Verb doubling and the order of operations at PF

The case of Asante Twi

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1Slides and handout available at: home.uni-leipzig.de/jhein/talks.html
Proposal

I argue that there is a language-specific strict order of application of the two operations Chain Reduction (CR) and Head-to-head movement (HHM) at PF. One order gives rise to an asymmetric pattern of verb doubling, the other to a symmetric one.
Roadmap

1. Introduction

2. Syntactic properties of Asante Twi predicate clefts

3. An analysis

4. Extending the analysis

5. Conclusions
Verb doubling in V fronting (bare verb)

(1)  
a. **Liknot, hi kanta et ha-praxim.**  
buy.INF she buy.PST ACC DEF-flowers  
‘As for buying, she bought the flowers.’  
   (Hebrew, Landau 2006: 37)

b. **Wypić (to) Marek wypiże herbatę, ale nie wypiże kawy.**  
drink.INF to Marek drink.FUT tea but not drink.FUT coffee  
‘As for drinking, Marek will drink tea, but he will not drink coffee.’  
   (Polish, Bondaruk 2012: 55)

c. **Dááó lá ká ń dà dà bóó.**  
buy.NMLZ FOC COMP 1.SG PST buy goat  
‘It is buying that I did to a goat (as opposed to e.g. selling it).’  
   (Dàgáárè, Hiraiwa and Bodomo 2008: 803)
Verb doubling in VP fronting (verb + arguments)

(2) a. **Liknot et ha-praxim, hi kanta.**
   buy.INF ACC DEF-flowers she buy.PST
   ‘As for buying the flowers, she bought (them).’ (Hebrew, Landau 2006: 37)

b. **Wypić herbatę (to) Marek wypije, ale nie wypije kawy.**
   drink.INF tea TO Marek drink.FUT but not drink.FUT coffee
   ‘As for drinking tea, Marek will drink it, but he will not drink coffee.’
   (Polish, Bondaruk 2012: 55)

c. **Bóó dááó lá ká ní dà dà.**
   goat buy.NMLZ FOC COMP 1.SG PST buy
   ‘It is buying a goat that I did (as opposed to e.g. selling a hen).’
   (Dàgáárè, Hiraiwa and Bodomo 2008: 805)
Verb doubling is symmetric

If a language has verb doubling in V fronting it also has verb doubling in VP fronting.
A Generalisation?

Verb doubling is symmetric?

If a language has verb doubling in V fronting it also has verb doubling in VP fronting.

(3) a. Si-(e) na Kofi a-si/*a-yə dan.
   build-NMLZ FOC Kofi PRF-build/PRF-do house
   ‘Kofi has built a house.’

b. Dan si-e na Kofi *a-si/a-yə.
   house build-NMLZ FOC Kofi PRF-build/PRF-do
   ‘Kofi has built a house.’

c. Kofi a-si dan.
   Kofi PRF-build house
   ‘Kofi has built a house.’

d. Dan na Kofi a-si.
   house FOC Kofi PRF-build
   ‘It is a house that Kofi has built.’
Patterns of verb doubling

Attested patterns in verbal fronting

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<tr>
<th>V fronting</th>
<th>V doubling</th>
<th>do-support</th>
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*symmetric*
Patterns of verb doubling

(4) **Attested patterns in verbal fronting**

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*J. Hein* Verb doubling and PF 1–2 Oct 2015 7 / 38
### Patterns of verb doubling

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**Asymmetric**

**Symmetric**
Syntactic properties of Asante Twi predicate clefts
Three questions

1. Is it ($\bar{A}$) movement or base generation (cf. Cable 2004: for Yiddish and Br. Portuguese)?
2. Is the focussed constituent in V fronting a bare head or a remnant phrase?
3. Is the fronted constituent a V(P) or a v(P)?

Cable’s (2004) base generation approach:
The fronted constituent is base generated in a peripheral topic/focus position. It may move to higher topic/focus positions later on.
Movement: Unboundedness and island effects

(5)  *Non-clause bound*
    a. Si-(e) na Ama ka-a se Kofi a-si dan.
       build-NMLZ FOC Ama say-PST COMP Kofi PRF-build house
       ‘Ama said that Kofi has BUILT a house.’
    b. Dan si-e na Ama ka-a se Kofi a-yɔ.
       house build-NMLZ FOC Ama say-PST COMP Kofi PRF-do
       ‘Ama said that Kofi has BUILT a HOUSE.’

(6.1)  *Wh-island*
    a. *Si-(e) na Ama bisa-a se dabɛn na Kofi si-i dan.
       build-NMLZ FOC Ama ask-PST COMP when FOC Kofi build-PST house
       ‘Ama asked when Kofi BUILT a house.’
    b. *?Dan si-e na Ama bisaa se dabɛn na Kofi yɔ-ɔɛ.
       house build-NMLZ FOC Ama ask-PST COMP when FOC Kofi do-PST
       ‘Ama asked when Kofi BUILT a HOUSE.’
(6.2) Complex NP island

a. *Si-(e) na me-n-te-e atetesɛm biara sɛ Kofi a-si dan.
   build-NLZ FOC 1s-NEG-hear-PST rumour.PL any COMP Kofi PRF-build house
   ‘I didn’t hear any rumours that Kofi has built a house.’

b. *?Dan si-e na me-n-te-e atetesɛm biara sɛ Kofi a-yɔ
   house build-NLZ FOC 1s-NEG-hear-PST rumour.PL any COMP Kofi PRF-do
   ‘I didn’t hear any rumours that Kofi has BUILT a house.’

(6.3) Subject island

a. *Si-(e) na sɛ Kofi a-si dan no ma Ama ani gye.
   build-NMLZ FOC COMP Kofi PRF-build house CD give Ama eye collect
   ‘That Kofi has BUILT a house made Ama happy.’

b. *Dan si-e na sɛ Kofi a-yɔ no ma Ama ani gye.
   house build-NMLZ FOC COMP Kofi PRF-do CD give Ama eye collect
   ‘That Kofi has BUILT A HOUSE made Ama happy.’
Movement: Tonal reflex of \( \tilde{A} \) movement

(See Korsah and Murphy 2015 for a more detailed discussion of the phenomenon.)

(7) a. Ama re-di bayéré
    Ama PROG-eat yam
    ‘Ama is eating a yam.’

   b. Déén na Ama ré-dí?
       what FOC Ama PROG-eat
       ‘What is Ama eating?’

   c. Bayéré na Ama ré-dí.
       yam FOC Ama PROG-eat
       ‘It is yam that Ama is eating.’

   d. \([\text{DP} \text{Bayéré nó} i \quad [\text{CP} \text{áa} \quad \text{Ama ré-dí} \quad t_i \text{ nó} ]]\) da pónó nó só.
       yam DEF REL Ama PROG-eat CD lie table DEF top
       ‘The yam that Ama is eating is on the table.’
Movement: Tonal reflex of Ā movement

(See Korsah and Murphy 2015 for a more detailed discussion of the phenomenon.)

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   Ama PROG-eat yam
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      ‘What is Ama eating?’

   c. Bayéré na Ama ré-dí.
      yam FOC Ama PROG-eat
      ‘It is yam that Ama is eating.’

   d. [DP Bayéré nó; [CP áa Ama ré-dí ti nó ]] da pónó nó só.
      yam DEF REL Ama PROG-eat CD lie table DEF top
      ‘The yam that Ama is eating is on the table.’

   eat FOC Ama PROG-eat yam
   ‘Ama is EATING yam.’

   b. Bayéré di-e na Ama ré-yó.
      yam laugh-NMLZ FOC Ama PROG-do
      ‘It is eating yam that Ama does.’
V fronting involves a bare head

(9) a. Kofi a-si dan.
    Kofi PRF-build house
    ‘Kofi has built a house.’

b. *Kofi dan a-si.

(10) a. Kofi ma-a mmofra no krataa.
    Kofi give-PST children DET book
    ‘Kofi gave the children a book.’

b. *Kofi ma-a krataa mmofra no.
Fronted constituent is V(P), not v(P)

(11) (*A-)Si-(e) na Kofi a-si dan.
(\text{PRF-})build-\text{NMLZ} FOC Kofi \text{PRF-build} house
‘Kofi has \text{BUILT} a house.’
Syntactic properties of predicate clefts in AT

1. Ā movement dependency
2. Bare head fronting (cf. Ā head movement, Koopman 1984; Vicente 2007, 2009)
3. Fronted constituent is V(P)
An analysis
Preliminaries

- Copy theory of movement (Chomsky 1993, 1995)
- \( vP \) and CP are phases, weak PIC (Chomsky 2001)
- Verb doubling = spell-out of two copies of the verb (Abels 2001; Nunes 2004)
- Only highest copy pronounced (Brody 1995; Bobaljik 1995; Groat and O’Neill 1996; Pesetsky 1997, 1998); Chain Reduction at PF deletes lower copies (Nunes 2004)
- Verb moves twice (cf. parallel chains, Aboh 2006; Collins and Essizewa 2007; Chomsky 2008; Kandybowicz 2008; Aboh and Dyakonova 2009)
- Ā head movement in (narrow) syntax (Koopman 1984; Vicente 2007, 2009)
- HHM at PF (Chomsky 1995; Brody 2000; Hale and Keyser 2002; Bury 2003; Harley 2004; Platzack 2013); does not leave copies (Boeckx and Stjepanović 2001; Sauerland and Elbourne 2002)
Strict order of operations at PF

For each language, operations at PF apply in a strict and invariable order. Either Chain Reduction precedes Head-to-head movement, or Head-to-head movement precedes Chain Reduction.

(See Müller (2009); Georgi (2014); Murphy and Puškar (2015); Assmann et al. (to appear) for approaches employing an order of application of operations in syntax.)
Order at PF

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- CR > HHM: asymmetric verb doubling

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Order at PF

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For each language, operations at PF apply in a strict and invariable order. Either Chain Reduction precedes Head-to-head movement, or Head-to-head movement precedes Chain Reduction.

- CR > HHM: asymmetric verb doubling
- HHM > CR: symmetric verb doubling

(See Müller (2009); Georgi (2014); Murphy and Puškar (2015); Assmann et al. (to appear) for approaches employing an order of application of operations in syntax.)
CR > HHM in VP fronting → do-support

(12) Dan si-e na Kofi a-yɔ. house build-nMLZ foc Kofi prf-do ‘Kofi has BUILT A HOUSE.’

(narrow) syntax

VP

V

Obj
CR > HHM in VP fronting → do-support

(12) Dan si-e na Kofi a-yɔ.
    house build-nmlz foc Kofi prf-do
    ‘Kofi has BUILT A HOUSE.’
CR $\Rightarrow$ HHM in VP fronting $\rightarrow$ *do*-support

(12) Dan si-e na Kofi a-yɔ.
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An analysis

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‘Kofi has BUILT A HOUSE.’
An analysis

CR > HHM: asymmetric verb doubling

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\[
\begin{array}{c}
T' \\
\downarrow \\
T \\
\downarrow \\
\text{Subj} \\
\upto \\
\text{v'} \\
\downarrow \\
\text{VP} \\
\downarrow \\
\text{V} \\
\downarrow \\
\text{Obj} \\
\uparrow \\
\text{v} \\
\downarrow \\
\text{VP} \\
\downarrow \\
\text{V} \\
\downarrow \\
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\end{array}
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(narrow) syntax
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CR > HHM in VP fronting → do-support
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house build-NMLZ FOC Kofi prf-do 
‘Kofi has built a house.’
CR > HHM in VP fronting → *do*-support

(12) Dan si-e na Kofi a-yɔ.
house build-nMLZ foc Kofi prf-do
‘Kofi has BUILT A HOUSE.’
CR > HHM in VP fronting $\rightarrow$ do-support

(12) Dan si-e na Kofi a-yɔ. house build-nMLZ FOC Kofi prf-do ‘Kofi has BUILT A HOUSE.’

(narrow) syntax

[Diagram of syntactic structure]

PF

[Diagram of phonetic structure]
CR > HHM in VP fronting → do-support

(12) Dan si-e na Kofi a-yɔ.
    house build-NMLZ FOC Kofi prf-do
‘Kofi has BUILT A HOUSE.’
(narrow) syntax

CR > HHM in VP fronting → do-support

(12) Dan si-e na Kofi a-yɔ. 
house build-NMLZ FOC Kofi prf-do
‘Kofi has BUILT A HOUSE.’
CR > HHM in VP fronting → *do-support*

(12) Dan si-e na Kofi a-yô.
house build-NMLZ foc Kofi prf-do
‘Kofi has BUILT A HOUSE.’
CR > HHM in V fronting $\rightarrow$ verb doubling

(13) Si-(e) na Kofi a-si dan.
    build-NMLZ FOC Kofi PRF-build house
    ‘Kofi has built a house.’
CR > HHM in V fronting → verb doubling

(13) Si-(e) na Kofi a-si dan.
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(190x267) Si-(e) na Kofi a-si dan.
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CR > HHM in V fronting → verb doubling

(13) Si-(e) na Kofi a-si dan.
    build-NMLZ FOC Kofi PRF-build house
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Chain Uniformity Condition (Chomsky 1995)
A chain is uniform with regard to phrase structure status.
CR > HHM in V fronting → verb doubling

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\[
\text{CP} \quad \text{C} \quad \text{TP} \\
\text{Subj} \quad \text{T'} \\
\quad \quad \text{T} \quad \text{vP} \\
\quad \quad \quad \text{Subj} \quad \text{v'} \\
\quad \quad \quad \quad \text{V} \quad \text{v'} \\
\quad \quad \quad \quad \quad \text{v} \quad \text{VP} \\
\quad \quad \quad \quad \quad \quad \text{V} \quad \text{Obj}
\]
(narrow) syntax

\[
C' \\
\quad C \quad TP \\
\quad \quad Subj \quad T' \\
\quad \quad \quad T \quad vP \\
\quad \quad \quad \quad Subj \quad v' \\
\quad \quad \quad \quad \quad V \quad v' \\
\quad \quad \quad \quad \quad \quad v \quad VP \\
\quad \quad \quad \quad \quad \quad \quad \quad \quad v \quad Obj
\]

An analysis

CR > HHM: asymmetric verb doubling

\[(13)\quad Si-(e) \quad na \quad Kofi \ a-si \quad dan. \]
\[\text{build-NMLZ} \quad \text{FOC} \quad Kofi \quad \text{PRF-build house} \]
‘Kofi has built a house.’
CR > HHM in V fronting → verb doubling

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has built a house.’

Chain Uniformity Condition (Chomsky 1995)
A chain is uniform with regard to phrase structure status.
An analysis

CR > HHM: asymmetric verb doubling

CR > HHM in V fronting → verb doubling

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has built a house.’

(narrow) syntax

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Parse Tree

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<th>Subj</th>
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(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has built a house.’
CR > HHM in V fronting $\rightarrow$ verb doubling

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Chain Uniformity Condition (Chomsky 1995)
A chain is uniform with regard to phrase structure status.
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CR > HHM in V fronting → verb doubling

(narrow) syntax

(13) Si-(e) na Kofi a-si dan.
    build-NMLZ FOC Kofi PRF-build house
    ‘Kofi has BUILT a house.’

CP
   V C’
   C TP
   Subj T’
   T vP
   Subj v’
   V v’
   v VP
   V Obj

PF

CP
   V C’
   C TP
   Subj T’
   V-v-T vP
   Subj v’
   V v’
   VP Obj
An analysis of CR > HHM in V fronting → verb doubling

Chain Uniformity Condition (Chomsky 1995)
A chain is uniform with regard to phrase structure status.

(13) Si-(e) na Kofi a-si dan.
build-nMLZ foc Kofi prf-build house
‘Kofi has built a house.’
CR > HHM in V fronting → verb doubling

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has BUILT a house.’

Chain Uniformity Condition (Chomsky 1995)

A chain is uniform with regard to phrase structure status.
CR $\Rightarrow$ HHM in V fronting $\rightarrow$ verb doubling

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has BUILT a house.’

Chain Uniformity Condition (Chomsky 1995)

A chain is uniform with regard to phrase structure status.
An analysis

CR > HHM: asymmetric verb doubling

(narrow) syntax

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has BUILT a house.’

Chain Uniformity Condition (Chomsky 1995)
A chain is uniform with regard to phrase structure status.
CR $\Rightarrow$ HHM in V fronting $\rightarrow$ verb doubling

(13) Si-(e) na Kofi a-si dan.
build-NMLZ FOC Kofi PRF-build house
‘Kofi has built a house.’
Asymmetric pattern:

- VP fronting: V is deleted as part of the VP before it can move → *do*-support
- V fronting: Peculiarities of Ā head movement protect V from deletion → verb doubling
An analysis of HHM $\rightarrow$ CR: symmetric verb doubling

**HHM $\rightarrow$ CR in VP fronting $\rightarrow$ verb doubling**

(14) Liknot et ha-praxim, hi kanta.
buy.INF ACC DEF-flowers she buy.PST
‘As for buying the flowers, she bought (them).’

**Diagram:**

```
       VP
      /\
     / \
    V   Obj
```
(14) Liknot et ha-praxim, hi kanta.
buy.INF ACC DEF-flowers she buy.PST
‘As for buying the flowers, she bought (them).’
HHM > CR in VP fronting $\rightarrow$ verb doubling

(14) Liknot et ha-praxim, hi kanta.
buy.INF ACC DEF-flowers she buy.PST
‘As for buying the flowers, she bought (them).’
(14) Liknot et ha-praxim, hi kanta. buy.INF ACC DEF-flowers she buy.PST ‘As for buying the flowers, she bought (them).’
(14) Liknot et ha-praxim, hi kanta.
buy.INF ACC DEF-flowers she buy.PST
‘As for buying the flowers, she bought (them).’
HHM $\rightarrow$ CR in VP fronting $\rightarrow$ verb doubling

(14) Liknot et ha-praxim, hi kanta.
  buy.INF ACC DEF-flowers she buy.PST
  ‘As for buying the flowers, she bought (them).’
(14) Liknot et ha-praxim, hi kanta.

buy.INF ACC DEF-flowers she buy.PST

‘As for buying the flowers, she bought (them).’
HHM > CR in VP fronting → verb doubling

(14) Liknot et ha-praxim, hi kanta.
    buy.INF ACC DEF-flowers she buy.PST
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An analysis of verb doubling and PF.
(15) Liknot, hi kanta et ha-praxim. buy.INF she buy.PST ACC DEF-flowers
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An analysis

HHM > CR: symmetric verb doubling

(narrow) syntax

\[(15)\] Liknot, hi kanta et ha-praxim. 

\[\text{buy.INF she buy.PST ACC DEF-flowers}\]

‘As for buying, she bought the flowers.’

\[
\text{CP} \\
\rightarrow \text{V} \\
\rightarrow \text{C'} \\
\rightarrow \text{C} \quad \text{TP} \\
\rightarrow \text{Subj} \quad \text{T'} \\
\rightarrow \text{T} \quad \text{vP} \\
\rightarrow \text{Subj} \quad \text{v'} \\
\rightarrow \text{v} \quad \text{v'} \\
\rightarrow \text{VP} \\
\rightarrow \text{v} \\
\rightarrow \text{VP} \\
\rightarrow \text{V} \quad \text{Obj}
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Symmetric pattern:
- VP fronting: V leaves the lower VP copy before it is deleted → verb doubling
- V fronting: Peculiarities of Ā head movement protect V from deletion, and it leaves the lower chain link before CR applies → verb doubling
Extending the analysis
Problem

Fronted constituent in Hebrew is actually v(P) (Landau 2006). But at the point where v moves to SpecCP in syntax, V has not yet moved to v. Only VP is at PF at this moment. We’d hence predict v doubling instead of doubling of the main verb.
**Problem**

Fronted constituent in Hebrew is actually $v(P)$ (Landau 2006). But at the point where $v$ moves to SpecCP in syntax, $V$ has not yet moved to $v$. Only VP is at PF at this moment. We’d hence predict $v$ doubling instead of doubling of the main verb.

**Solution**

The entire phase is sent off to PF, not just its domain. The head and edge remain syntactically accessible (Fox and Pesetsky 2003, 2005; Svenonius 2004, 2005; Fowlie 2010; Richards 2011; Aelbrecht 2012). Now $V$ can move to $v$ at PF before the V-$v$ complex is moved to SpecCP in syntax.
v and vP movement

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- CR > HHM: asymmetric pattern
- HHM > CR: symmetric pattern\(^2\)
- V(P) movement remains unaffected by this assumption.

\(^2\)Only if the verb moves on to T. Otherwise it is deleted as part of the lower vP copy in VP fronting resulting in do-support and thus an asymmetric pattern.
A problem for Chain Reduction

Extending the analysis

$\nu(P)$ movement

Nunes (2004): $CH = ((\text{Subj}, \text{T}'), (\text{Subj}, \nu'))$

$O_{CR}$ inspects the chain and determines the occurrence of Subj that is the sister of $\nu'$ to be deleted.

$O_{CR}$ deletes both.
A problem for Chain Reduction

Extending the analysis  v(P) movement

Nunes (2004): \( CH = ( (Subj, T'), (Subj, v') ) \)

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Extending the analysis

Nunes (2004): \( CH = ((\text{Subj} , T'), (\text{Subj} , v')) \)

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Interim summary

(16) **Attested patterns in verbal fronting**

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<tr>
<th>VP fronting</th>
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<th>Asante Twi</th>
<th>German</th>
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V fronting

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Extending the analysis

v(P) movement
**Interim summary**

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(17) *Pattern depending on order of operations (non-final)*

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| Hebrew | Asante Twi |

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**Extending the analysis**

v(P) movement

---

**A/t tested pa/t_terns in verbal fronting**

**Surface Consituent Order of PF operations**

- HHM > CR
- CR > HHM
German remnant VP movement

(18) a. Lesen tut sie Bücher gern. (Aber schreiben nicht.)
‘She likes to read books. But she doesn’t like to write them.’

b. Bücher lesen tut sie gern.
‘She likes to read books.’

- V fronting involves remnant VP movement, not Ä head movement (den Besten and Webelhuth 1990; Grewendorf and Sabel 1994; Koopman 1997; Hinterhölzl 2002; Müller 2014).
- Remnant VP movement patterns with full VP movement, CR > HHM leads to do-support while HHM > CR results in verb doubling.
- German has the order CR > HHM: V is deleted before it can move to v, T, and C in both V fronting and VP fronting, hence the symmetric do-support.
Remnant movement and HHM > CR: Polish

(19) a. Wypić (to) Marek wypije herbatę, ale nie wypije kawy.
‘As for drinking, Marek will drink tea, but he will not drink coffee.’

drink.INF TO Marek drink.FUT tea but not drink.FUT coffee

b. Wypić herbatę (to) Marek wypije, ale nie wypije kawy.
‘As for drinking tea, Marek will drink it, but he will not drink coffee.’

drink.INF tea TO Marek drink.FUT but not drink.FUT coffee

(Bondaruk 2012: 55)

- Polish shows symmetric verb doubling.
- V fronting (19-a) involves remnant vP movement rather than Ā head movement (Bondaruk 2009, 2012).
- The order HHM > CR gives rise to exactly this pattern: V-v moves to T before CR applies.
Summary

(20) Pattern depending on order of operations and constituency

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- The order HHM > CR always gives rise to symmetric verb doubling$^3$
- The order CR > HHM, on the other hand, leads to do-support unless the lower copy of the moved constituent is not part of a chain with the higher copy, which is the case in Ā head movement.

$^3$Caveat: This does not hold for languages that move νP and do not have verb-to-T movement. These show either Asante Twi type asymmetric verb doubling if they use Ā head movement in V fronting, or German type symmetric do-support if they use remnant νP movement in V fronting.
I proposed that the two PF operations Chain Reduction and Head-to-head movement apply in a strict order in any given language.

Apart from that, the account rests on minimalist proposals about phrase structure and movement that have independently been argued for in the literature.

The asymmetric Asante Twi pattern falls out as naturally as the symmetric Hebrew pattern.

The approach is further able to derive the German pattern with no verb doubling, making the typology of attested patterns in predicate fronting complete.

In addition, the unattested pattern of do-support in V fronting and verb doubling in VP fronting is underivable: In order to show verb doubling in VP fronting, a language would have to have the order HHM $\gg$ CR (and possibly also V-to-T movement). However, as mentioned above, this order results in verb doubling for V fronting, too, independent of whether it involves $A'$ head movement or remnant movement.


References II


Fox, Danny, and David Pesetsky. 2003. Cyclic linearisation and the typology of movement. Ms., MIT.


References IV


