

VP fronting in Norwegian

Petter Haugereid

Department of Language, Literature, Mathematics and Interpreting
Western Norway University of Applied Sciences

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Outline

Data

Incremental analysis

Partial VP fronting

Evaluation and conclusion

VP fronting

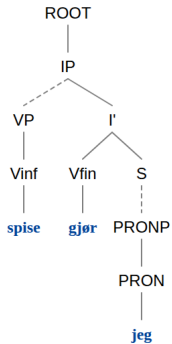
- (1) I've promised to help them [and help them I WILL].
(Huddleston and Pullum, 2002, 1376)

Norwegian data from Faarlund *et al.* (1997, 876–877)

- (2) a. Syngje kan eg ikkje
sing kan I not
Sing, I can not
- b. Sende pengene tilbake vil eg ikkje
send money-DEF back will I not
Send the money back, I will not

Analysis in LFG

C-structure



F-structure

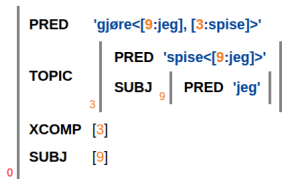


Figure: LFG analysis of *Spise gjør jeg* 'Eat, I do'

Search results from the NorGramBank corpus

A search for VP fronting in NorGramBank (Rosén *et al.*, 2012; Dyvik *et al.*, 2016) yields:

- ▶ 1,604 hits
- ▶ 46 of first 100 are true examples
- ▶ Approximately 800 examples in a corpus of 13,235,938 sentences
- ▶ One VP fronting per 17,000 sentences

Fronted VPs and the dummy verb 'gjøre'

- (3) a. Hører dårlig gjorde han også.
hears bad did he also
He also heard bad.
- b. Men tenke gjorde jeg.
but think did I
But think I did.

Fronted VPs topicalized from a subordinate clause or an infinitival clause

- (4) a. Overnattet hendte det også at han gjorde
slept-over happened it also that he did
It also happened that he slept over
- b. Forlate ham kom hun ikke til å gjøre.
Leave him came she not to to do
She would not leave him.

Adverbials often remain in the canonical VP position

- (5) Kaste terninger kan en gjøre dag og natt
throw dices can one do day and night
One can roll dice day and night

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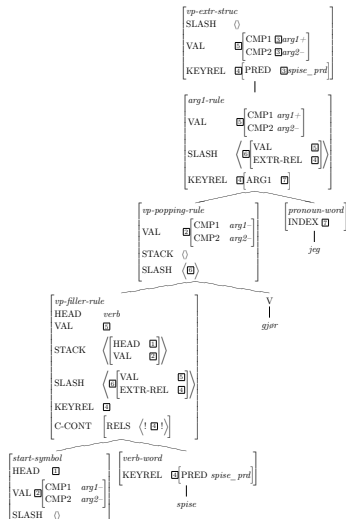
Partial VP fronting

Evaluation and conclusion

Incremental parsing

- ▶ Implementation:
 - ▶ Norsyg – an HPSG-inspired incremental typed feature structure grammar for Norwegian (Haugereid, 2009)
 - ▶ using the LKB system (Copestake, 2002) as a part of the Delph-In effort:
<https://github.com/delph-in/docs/wiki>
- ▶ Design:
 - ▶ division between a parse tree and a constituent tree (Haugereid and Morey, 2012),
 - ▶ utterances are parsed in a bottom-up fashion, incrementally, from left to right
→ completely left-branching tree structure

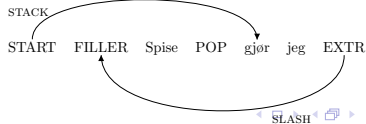
Analysis of VP fronting with SLASH



Intransitive sentence with VP fronting

(6) Spise gjør jeg.
eat do I
Eat, I do.

Tracking the VAL feature via STACK and SLASH



VP filler rule

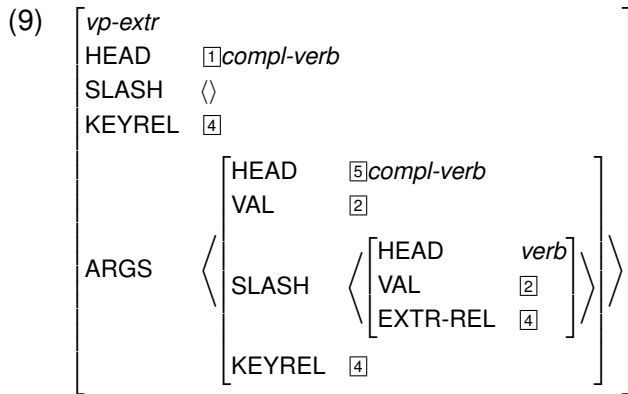
(7)

$$\left[\begin{array}{l} \textit{vp-filler} \\ \text{HEAD} \quad \boxed{5} \textit{verb} \\ \text{VAL} \quad \boxed{2} \\ \text{STACK} \quad \left\langle \boxed{6} \left[\text{HEAD} \quad \boxed{1} \textit{start} \right] \right\rangle \oplus \boxed{3} \langle \rangle \\ \text{SLASH} \quad \left\langle \left[\begin{array}{ll} \text{HEAD} & \boxed{5} \\ \text{VAL} & \boxed{2} \\ \text{EXTR-REL} & \boxed{4} \end{array} \right] \right\rangle \\ \text{KEYREL} \quad \boxed{4} \left[\text{PRED} \boxed{6} \right] \\ \text{C-CONT} \quad \left[\text{RELS} \langle ! \boxed{4} ! \rangle \right] \\ \text{ARGS} \quad \left\langle \left[\begin{array}{ll} \textit{start-symbol} & \\ \text{HEAD} & \boxed{1} \textit{start} \\ \text{STACK} & \boxed{3} \langle \rangle \\ \text{SLASH} & \langle \rangle \end{array} \right], \left[\begin{array}{ll} \textit{verb-word} & \\ \text{HEAD} & \boxed{5} \\ \text{KEYREL} | \text{PRED} & \boxed{6} \end{array} \right] \right\rangle \end{array} \right]$$

VP popping rule

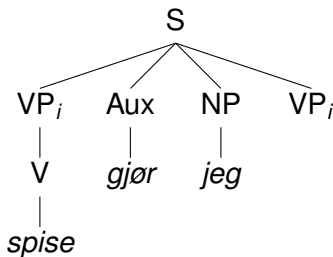
$$(8) \left[\begin{array}{l} \textit{vp-popping} \\ \text{HEAD} \quad \boxed{1} \textit{start} \\ \text{STACK} \quad \boxed{3} \langle \rangle \\ \text{SLASH} \quad \langle \boxed{2} \rangle \\ \text{ARGS} \quad \left\langle \left[\begin{array}{l} \text{HEAD} \quad \boxed{1} \textit{verb} \\ \text{STACK} \quad \boxed{3} \left\langle \left[\text{HEAD} \quad \boxed{1} \textit{start} \right] \right\rangle \oplus \boxed{3} \langle \rangle \right\rangle \\ \text{SLASH} \quad \langle \boxed{2} \rangle \end{array} \right] \right\rangle \end{array} \right]$$

VP extraction rule



Analysis of sentence with fronted VP

Constituent tree



MRS

$$(10) \left\langle h1, e2, \left\{ \begin{array}{l} h3: \text{_spise_1}(e2: \text{PRES}, x4), \\ h5: \text{pers-pron}(x4), \\ h6: \text{pronuon_q}(x4, h8, h7) \end{array} \right\}, \left\{ \begin{array}{l} h8 \text{ qeq } h5, \\ h1 \text{ qeq } h3 \end{array} \right\} \right\rangle$$

Generated sentences

- (11) a. Spise gjør jeg.
eat-INF do-PRES I
Eat, I do.
- b. Spiser gjør jeg.
eat-PRES do-PRES I
Eat, I do.
- c. Jeg spiser.
I eat-PRES
I eat.

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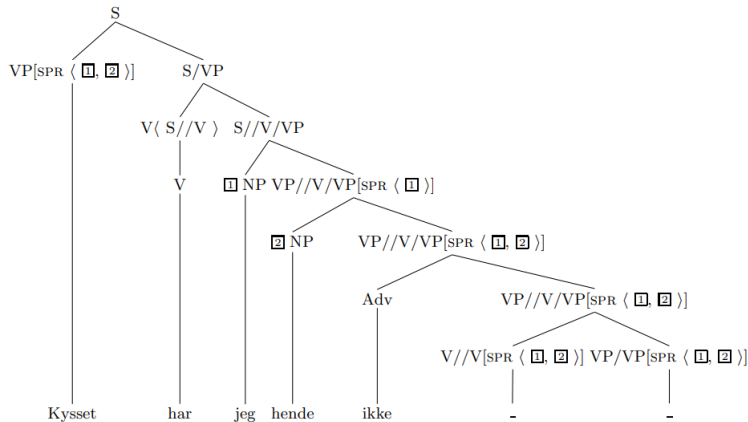
Partial VP fronting

- (12) Glemmes skal det heller ikke at Beethoven satte i gang en pengeinnsamling
forget-PASS shall it also not that Beethoven set in walk a fundraiser
til Bachs yngste datter
to Bachs youngest daughter
*It should also not be forgotten that Beethoven initiated a fundraiser for
Bach's youngest daughter*

Partial VP fronting (and Object Shift)

- (13) a. Spise den pizzaen vil jeg ikke.
eat that pizza will I
Eat that pizza, I will.
- b. ? Spise vil jeg ikke den pizzaen.
eat will I not that pizza
I will not eat that pizza.
- c. ? Spise vil jeg den ikke.
eat will I it not
I will not eat it.

Analysis of partial VP fronting in Müller and Ørsnes (2013)



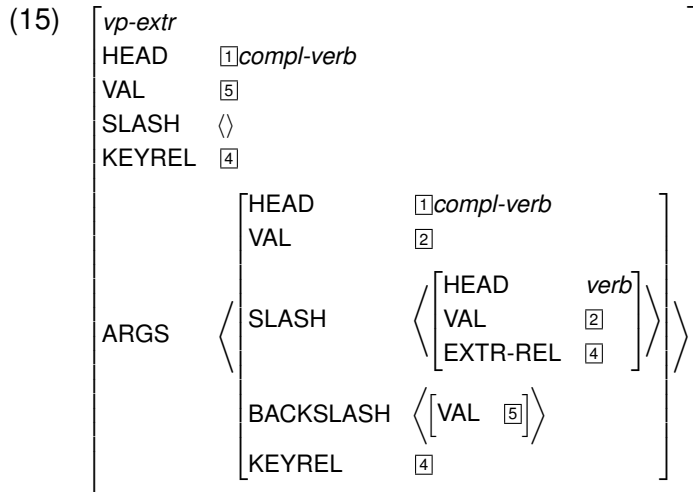
BACKSLASH

- ▶ The grammar uses the SLASH feature in order to front VPs
 - ▶ In case of partial VP fronting, only a part of the VP is parsed in the topic
 - ▶ The valence features are then put on a BACKSLASH list by the VP popping rule
 - ▶ The VP extraction rule unifies the the valence features of the element on the BACKSLASH list with its own valence features
- The parsing of the VP continues where it was interrupted

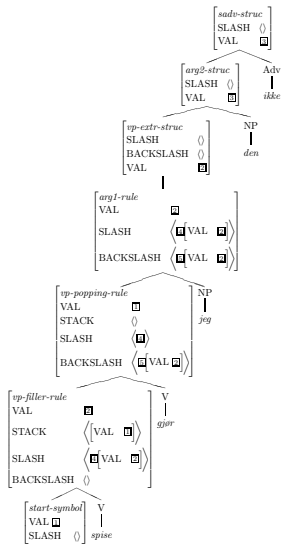
VP popping rule

$$(14) \left[\begin{array}{ll} \text{vp-popping} & \\ \text{HEAD} & \boxed{1} \text{start} \\ \text{STACK} & \boxed{3} \langle \rangle \\ \text{SLASH} & \langle \boxed{2} \rangle \\ \text{BACKSLASH} & \langle [\text{VAL } \boxed{4}] \rangle \\ \text{ARGS} & \left\langle \left[\begin{array}{ll} \text{HEAD} & \boxed{1} \text{verb} \\ \text{VAL} & \boxed{4} \\ \text{STACK} & \boxed{3} \langle [\text{HEAD } \boxed{1} \text{start}] \rangle \oplus \boxed{3} \langle \rangle \\ \text{SLASH} & \langle \boxed{2} \rangle \end{array} \right] \right\rangle \end{array} \right]$$

VP extraction rule

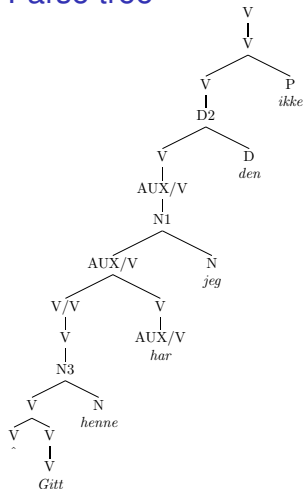


Analysis of partial VP fronting with SLASH and BACKSLASH



Analysis of ditransitive sentence with partial VP fronting

Parse tree

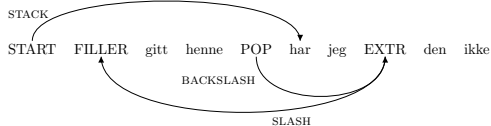


Ditransitive sentence with partial VP fronting

(16) ? Gett henne har jeg den inte.
given her have I it not
I have not given it to her.

(Fox and Pesetsky, 2005)

Tracking the VAL feature via STACK, SLASH, and BACKSLASH



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Evaluation

- ▶ 8.3% increase in cost
- ▶ 4.0% increase in tasks
- ▶ Reason: Items that start with a verb:
 - ▶ Yes-no questions
 - ▶ Certain imperatives
 - ▶ Homonymes

Conclusion

An analysis of VP fronting is presented

- ▶ The analysis derives VP filler–gap dependencies and the behavior of dummy *gjøre* without extra lexical stipulation.
- ▶ Fronted and non-fronted variants share the same MRS, supporting the view that VP fronting is a constructional variant of clause structure rather than a separate lexical pattern.

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