Issues in a German core grammar in HPSG

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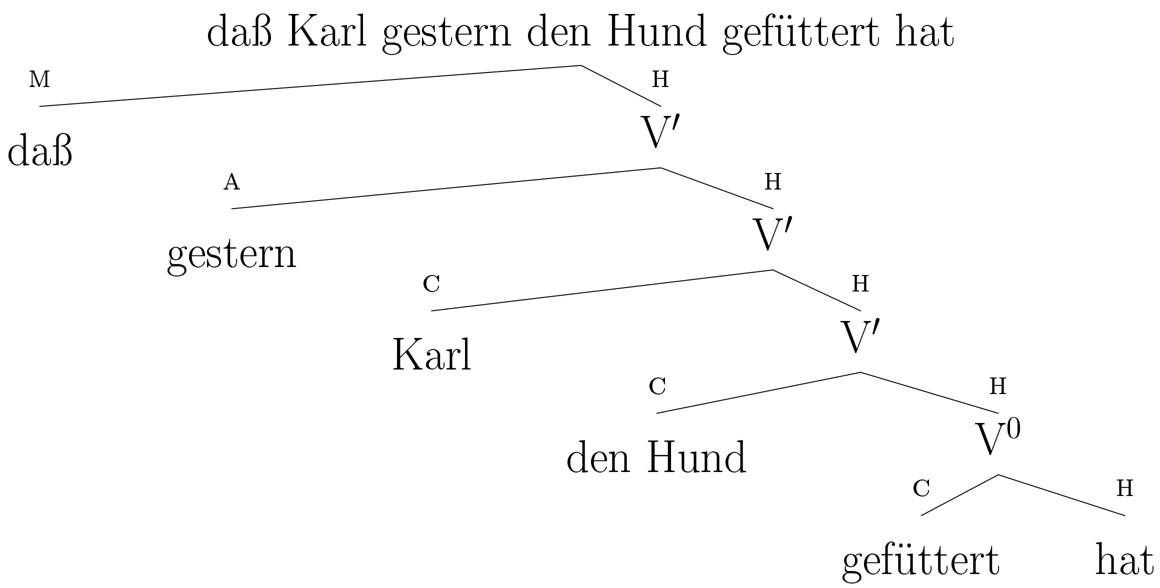
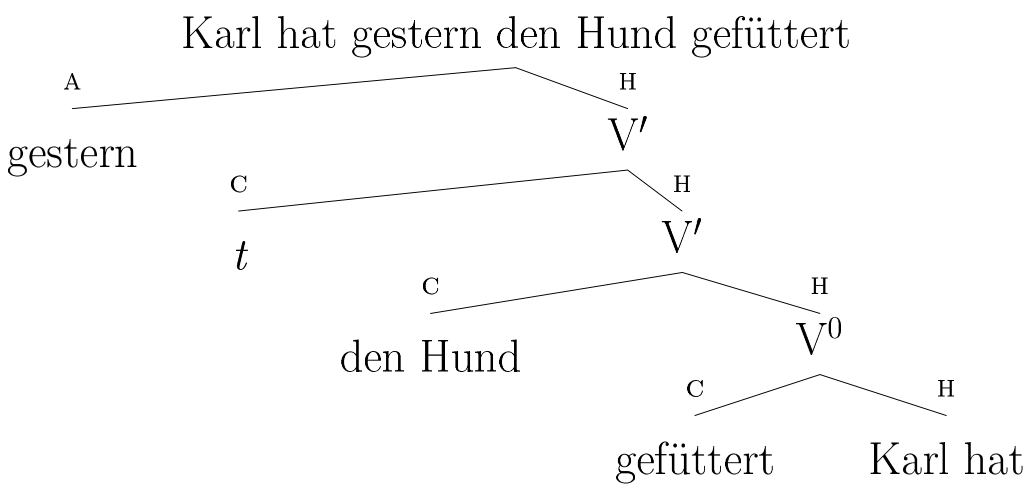
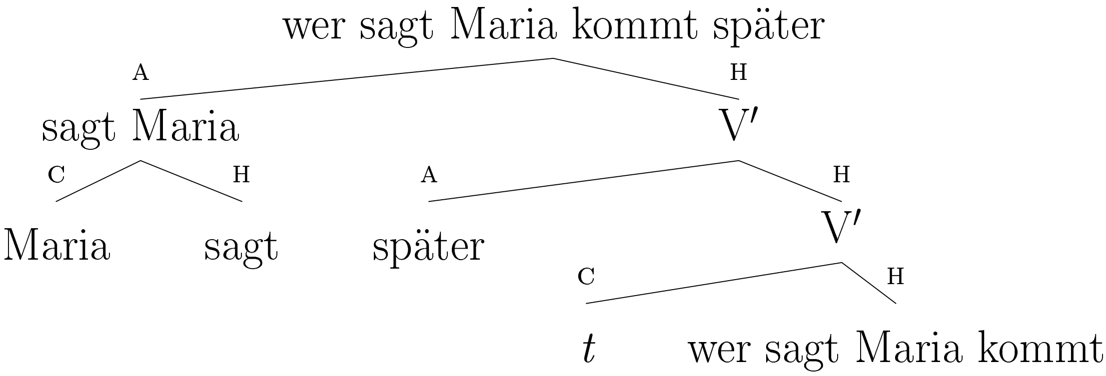
Overview

- introduction to the basic ideas of the B8 fragment
- components and meaning of a grammar in HPSG
- specification of the lexicon
- ID schemata
- treatment of word order: VF, V1 and V2 sentences
- long movement without slash percolation mechanisms

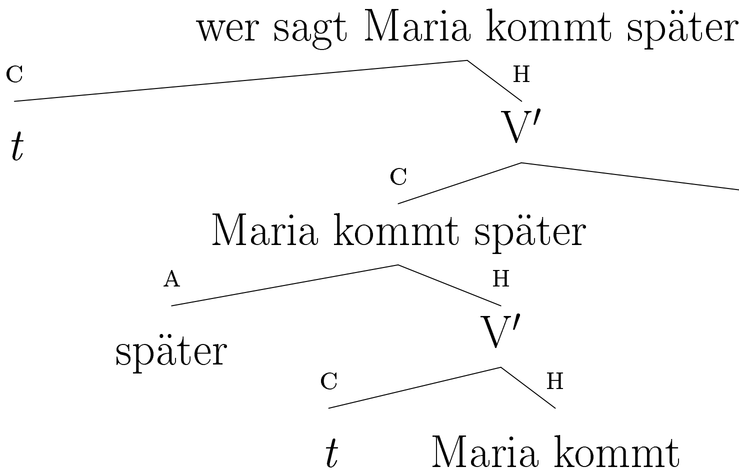

daß Karl gestern den Hund gefüttert hat
M
H
daß
V′
A
H
gestern
V′
C
H
Karl
V′
C
H
den Hund
V0
C
H
gefüttert
hat


Karl hat gestern den Hund gefüttert
A
H
gestern
V′
C
H
t
V′
C
H
den Hund
V0
C
H
gefüttert
Karl hat

Who does Maria say comes later?



Who says that Maria comes later?

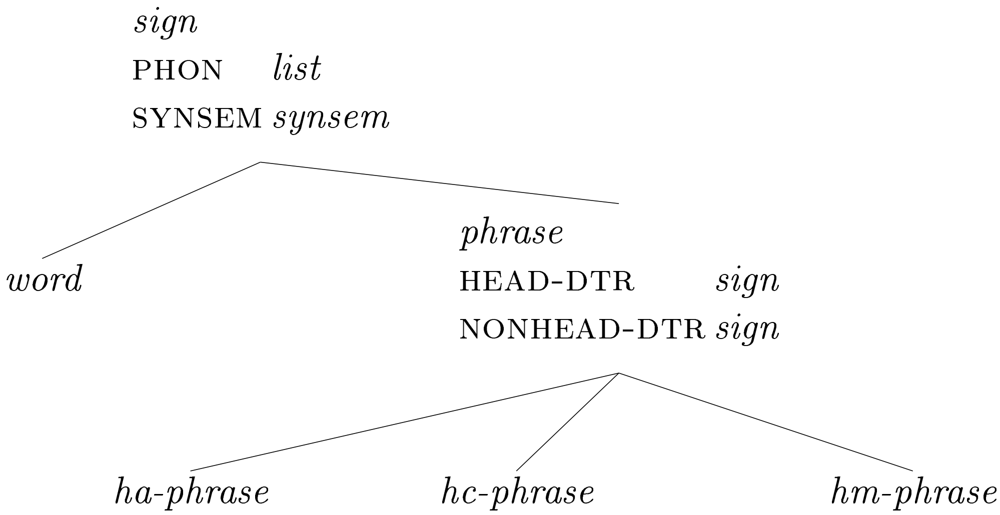


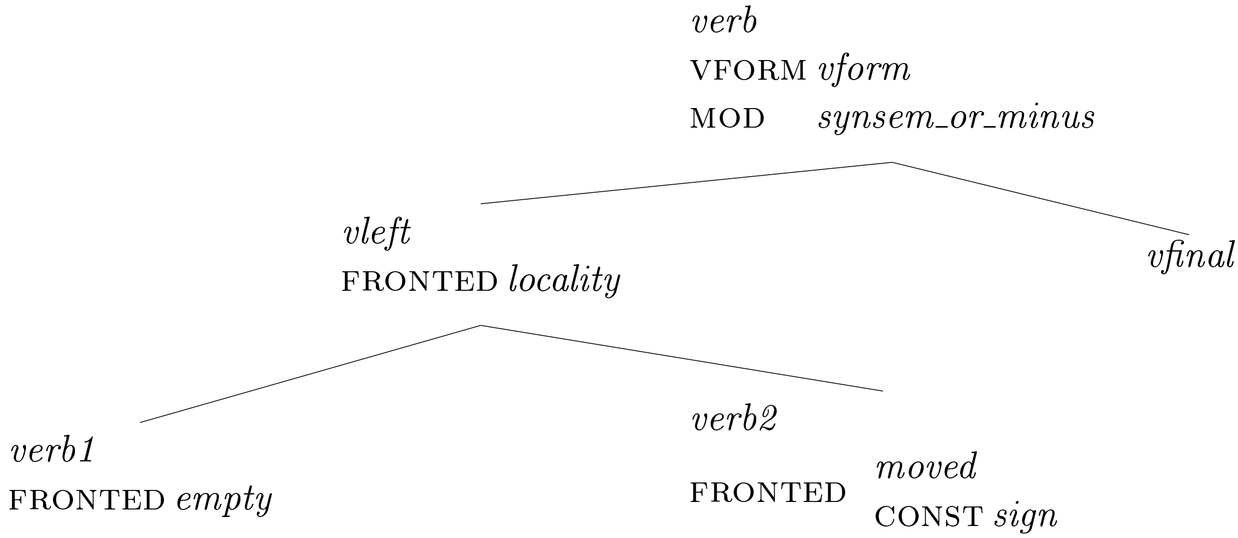
A grammar Γ is a triple $\langle \Sigma, \theta, C \rangle$, where

Σ is a signature,

θ is a set of descriptions, and

C is a set of clauses.





A grammar Γ is a triple $\langle \Sigma, \theta, C \rangle$, where

Σ is a signature,

θ is a set of descriptions, and

C is a set of clauses.

Example for descriptions: Head Feature Principle

$$\begin{bmatrix} \textit{phrase} \\ \end{bmatrix} \implies$$

$$\begin{bmatrix} \text{SYNSEM LOC CAT HEAD} & \boxed{1} \\ \text{HEAD-DTR SYNSEM LOC CAT HEAD} & \boxed{1} \end{bmatrix}$$

Example for clauses: `append`

$$\texttt{append}\left(\begin{bmatrix} \textit{elist} \\ \end{bmatrix}, \boxed{1}\begin{bmatrix} \textit{list} \\ \end{bmatrix}, \boxed{1}\right) := \top$$

$$\texttt{append}\left(\begin{bmatrix} \textit{list} & \\ \text{FIRST} & \boxed{1} \\ \text{REST} & \boxed{2} \end{bmatrix}, \boxed{3}\begin{bmatrix} \textit{list} \\ \end{bmatrix}, \begin{bmatrix} \textit{list} & \\ \text{FIRST} & \boxed{1} \\ \text{REST} & \boxed{4} \end{bmatrix}\right) := \texttt{append}(\boxed{2}, \boxed{3}, \boxed{4})$$

Major Principles for Signs

- lexicon: words in the grammar
- ID principle: combining signs
- linearization module: word order in phrases

$$\left[\begin{array}{ll} \textit{word} & \\ \text{PHON} & \langle \textit{geht} \rangle \\ \text{SYNSEM LOC CAT} & \left[\begin{array}{ll} \textit{cat} & \\ \text{HEAD} & \left[\begin{array}{ll} \textit{verb1} & \\ \text{FRONTED} & \textit{empty} \\ \text{VFORM} & \textit{finite} \\ \text{MOD} & \textit{minus} \end{array}\right] \\ \text{VAL} & \text{COMPS } \langle \text{DP}[\textit{complete}] \rangle \end{array}\right] \end{array}\right]$$

$$\left[\begin{array}{ll} \textit{word} & \\ \text{PHON} & \langle \textit{geht} \rangle \\ \text{SYNSEM LOC CAT} & \left[\begin{array}{ll} \textit{cat} & \\ \text{HEAD} & \left[\begin{array}{ll} \textit{vfinal} & \\ \text{VFORM} & \textit{finite} \\ \text{MOD} & \textit{minus} \end{array}\right] \\ \text{VAL} & \text{COMPS } \langle \text{DP}[\textit{complete}] \rangle \end{array}\right] \end{array}\right]$$

$$\left[\begin{array}{ll} \textit{word} & \\ \text{PHON} & \boxed{1} \otimes \langle \textit{geht} \rangle \\ \text{SYNSEM LOC CAT} & \left[\begin{array}{ll} \textit{cat} & \\ \text{HEAD} & \left[\begin{array}{ll} \textit{verb2} & \\ \text{FRONTED} & \left[\begin{array}{l} \textit{moved} \\ \text{CONST PHON } \boxed{1} \ \textit{list} \end{array}\right] \\ \text{VFORM} & \textit{finite} \\ \text{MOD} & \textit{minus} \end{array}\right] \\ \text{VAL} & \text{COMPS } \langle \text{DP}[\textit{complete}] \rangle \end{array}\right] \end{array}\right]$$

The ID principle

$$\begin{bmatrix} \textit{phrase} \\ \end{bmatrix} \quad \Longrightarrow$$

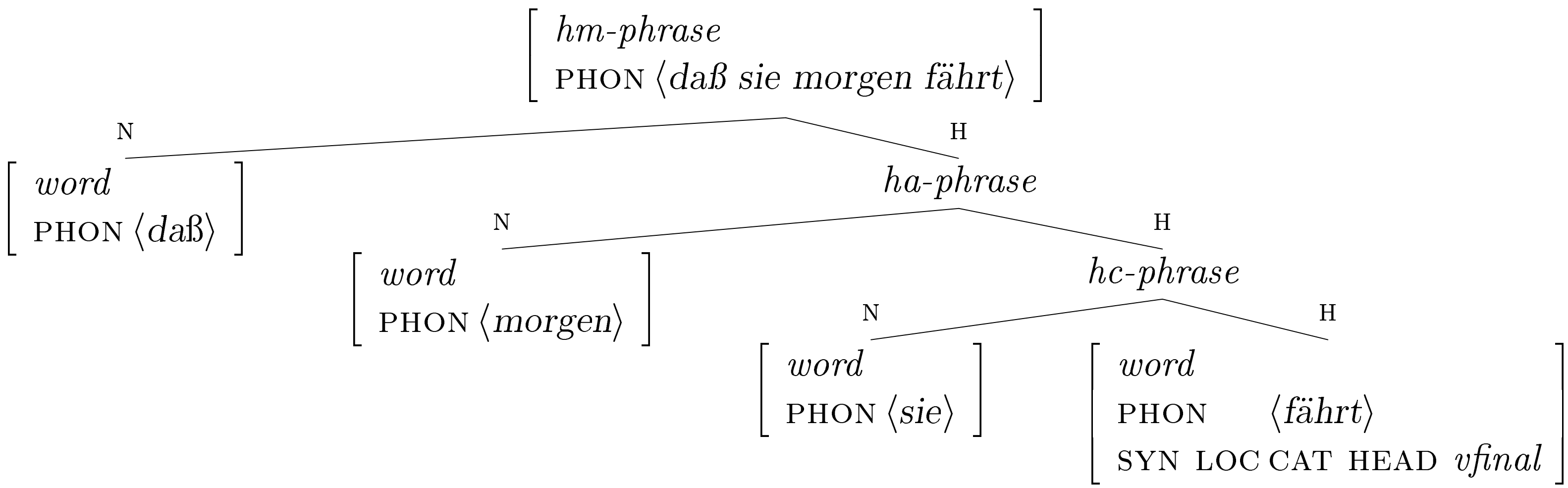
$$\begin{array}{cc}
\multicolumn{2}{c}{\begin{bmatrix} \textit{ha-phrase} \\ \text{SYN LOC CAT VAL SPR } \boxed{1} \end{bmatrix}} \\
\text{N} & \text{H} \\
\begin{bmatrix} \text{SYN} \begin{bmatrix} \text{STATUS} & \textit{complete} \\ \text{LOC CAT HEAD} & \begin{bmatrix} \textit{adverbial} \\ \text{MOD } \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} &
\begin{bmatrix} \text{SYN } \boxed{2} \begin{bmatrix} \text{STATUS} & \textit{incomplete} \\ \text{LOC CAT VAL SPR} & \boxed{1} \end{bmatrix} \end{bmatrix}
\end{array}$$

$$\vee$$

$$\begin{array}{cc}
\multicolumn{2}{c}{\begin{bmatrix} \textit{hc-phrase} \\ \text{SYN LOC CAT VAL SPR } \boxed{1} \end{bmatrix}} \\
\text{N} & \text{H} \\
\begin{bmatrix} \textit{sign} \\ \end{bmatrix} &
\begin{bmatrix} \text{SYN LOC CAT VAL} \begin{bmatrix} \text{SPR} & \boxed{1} \\ \text{COMPS} & \textit{nelist} \end{bmatrix} \end{bmatrix}
\end{array}$$

$$\vee$$

$$\begin{array}{cc}
\multicolumn{2}{c}{\begin{bmatrix} \textit{hm-phrase} \\ \text{SYN STATUS } \textit{complete} \end{bmatrix}} \\
\text{N} & \text{H} \\
\begin{bmatrix} \text{SYN} \begin{bmatrix} \text{STATUS} & \textit{complete} \\ \text{LOC CAT HEAD} & \textit{marker} \end{bmatrix} \end{bmatrix} &
\begin{bmatrix} \text{SYN STATUS } \textit{incomplete} \end{bmatrix}
\end{array}$$

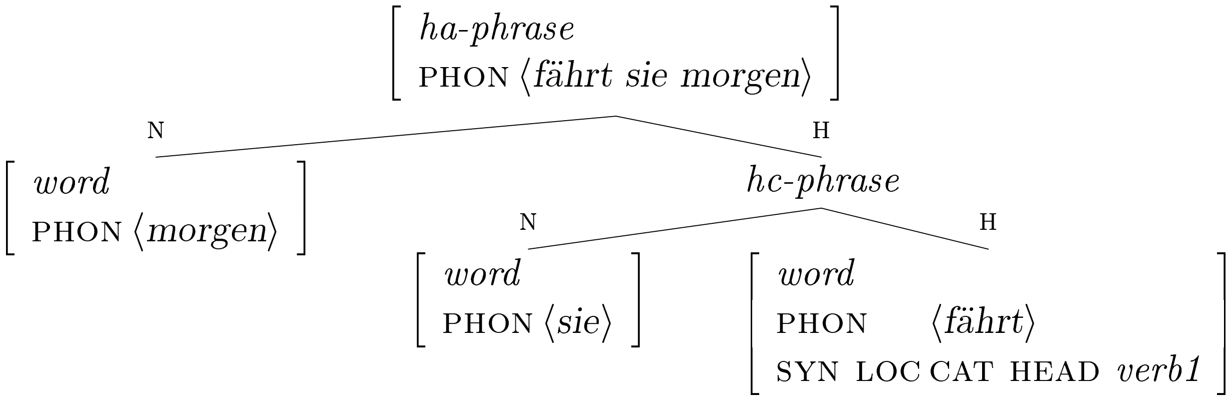

hm-phrase
PHON ⟨daß sie morgen fährt⟩
N
H
word
PHON ⟨daß⟩
ha-phrase
N
H
word
PHON ⟨morgen⟩
hc-phrase
N
H
word
PHON ⟨sie⟩
word
PHON ⟨fährt⟩
SYN LOC CAT HEAD vfinal

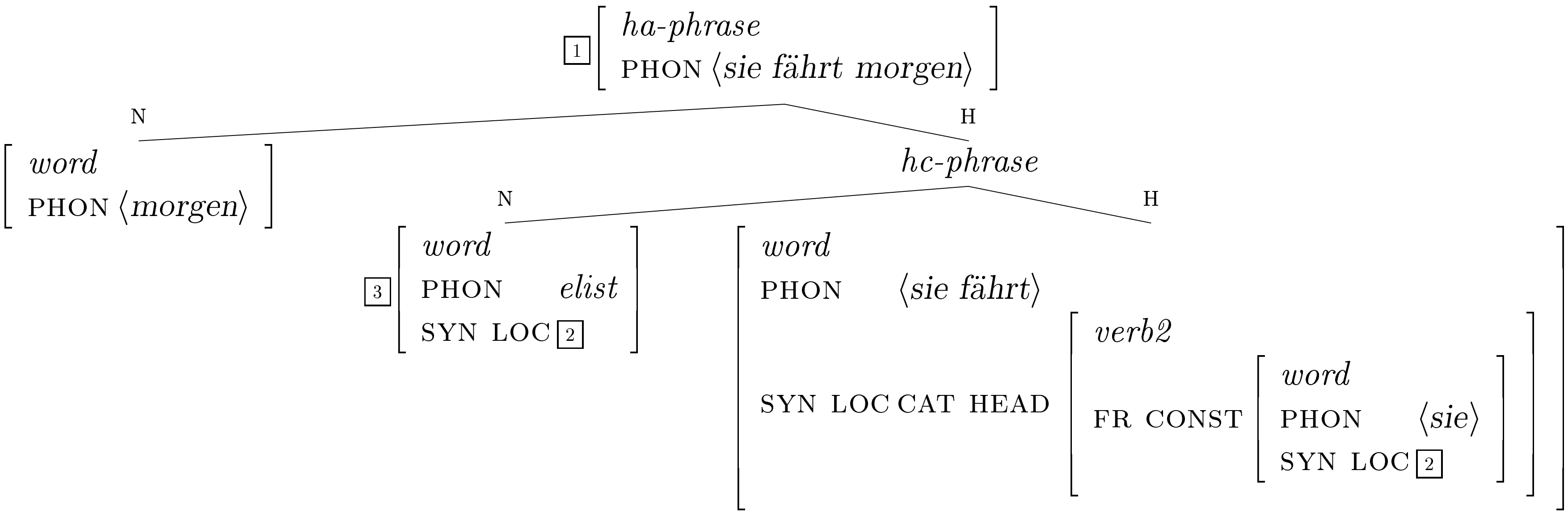
Description of the marker *daß*

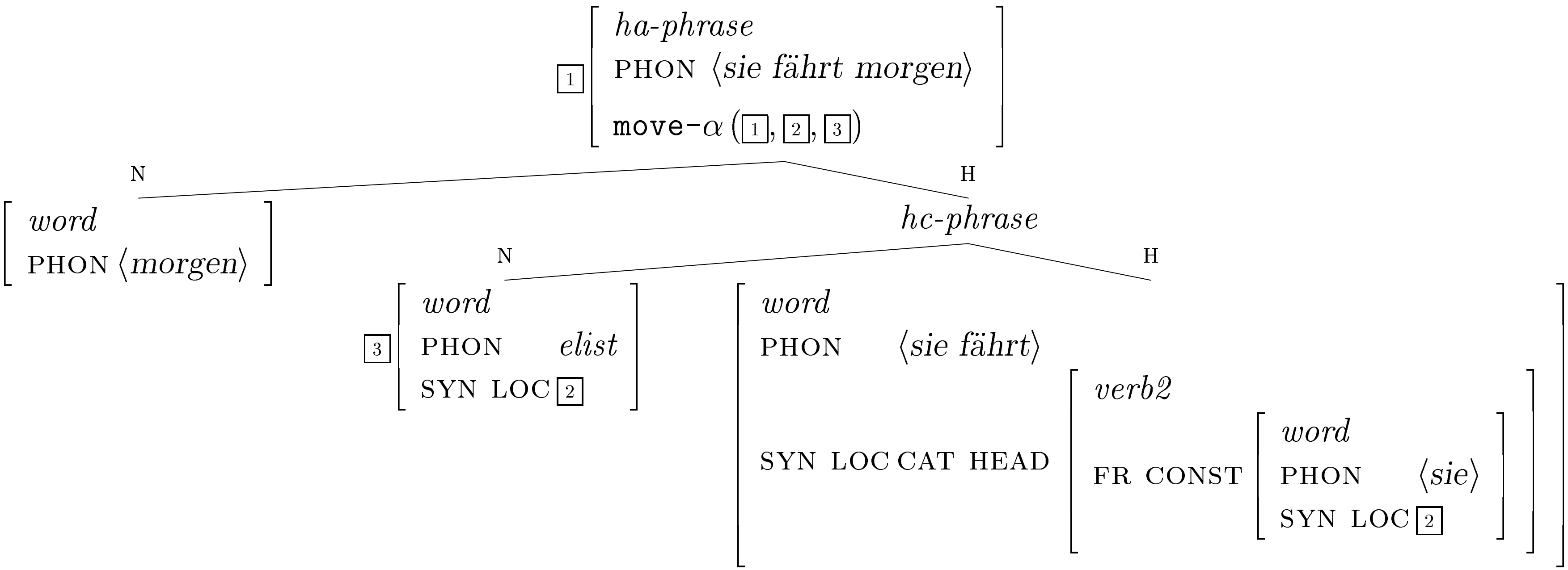
$$\left[\begin{array}{ll} \textit{word} & \\ \textsc{phon} & \langle \textit{daß} \rangle \\ \textsc{syn loc} & \left[\begin{array}{ll} \textsc{cat} & \left[\begin{array}{ll} \textsc{head} & \left[\begin{array}{ll} \textit{marker} & \\ \textsc{fronted} & \textit{empty} \\ \textsc{spec} & \left[\begin{array}{l} \textit{synsem} \\ \textsc{loc cat head vform}\ \textit{finite} \end{array}\right] \end{array}\right] \\ \textsc{marking} & \textit{daß} \end{array}\right] \end{array}\right] \end{array}\right]$$

Description of the marker *w-*

$$\left[\begin{array}{ll} \textit{word} & \\ \textsc{phon} & \boxed{1} \\ \textsc{syn loc} & \left[\begin{array}{ll} \textsc{cat} & \left[\begin{array}{ll} \textsc{head} & \left[\begin{array}{ll} \textit{marker} & \\ \textsc{fronted} & \left[\begin{array}{ll} \textit{moved} & \\ \textsc{const} & \left[\begin{array}{ll} \textsc{phon} & \boxed{1} \\ \textsc{syn l c h def} & \textit{inter} \end{array}\right] \end{array}\right] \\ \textsc{spec} & \left[\begin{array}{l} \textit{synsem} \\ \textsc{loc cat head vform}\ \textit{finite} \end{array}\right] \end{array}\right] \\ \textsc{marking} & \textit{wp} \end{array}\right] \end{array}\right] \end{array}\right]$$


ha-phrase
PHON ⟨fährt sie morgen⟩
N
H
word
PHON ⟨morgen⟩
hc-phrase
N
H
word
PHON ⟨sie⟩
word
PHON ⟨fährt⟩
SYN LOC CAT HEAD verb1


1 ha-phrase
PHON ⟨sie fährt morgen⟩
N
H
word
PHON ⟨morgen⟩
hc-phrase
N
H
3 word
PHON elist
SYN LOC 2
word
PHON ⟨sie fährt⟩
SYN LOC CAT HEAD
verb2
FR CONST
word
PHON ⟨sie⟩
SYN LOC 2



1
ha-phrase
PHON ⟨sie fährt morgen⟩
move-α (1, 2, 3)
N
H
word
PHON ⟨morgen⟩
hc-phrase
N
H
3
word
PHON elist
SYN LOC 2
word
PHON ⟨sie fährt⟩
SYN LOC CAT HEAD
verb2
FR CONST
word
PHON ⟨sie⟩
SYN LOC 2

Other empirical domains in the fragment

- DP analysis (Heike Winhart)
- Verbal complex (Detmar Meurers)
  - coherent and incoherent constructions
  - third construction
  - passive
- interface to a theory of illocutions
- complex sentences
- island constraints for syntactic movement
- a simple theory of coordination

$$
\begin{bmatrix}
\textit{word} & \\
\text{SS LOC} & \begin{bmatrix}
\text{CAT} & \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} \textit{vfinal} & \\ \text{VFORM} & \textit{fin} \end{bmatrix} \\
\text{VAL COMPS} & \boxed{1} \oplus \left\langle \begin{bmatrix} \text{SS} & \begin{bmatrix} \text{STATUS} & \textit{complete} \\ \text{LOC CAT} & \begin{bmatrix} \text{HEAD} & \textit{vfinal} \\ \text{MARKING} & \textit{daß} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \oplus \boxed{2}
\end{bmatrix} \\
\text{CONT} & \boxed{3}
\end{bmatrix}
\end{bmatrix}
\longmapsto
$$

$\wedge$ **gen-vipverb**($\boxed{3}$)

$$
\begin{bmatrix}
\textit{word} & \\
\text{SS LOC} & \begin{bmatrix}
\text{CAT} & \begin{bmatrix}
\text{HEAD} & \begin{bmatrix}
\textit{verb1adj} & \\
\text{VFORM} & \textit{fin} \\
\text{MOD} & \begin{bmatrix} \text{STATUS} & \textit{incomplete} \\ \text{LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{verb2} \\ \text{VAL COMPS} & \textit{elist} \end{bmatrix} \\ \text{CONT} & \boxed{4} \end{bmatrix} \end{bmatrix} \\
\text{FRONTED} & \textit{empty}
\end{bmatrix} \\
\text{VAL COMPS} & \boxed{1} \oplus \boxed{2}
\end{bmatrix} \\
\text{CONT NUCL THETA0} & \boxed{4}\ \textit{psoa}
\end{bmatrix}
\end{bmatrix}
$$