM > CD (determined by its showing verb doubling in verb phrase fronting (41-b)) and employs \bar{A} -head movement in verb fronting is Hebrew (Landau, 2006: 50).

- (41) a. **liknot** hi **kanta** et ha-praxim
to.buy she bought ACC the-flowers
'As for buying, she bought the flowers.'
- b. [**liknot** et ha-praxim], hi **kanta**.
buy.INF ACC the-flowers she bought
'As for buying the flowers, she bought (them).'

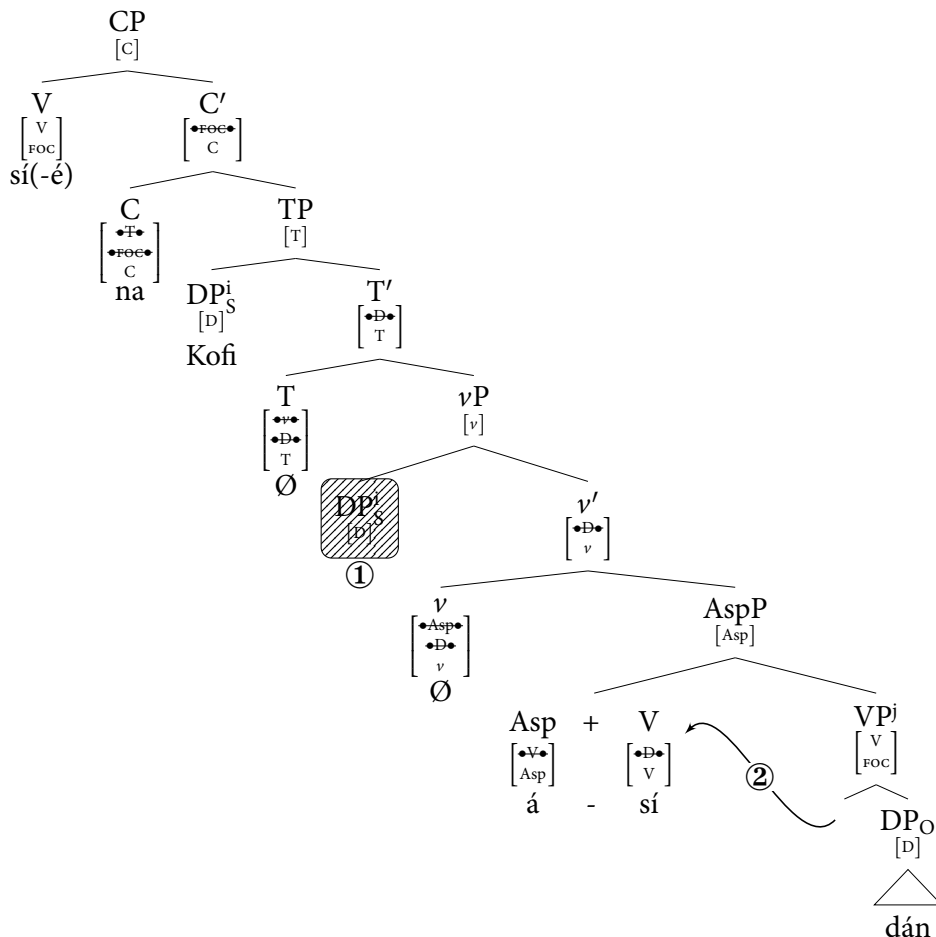
(Hebrew, Landau, 2006: 37)

(42) Hebrew verb fronting: Post-syntax (HM > CD)



- If, however, a language has the order CD > HM, like Asante Twi, we would expect *do*-insertion to take place as in German. Despite CD applying before HM, this is not the case because as a head the low copy of V is exempt from deletion and exceptionally surfaces as a second verb copy (43).

(43) Asante Twi verb fronting: Post-syntax (CD > HM)



5 Summary and prediction

- The typology of gap avoidance strategies in verbal fronting shows a 3/4-pattern as illustrated in (44).

(44) *Typology of repair patterns in verbal fronting*

	Fronted element		Languages
	Verb	Verb phrase	
I	verb copy	verb copy	Polish, Hebrew ...
II	dummy verb	dummy verb	German, ...
III	verb copy	dummy verb	Asante Twi, Limbum
IV	dummy verb	verb copy	—

- Given that HM takes place post-syntactically and that there is a strict, language-specific order between HM and CD pattern I and II directly follow from this order as counter-bleeding and bleeding of HM by CD, respectively.
- Pattern III is the result of an exceptional property of \bar{A} -head movement, namely that its lowest copy cannot undergo deletion. This neutralizes the usual bleeding relation of the CD > HM order such that verb phrase fronting triggers *do*-insertion but verb fronting results in verb doubling.
- Pattern IV is correctly predicted to be unattested as it cannot be derived. As shown in (45), of the four interactions between order of operations and type of movement two give rise to the same pattern of symmetric verb doubling.

(45) *Interaction of order of operations and movement type (complete)*

	\bar{A} -head movement	remnant VP movement
CD > HM	asymmetric pattern (Asante Twi)	symmetric dummy verb insertion (German)
HM > CD	symmetric verb doubling (Hebrew)	symmetric verb doubling (Polish)

- Prediction:** V-to-higher functional head movement is what usually leads to verb doubling (if HM > CD). When this movement is blocked, i.e. when an auxiliary or modal is present or when T is nonfinite as in infinitive-embedding contexts, verb doubling is absent as shown by Hebrew (46-a) and Vietnamese (46-b).

- (46) a. [doc sach]₁ thi no *nen* ___₁
 read book TOP he should
 ‘As for reading books, he should do that.’ (Vietnamese, Trinh, 2011: 37)
- b. [liknot et ha-sefer]₁ Dan *kiva* ___₁
 buy.INF ACC the-book Dan hoped
 ‘As for buying the book, Dan hoped to (do it).’ (Hebrew, Trinh, 2011: 32)

With \bar{A} -head movement, we would expect verb doubling to also occur in these contexts as low copies of this movement never undergo deletion. Indeed, this is what we find in Hebrew (47-a) and Vietnamese (47-b).

- (47) a. **doc** thi no *nen* *(**doc**) sach
 read TOP he should read book
 ‘As for reading, he should read books.’ (Vietnamese, Trinh, 2009: 38)
- b. **liknot** Dan *kiva* **liknot** et ha-sefer
 buy.INF Dan hoped buy.INF ACC the-book
 ‘As for buying, Dan hoped to buy the book.’ (Hebrew, Trinh, 2011: 32)

Equally, with fronting of intransitives, which are ambiguous between verb and verb phrase fronting, we would expect optionality of verb doubling. This is indeed what we observe (48).

- (48) a. **ngu** thi no *nen* (**ngu**)
 sleep TOP he should sleep
 ‘As for sleeping, he should sleep.’ (Vietnamese, Trinh, 2011: 39)
- b. **lalexet** Dan *kiva* (**lalexet**)
 walk.INF Dan hoped walk.INF
 ‘As for walking, Dan hoped to walk.’ (Hebrew, Trinh, 2011: 32)

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