Deriving the typology of verbal fronting*

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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. 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) (and Brazilian Portuguese, Buli, Dagaare, Hebrew, Krachi, Mani, Nupe, and many others, for an overview see Hein, 2018 and references cited therein), or (ii) a semantically vacuous dummy verb appears in the tail as in German (3) (and Dutch, Norwegian, Skou, Swedish, Wolof, and others, for an overview see Hein, 2018 and references cited therein).

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(2) *Polish verb doubling* (Bondaruk, 2012: 55)

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.'

(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.'

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 and the type of repair. 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 (Kwa, Niger-Congo) and Limbum (Grassfields Bantu) suggest that it is possible to have two different repairs for the two types

of fronting. In Asante Twi, verb fronting triggers verb doubling (6a) whereas verb phrase fronting gives rise to dummy verb insertion (6b). The interpretation is one of contrastive focus. In Limbum, verb fronting also leads to verb doubling (7a) while verb phrase fronting triggers the insertion of a dummy verb *gī* 'do' (7b). The interpretation is new information focus.[1]

(6) a. **sí**(-é) na Kofí á-**sí**/*á-yɔ́ 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 Kofí *á-sí/á-**yɔ́**
house build-NMLZ FOC Kofi PRF-build/PRF-do
'Kofi has BUILT A HOUSE. (not e.g. bought a boat)' (*Asante Twi*)

(7) a. á r-**yū** (cí) njíŋwɛ̀ fɔ̄ 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) njíŋwɛ̀ fɔ̄ 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 (see Hein, 2018). 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	Polish, ...
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

[1] See Hein (2018) for arguments that both the verb copy and the dummy verb cannot derive from independent verb doubling or light verb plus main verb constructions in both Asante Twi and Limbum.

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 another observation which will not be discussed further here due to space restrictions. Within the 47 investigated languages those that only allow either verb fronting, like Nupe, or verb phrase fronting, like Norwegian, but not both consistently show verb doubling in the former case and dummy verb insertion in the latter (see Hein, 2018 for data and discussion).

3. Deriving the typology

3.1 Background assupmtions

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. 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 (10). For concreteness, I will assume 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).

(10) *Copy Deletion (CD)*
In a structure that contains multiple copies X^i_1, X^i_2, …, X^i_n of a constituent X (i.e. several elements 1–*n* that share the same movement-assigned index *i*) delete every X^i_m that does not fulfill a. or b.
   a. X^i_m c-commands X^i_b and there is no other X^i_c such that X^i_c c-commands X^i_m,
   b. X^i_m is a head (bearing a saturated selectional feature).

I will further adopt head movement (HM) as a post-syntactic operation (see e.g. Boeckx & Stjepanović, 2001; Schoorlemmer & Temmerman, 2012; Zwart, 2016) that does not leave any copies (or traces) (Sauerland & Elbourne, 2002). Finally, as has been argued by Koopman (1984); Landau (2006); Vicente (2009), in order to account for single verbs in the left periphery in languages where remnant movement is not available heads must be allowed to move into a specifier position, known as $\overline{\text{A}}$-head movement.

3.2 Proposal

Following a recent line of research on the order of application of operations in both syntax and post-syntax (Müller, 2009; Arregi & Nevins, 2012; Schoorlemmer, 2012; Georgi,

2014; Murphy & Puškar, 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 inflectinoal affixes. Languages where verb fronting is $\overline{\text{A}}$-head movement rather than remnant VP movement show verb doubling independent of the order of operations because by clause b. of copy deletion (10) low copies in head position are prevented from being deleted. This order interacts with the kind of movement that leads to verb fronting, namely either remnant VP movement or $\overline{\text{A}}$-head movement of V. The effect of the ordering is summarized in (11).

(11) *Effect of order of operations in verbal fronting*

	Order of post-syntactic operations		
Moved item	HM $\succ$ CD	CD $\succ$ HM	Surface
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

3.3 Verb phrase fronting

Consider verb phrase fronting first. In syntax, the VP undergoes $\overline{\text{A}}$-movement into SpecCP leaving a copy in its base position. Both copies are assigned the same index to identify them as copies of each other. This process is uniform across different languages.[2]

(12) *VP fronting in syntax*
$[_{\text{CP}}\ [_{\text{VP}^i}\ \text{V O}\ ]\ [_{\text{C}'}\ \text{C}\ [_{\text{TP}}\ \text{T}\ [_{v\text{P}}\ v\ [_{\text{VP}^i}\ \text{V O}\ ]]]]]]$

In the post-syntax, languages may differ in whether they show the order HM $\succ$ CD or CD $\succ$ HM. If HM precedes 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. A concrete derivation is given in (14) for the Polish sentence (2b) where V head-moves to *v* and Asp thereby evacuating the low VP copy before the latter's deletion (indicated by strikethrough).

(13) *Post-syntactic derivation for Polish VP fronting (HM $\succ$ CD)*
HM: $[_{\text{CP}}\ [_{\text{VP}^i}\ \text{V O}\ ]\ [_{\text{C}'}\ \text{C}\ [_{\text{TP}}\ \text{S}\ [_{\text{T}'}\ \text{T}\ [_{\text{AspP}}\ \text{V}+v+\text{Asp}\ [_{v\text{P}}\ [_{\text{VP}^i}\ \text{O}\ ]]]]]]]]$
CD: $[_{\text{CP}}\ [_{\text{VP}^i}\ \mathbf{\text{V}}\ \text{O}\ ]\ [_{\text{C}'}\ \text{C}\ [_{\text{TP}}\ \text{S}\ [_{\text{T}'}\ \text{T}\ [_{\text{AspP}}\ \mathbf{\text{V}}+v+\text{Asp}\ [_{v\text{P}}\ \sout{[_{\text{VP}^i}\ \text{O}\ ]}]]]]]]]]$

[2]The subject is not given here as it does not play a role for the discussion.

If CD precedes 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. This order can be found in German where, in the post-syntactic derivation of a sentence like (3b), the low VP copy is deleted before V-to-C movement takes place (15).[3] Asante Twi VP fronting (6b) is derived in a similar way.

(14) *Post-syntactic derivation of German VP fronting (CD ≻ HM)*

CD: [$_{CP}$ [$_{VP^i}$ O V] [$_{C'}$ C [$_{TP}$ [$_{vP}$ S [$_{v'}$ ~~[$_{VP^i}$ O V]~~ *v*]] T]]]

HM: [$_{CP}$ [$_{VP^i}$ O **V**] [$_{C'}$ *v*+T+C [$_{TP}$ [$_{vP}$ S [$_{v'}$ ~~[$_{VP^i}$ O V]~~ ✗]]]]]

A dummy verb is then inserted into *v*+T+C to provide a host for affixal material.

3.4 Verb fronting

With verb fronting, languages may differ in whether they employ remnant VP movement or $\overline{\text{A}}$-head movement in order to achieve a surface configuration in which a single verb appears in the left periphery. I first dicuss the former before turning to the latter.

3.4.1 Remnant VP movement

In the syntax, remnant VP movement behaves like full phrasal VP movement with the difference that there is an additional copy of the object outside the VP (15).

(15) *Remnant VP fronting in syntax*

[$_{CP}$ [$_{VP^j}$ V O^i] [$_{C'}$ C [$_{TP}$ T [$_{AspP}$ Asp [$_{vP}$ O^i [$_{v'}$ *v* [$_{VP^j}$ V O^i]]]]]]]

As there is a full VP copy both in SpecCP as well as in the base position, remnant VP movement interacts with the orders of operations in the same way as full VP movement. If HM precedes CD, the low V copy leaves the low VP copy before deletion and verb doubling results (16). This is the case in Polish (2a) which arguably employs remnant VP movement rather than $\overline{\text{A}}$-head movement (Bondaruk, 2012).

(16) *Post-syntactic derivation of Polish V fronting (HM ≻ CD)*[4]

HM: [$_{CP}$ [$_{VP^j}$ V O^i] [$_{C'}$ C [$_{TP}$ S [$_{T'}$ T [$_{AspP}$ V+*v*+Asp [$_{vP}$ O^i [$_{v'}$ [$_{VP^j}$ O^i]]]]]]]]

CD: [$_{CP}$ [$_{VP^j}$ **V** ~~O^i~~] [$_{C'}$ C [$_{TP}$ S [$_{T'}$ T [$_{AspP}$ **V**+*v*+Asp [$_{vP}$ O^i [$_{v'}$ ~~[$_{VP^j}$ O^i]~~]]]]]]]

[3] The subject remains in Spec*v*P as there is no evidence for it to undergo movement to SpecTP (or the existence of T in the first place, see e.g. Haider, 2010) in German.

[4] Note that deletion of the object copy in the higher VP is ensured by clause a. of the definition of copy deletion: This copy does not c-command another copy if the same element.

If CD precedes 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 (17). This is the case in German, e.g. in the sentence (3a)

(17) *Post-syntactic derivation of German V fronting (CD ≻ HM)*

CD: $[_{CP}\ [_{VP^j}\ \sout{O^i}\ V\ ]\ [_{C'}\ C\ [_{TP}\ [_{vP}\ S\ [_{v'}\ O^i\ [_{v'}\ \sout{[_{VP^j}\ O^i\ V\ ]}\ v\ ]]]\ T\ ]]]$

HM: $[_{CP}\ [_{VP^j}\ \sout{O^i}\ \mathbf{V}\ ]\ [_{C'}\ v\text{+}T\text{+}C\ [_{TP}\ [_{vP}\ S\ [_{v'}\ O^i\ [_{v'}\ \sout{[_{VP^j}\ O^i\ V\ ]}\ ]]]\ ]]]$

3.4.2 $\bar{A}$-head movement

In languages that use $\bar{A}$-head movement rather than remnant VP movement to achieve verb fronting, the order of application of the post-syntactic operations has no impact on the outcome. The syntactic derivation of $\bar{A}$head movement of V is given in (18).

(18) *$\bar{A}$-head movement of V in syntax*

$[_{CP}\ V^i\ [_{C'}\ C\ [_{TP}\ S\ [_{T'}\ T\ [_{vP}\ v\ [_{VP}\ V^i\ O\ ]]]]]]$

If HM precedes CD, verb doubling results because the low V copy can leave the low VP copy prior to its deletion.[5] One language that has HM precede CD (determined by its showing verb doubling in verb phrase fronting (19b)) and employs $\bar{A}$-head movement in verb fronting is Hebrew (Landau, 2006: 50).[6]

(19) 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)

The post-syntactic derivation of (19a) is given in (20).

(20) *Post-syntactic derivation of Hebrew V fronting (HM ≻ CD)*

HM: $[CP\ V^i\ [_{C'}\ C\ [_{TP}\ S\ [_{T'}\ V^i\text{+}v\text{+}T\ [_{vP}\ \ [_{VP}\ \ O\ ]]]]]]$

CD: $[CP\ \mathbf{V}^i\ [_{C'}\ C\ [_{TP}\ S\ [_{T'}\ \mathbf{V}^i\text{+}v\text{+}T\ [_{vP}\ \ [_{VP}\ \ O\ ]]]]]]$

If a language has the order CD ≻ HM, like Asante Twi (as evidenced by the absence of verb doubling in VP fronting), we would expect *do*-insertion to take place as in German. This is, however, not the case because, as a head, the low copy of V (boxed) is exempt from deletion and may undergo regular V-to-T movement despite prior application of copy

[5] Also, as a head it is exempt from deletion by clause b. of Copy Deletion.s

[6] Hebrew VP fronting is derived in a similar way to Polish VP fronting, see section 3.3.

deletion. Therefore, it exceptionally surfaces as a second verb copy, as in the post-syntactic derivation of the Asante Twi sentence (6a) in (21).

(21) *Post-syntactic derivation of Asante Twi V fronting (CD ≻ HM)*[7]

CD: $[_{CP}\ V^i\ [_{C'}\ C\ [_{TP}\ S\ [_{T'}\ T\ [_{vP}\ v\ [_{VP}\ \boxed{V^i}\ O]]]]]]$
HM: $[_{CP}\ \mathbf{V^i}\ [_{C'}\ C\ [_{TP}\ S\ [_{T'}\ \mathbf{V^i}\text{+}v\text{+}T\ [_{vP}\ \ [_{VP}\ \ O]]]]]]$

4. Evidence for clause b. of Copy Deletion

As 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 (22a) and Vietnamese (22b).

(22) 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 $\overline{\text{A}}$-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 (23a) and Vietnamese (23b).

(23) 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 is ambiguous between verb and verb phrase fronting, we expect optionality of verb doubling. Again, this is what we observe (24).

(24) 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)

[7] See Hein (2018) for arguments that V and VP fronting in Asante Twi (and Limbum) involve $\overline{\text{A}}$-movement and that remnant VP movement is not available.

5. Summary and conclusion

The typology of gap avoidance strategies in verbal fronting shows a 3/4-pattern as illustrated in (25).

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

	Fronted element		
	Verb	Verb phrase	Languages
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 counterbleeding and bleeding of HM by CD, respectively. Pattern III is the result of an exceptional property of $\overline{\text{A}}$-head movement, namely that its lowest copy cannot undergo deletion. This neutralizes the usual bleeding relation of the CD $\succ$ 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 (26), of the four interactions between order of operations and type of movement two give rise to the same pattern of symmetric verb doubling.

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

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

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