Verb doubling and the order of operations at PF[1]

The case of Asante Twi

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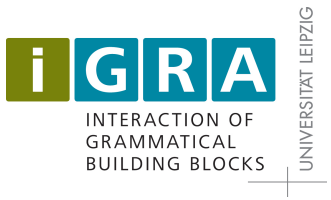
Replicative Processes in Grammar

Leipzig, 1–2 October 2015



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

Proposal

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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 wypije herbatę, ale nie wypije 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 bóɔ́.
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. Bóɔ́ dááó lá ká ń 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)

A Generalisation

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-yɔ dan. — V fronting
build-NMLZ FOC Kofi PRF-build/PRF-do house
'Kofi has BUILT a house.'

b. Dan si-e na Kofi *a-si/a-yɔ. — VP fronting
house build-NMLZ FOC Kofi PRF-build/PRF-do
'Kofi has BUILT A HOUSE.'

c. Kofi a-si dan. — simple transitive
Kofi PRF-build house
'Kofi has built a house.'

d. Dan na Kofi a-si. — object focus
house FOC Kofi PRF-build
'It is a house that Kofi has built.'

Patterns of verb doubling

(4) *Attested patterns in verbal fronting*

		V fronting	
		V doubling	*do*-support
VP fronting	*do*-support	Asante Twi	German
	V doubling	Hebrew	—

Patterns of verb doubling

(4) *Attested patterns in verbal fronting*

		V fronting	
		V doubling	*do*-support
VP fronting	*do*-support	Asante Twi	*symmetric* German
	V doubling	*symmetric* Hebrew	—

Patterns of verb doubling

(4) *Attested patterns in verbal fronting*

		V fronting	
		V doubling	*do*-support
VP fronting	*do*-support	*asymmetric* Asante Twi	*symmetric* German
	V doubling	*symmetric* Hebrew	—

Patterns of verb doubling

(4) *Attested patterns in verbal fronting*

		V fronting	
		V doubling	*do*-support
VP fronting	*do*-support	*asymmetric* Asante Twi	*symmetric* German
	V doubling	*symmetric* Hebrew	*asymmetric* —

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 sɛ 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 sɛ 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 sɛ 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 sɛ 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.'

Movement: Unboundedness and island effects

(6.2) *Complex NP island*

a. *Si-(e) na me-n-te-e ateteseɛm 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 ateteseɛm 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 Ā movement

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

(7) a. Ama re-di bayérɛ́
Ama PROG-eat yam
'Ama is eating a yam.'

b. Déɛ́n na Ama ré-dí?
what FOC Ama PROG-eat
'What is Ama eating?'

c. Bayérɛ́ na Ama ré-dí.
yam FOC Ama PROG-eat
'It is yam that Ama is eating.'

d. [$_{DP}$ Bayérɛ́ nó$_i$ [$_{CP}$ áa Ama ré-dí t_i 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.)

(7) a. Ama re-di bayéré
Ama PROG-eat yam
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yam DEF REL Ama PROG-eat CD lie table DEF top
'The yam that Ama is eating is on the table.'

(8) a. Di na Ama ré-dí bayéré.
eat FOC Ama PROG-eat yam
'Ama is EATING yam.'

b. Bayéré di-e na Ama ré-yɔ́.
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.
(PRF-)build-NMLZ FOC Kofi PRF-build house
'Kofi has 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)
- *v*P 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)
- $\bar{\text{A}}$ 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)

Order at PF

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.)

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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

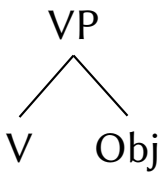
(See Müller (2009); Georgi (2014); Murphy and Puškar (2015); Assmann et al. (to appear) for approaches employing an order of application of operations in syntax.)

CR > HHM in VP fronting → *do*-support

(narrow) syntax

(12) Dan si-e na Kofi a-yɔ.
house build-NMLZ FOC Kofi PRF-do
'Kofi has BUILT A HOUSE.'

PF



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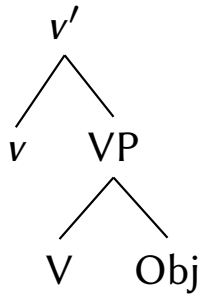

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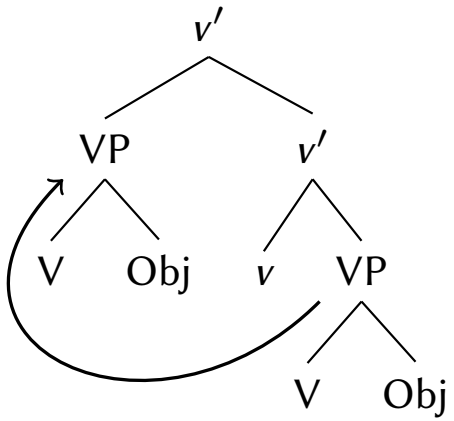

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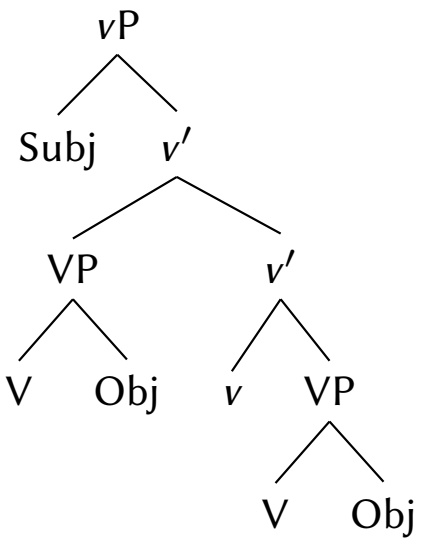

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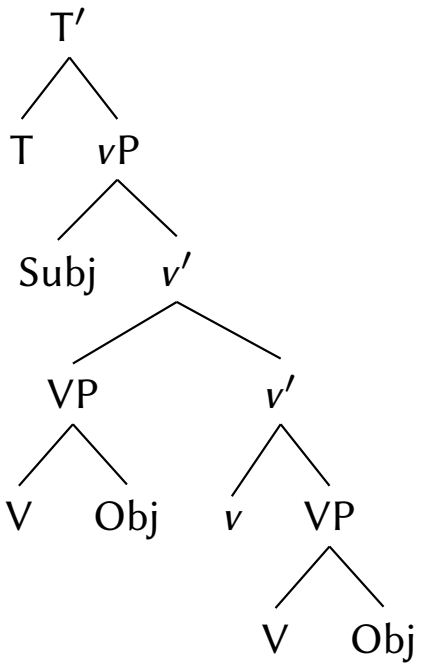

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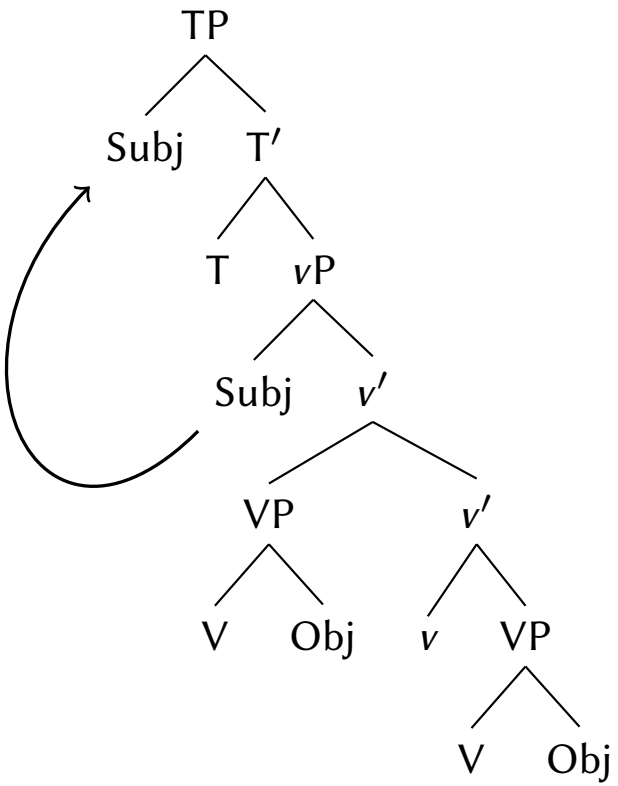

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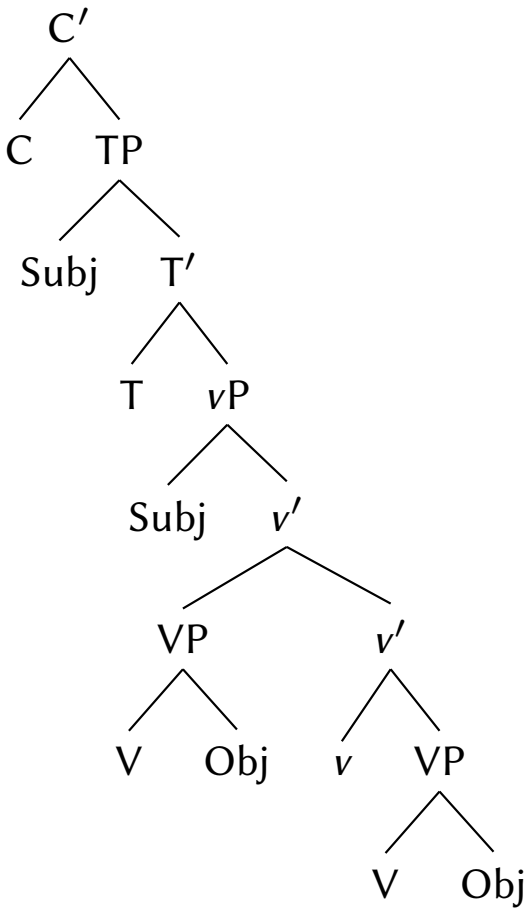

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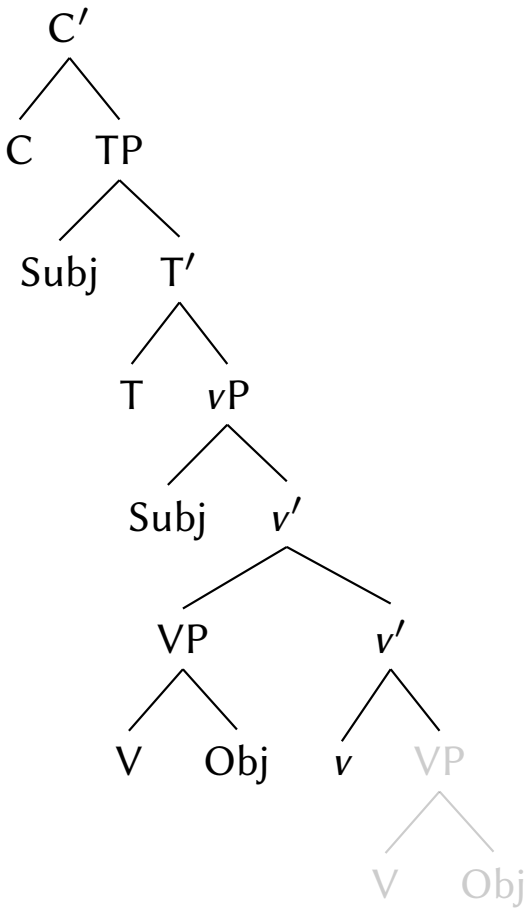

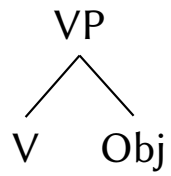

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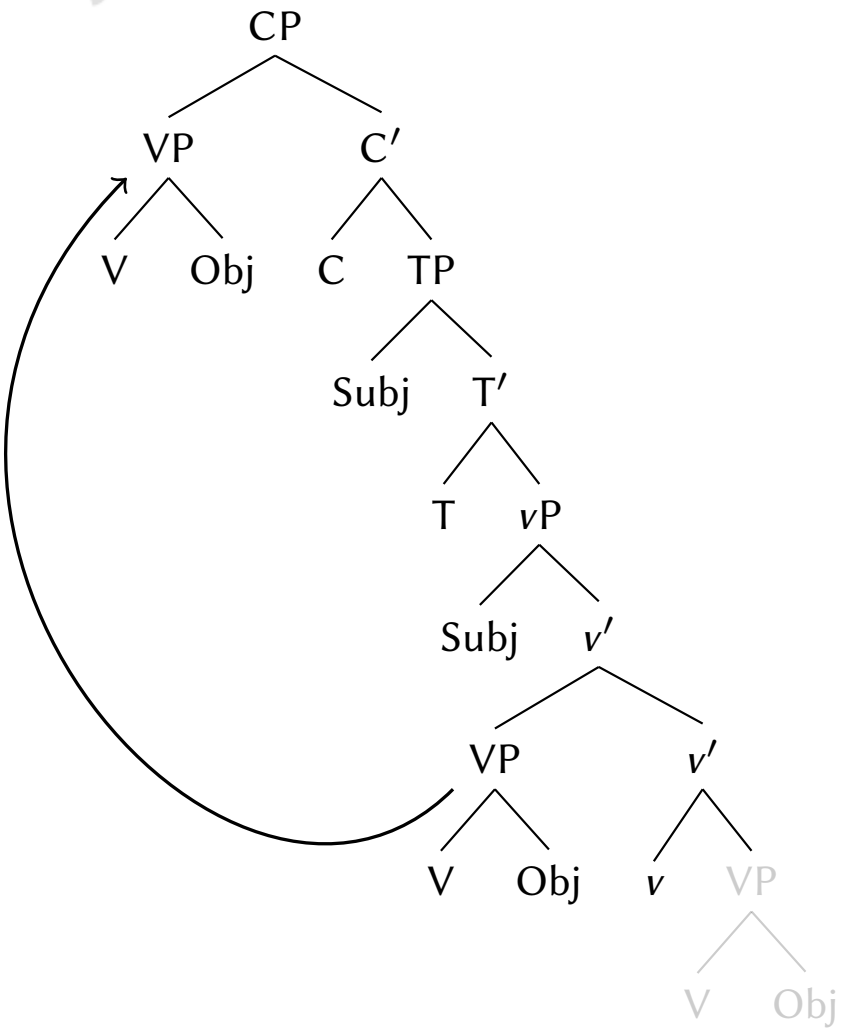

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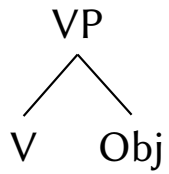

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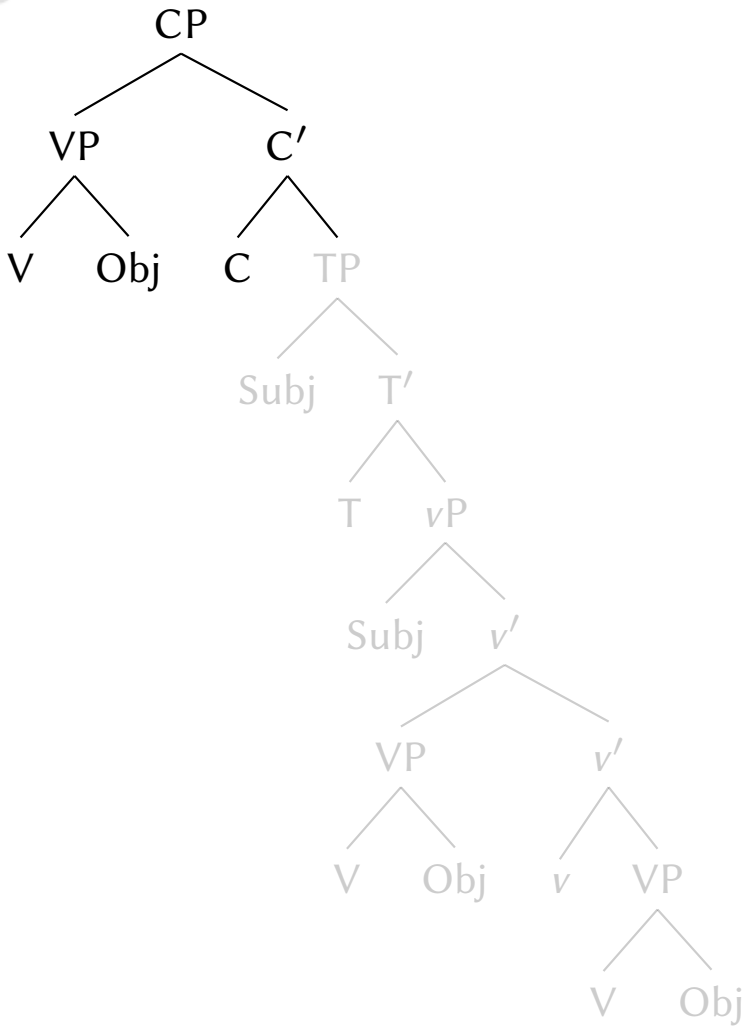

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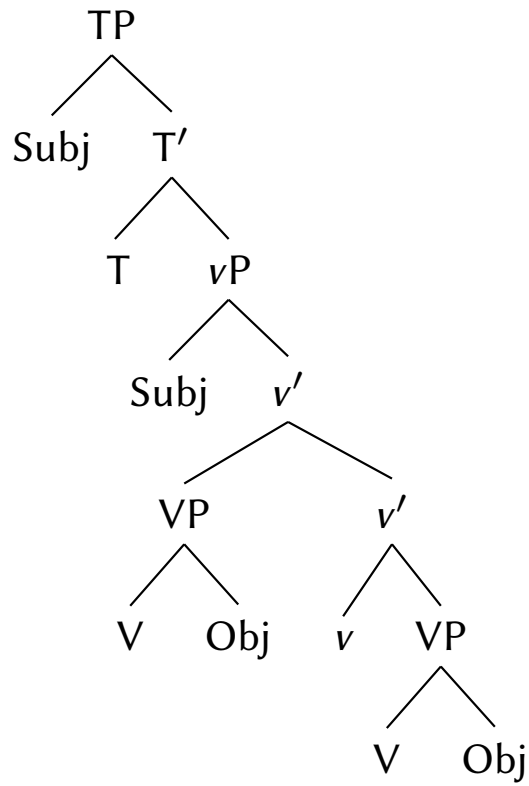

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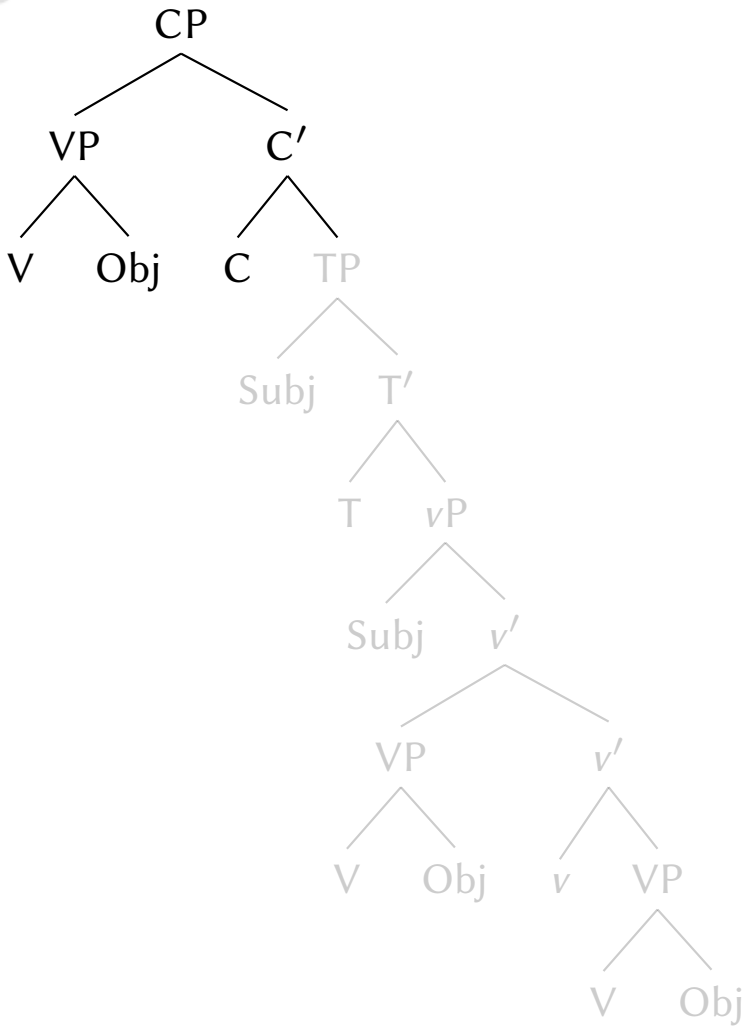

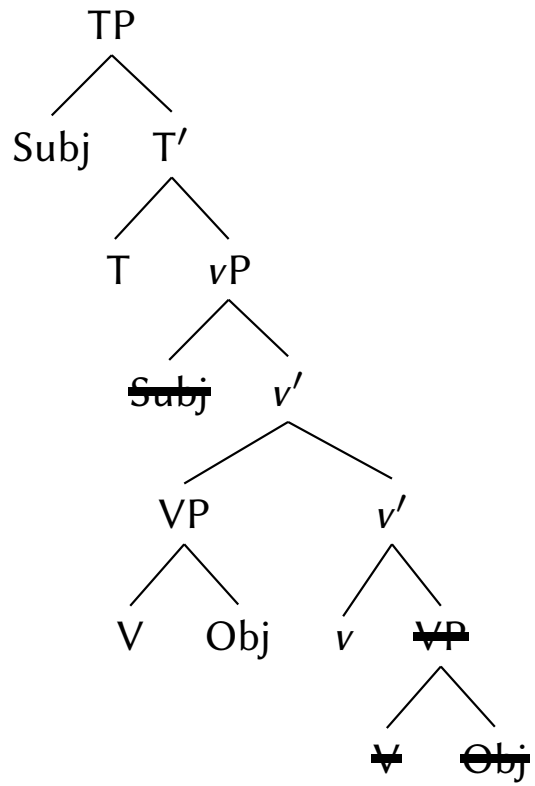

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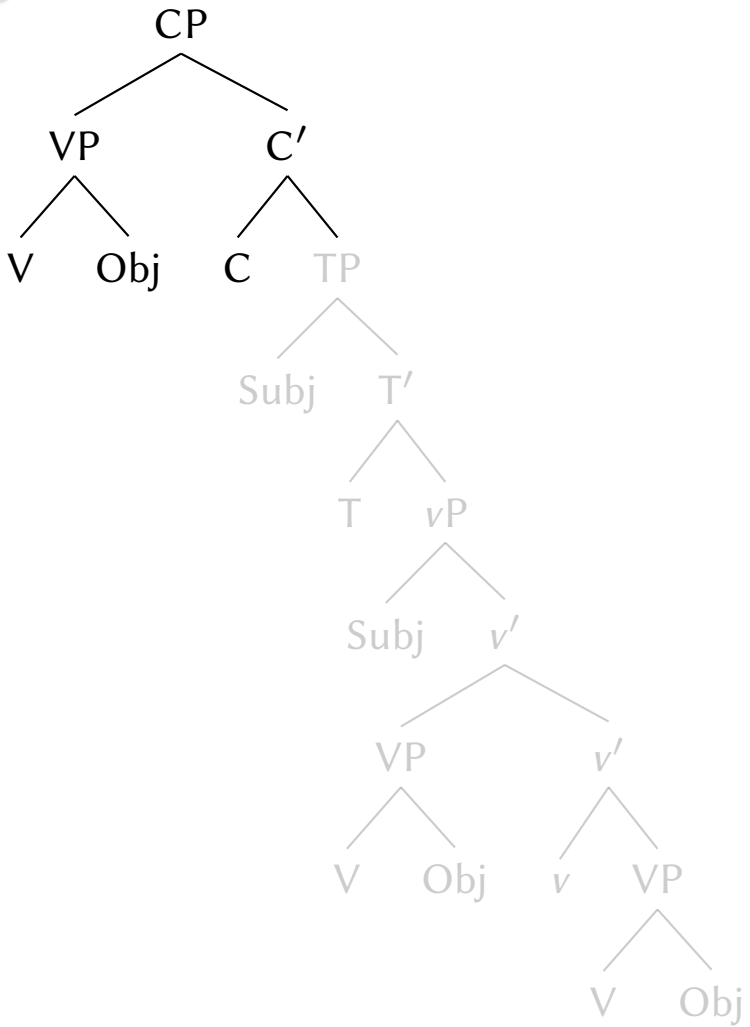

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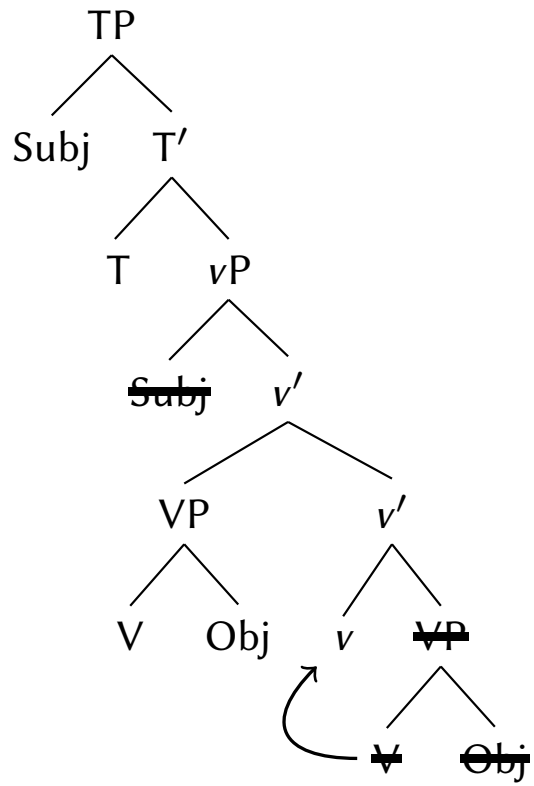

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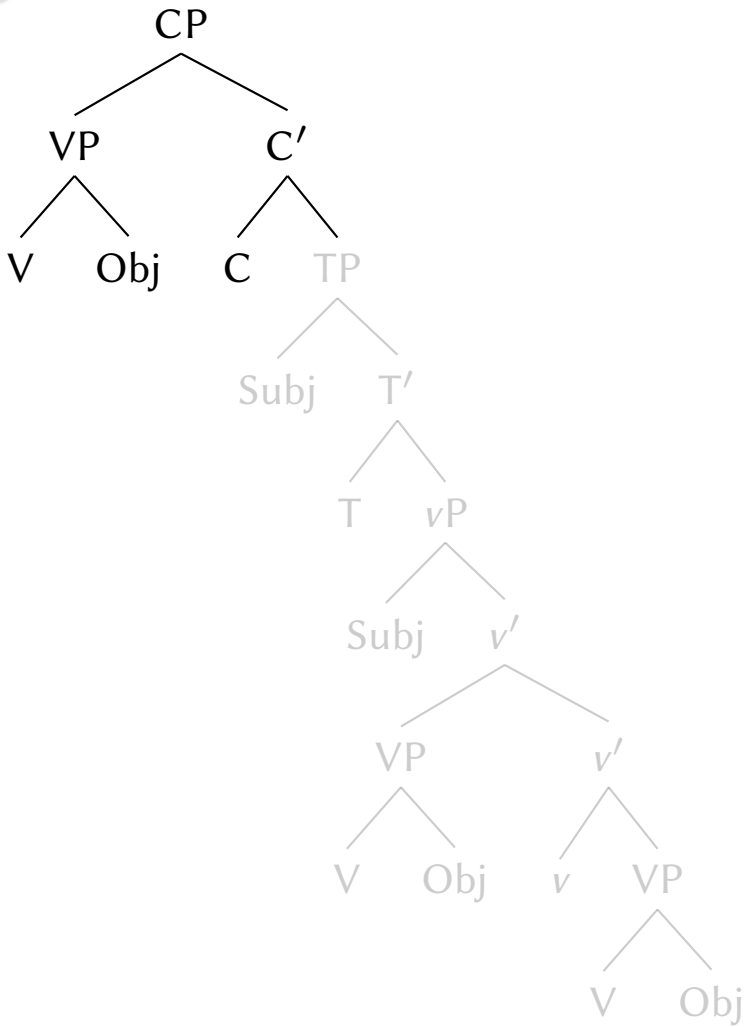

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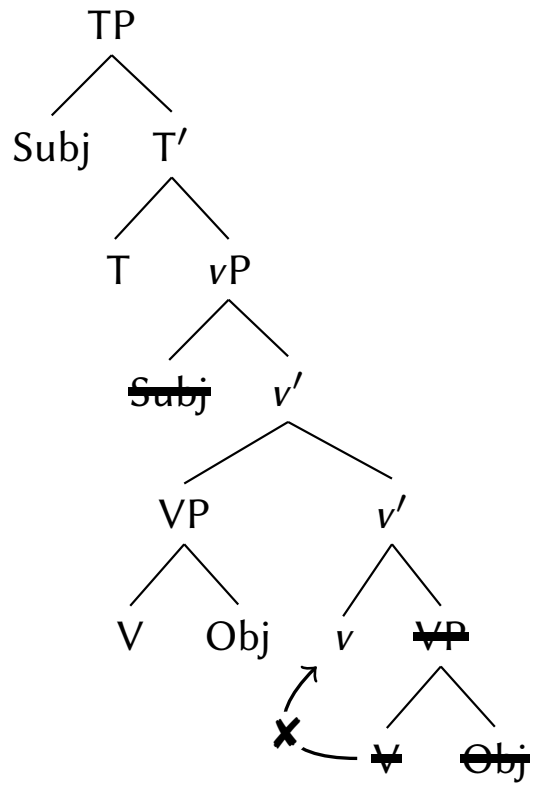

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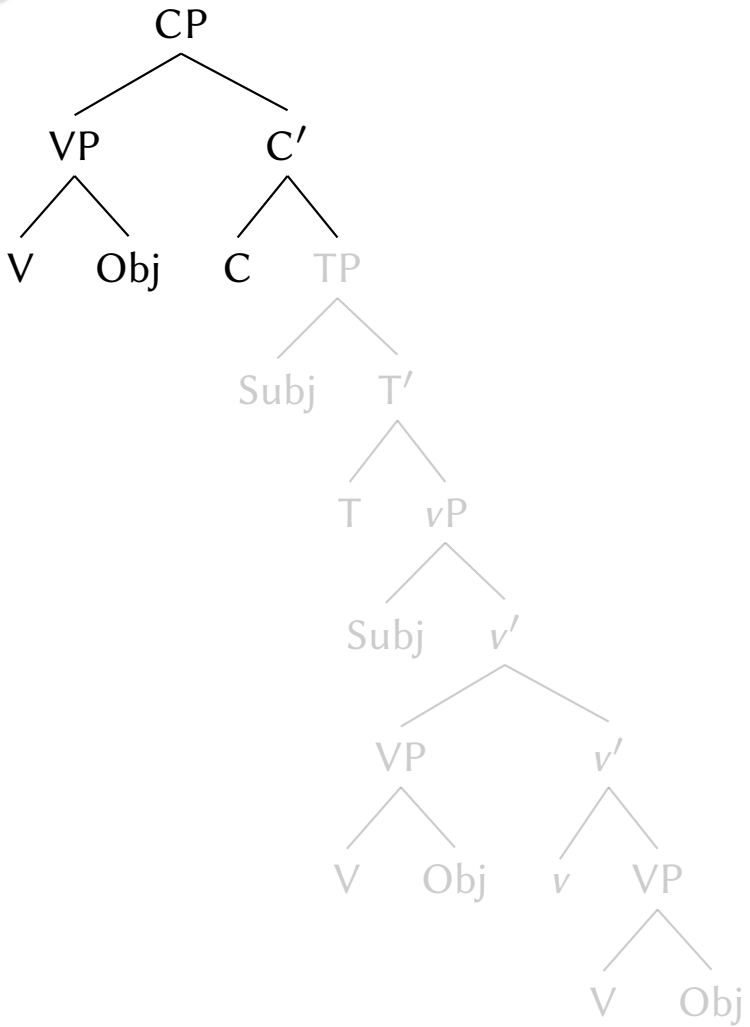

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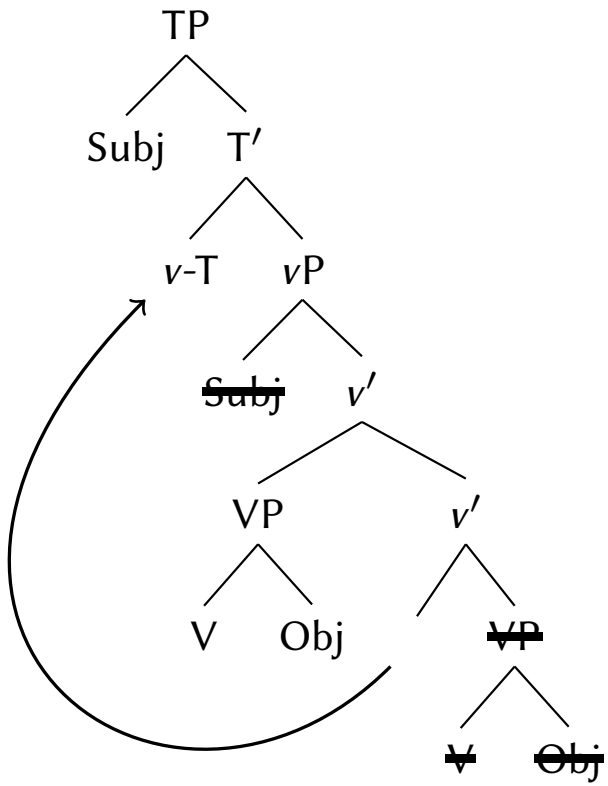

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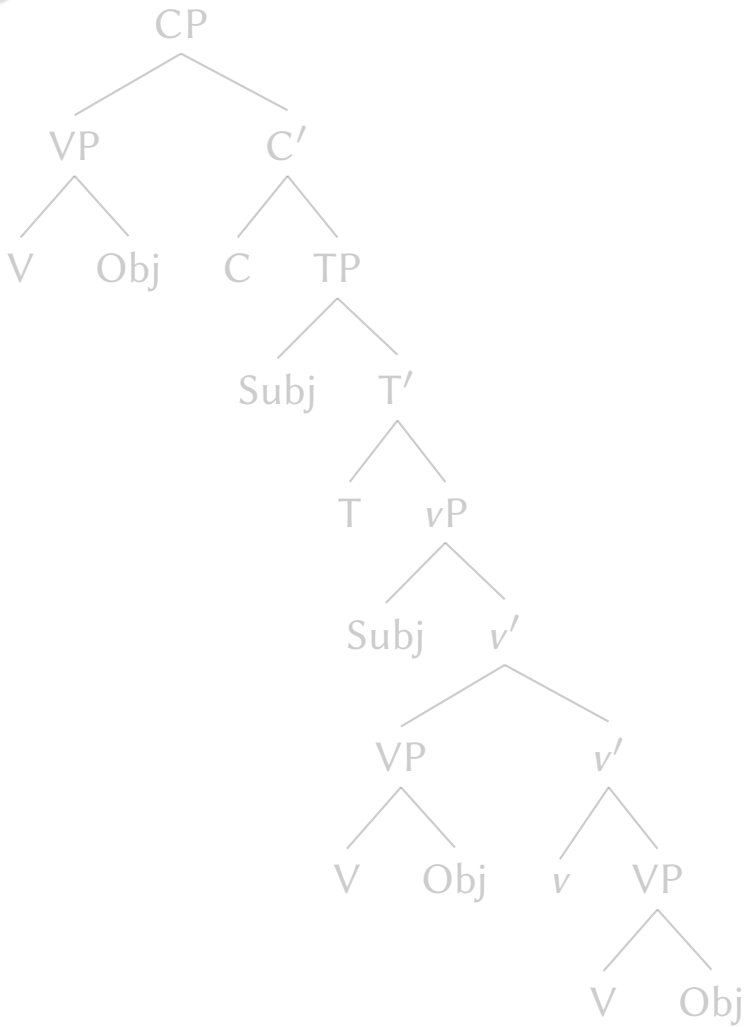

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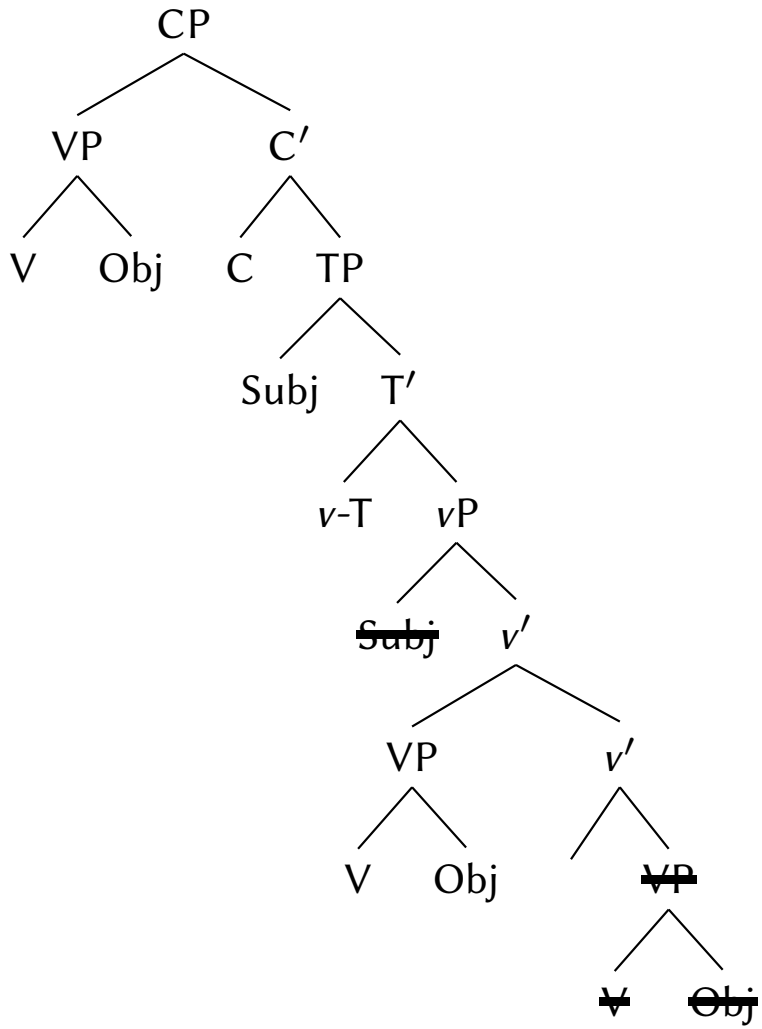

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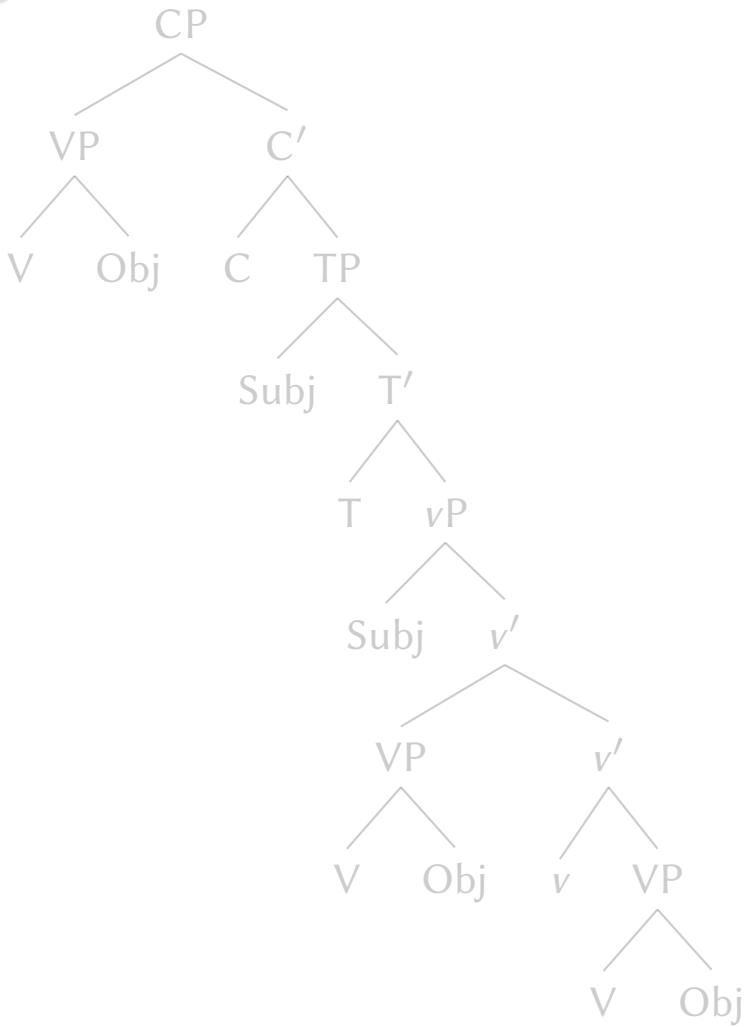

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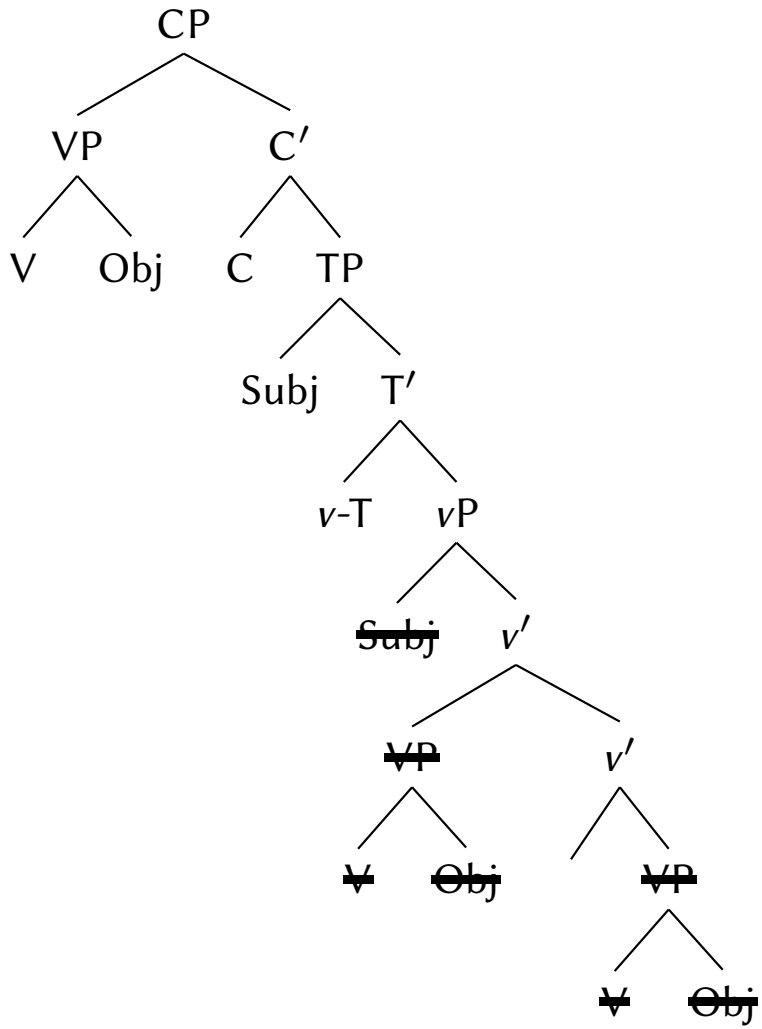
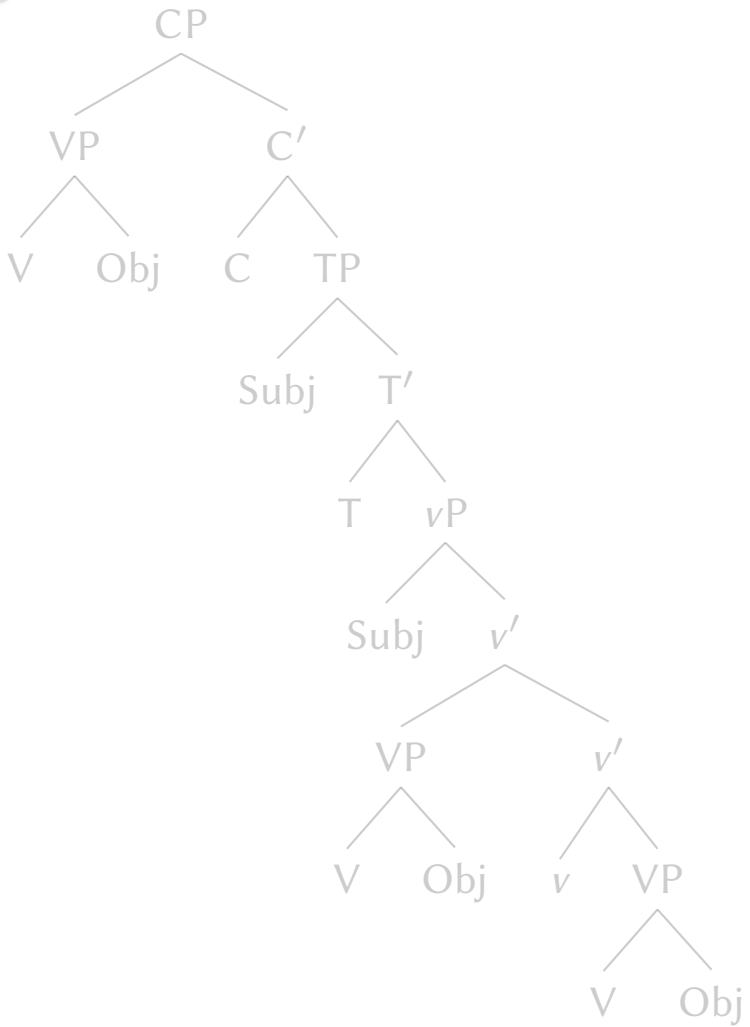


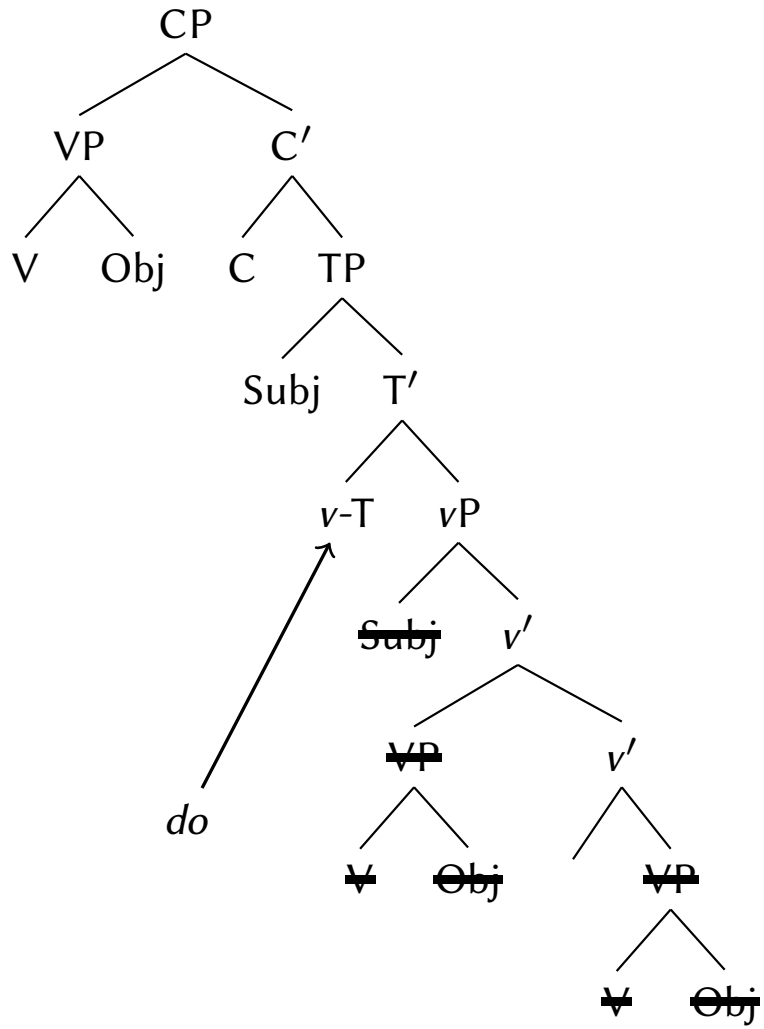
CR > HHM in VP fronting → *do*-support

(narrow) syntax

(12) Dan si-e na Kofi a-yɔ.
house build-NMLZ FOC Kofi PRF-do
'Kofi has BUILT A HOUSE.'

PF





CR > HHM in V fronting → verb doubling

(narrow) syntax

PF

(13) Si-(e) na Kofi a-si dan.
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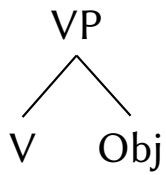

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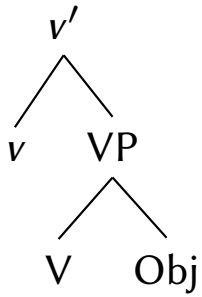

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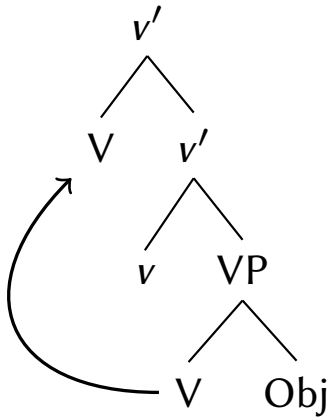

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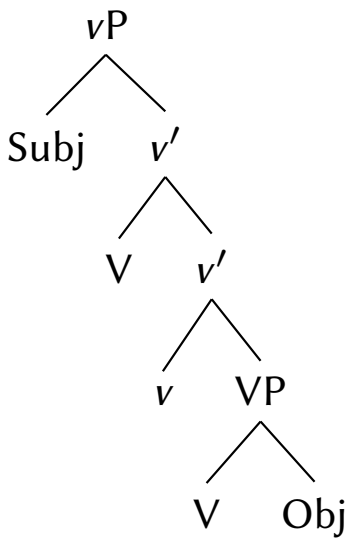

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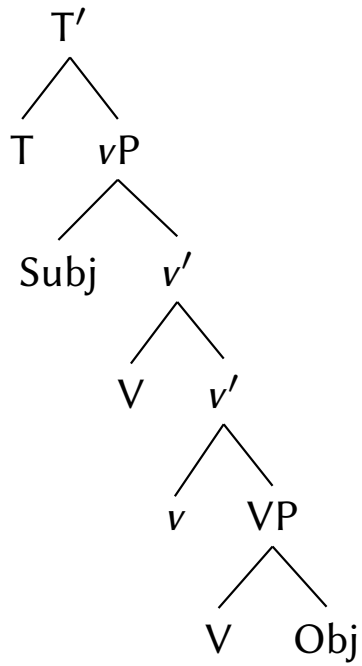

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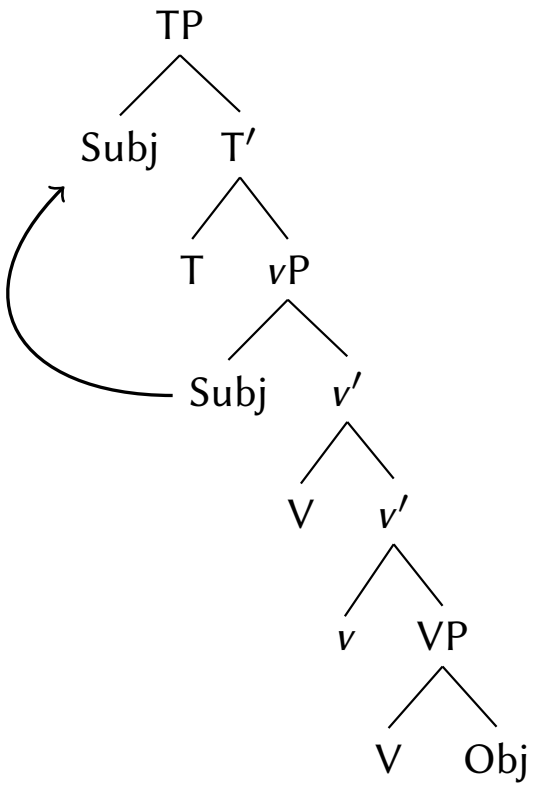

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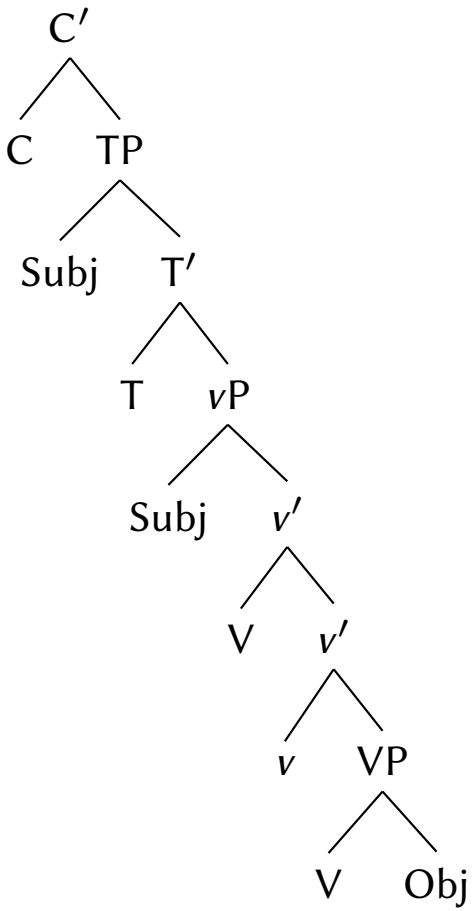

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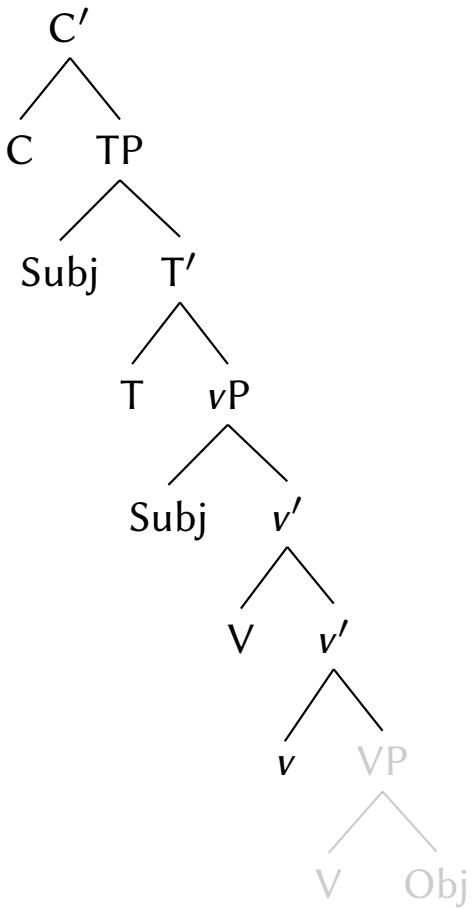

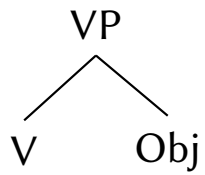

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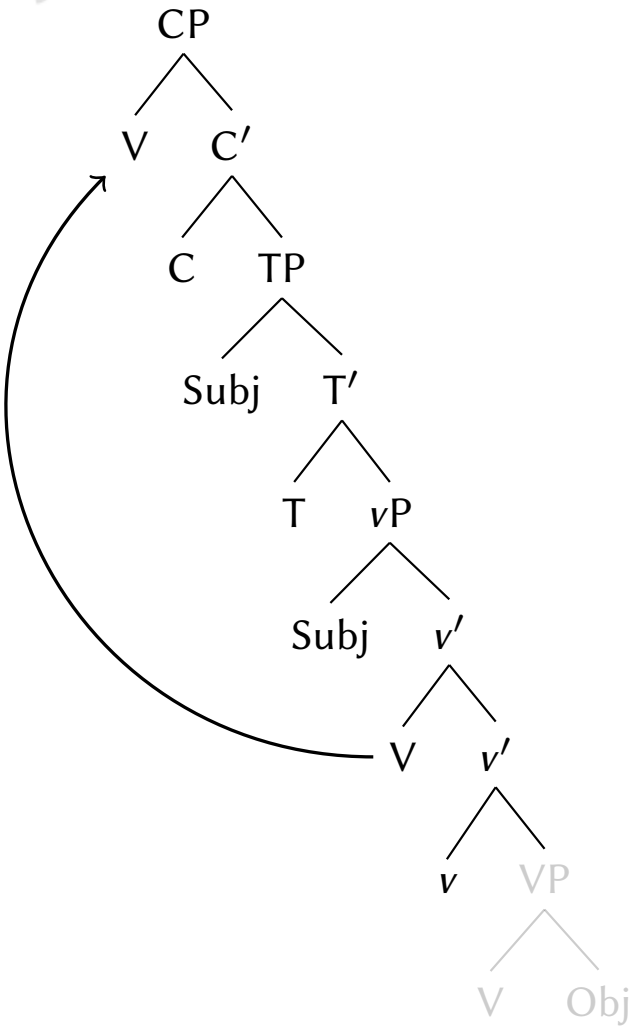

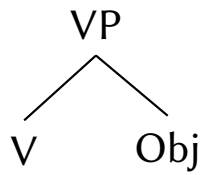

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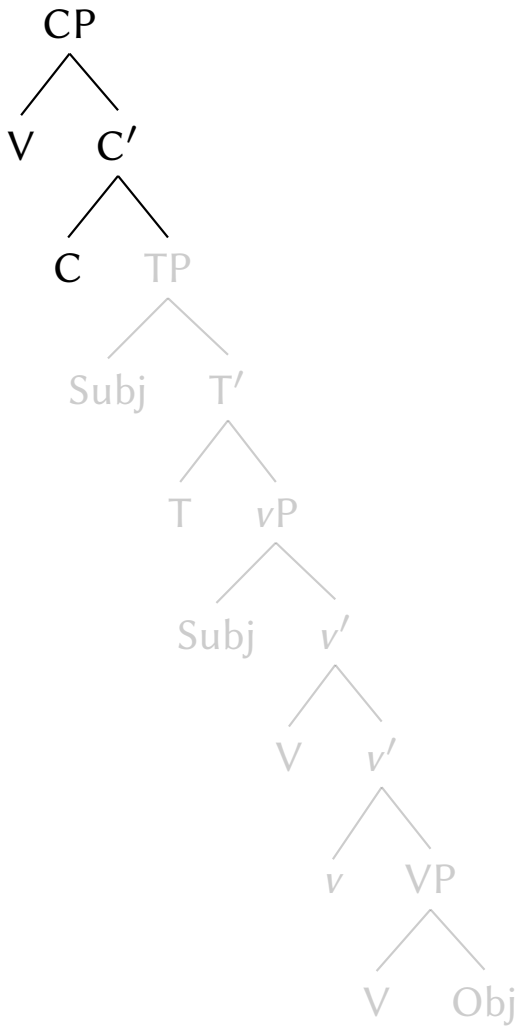

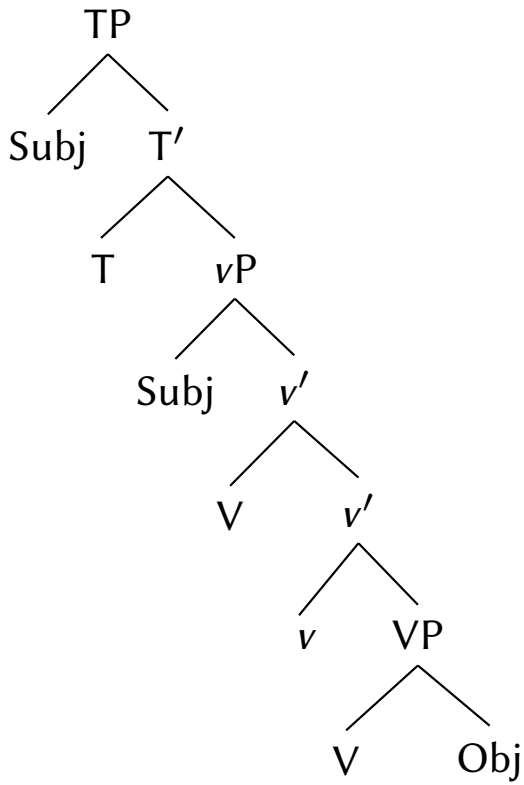

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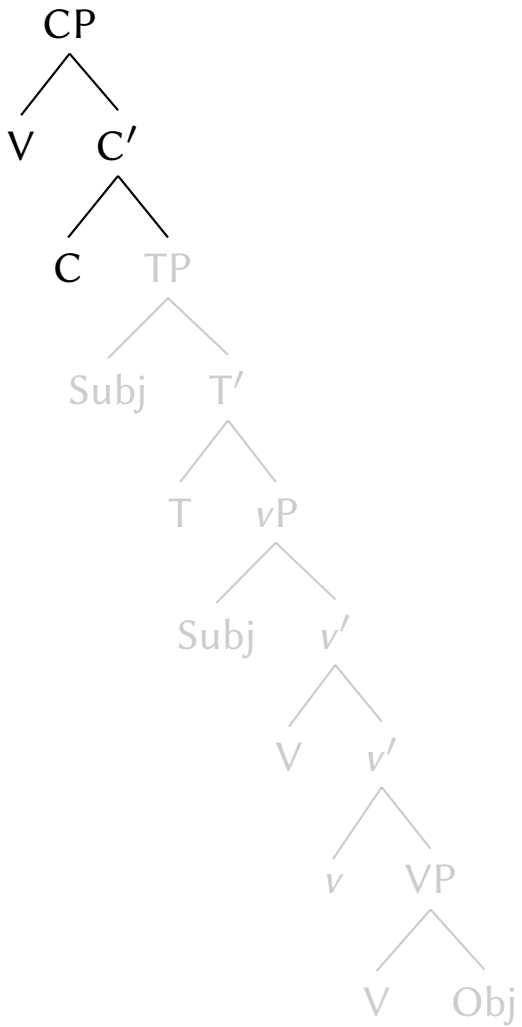

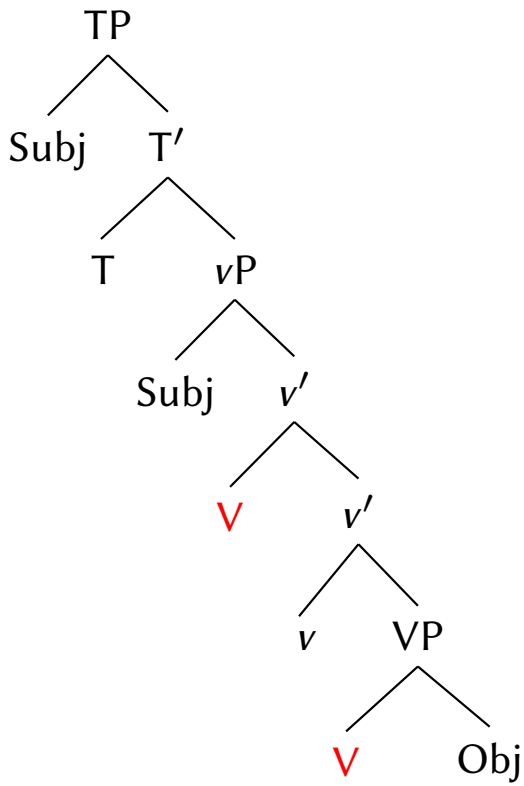

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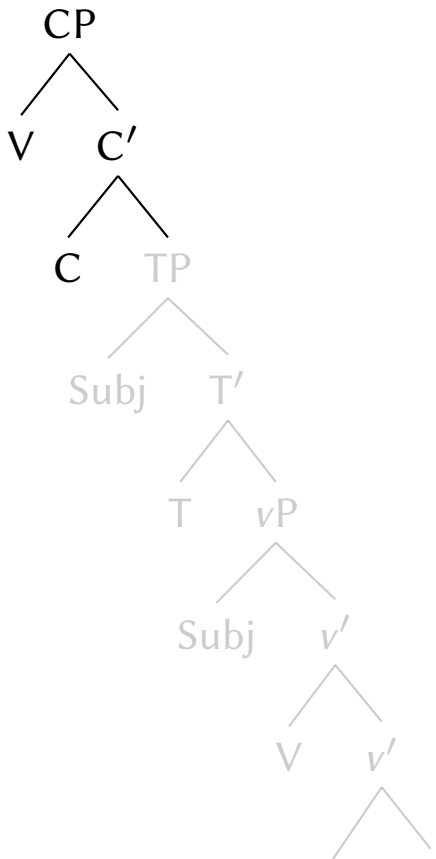

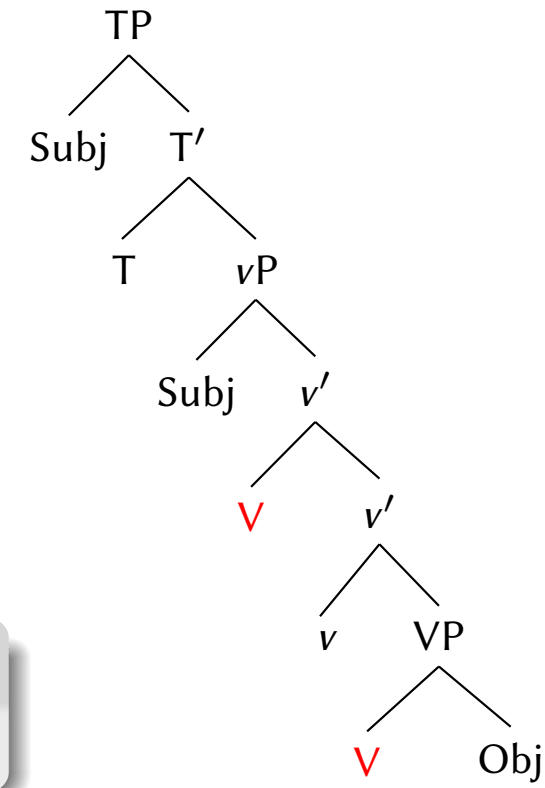

Chain Uniformity Condition (Chomsky 1995)

A chain is uniform with regard to phrase structure status.

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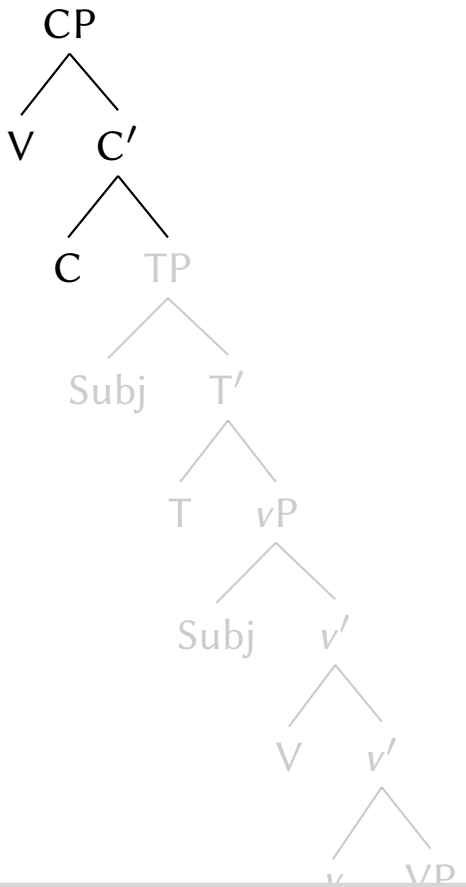

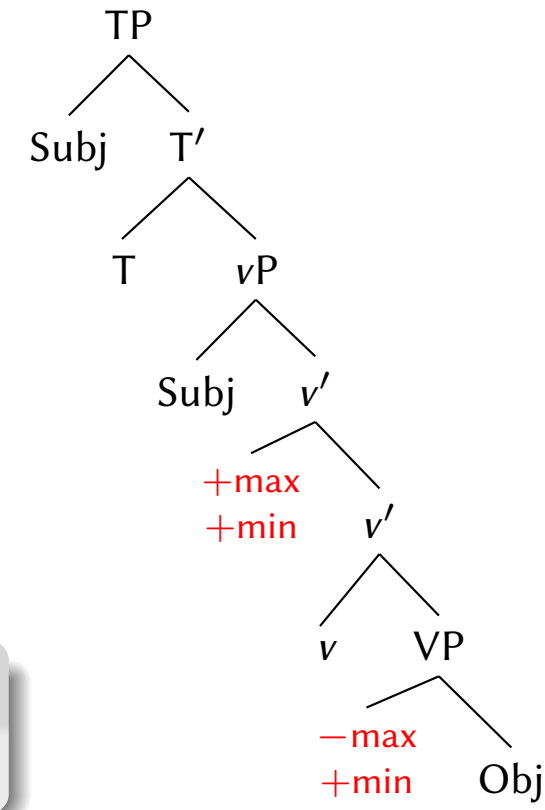

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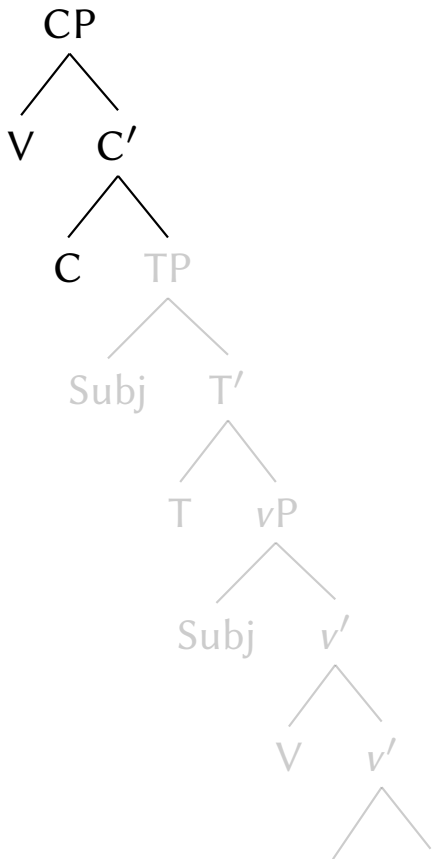

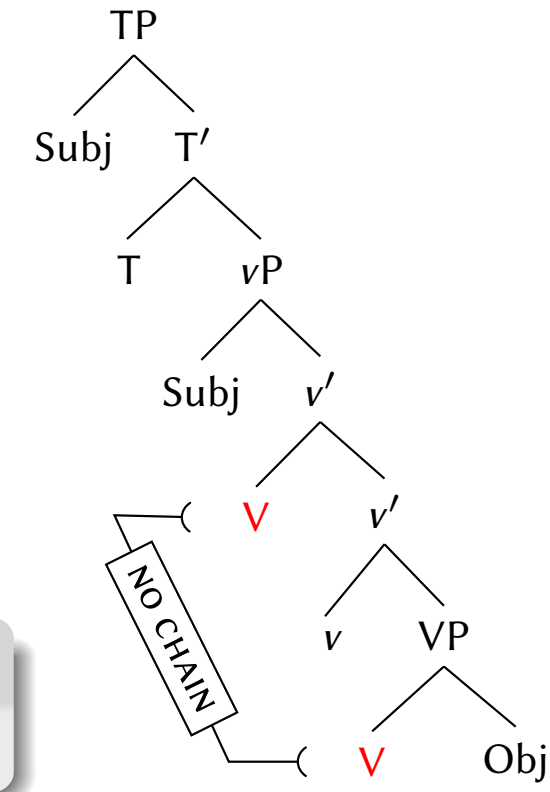

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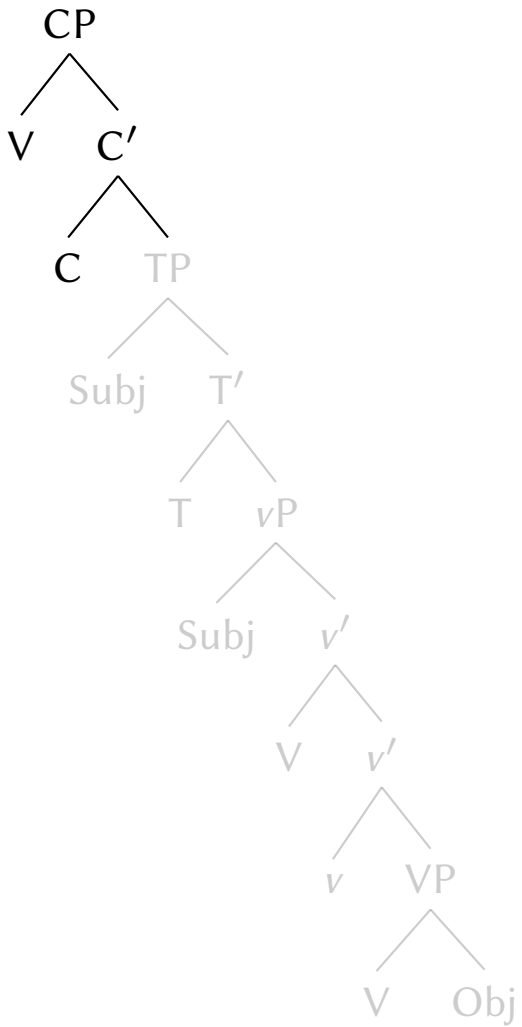

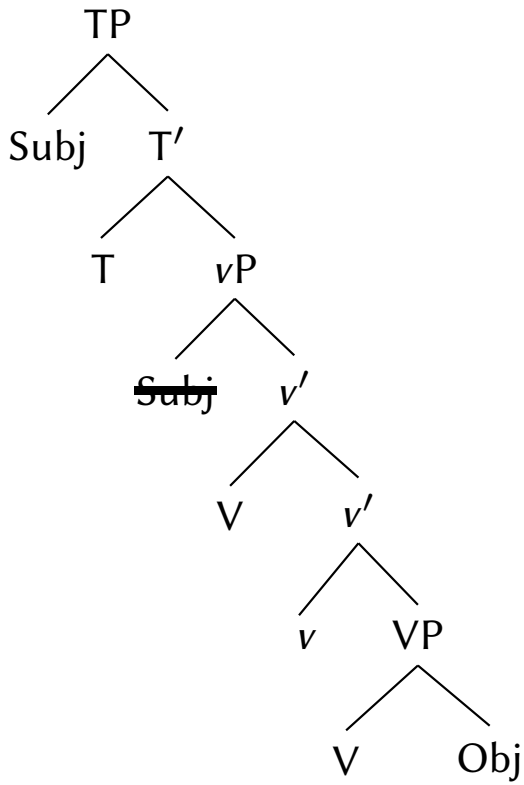

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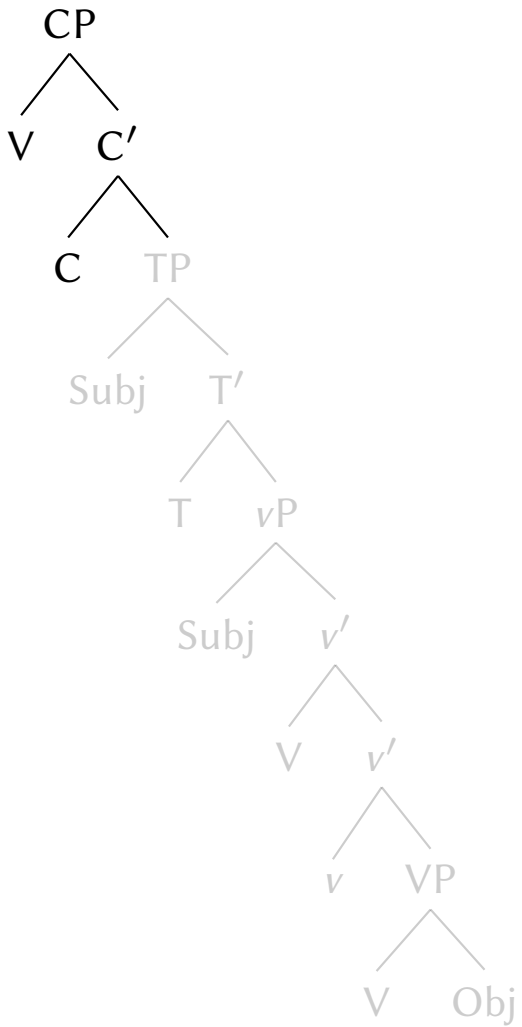

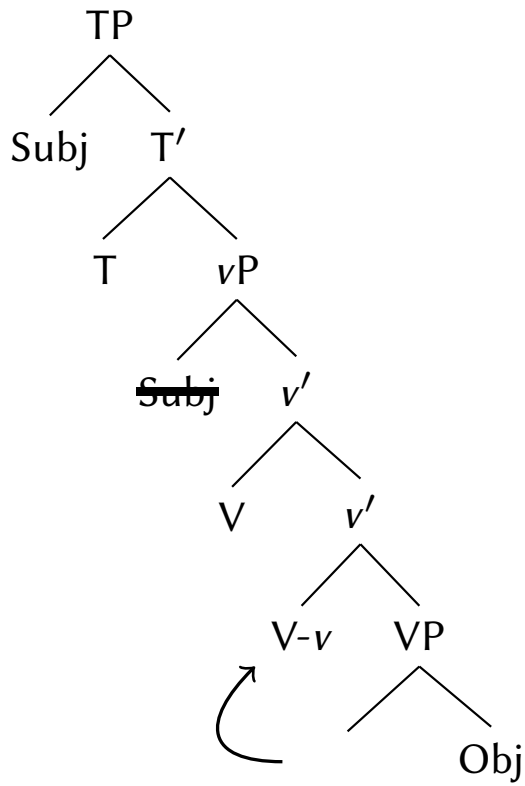

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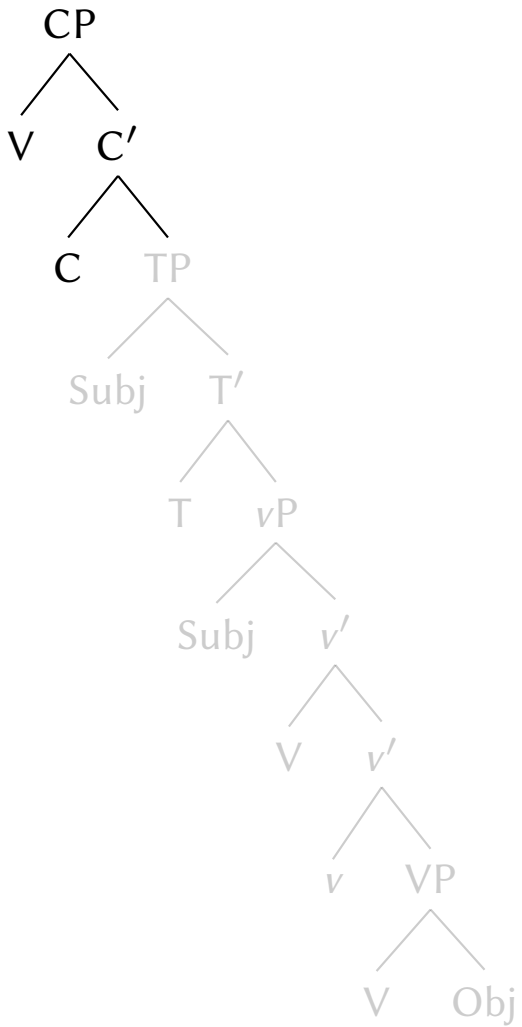

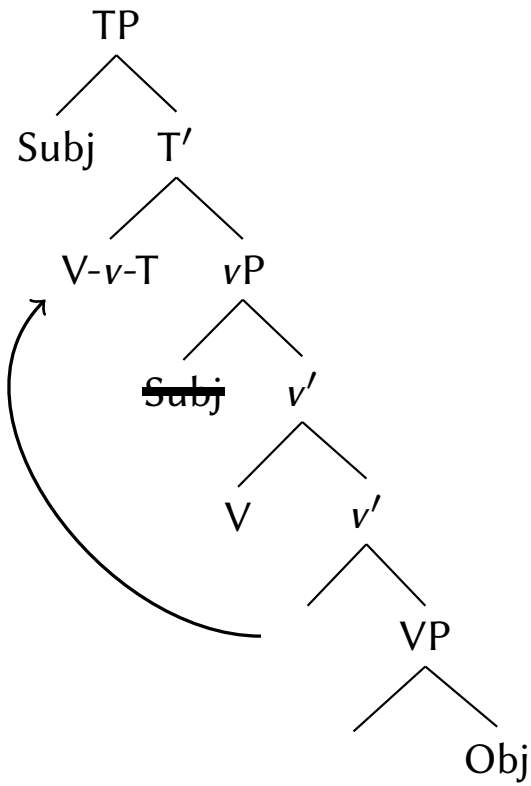

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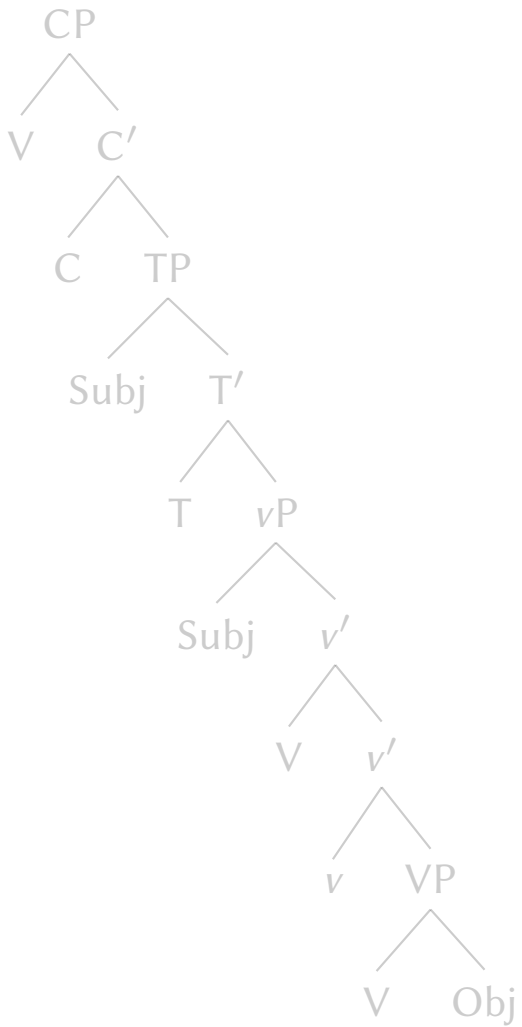

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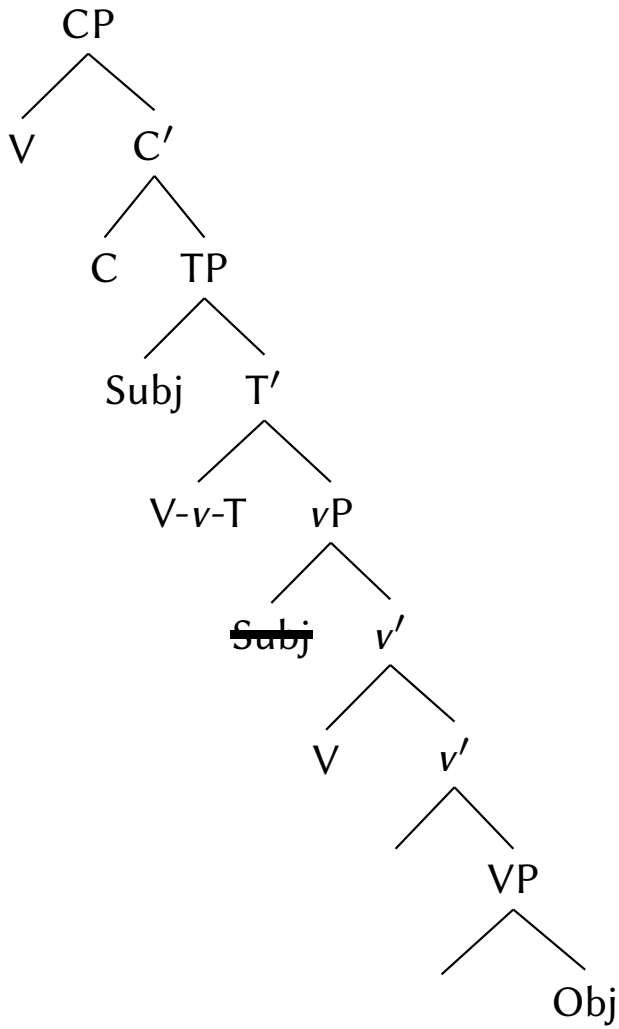

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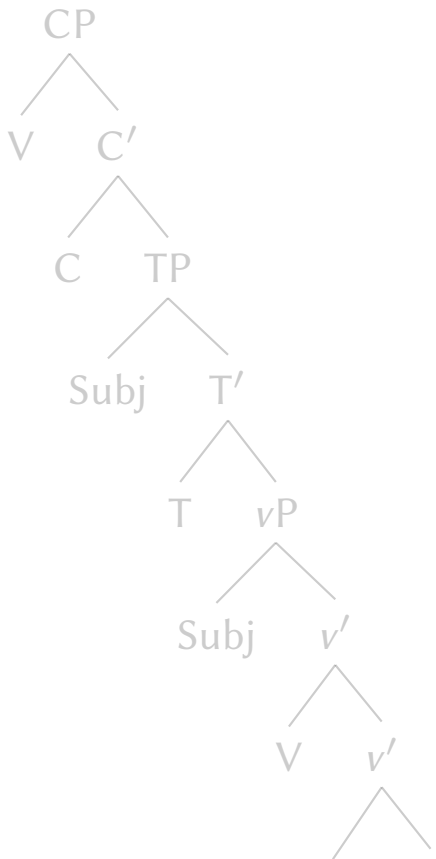

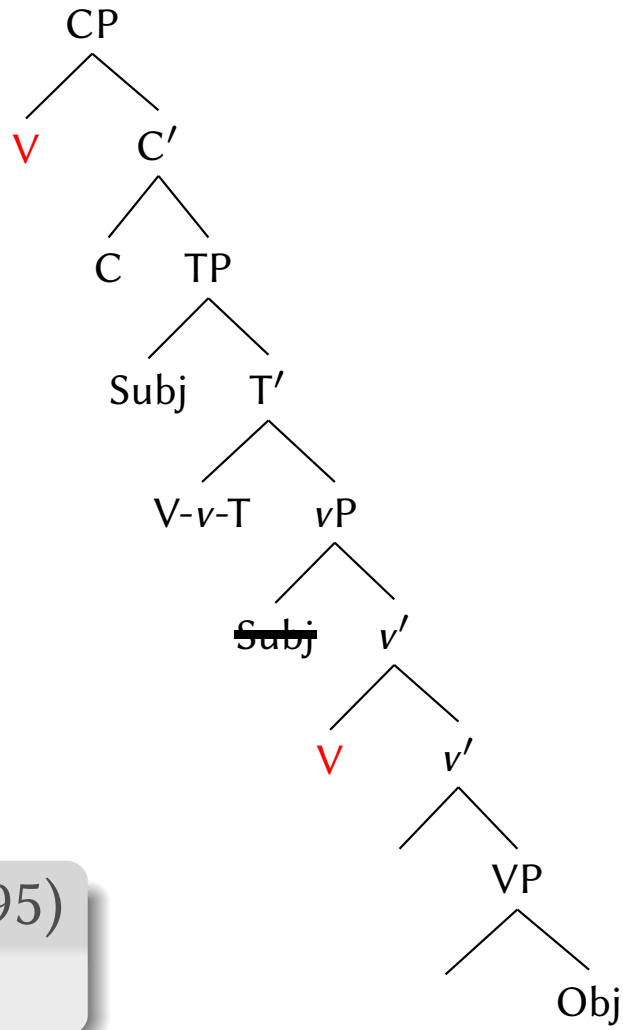

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A chain is uniform with regard to phrase structure status.

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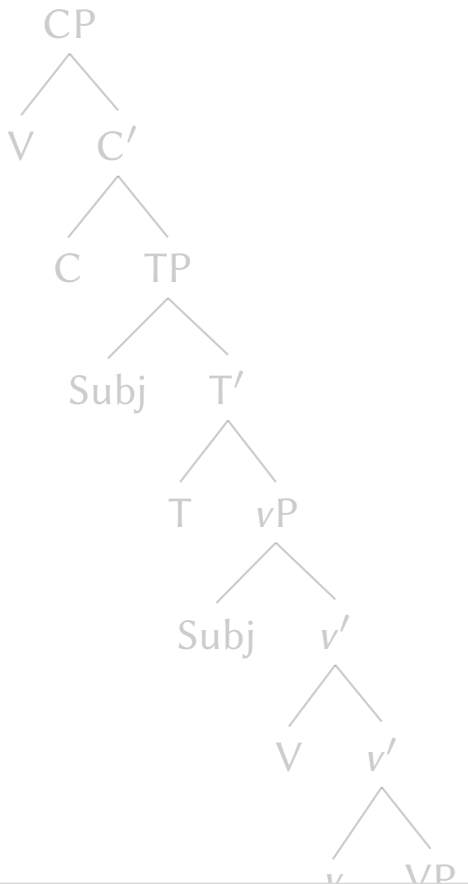

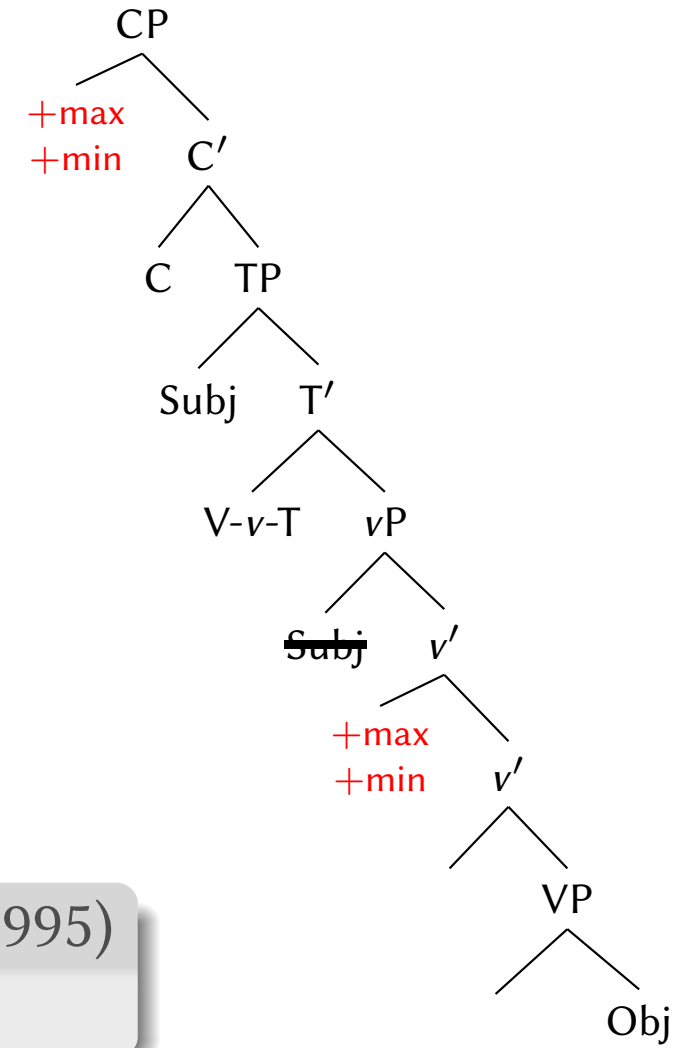

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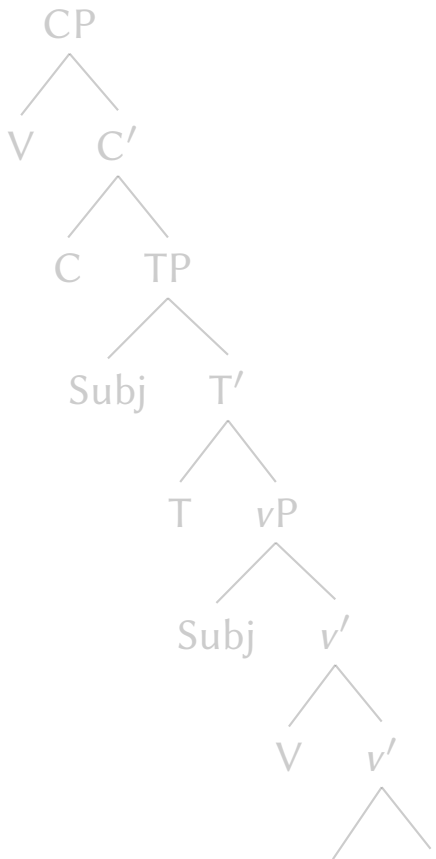

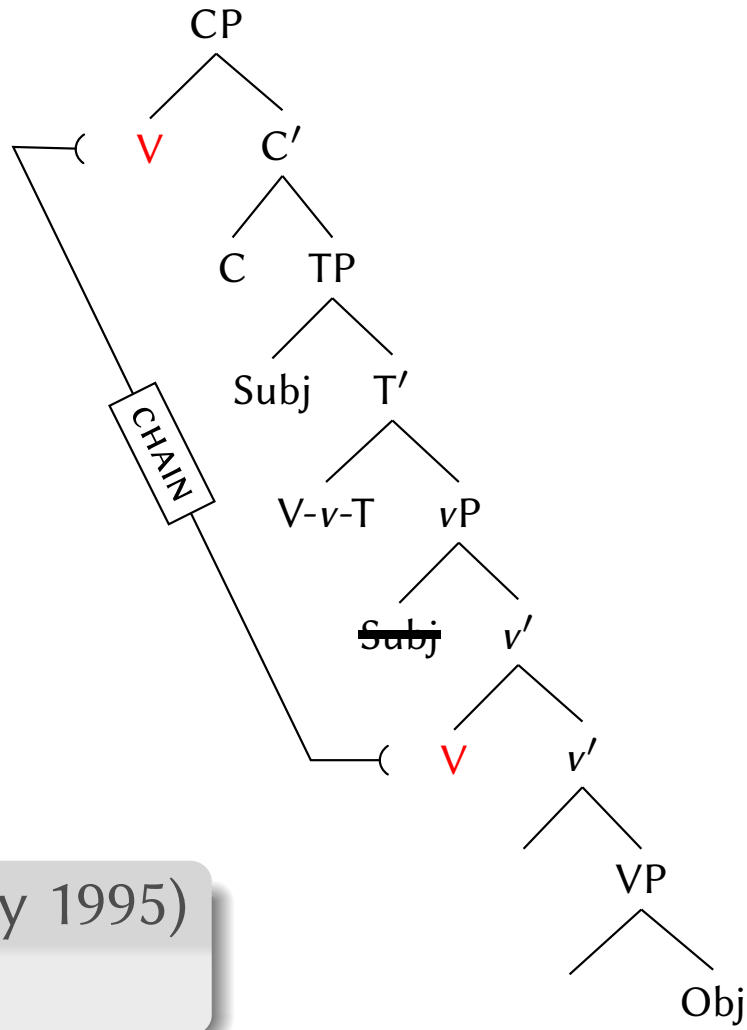

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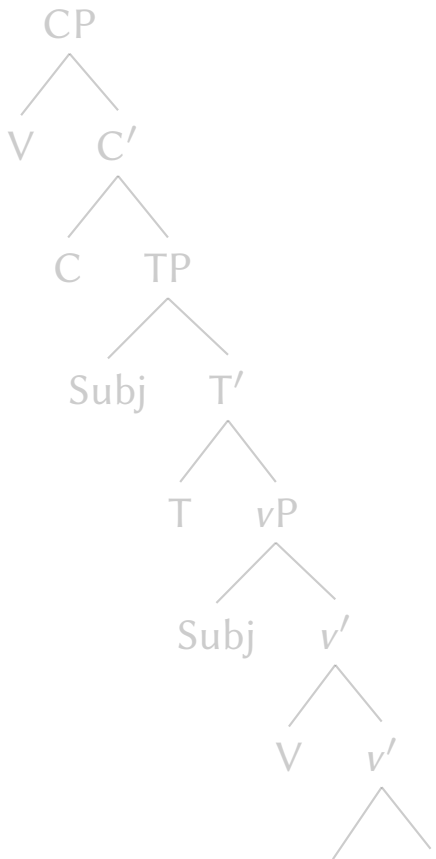

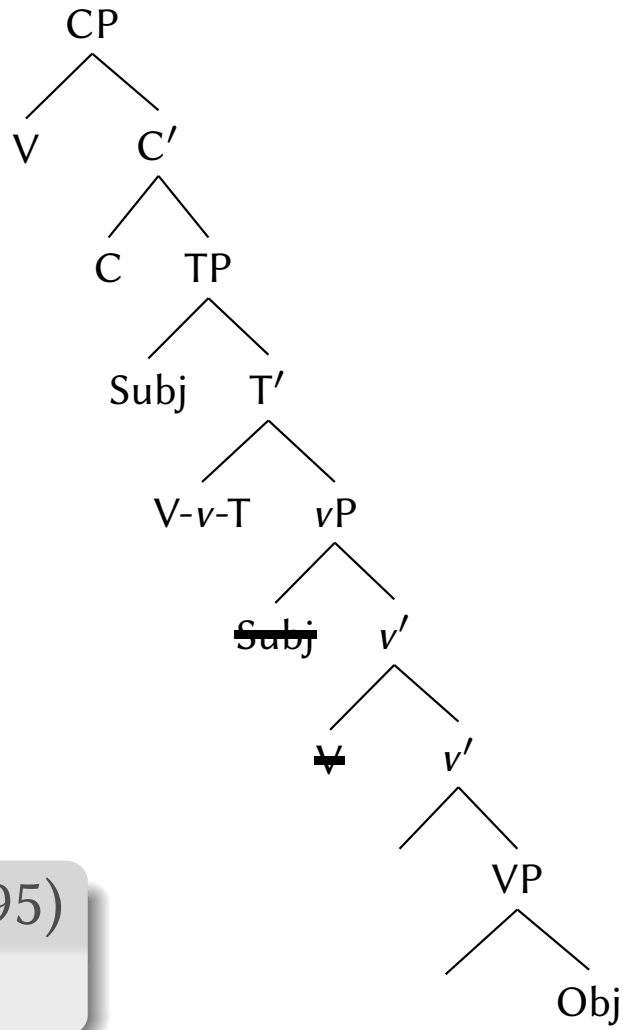

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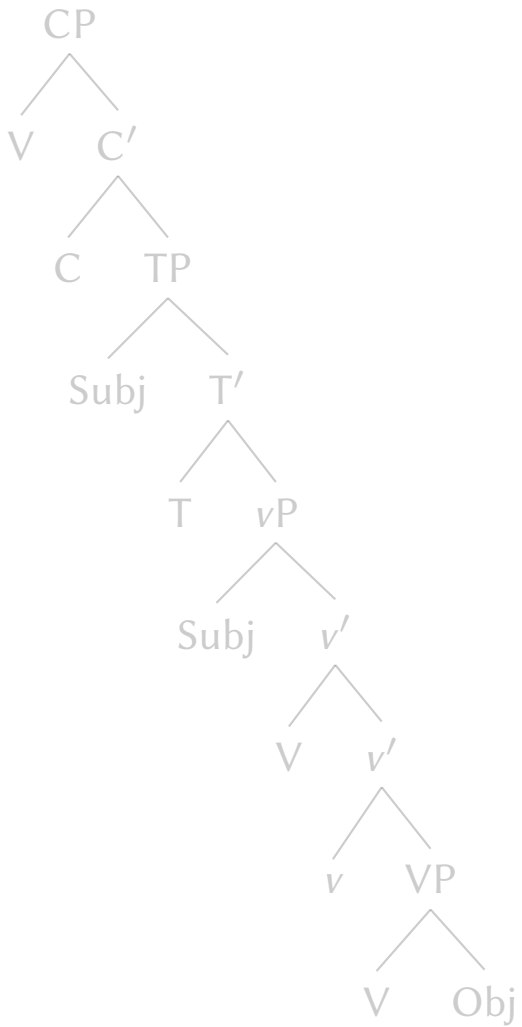
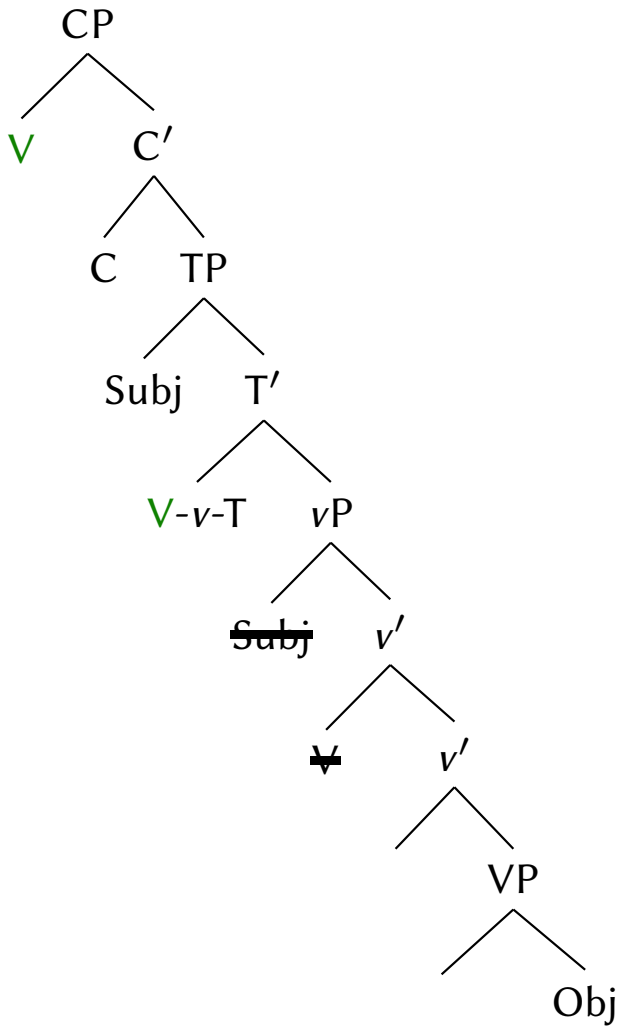




CR > HHM

Asymmetric pattern:

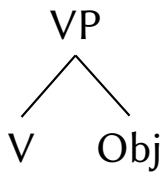
- VP fronting: V is deleted as part of the VP before it can move → *do*-support
- V fronting: Peculiarities of $\bar{A}$ head movement protect V from deletion → verb doubling

HHM > CR in VP fronting → verb doubling

(narrow) syntax

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

PF



HHM > CR in VP fronting → verb doubling

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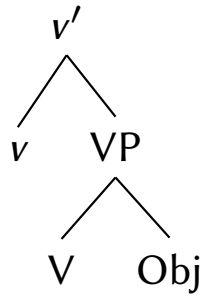

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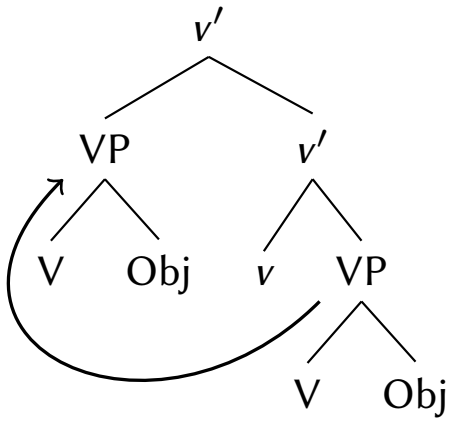

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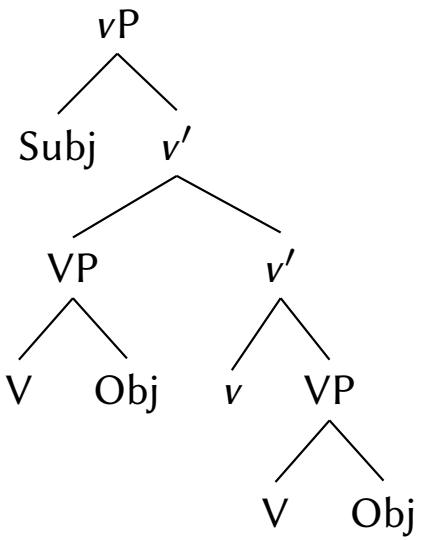

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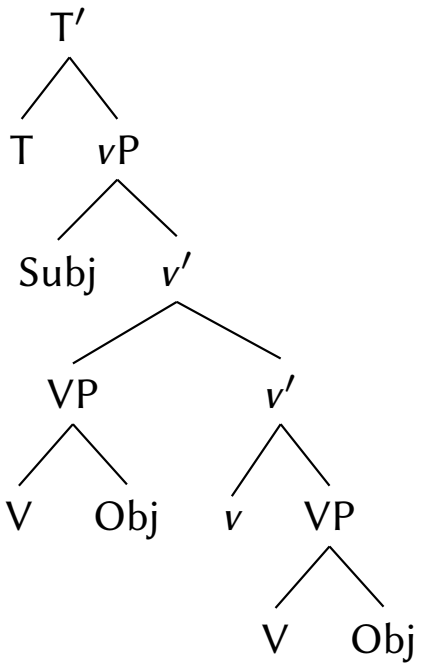

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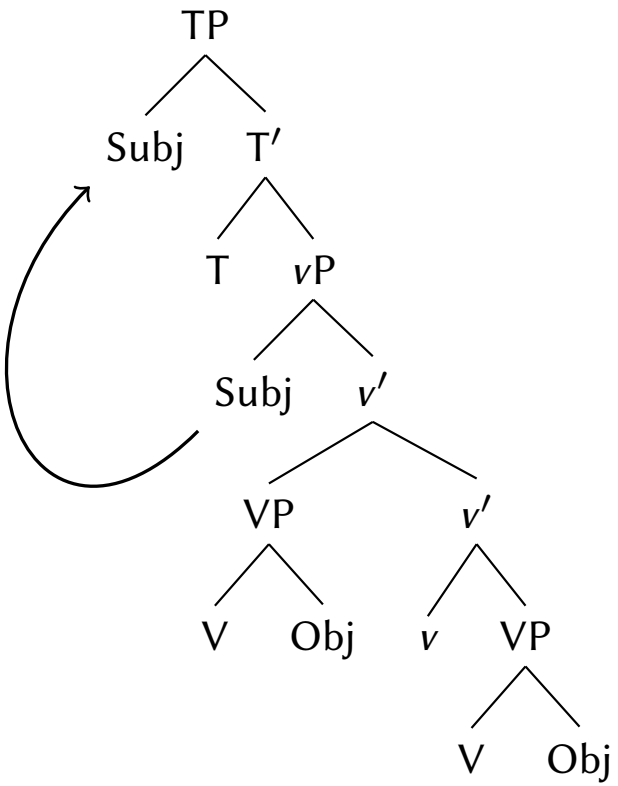

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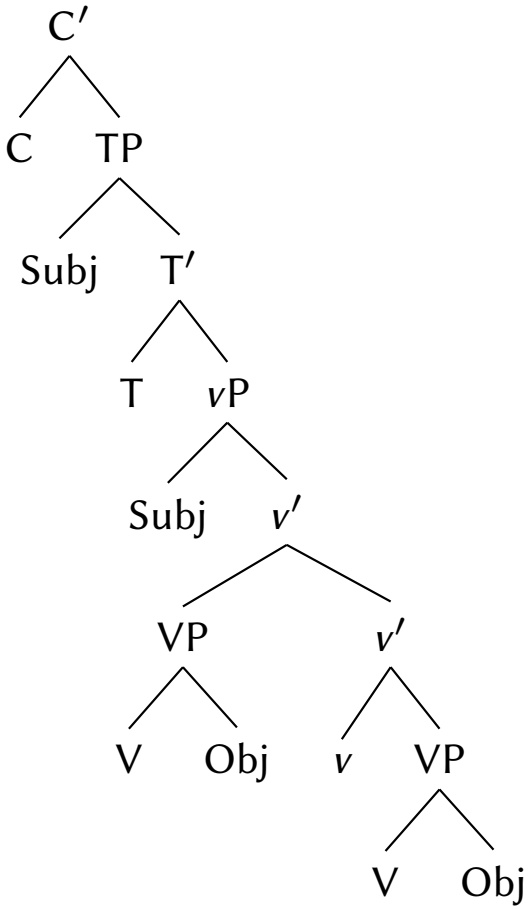

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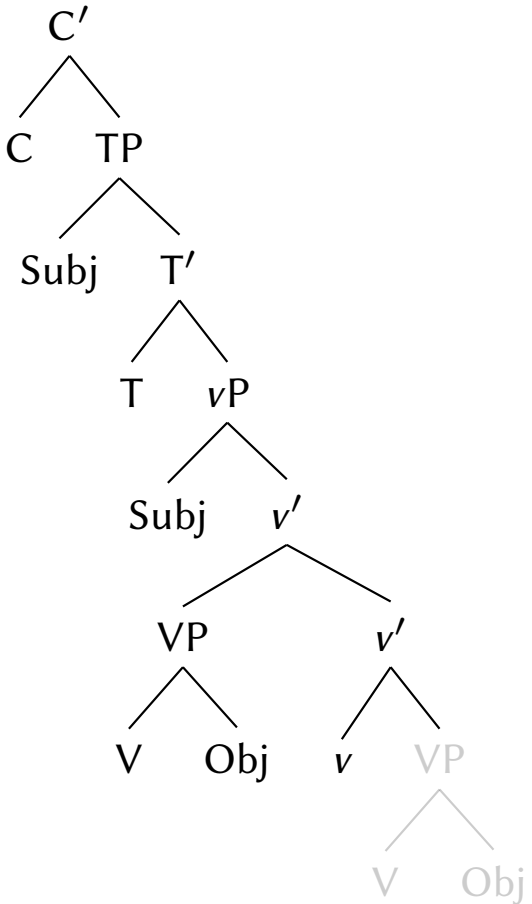

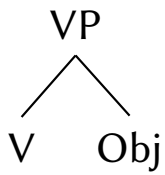

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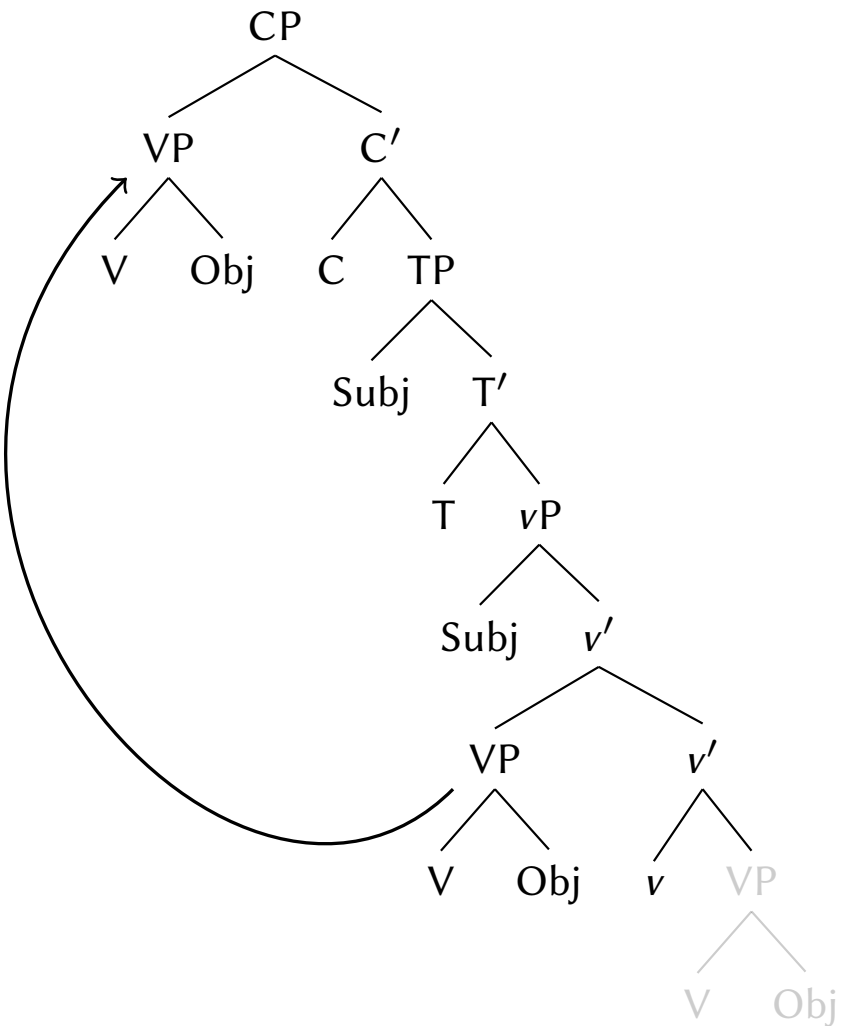

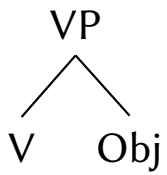

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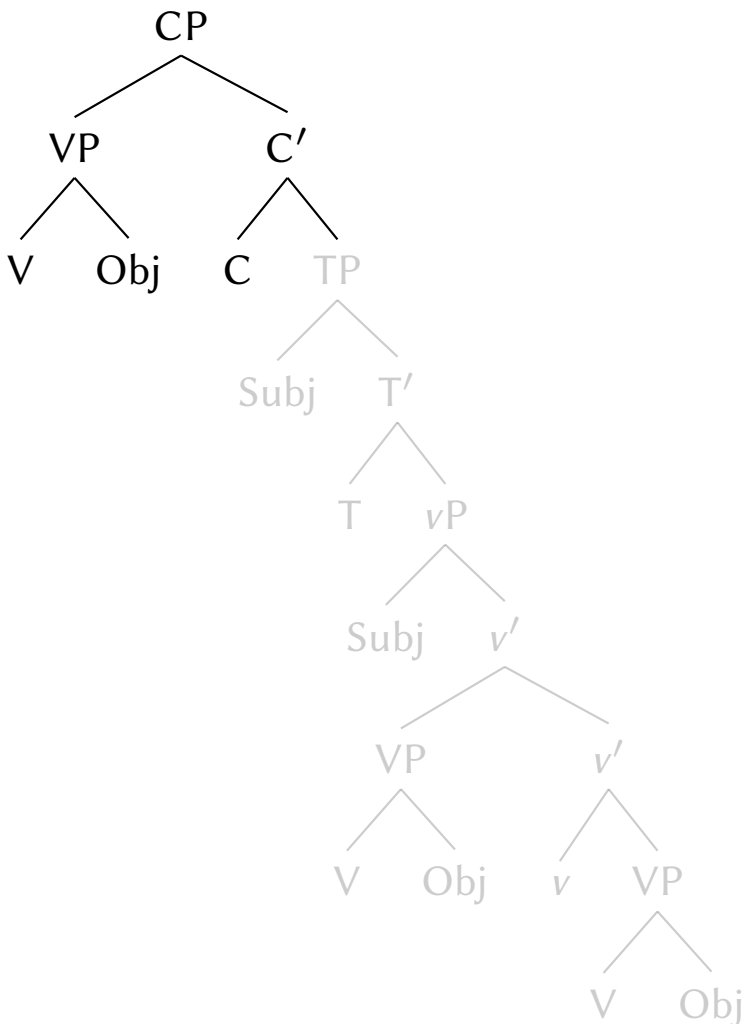

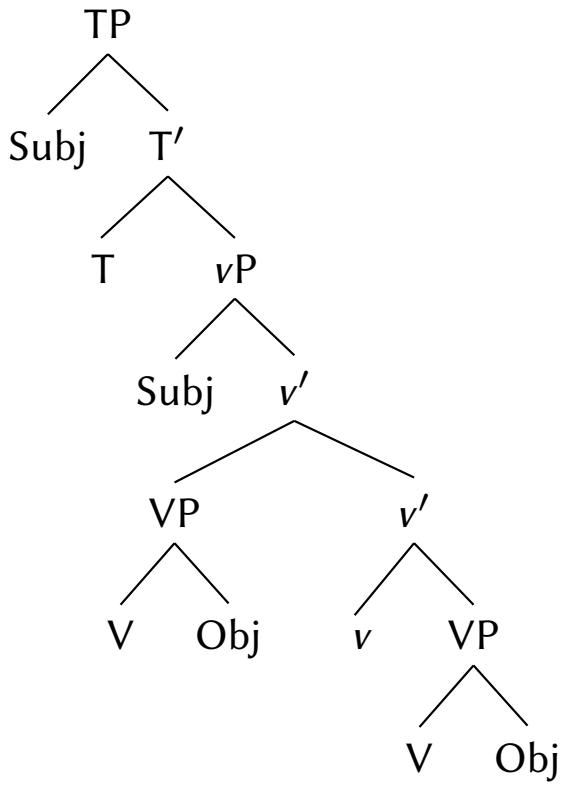

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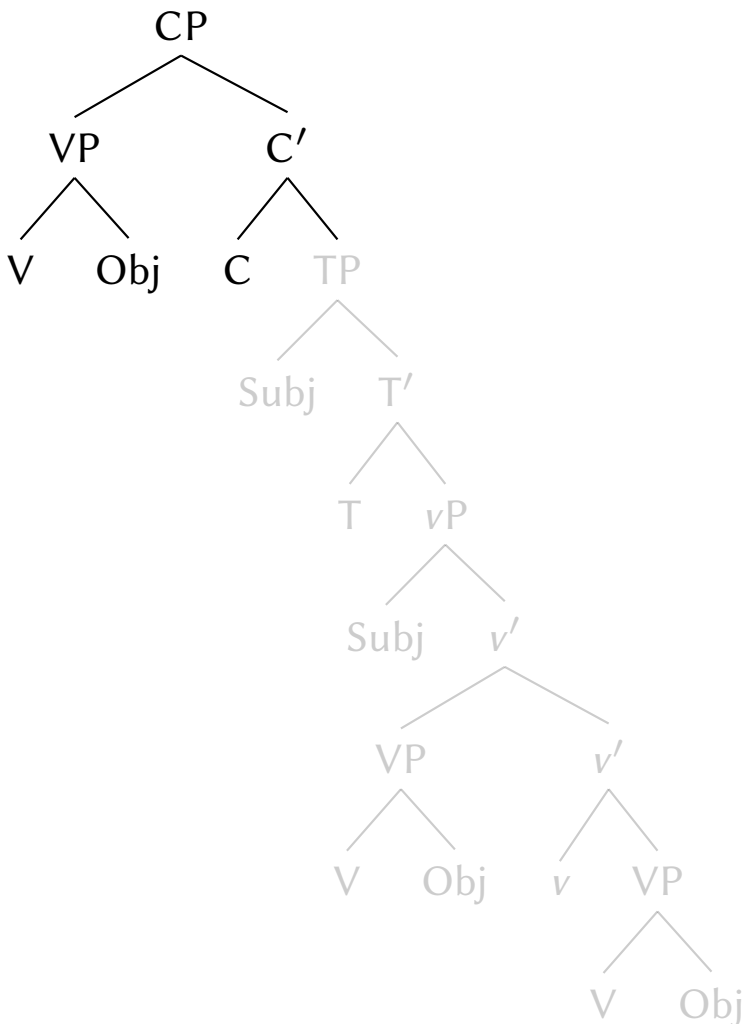

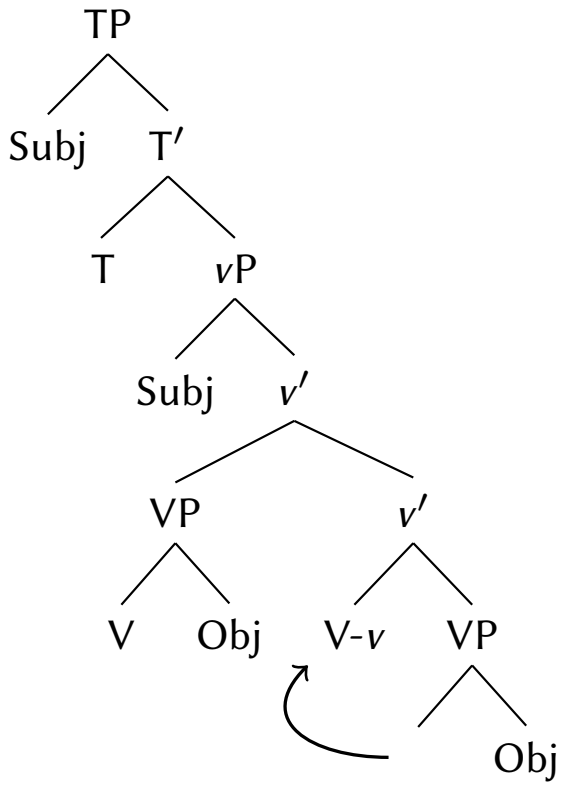

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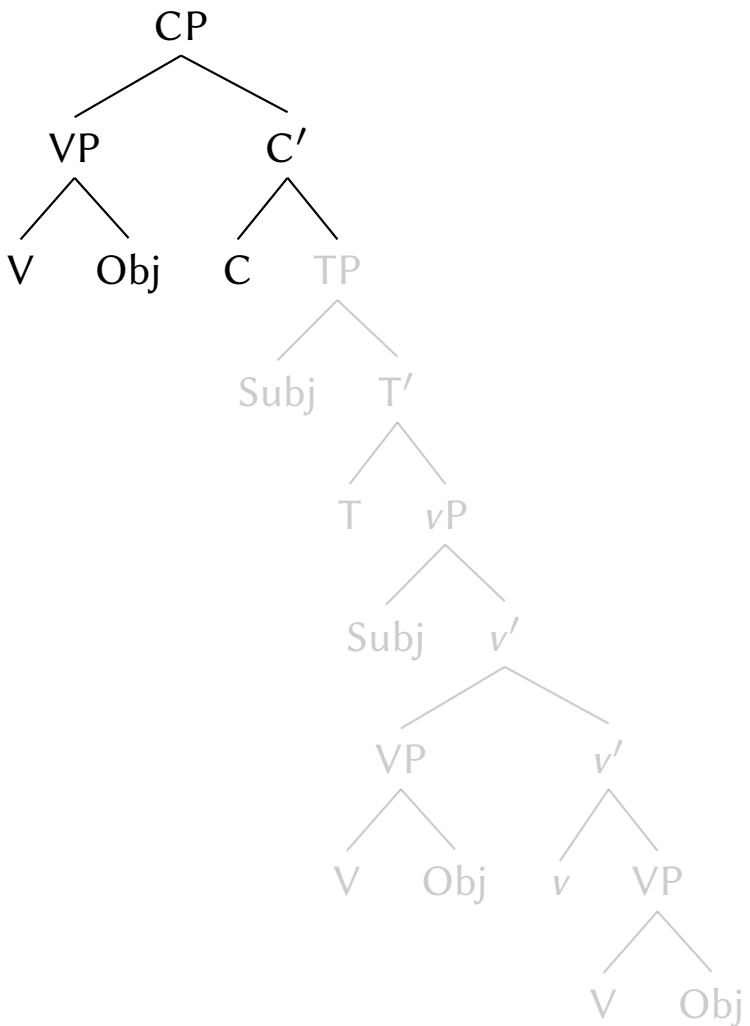

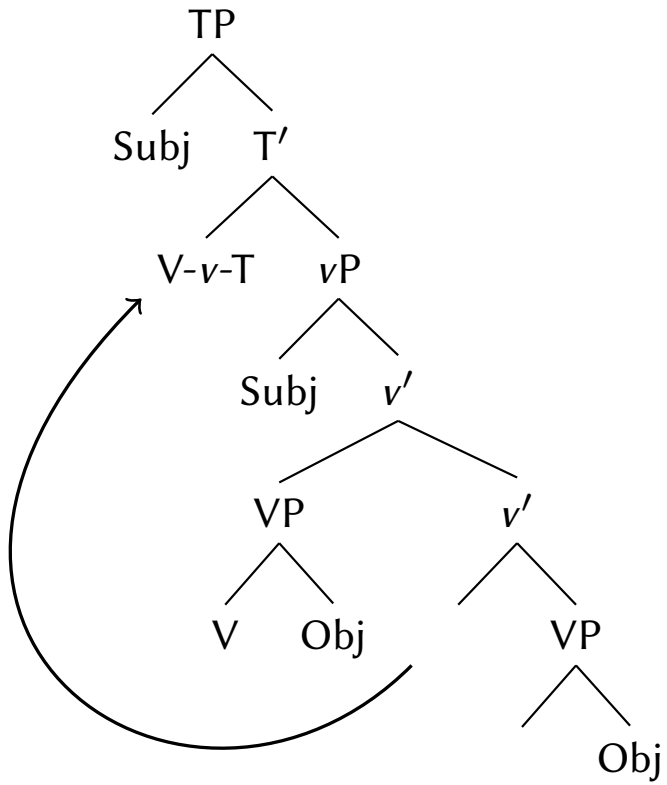

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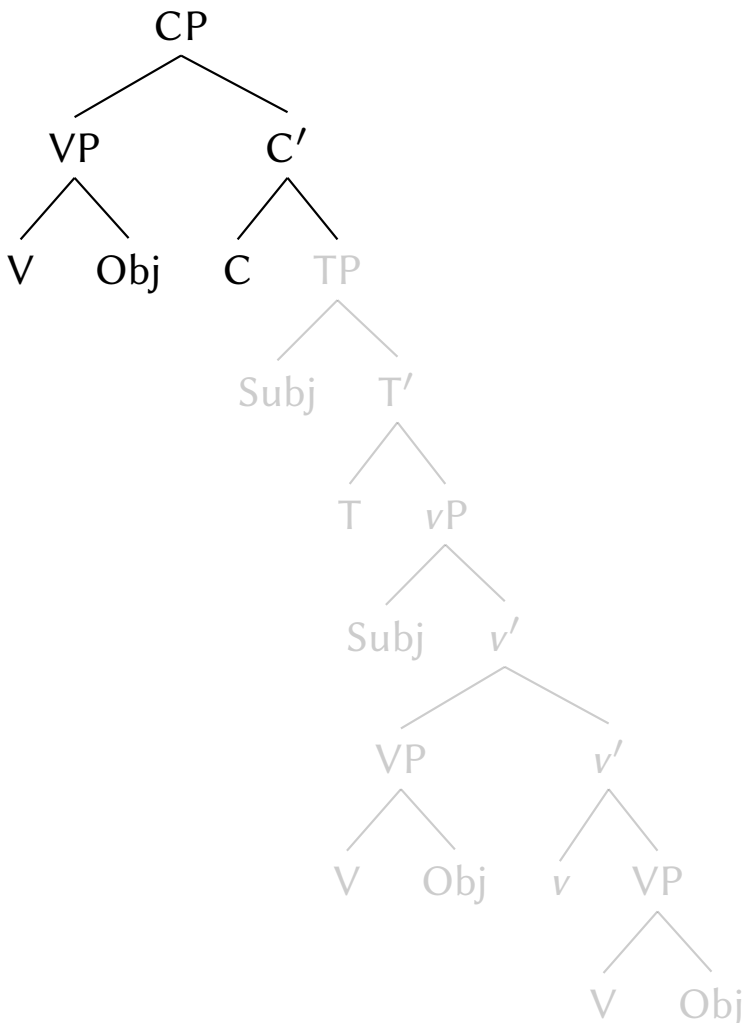

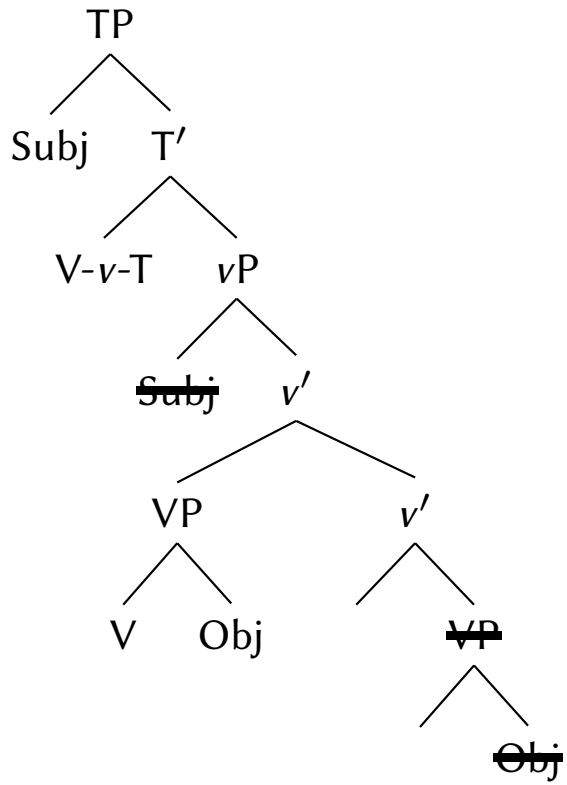

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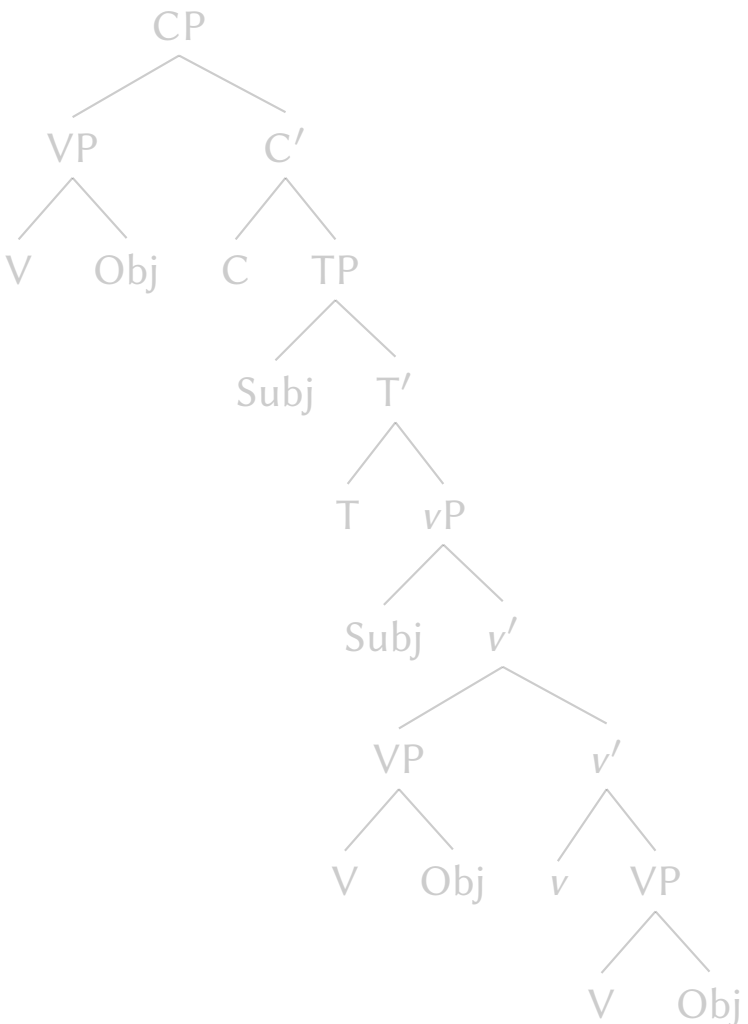

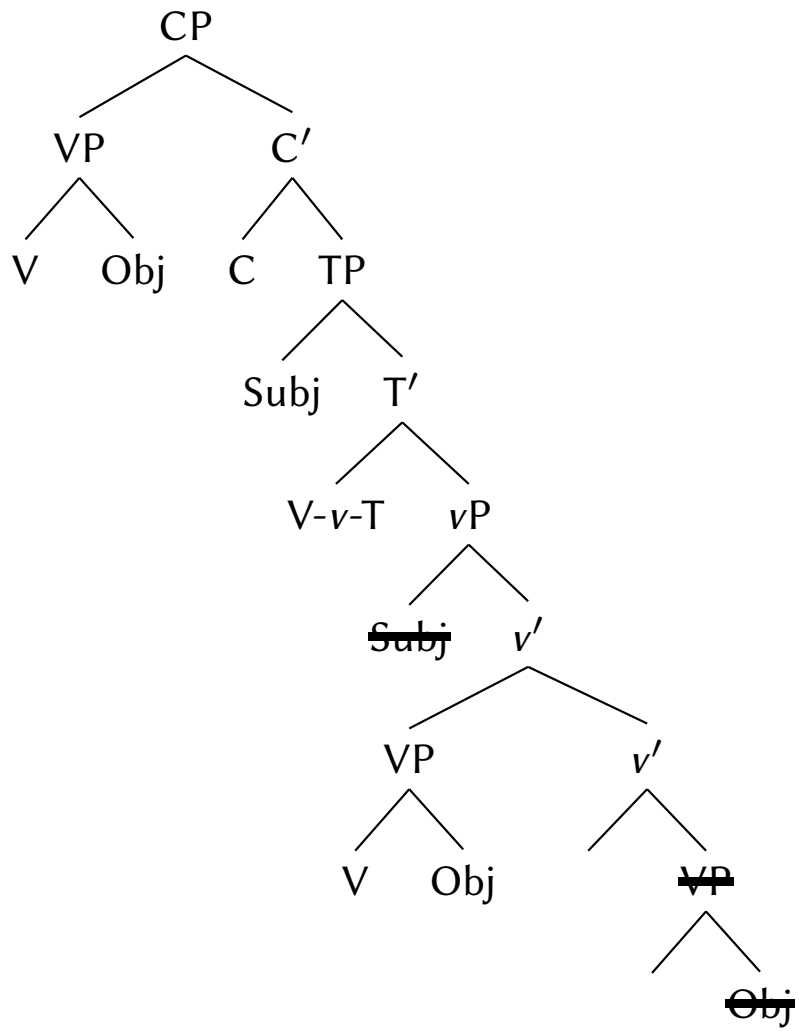

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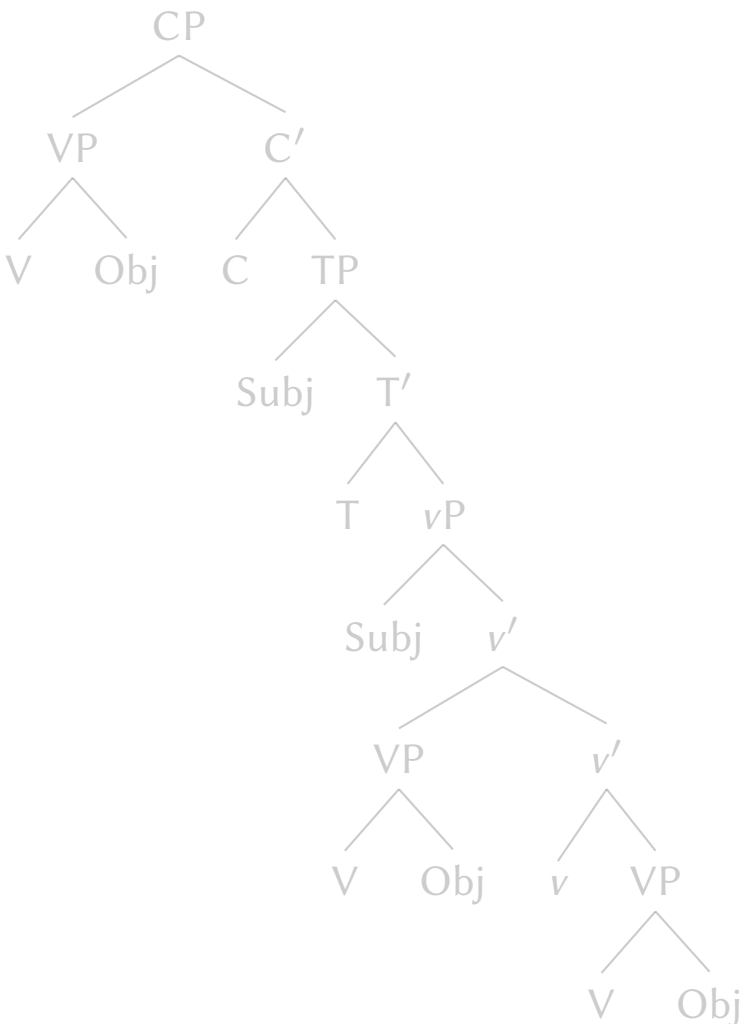

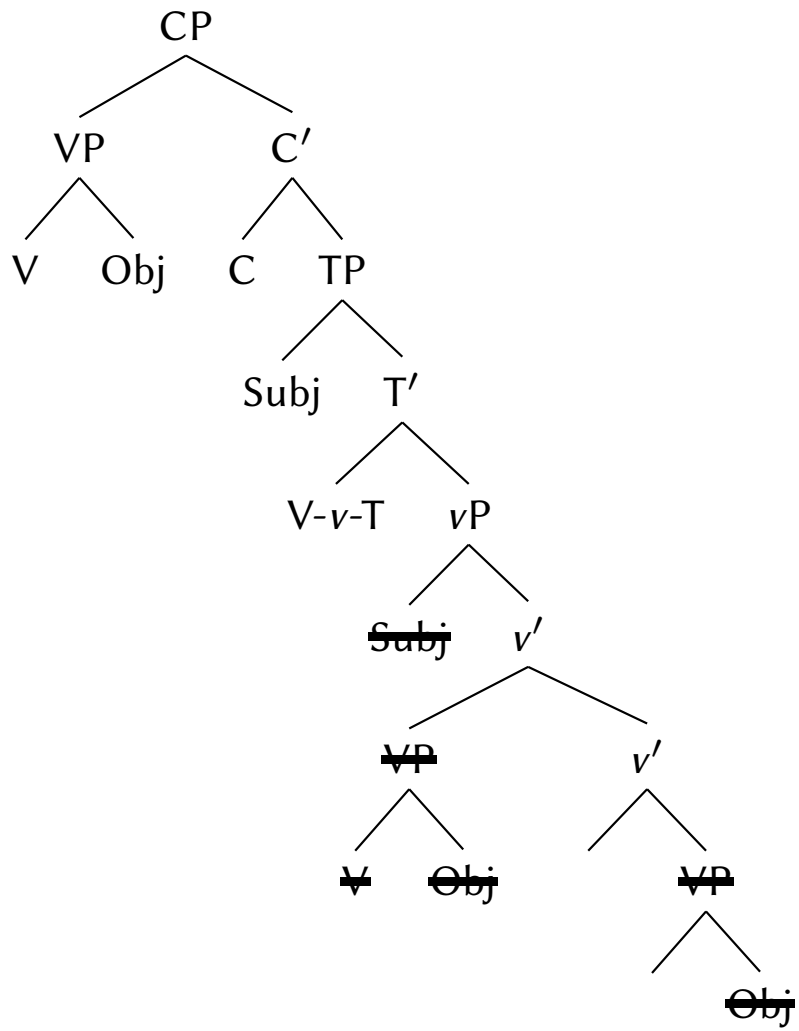

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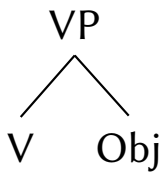

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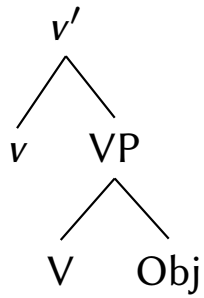

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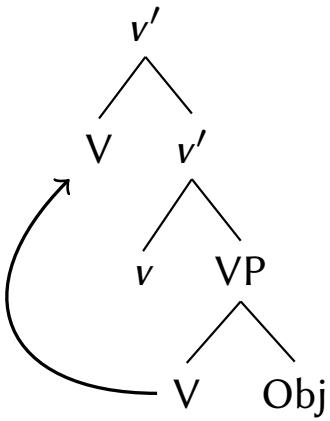

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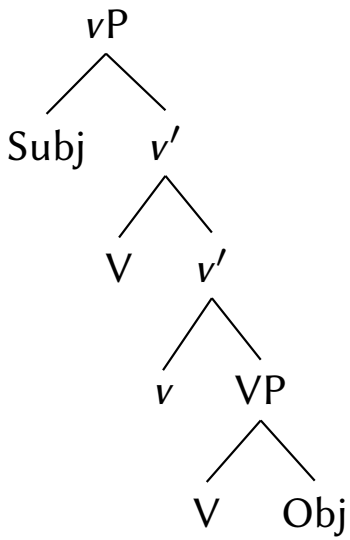

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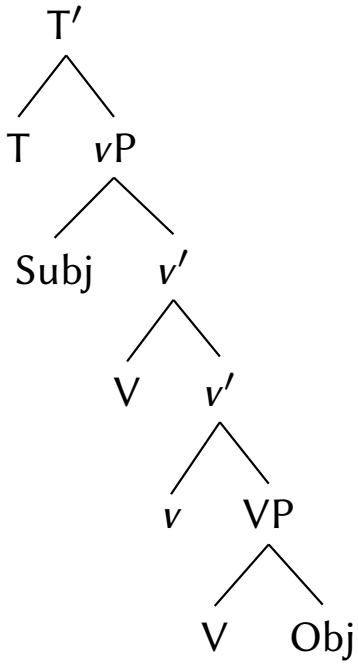

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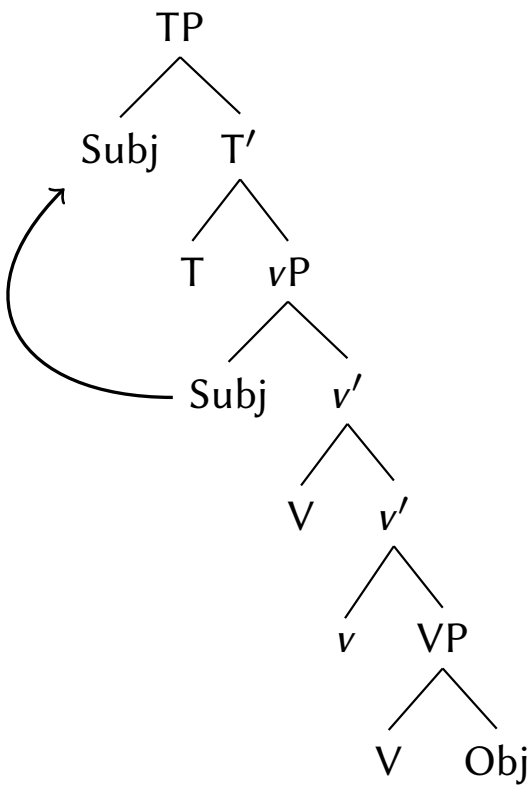

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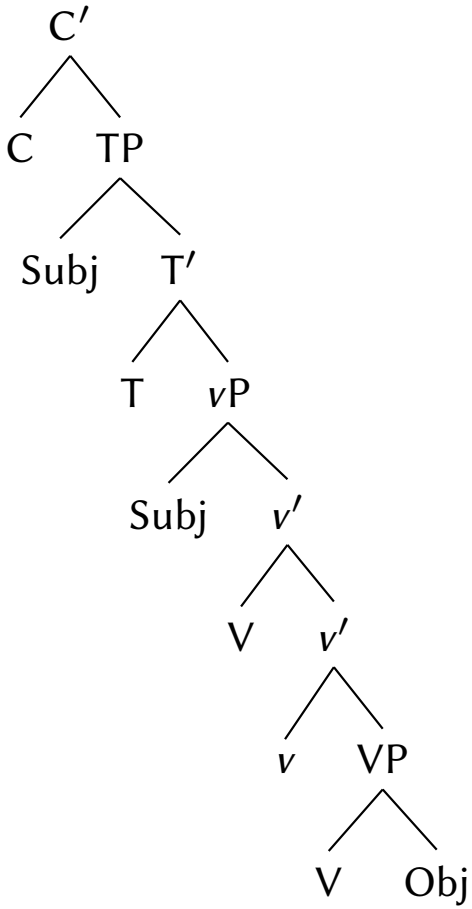

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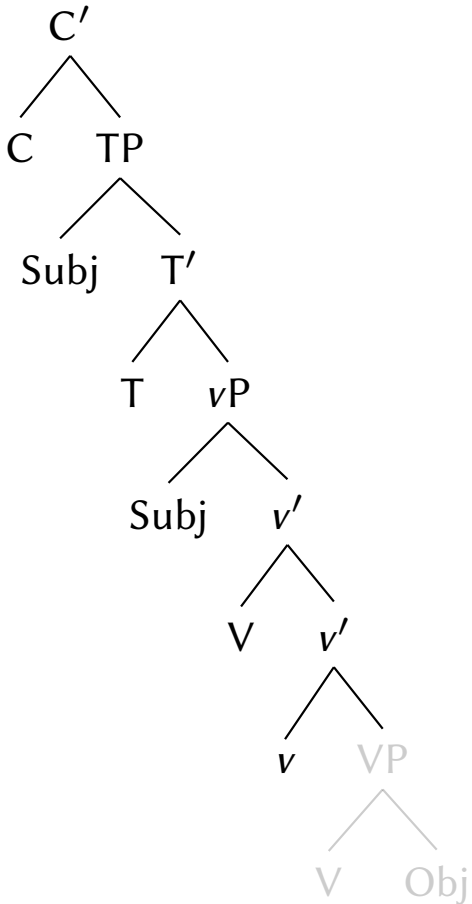

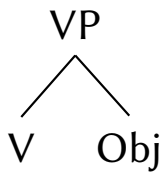

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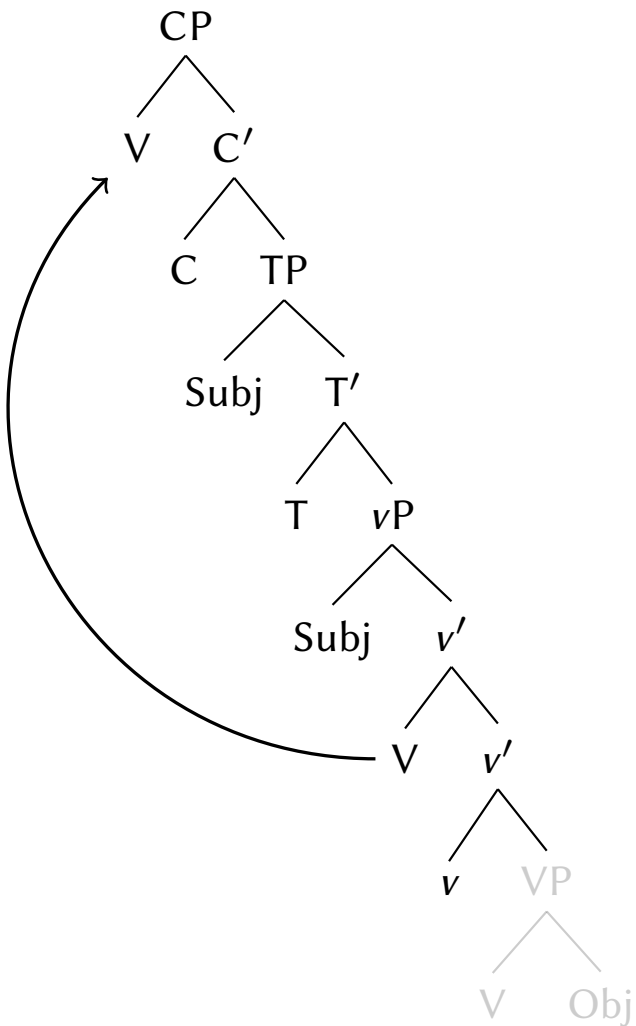

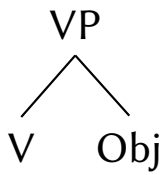

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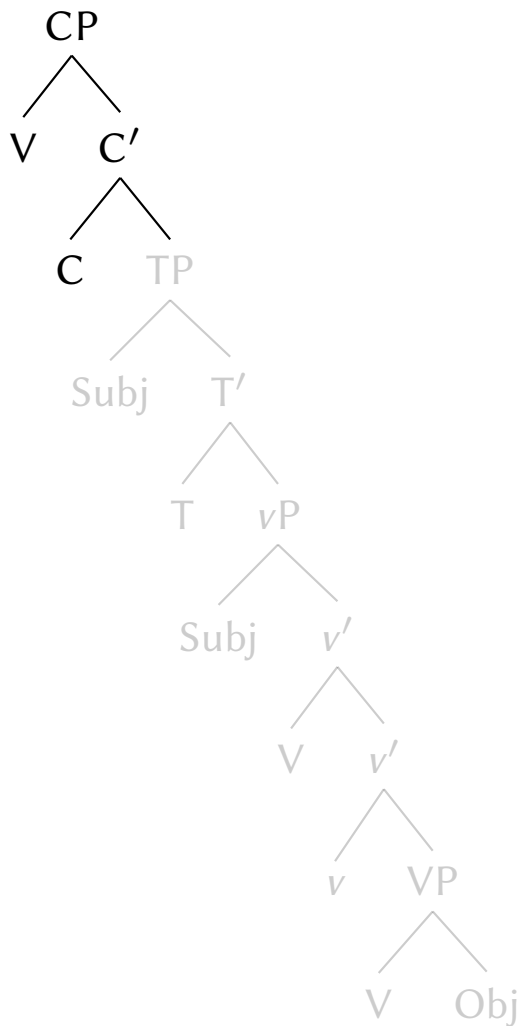

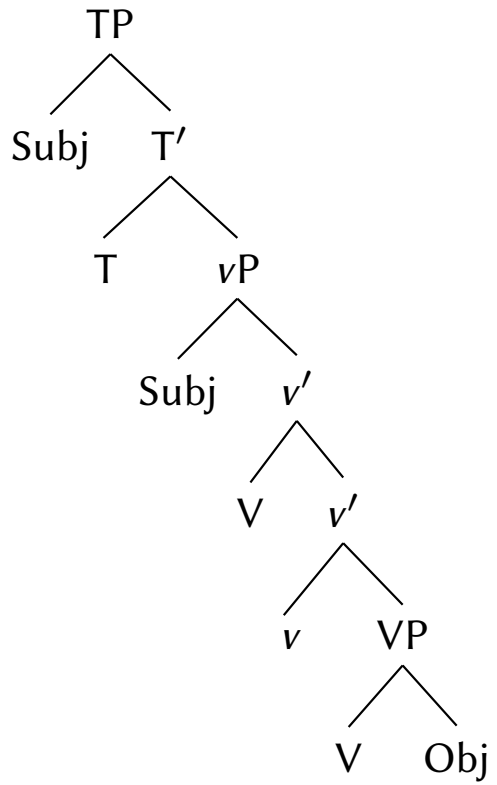

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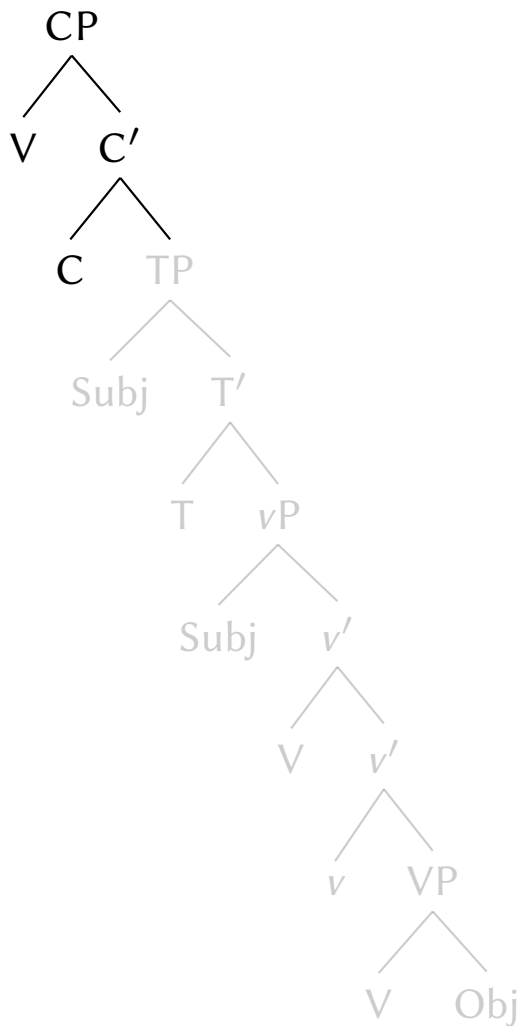

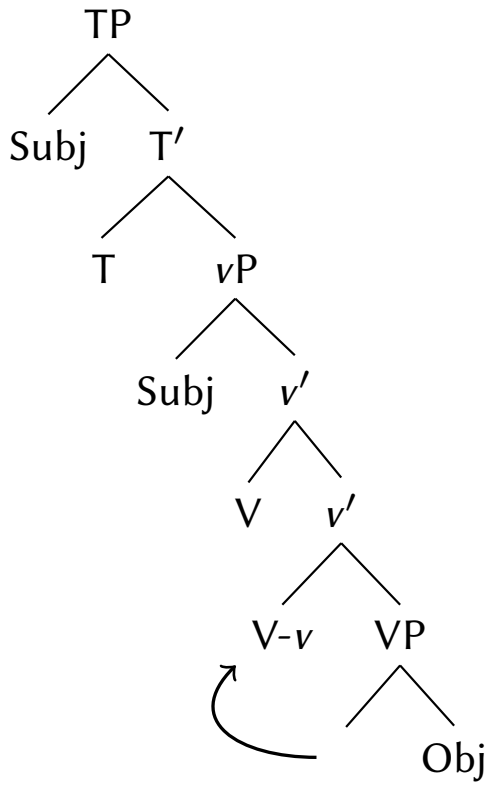

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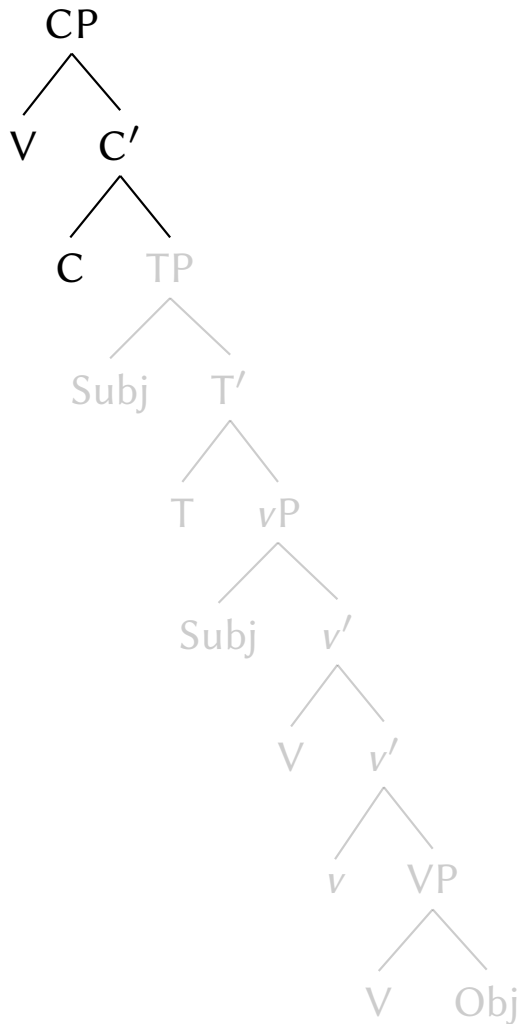

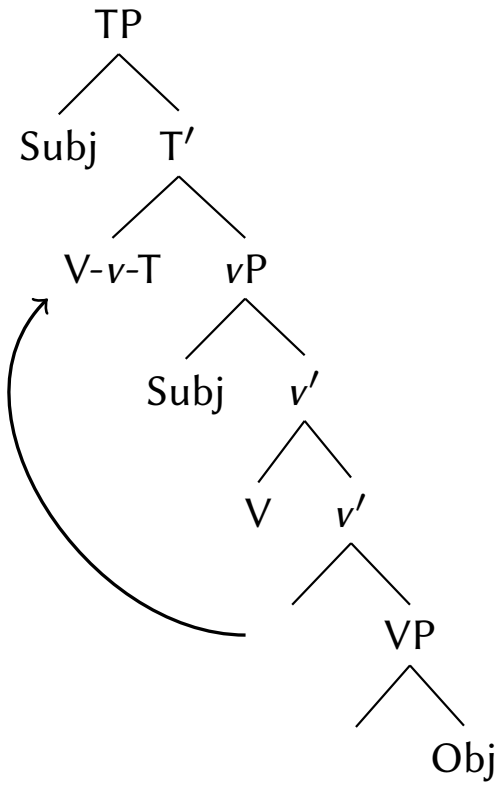

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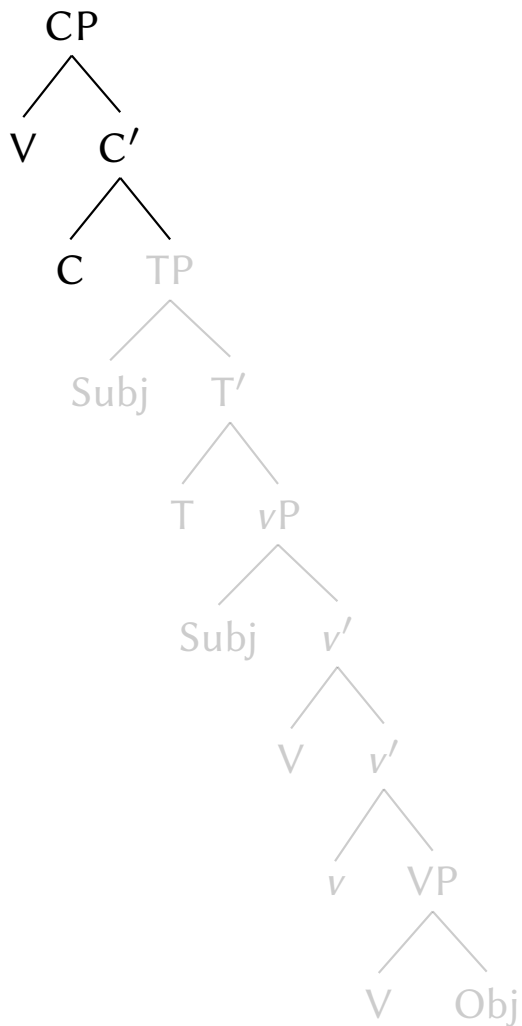

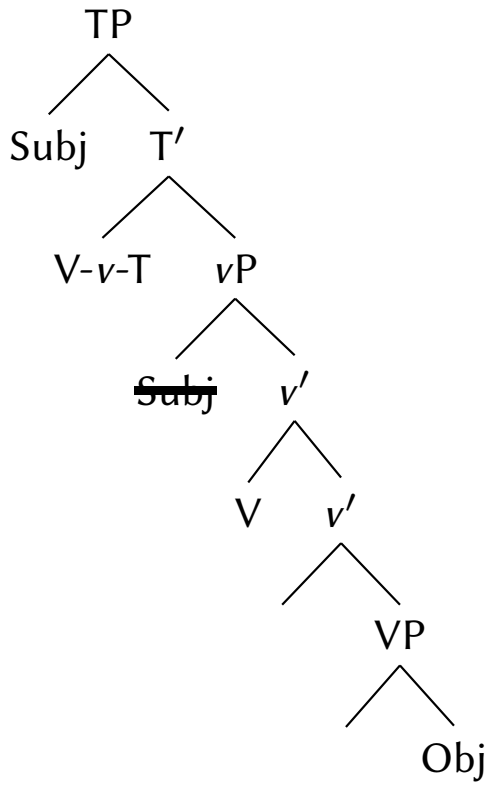

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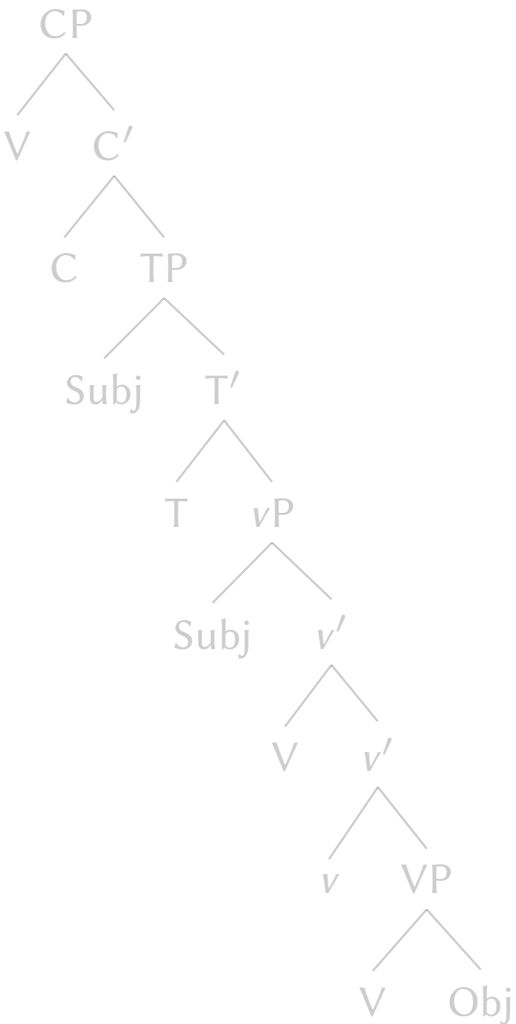
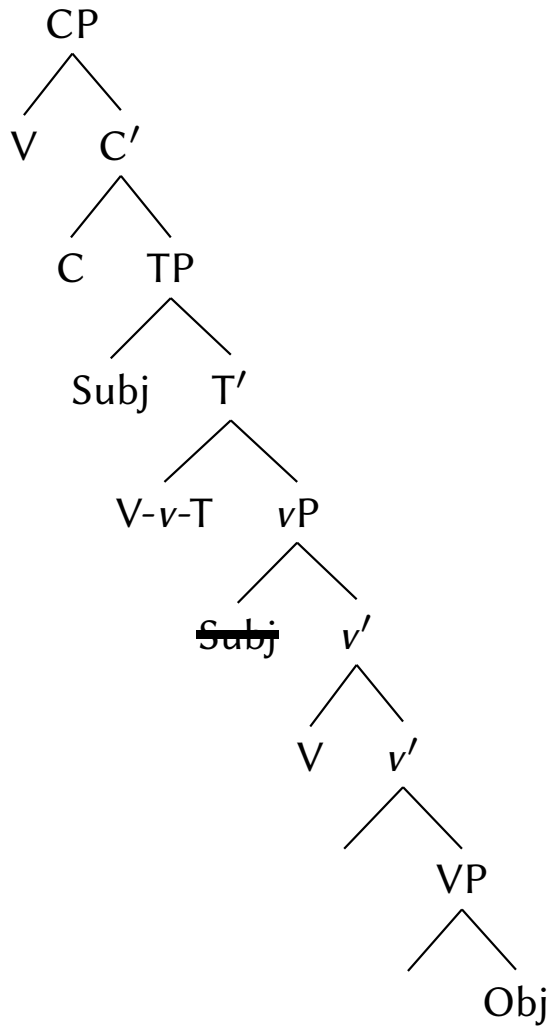


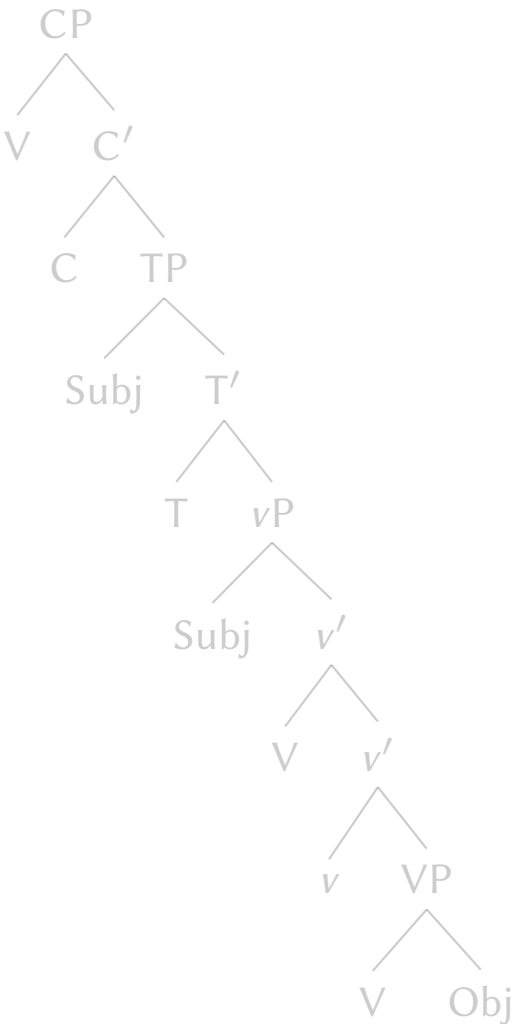


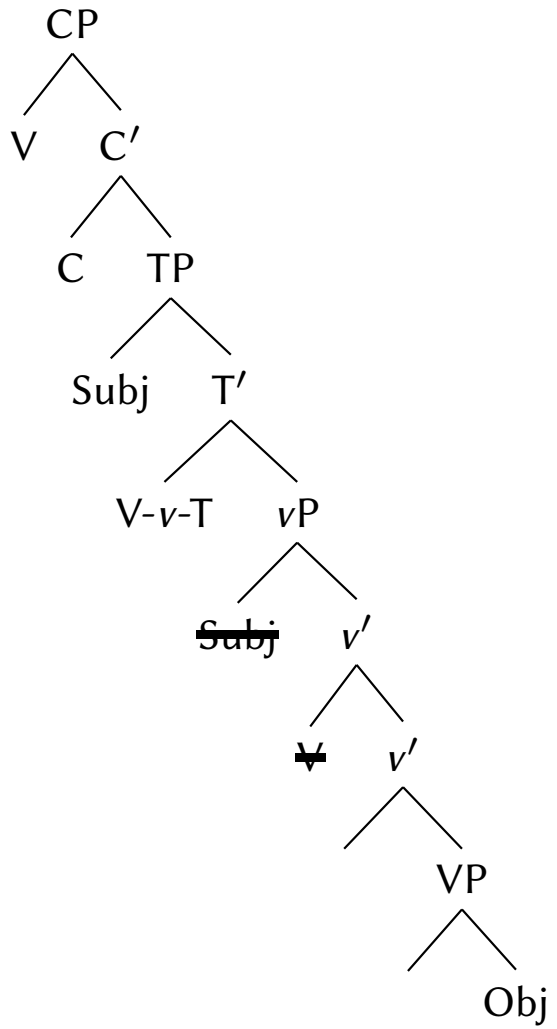
HHM > CR in V fronting → verb doubling

(narrow) syntax

(15) Liknot, hi kanta et ha-praxim.
buy.INF she buy.PST ACC DEF-flowers
'As for buying, she bought the flowers.'

PF





HHM > CR

Symmetric pattern:

- VP fronting: V leaves the lower VP copy before it is deleted → verb doubling
- V fronting: Peculiarities of $\bar{A}$ head movement protect V from deletion, and it leaves the lower chain link before CR applies → verb doubling

Extending the analysis

v and *v*P movement

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.

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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.

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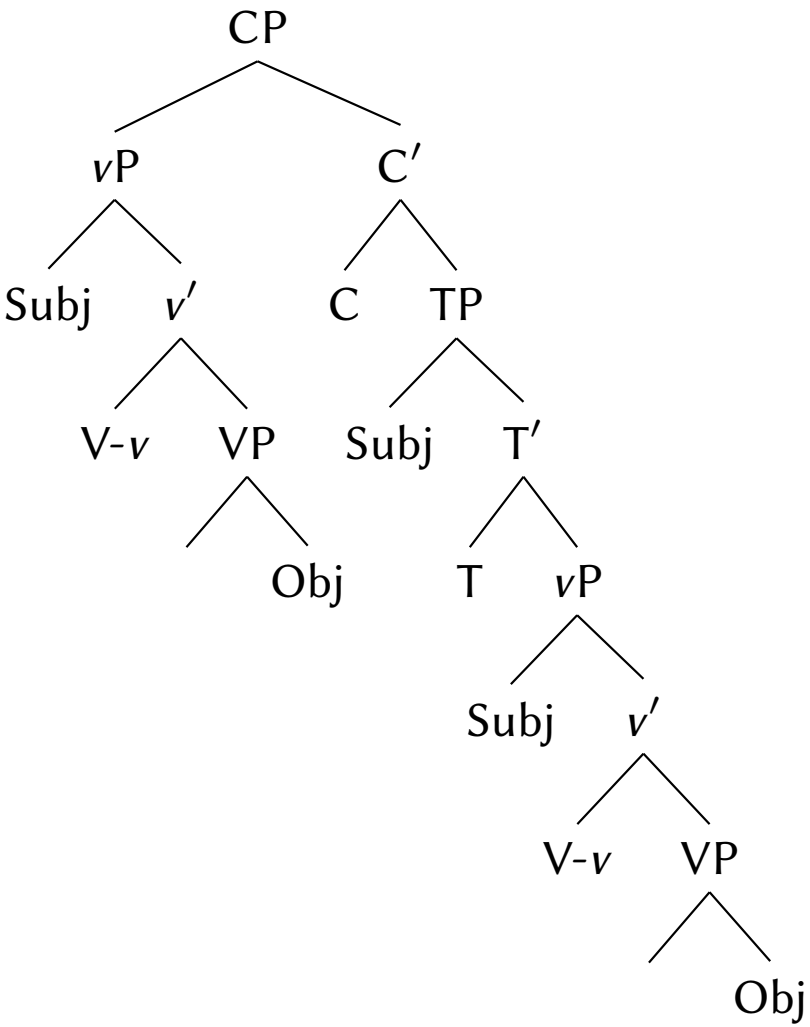
- CR > HHM: asymmetric pattern
- HHM > CR: symmetric pattern[2]
- V(P) movement remains unaffected by this assumption.

[2] Only if the verb moves on to T. Otherwise it is deleted as part of the lower *v*P copy in VP fronting resulting in *do*-support and thus an asymmetric pattern.

A problem for Chain Reduction



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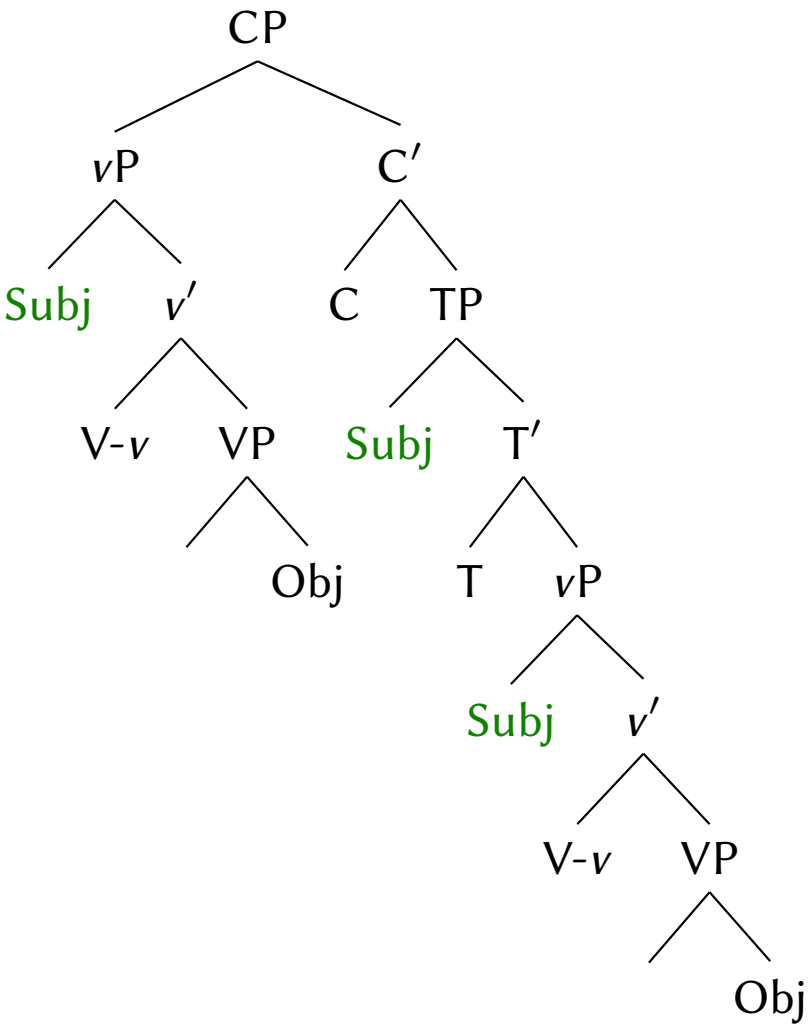

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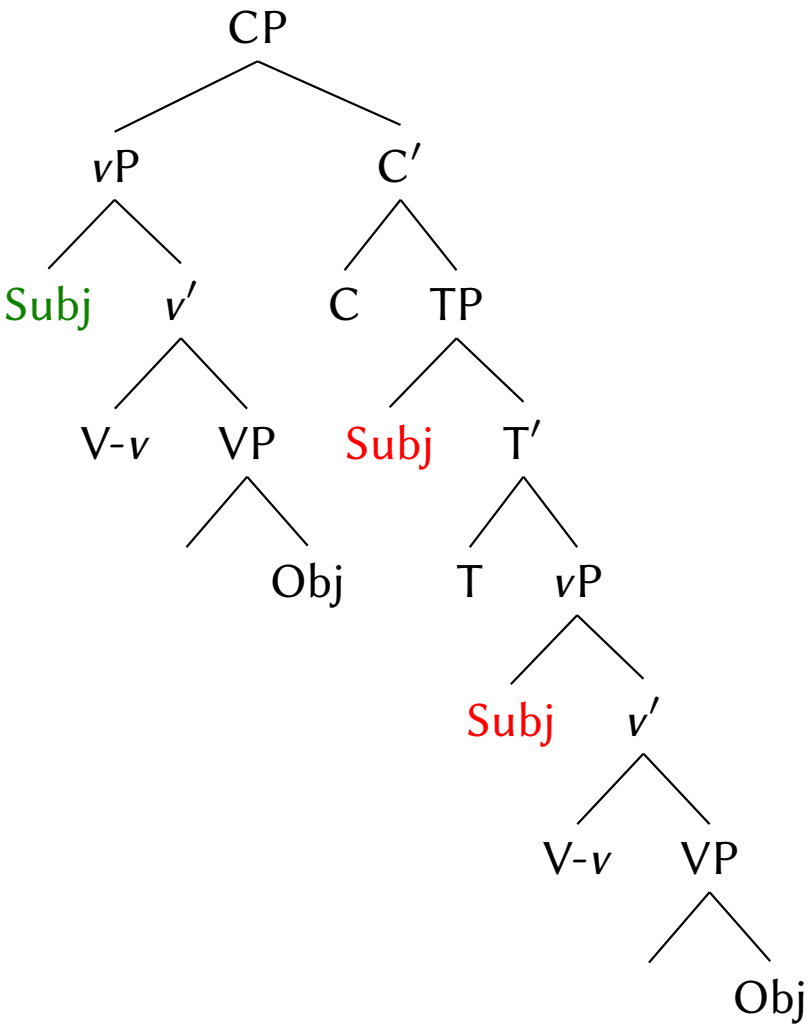

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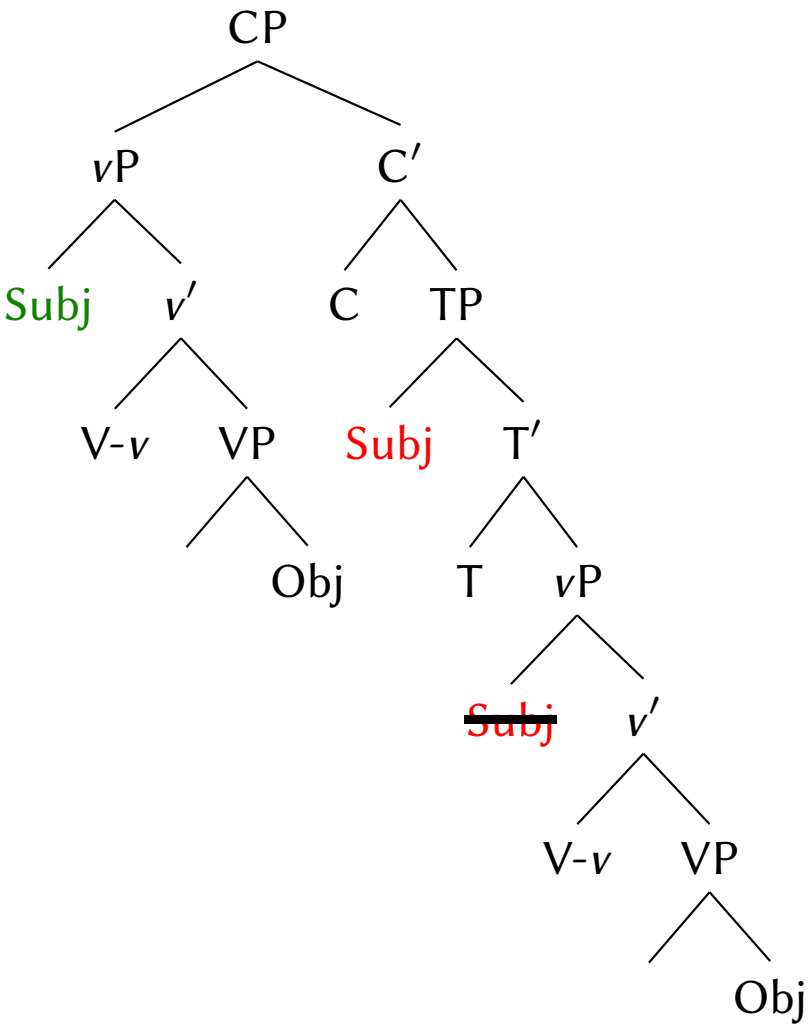

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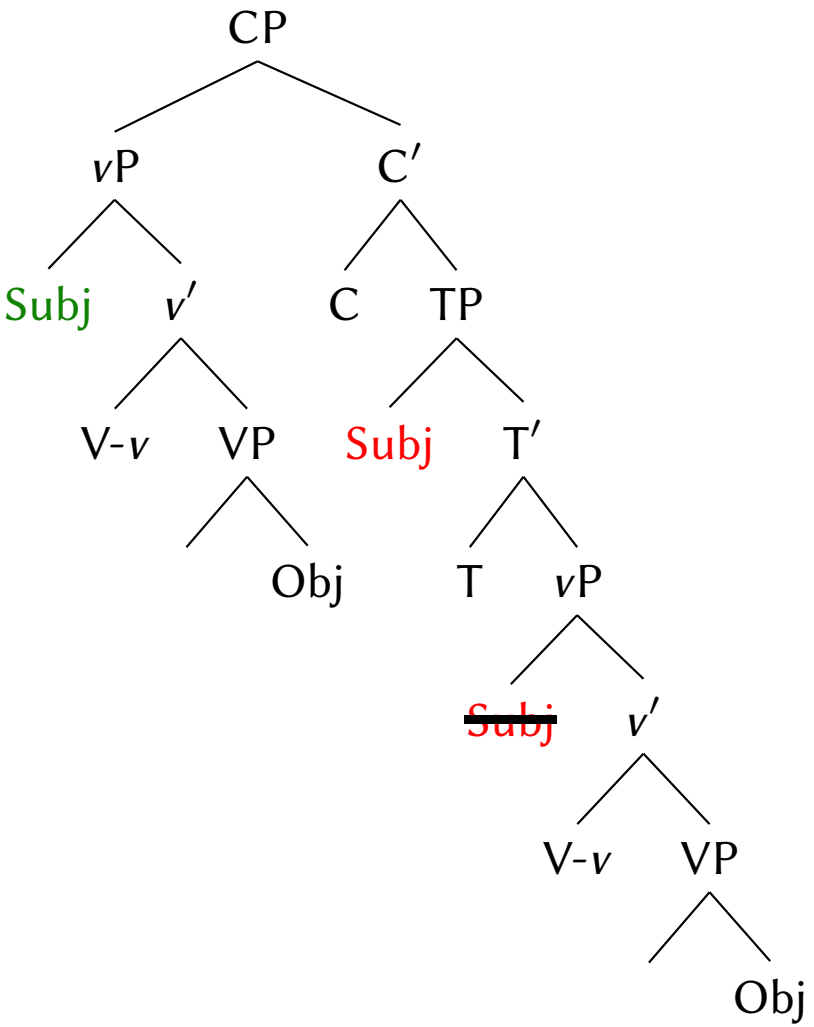
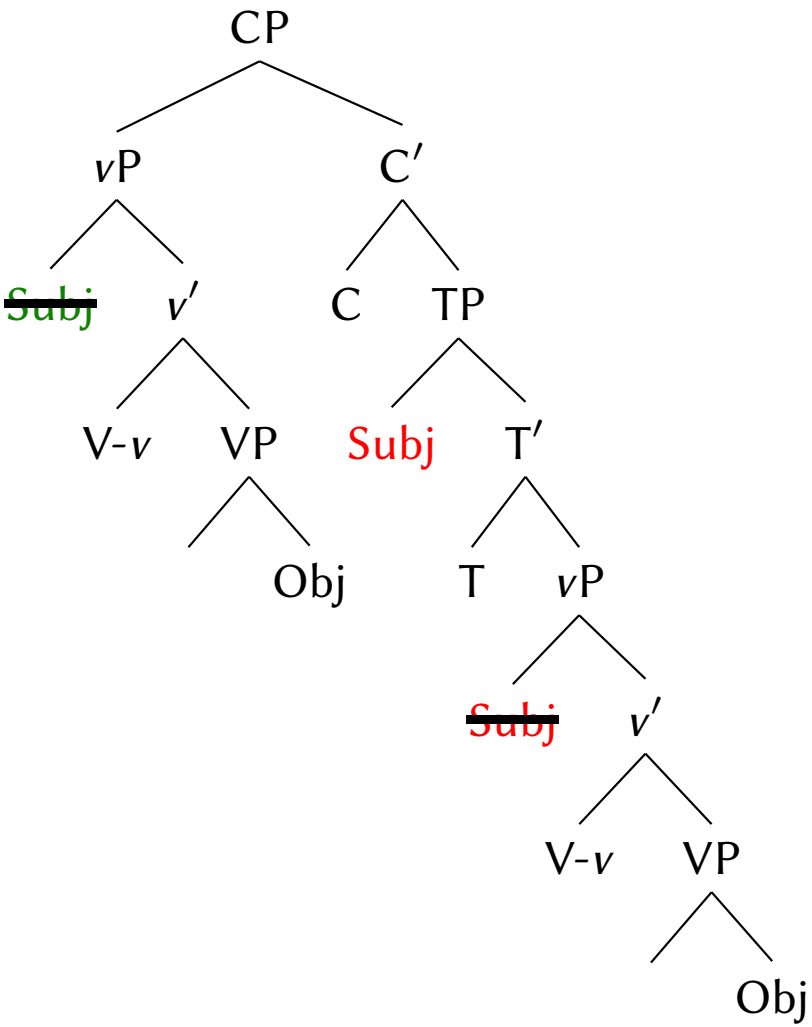


Nunes (2004):

CH = ((Subj , T') , (Subj , v'))

- CR inspects the chain and determines the occurrence of Subj that is the sister of v' to be deleted.
- There are two instances of Subj that fulfill this criterion.
- CR deletes both.

A problem for Chain Reduction



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Interim summary

(16) *Attested patterns in verbal fronting*

		V fronting	
		V doubling	*do*-support
VP fronting	*do*-support	Asante Twi	German
	V doubling	Hebrew	–

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

Surface	Consituent	Order of PF operations	
		HHM > CR	CR > HHM
VP fronting	complete VP/*v*P	verb doubling	*do*-support
V fronting	bare V/*v*+V	verb doubling	verb doubling
		Hebrew	Asante Twi

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German remnant VP movement

(18) a. Lesen tut sie Bücher gern. (Aber schreiben nicht.)
read.INF do.3SG she books gladly (but write.INF not)
'She likes to READ books. But she doesn't like to write them.'

b. Bücher lesen tut sie gern.
books read.INF do.3SG she gladly
'She likes to READ BOOKS.'

- V fronting involves remnant VP movement, not $\bar{A}$ 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.
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.'

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.'

(Bondaruk 2012: 55)

- Polish shows symmetric verb doubling.
- V fronting (19-a) involves remnant *v*P 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.

Conclusions

Summary

(20) *Pattern depending on order of operations and constituency*

Surface	Consituent	Order of PF operations	
		HHM > CR	CR > HHM
VP fronting	complete VP/*v*P	verb doubling	*do*-support
V fronting	remnant VP/*v*P	verb doubling	*do*-support
	bare V/V-*v*	verb doubling	verb doubling

- 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 $\bar{\text{A}}$ head movement.

[3] Caveat: This does not hold for languages that move *v*P and do not have verb-to-T movement. These show either Asante Twi type asymmetric verb doubling if they use $\bar{\text{A}}$ head movement in V fronting, or German type symmetric *do*-support if they use remnant *v*P movement in V fronting.

Conclusion

- 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 $>$ 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.

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