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An introduction to Head-Driven Phrase Structure Grammar and remarks on its position in the theoretical landscape

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Outline

- Grundlegendes zur HPSG
- Valenz und Grammatikregeln
- Die Modellierung von Konsituentenstruktur mit Hilfe von Merkmalstrukturen
- Projektion von Kopfeigenschaften
- Trennung zwischen Syntax und Semantik: Koordination
- Satzstruktur
- Zusammenfassung

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- developed in the 80s as a successor of GPSG (influences from CG, GB, CxG)

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  http://hpsg.stanford.edu/ and
  http://hpsg.fu-berlin.de/HPSG-Bib/ (Literature)

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Course Page and Material

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- Further reading:
  - Overview article in English: Müller, To appear
  - Introduction to HPSG in German: Müller, 2008
  - Introduction to several frameworks and comparison: Müller, 2010a

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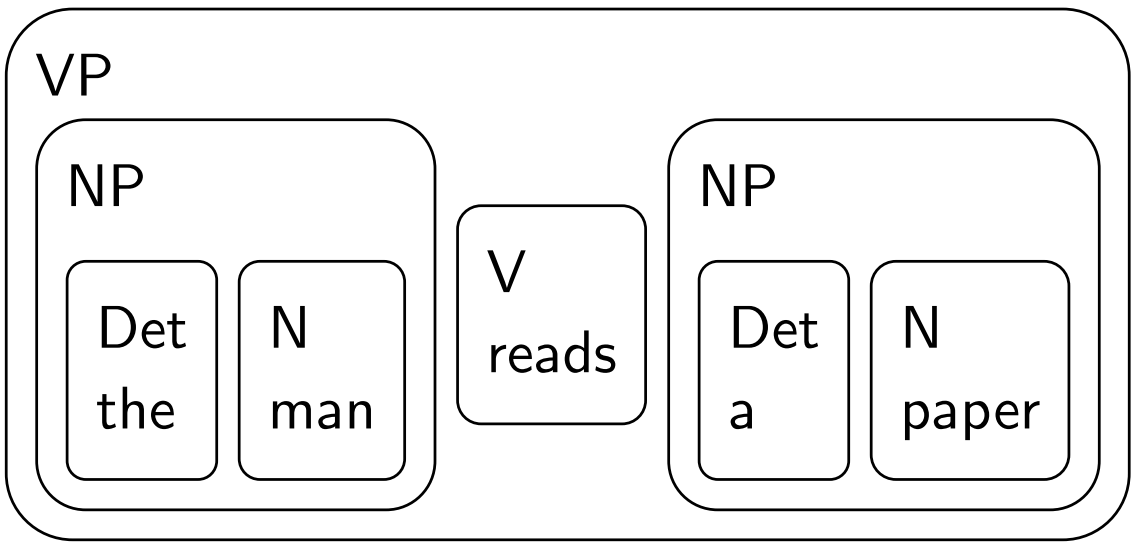
Labeled Boxes



Those who moved to a new flat will agree that it makes sense to label boxes.

We have information about the most important element in each box.

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Boxes May Be Replaced by Boxes with the Same Label

- The content of the box do not matter:

(1) a. he
b. the man
c. the man from Stuttgart
d. the man from Stuttgart that we know

Important: the words and phrases in (1) are nominal and complete: NP
We can exchange them for each other in bigger boxes that contain an NP.

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  Important: the words and phrases in (1) are nominal and complete: NP
  We can exchange them for each other in bigger boxes that contain an NP.
- This does not work for all NPs:

  (2) a. The man read a paper.
  b. * The men reads a paper.
  c. * Him reads a paper.

- Certain properties are important for the distribution of phrases.

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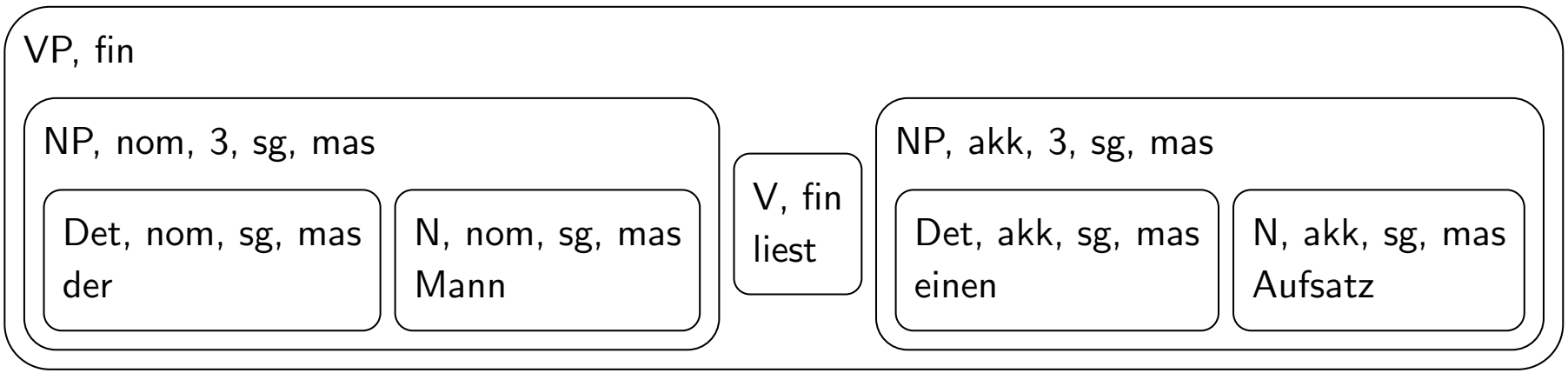
Boxes with Detailed Labels



All features that are relevant for the distribution of a phrase are projected.

These features are called head features.

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- monostratal theory

  - Phonology
  - Syntax
  - Semantics

$$\begin{bmatrix} \textsc{phon} & \langle\ \textit{Grammatik}\ \rangle \\ \textsc{synsem|loc} & \begin{bmatrix} \textsc{cat} & \begin{bmatrix} \textsc{head} & \begin{bmatrix} \textsc{case} & \boxed{1} \\ \textit{noun} & \end{bmatrix} \\ \textsc{subcat} & \langle \textsc{det}[\textsc{case}\ \boxed{1}] \rangle \\ \textit{cat} & \end{bmatrix} \\ \textsc{cont} & \ldots \begin{bmatrix} \textsc{inst} & X \\ \textit{grammatik} & \end{bmatrix} \\ \textit{loc} & \end{bmatrix} \\ \textit{word} & \end{bmatrix}$$

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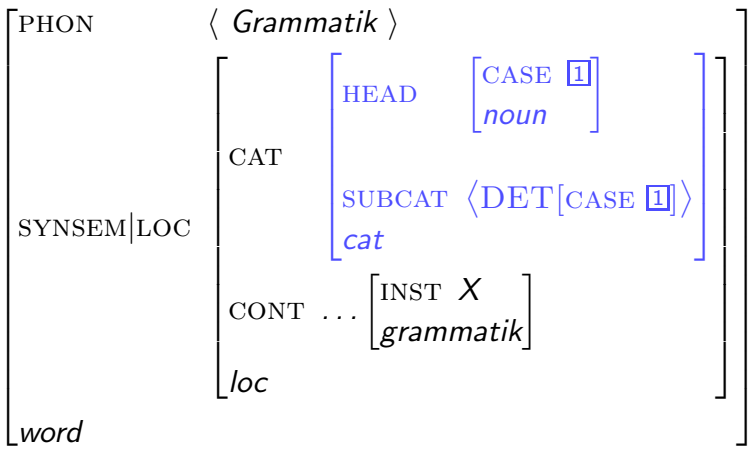

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Valence and Grammar Rules

- Arguments are represented as complex categories
  in the lexical representation of the head (as in Categorial Grammar)

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Verb	SUBCAT
schlafen ('sleep')	⟨ NP ⟩
lieben ('love')	⟨ NP, NP ⟩
sprechen ('talk')	⟨ NP, PP[*über*] ⟩
geben ('give')	⟨ NP, NP, NP ⟩
dienen ('serve')	⟨ NP, NP, PP[*mit*] ⟩

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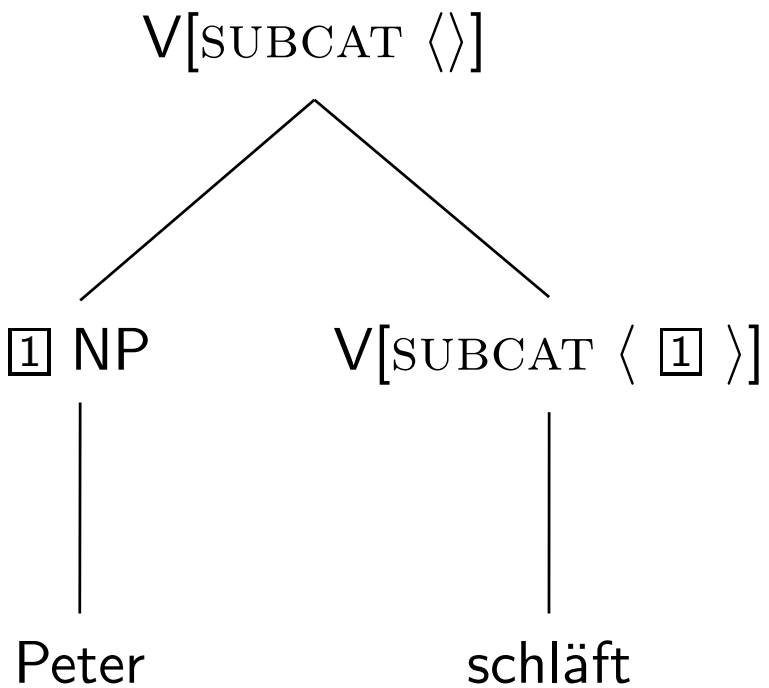
Example Structure with Valency Information (I)



V[SUBCAT ⟨ ⟩] corresponds to a complete phrase (VP or S)

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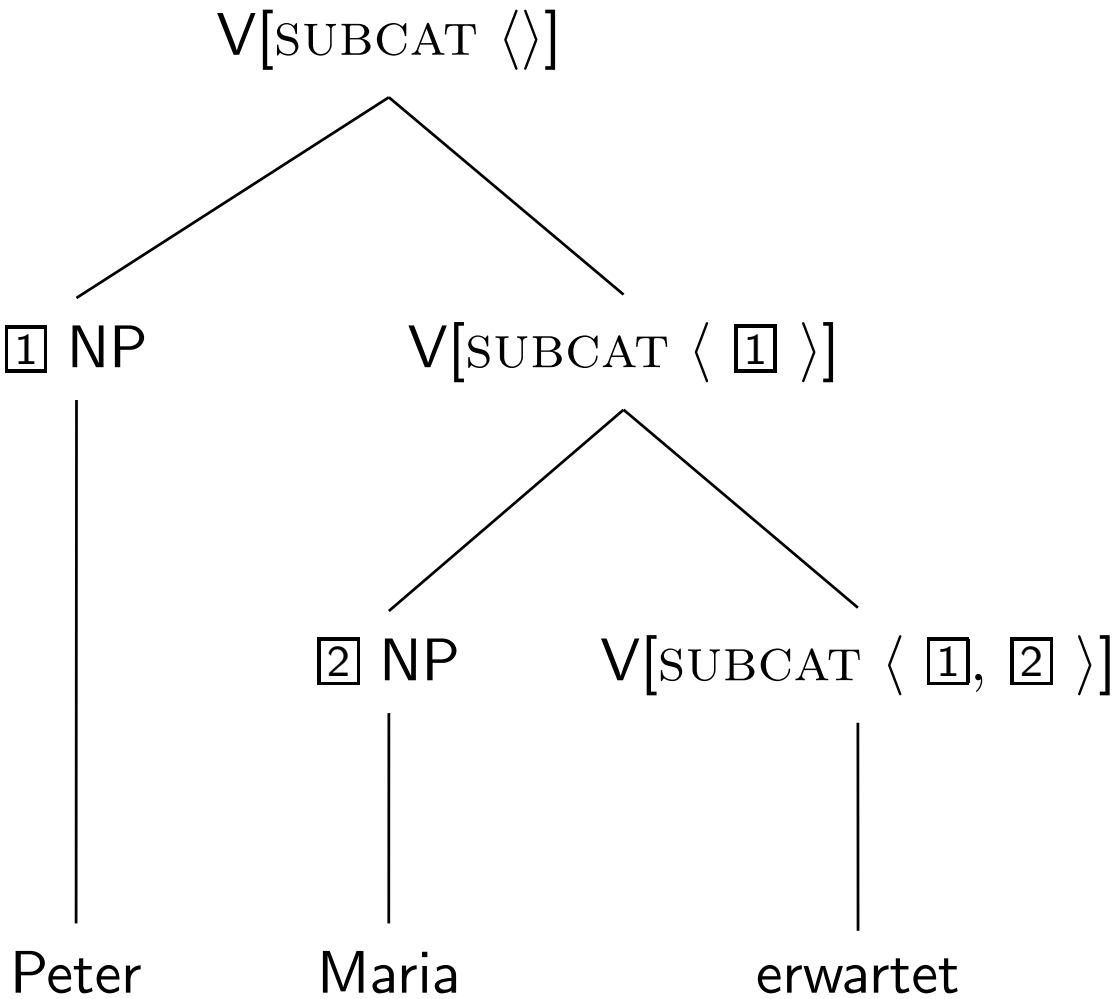
Example Structure with Valency Information (II)



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Valence and Grammar Rules

- specific rules for head-argument combinations:
  V[SUBCAT $\boxed{A}$] $\rightarrow$ $\boxed{B}$ V[SUBCAT $\boxed{A} \oplus \langle \boxed{B} \rangle$]

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  $\langle a, b \rangle = \langle a \rangle \oplus \langle b \rangle$ oder
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- generalized, abstract schema (H = head):
  H[SUBCAT $\boxed{A}$] $\rightarrow$ H[SUBCAT $\boxed{A} \oplus \langle \boxed{B} \rangle$] $\boxed{B}$

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Representation of Valence Information in Feature Descriptions

gibt (finite form):

$$\begin{bmatrix} \textsc{phon} & \langle\ \textit{gibt}\ \rangle \\ \textsc{part-of-speech} & \textit{verb} \\ \textsc{subcat} & \left\langle \mathrm{NP}[\textit{nom}],\ \mathrm{NP}[\textit{acc}],\ \mathrm{NP}[\textit{dat}] \right\rangle \end{bmatrix}$$

NP[*nom*], NP[*acc*] and NP[*dat*] are abbreviations of complex feature descriptions.

Representation of Grammar Rules (I)

- Feature descriptions are the description inventory for
  - morphological rules
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  (head daughter and non-head daughters)
- precedence is implicit in PHON

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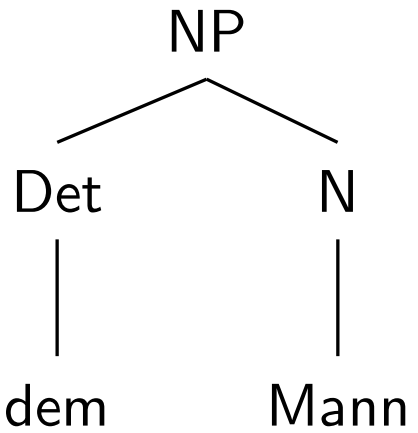
Partial Structure in Feature Representation



$$\begin{bmatrix} \textsc{phon} & \langle\ \textit{dem Mann}\ \rangle \\ \textsc{head-dtr} & \left[\textsc{phon}\ \langle\ \textit{Mann}\ \rangle\right] \\ \textsc{non-head-dtrs} & \left\langle \left[\textsc{phon}\ \langle\ \textit{dem}\ \rangle\right] \right\rangle \end{bmatrix}$$

- There is exactly one head daughter (HEAD-DTR).
  The head daughter contains the head.
  Structure with the daughters *the* and *picture of Mary* → *picture of Mary* is the head daughter, since *picture* is the head.

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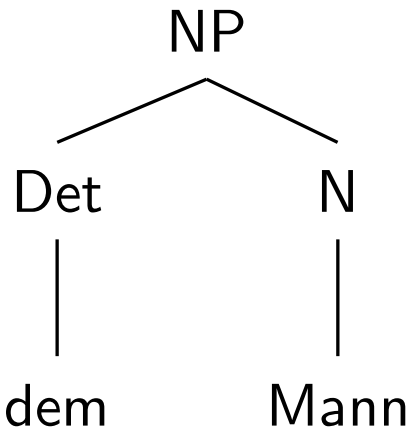

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  Structure with the daughters *the* and *picture of Mary* → *picture of Mary* is the head daughter, since *picture* is the head.
- There can be more than one non-head daughter
  (if we assume flat structures or binary branching structures without head).

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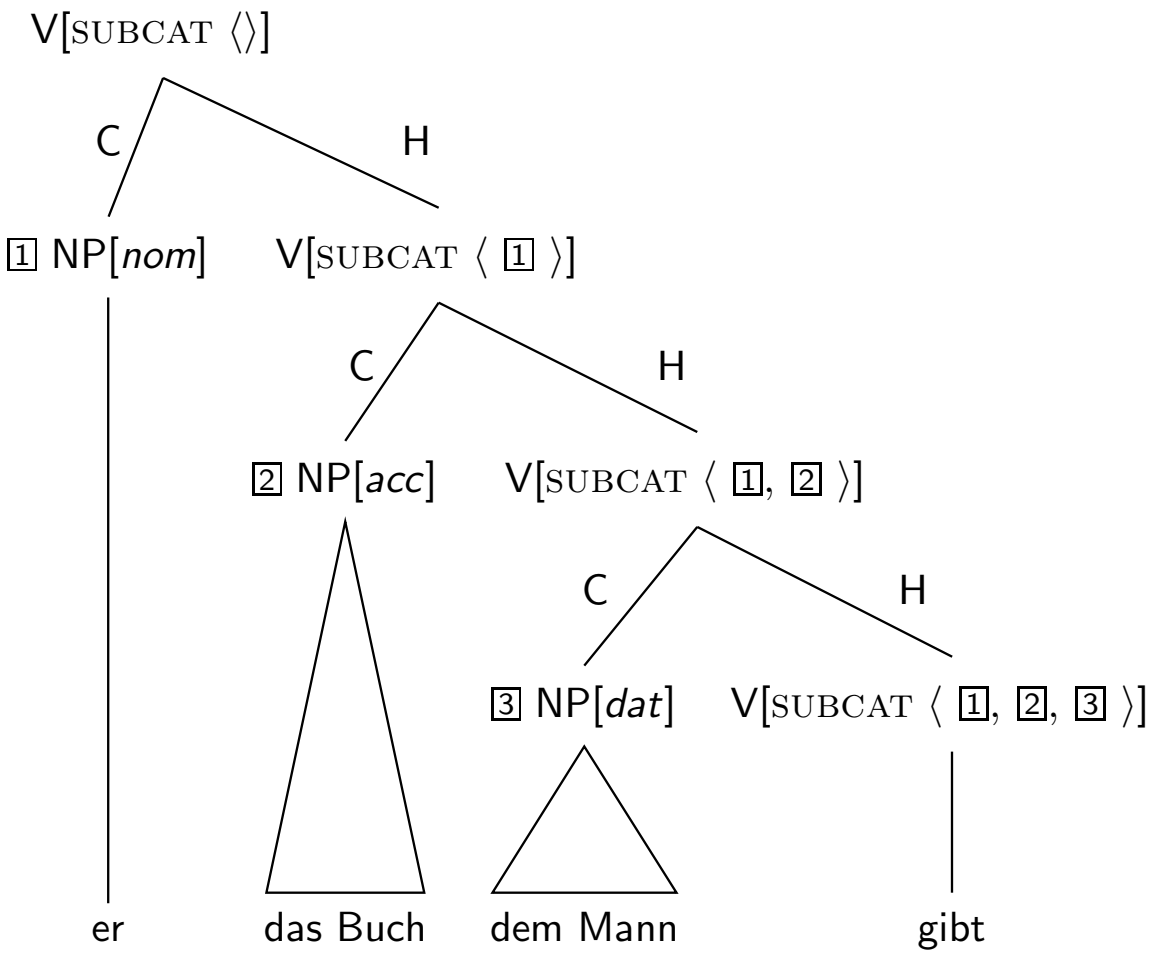
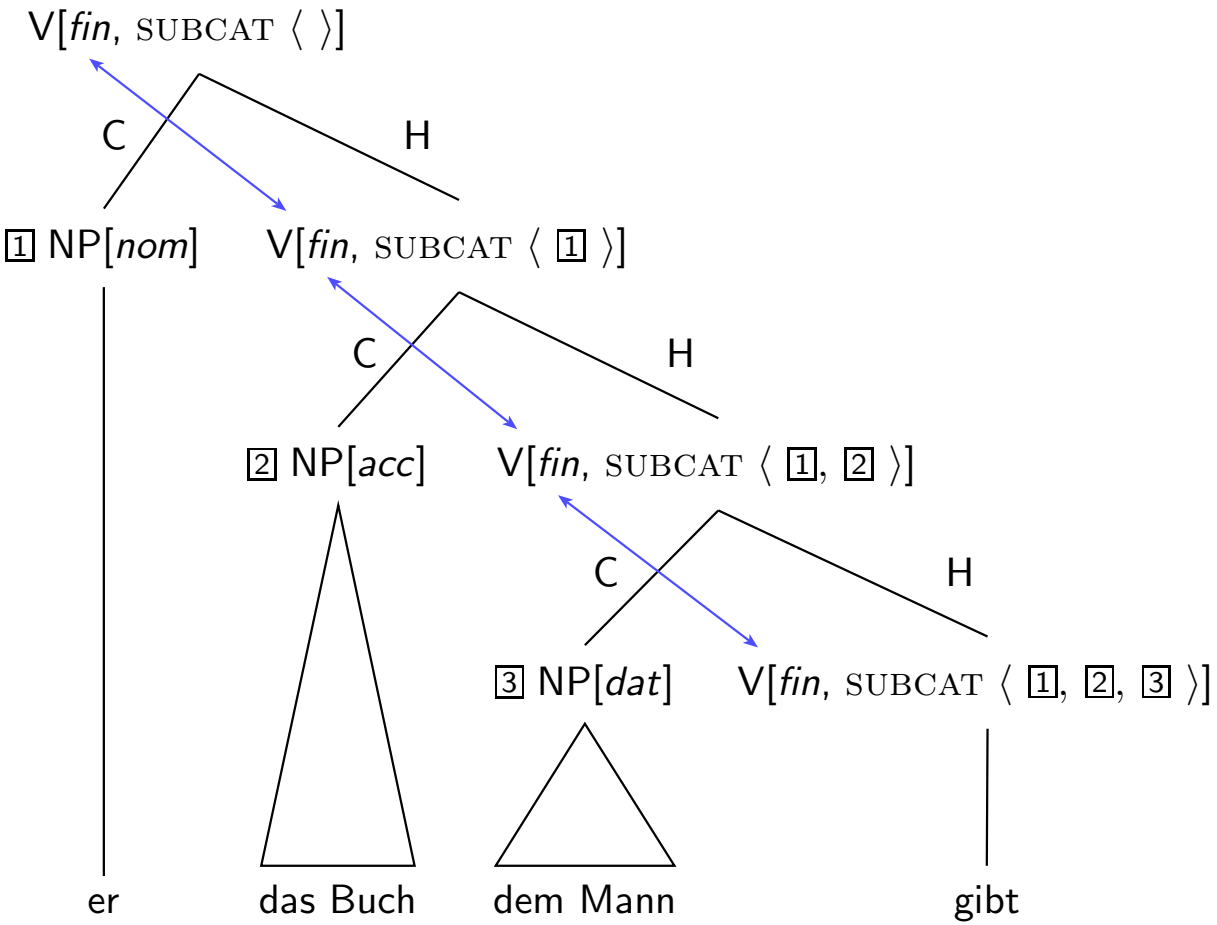
An Example



Projection of Head Features



The head is the finite verb.

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Feature Representation: the HEAD Value

- possible feature geometry:

$$\begin{bmatrix} \text{PHON} & \textit{list of phonemes} \\ \text{P-O-S} & \textit{p-o-s} \\ \text{VFORM} & \textit{vform} \\ \text{SUBCAT} & \textit{list} \end{bmatrix}$$

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- more structure, grouping of information that is projected:

$$\begin{bmatrix} \text{PHON} & \textit{list of phonemes} \\ \text{HEAD} & \begin{bmatrix} \text{P-O-S} & \textit{p-o-s} \\ \text{VFORM} & \textit{vform} \end{bmatrix} \\ \text{SUBCAT} & \textit{list} \end{bmatrix}$$

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Different Heads Project Different Features

- VFORM makes sense for verbs only
- prenominal adjectives and nouns project case (in German)
- possible structure: a structure with all features:

$$\begin{bmatrix} \text{P-O-S} & \textit{p-o-s} \\ \text{VFORM} & \textit{vform} \\ \text{CASE} & \textit{case} \end{bmatrix}$$

  CASE would not have a value for verbs, VFORM would not have a value for nouns.

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  CASE would not have a value for verbs, VFORM would not have a value for nouns.
- Better: different types of feature structures
  - the description for verbs:

    $$\begin{bmatrix} \text{VFORM} & \textit{vform} \\ \textit{verb} & \end{bmatrix}$$

  - for nouns

    $$\begin{bmatrix} \text{CASE} & \textit{case} \\ \textit{noun} & \end{bmatrix}$$

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A Lexical Item with Head Features

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  gibt (‘gives’):

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  - phonological information
  - head information (part of speech, verb form, ...)
  - valence information: a list of feature descriptions

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Head Feature Principle

- In a headed structure the head features of the mother are token identical with the head features of the head daughter.

$$\textit{headed-structure} \rightarrow \begin{bmatrix} \textsc{head}\ \boxed{1} \\ \textsc{head-dtr}|\textsc{head}\ \boxed{1} \end{bmatrix}$$

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- *head-argument-structure* inherits properties from *headed-structure*.

Integration of Semantics

- sign-based: Syntax and semantics are represented in the same structure (see also Jackendoff, 2011)

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- possibel data structure (CONT = CONTENT):

$$\begin{bmatrix} \textsc{phon} & \textit{list of phoneme strings} \\ \textsc{head} & \textit{head} \\ \textsc{subcat} & \textit{list} \\ \textsc{cont} & \textit{cont} \end{bmatrix}$$

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Separate Representation of Syntactic and Semantic Information

- grouping of information, division in syntactic and semantic information (CAT = CATEGORY)

$$\begin{bmatrix} \textsc{phon} & \textit{list of phoneme strings} \\ \textsc{cat} & \begin{bmatrix} \textsc{head} & \textit{head} \\ \textsc{subcat} & \textit{list} \\ & \textit{cat} \end{bmatrix} \\ \textsc{cont} & \textit{cont} \end{bmatrix}$$

- → possible to share syntactic information only
- symmetric coordination: the CAT value is identical:

(3) a. [the man and the woman]

b. He [knows and loves] this record.

German Clause Structure

- Example German: V2 + SOV + free ordering of arguments in the so-called *Mittelfeld*
  Deutsch ist eine V/2-Sprache mit Verbendstellung und freier Wortfolge
  (Haftka, 1996)

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  Deutsch ist eine V/2-Sprache mit Verbendstellung und freier Wortfolge
  (Haftka, 1996)
- almost free order of arguments in the Mittelfeld:

(4) a. weil der Mann der Frau das Buch gibt
since the man the woman the book gives
'since the man gives the woman the book'

b. weil der Mann das Buch der Frau gibt

c. weil das Buch der Mann der Frau gibt

d. weil das Buch der Frau der Mann gibt

e. weil der Frau der Mann das Buch gibt

f. weil der Frau das Buch der Mann gibt

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Adjuncts in the Mittelfeld

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- Apart from arguments adjuncts can appear in the Mittelfeld.
- These can be placed anywhere:

(5) a. weil morgen der Mann das Buch der Frau gibt
since tomorrow the man the book the woman gives
b. weil der Mann morgen das Buch der Frau gibt
c. weil der Mann das Buch morgen der Frau gibt
d. weil der Mann das Buch der Frau morgen gibt

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Scopal Adjuncts

- Scopal adjuncts cannot be reordered without a change in meaning:

(6) a. weil er absichtlich nicht lacht
since he deliberately not laughs
'since he does not laugh deliberately'

b. weil er nicht absichtlich lacht
since he not deliberately laughs
'since he does deliberately not laugh'

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Proposals

- Various proposals, for a discussion see Müller, 2004, 2005a

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- totally flat structures: verbs and arguments are in the same local tree. (Uszkoreit, 1987; Pollard, 1996)
  - Question: What about adjuncts? Semantics? (Kasper, 1994)
  - What about apparently multiple frontings? (Müller, 2003)

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Binary Branching Structures

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- The integration of adjuncts is straight-forward:

  (8) a. weil [morgen [der Mann [das Buch [der Frau gibt]]]]
  b. weil [der Mann [morgen [das Buch [der Frau gibt]]]]
  c. weil [der Mann [das Buch [morgen [der Frau gibt]]]]
  d. weil [der Mann [das Buch [der Frau [morgen gibt]]]]

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  d. weil [der Mann [das Buch [der Frau [morgen gibt]]]]

- The meaning difference in (9) follows from the difference in embedding.

  (9) a. weil er [absichtlich [nicht lacht]]
  b. weil er [nicht [absichtlich lacht]]

Reordering and Binary Branching

- Analyses with binary branching:
  - Analysis 1: Verb takes the arguments in the order they are represented in the valence list → we need several lexical items to cover all possible orders (Uszkoreit, 1986; Jacobs, 1986)

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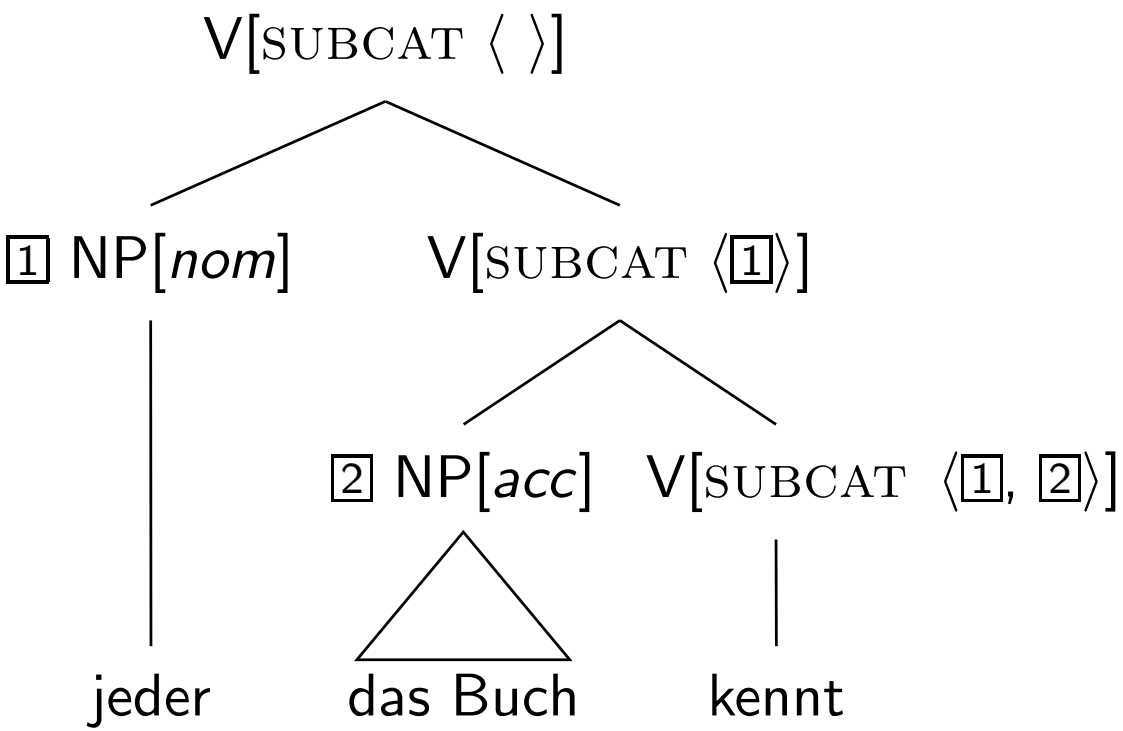
  - Analysis 1: Verb takes the arguments in the order they are represented in the valence list → we need several lexical items to cover all possible orders (Uszkoreit, 1986; Jacobs, 1986)
  - Analysis 2: Verb takes an arbitrary element from the valence list.
    This proposal can be found in HPSG (Gunji, 1986; Müller, 2008), Categorial Grammar (Hoffman, 1995; Steedman and Baldridge, 2006) and in GB/Minimalism (Fanselow, 2001)

Example: Normal Order

(10) a. weil jeder das Buch kennt
b. weil das Buch jeder kennt



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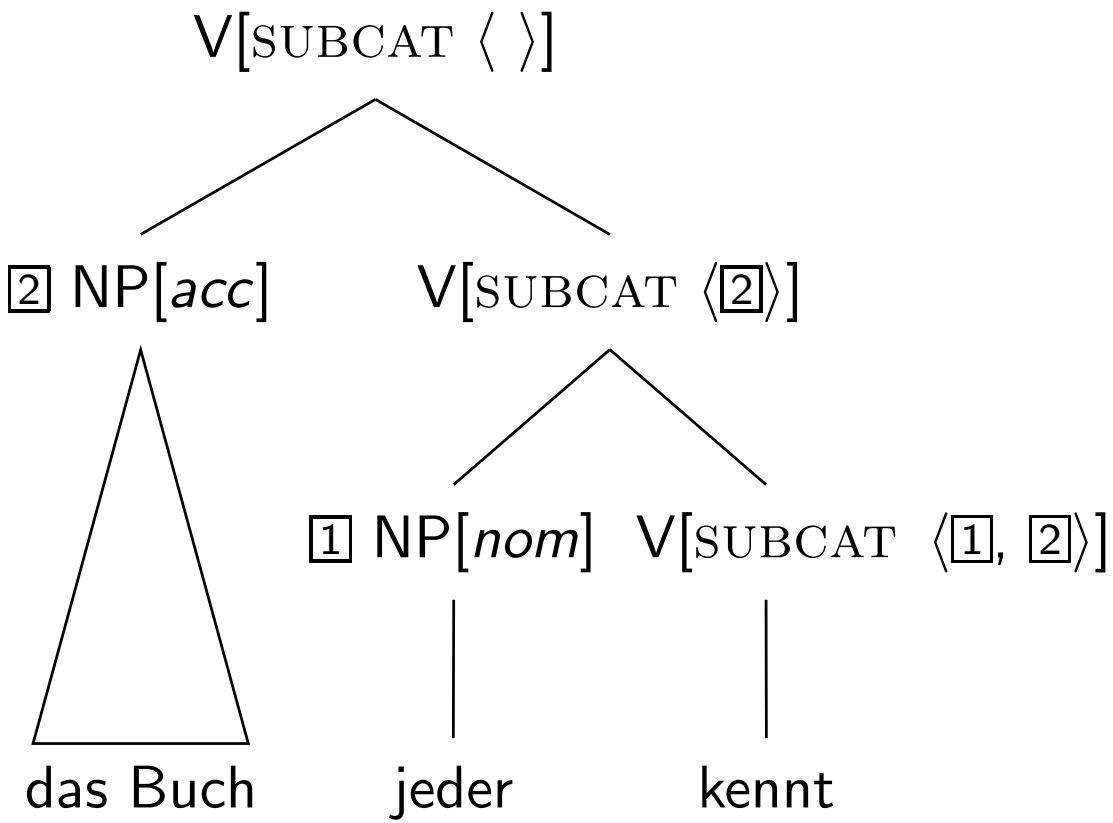

The difference is the binding off of elements in SUBCAT

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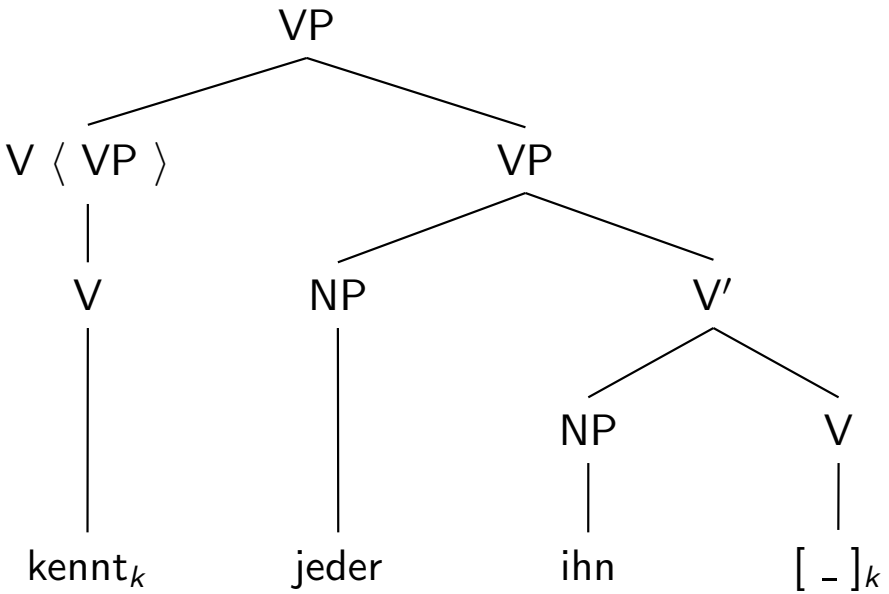
Verb Position: “Movement”



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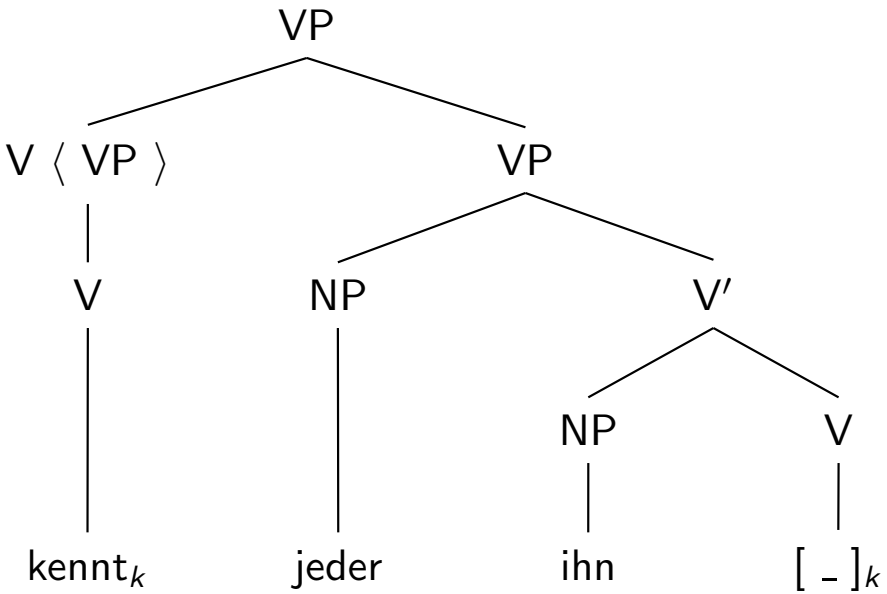

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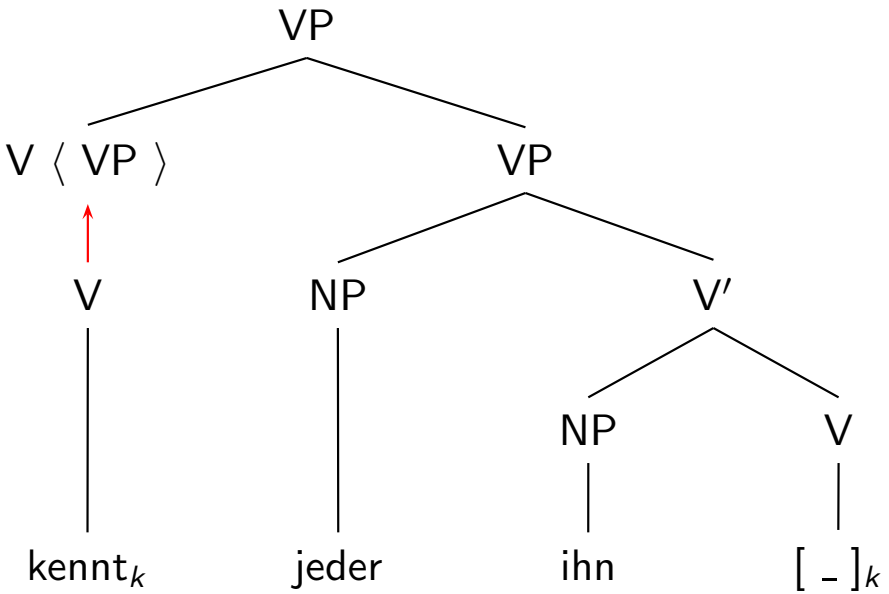

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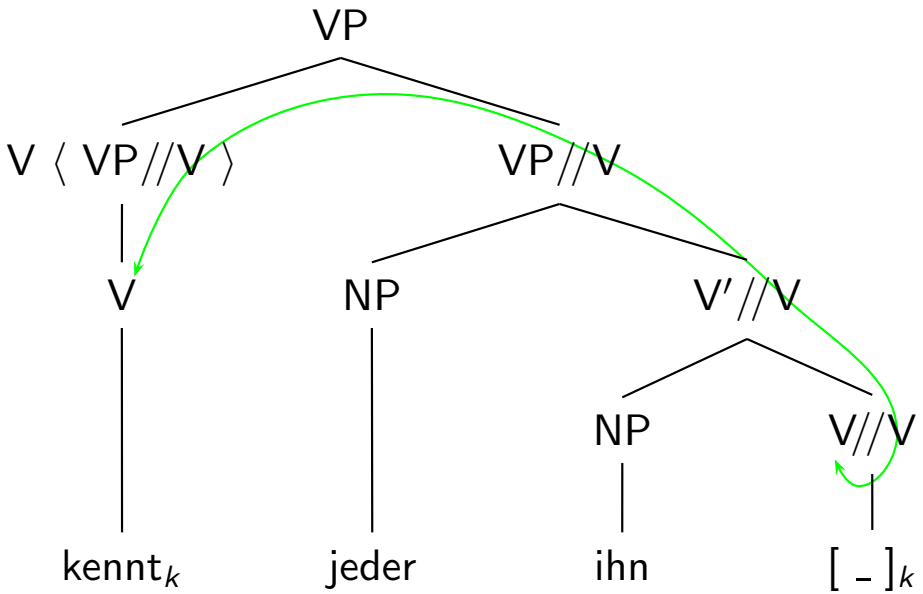

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- Connection between verb and trace via percolation of information.

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The LOCAL feature

- Syntactic information (valence, part of speech, inflexion) and semantic information is shared

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- This information, which is relevant locally, is grouped under LOCAL.
  gibt:

$$\left[\begin{array}{l}\textsc{phon}\ \langle\ \textit{gibt}\ \rangle \\ \textsc{loc}\ \left[\begin{array}{l}\textsc{cat}\ \left[\begin{array}{l}\textsc{head}\ \left[\begin{array}{l}\textsc{vform}\ \textit{fin} \\ \textit{verb}\end{array}\right] \\ \textsc{subcat}\ \left\langle \textsc{np}[\textit{nom}],\ \textsc{np}[\textit{acc}],\ \textsc{np}[\textit{dat}] \right\rangle\end{array}\right] \\ \textsc{cont}\ \ldots\end{array}\right]\end{array}\right]$$

Fronting (V2) as Nonlocal Dependency

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c. Wen$_i$ glaubst du, daß ich _$_i$ gesehen habe.[3]

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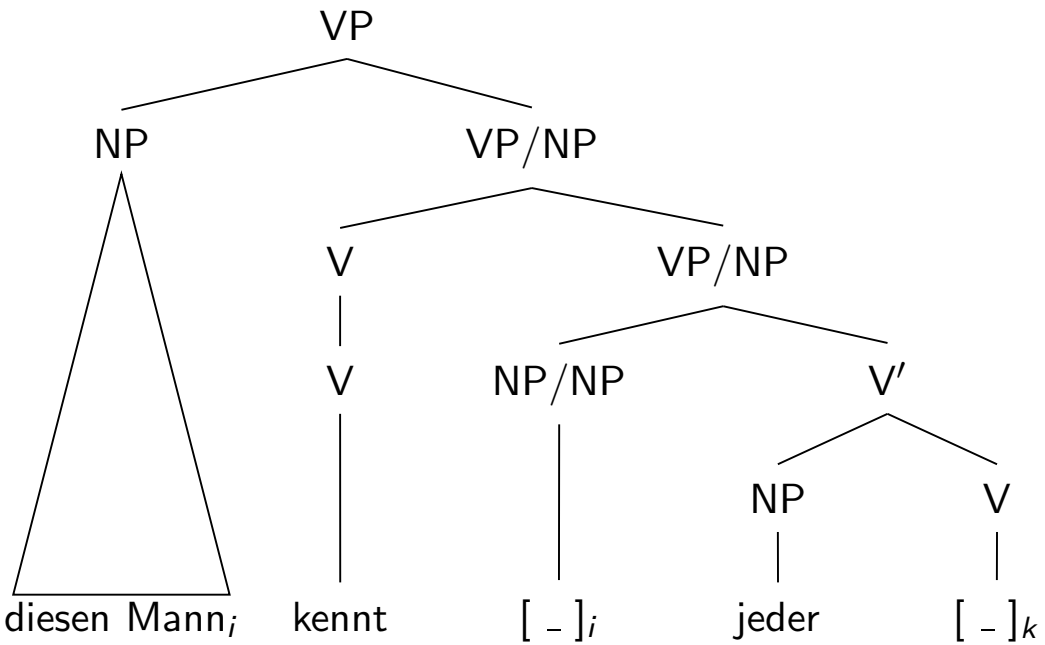
[3] Scherpenisse, 1986, p. 84.

Constituent Movement



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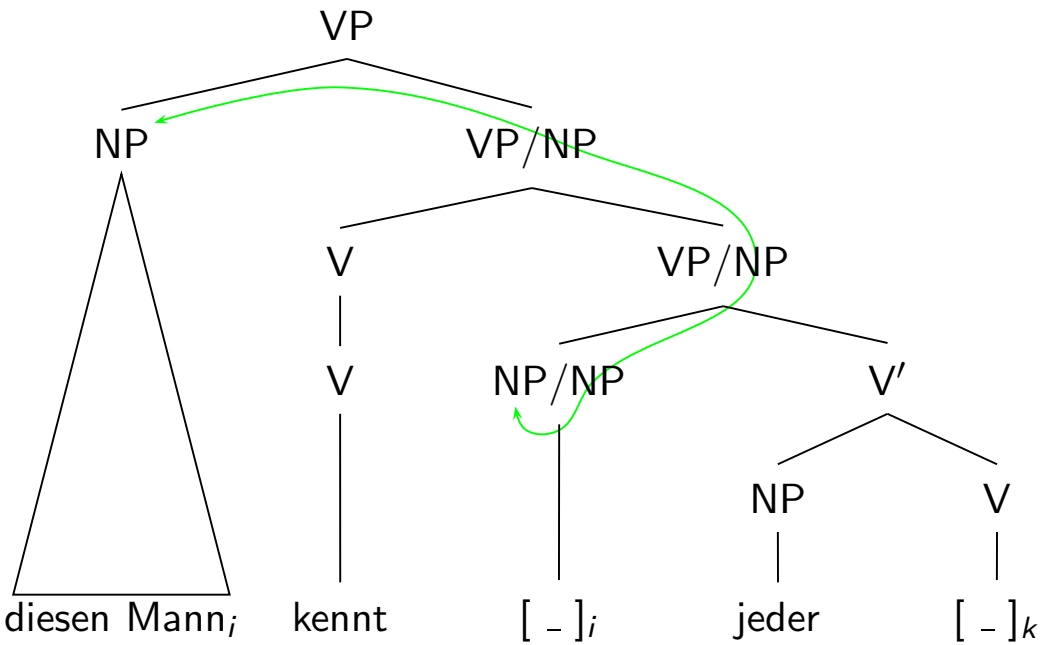

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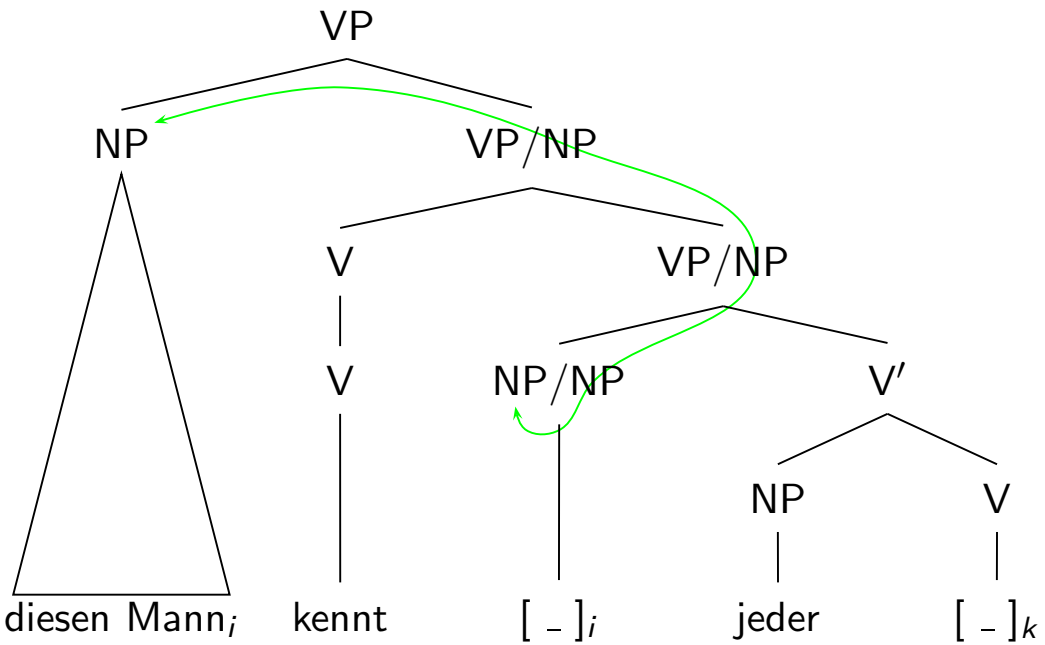

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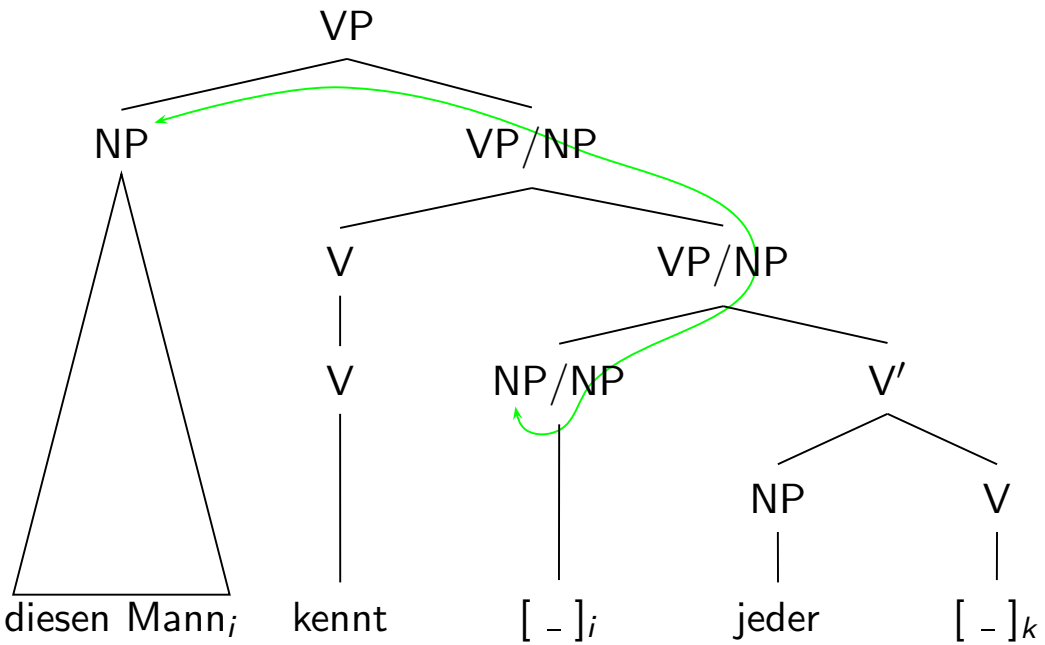

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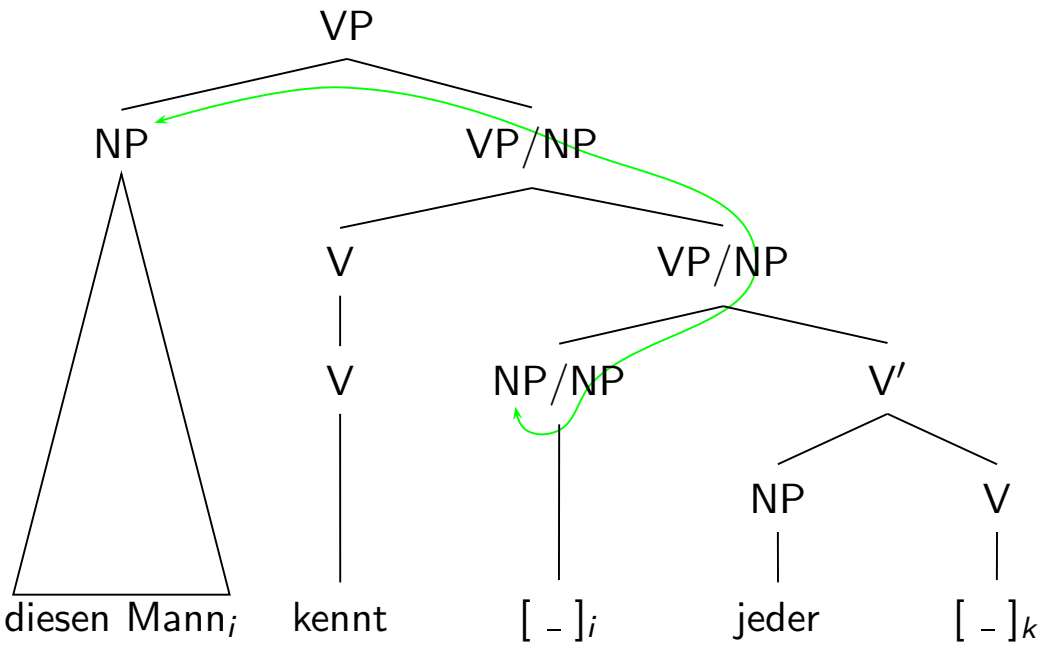

- As in the example of head movement: Trace at "canonical" position
- percolation of information in the tree
- constituent movement is not local, verb movement is two different features for modelling (SLASH vs. DSL)

The NONLOCAL Feature

- NONLOC contains features that are relevant for nonlocal dependencies (V2, relative clauses, interrogatives, extraposition).

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- These properties can be selected (LOC and NONLOC).
  No selection of daughters.
  New feature SYNSEM that includes LOC and NONLOC but excludes HEAD-DTR etc.

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- Additional rules are needed in CG,
  some are already there (topicalization).
- It does not make sense for all structures to assume a head (functor).
  See for instance Constructionist work by Jackendoff (2008) and Jacobs (2008).

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LFG's f-structure and HPSG's projected Argument Structure

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- Introduced and motivated for HPSG:
  Meurers, 1999, Przepiórkowski, 1999, Müller, 2008, Chapter 17.4

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- So, is everything the same?

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Minimalism vs. Constraint-Based Theories

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- Minimalism is generative-enumerative and derivational rather than representational. (Pullum and Scholz, 2001)

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Mixing up Levels (some variants)

- MGG is syntax centered:
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  A strong syntactic component and then interface modules PF and LF.
- As a result a lot of semantic or information structure phenomena are now treated in syntax with invisible functional projections:
  - SpeakerP, HearerP (Poletto, 2000, p. 31)
  - TopP, ForceP, OuterTopP (Rizzi, 1997; Grewendorf, 2002, 2009; Wiklund et al., 2007)
  - Quality, Size, Shape, Color, Nationality (Cinque, 1994, p. 96, 99)
- Other stuff that does not correspond to traditional, part of speech-based categories:
  - SubjP, ObjP, TraP (Transitive Phrase), IntraP (Intransitive Phrase) (Karimi-Doostan, 2005)

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- Most work in GB/Minimalism is on the so-called Core, that is, the regular and common parts of language.
- Other areas exist and the ultimate value of a theory depends on its capability to cover both core and periphery.

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- German and Dutch neither have object agreement nor topic morphemes.
- Conclusion:
  If such inferences regarding properties of particular languages,
  one has to assume (very specific!) innate linguistic knowledge.

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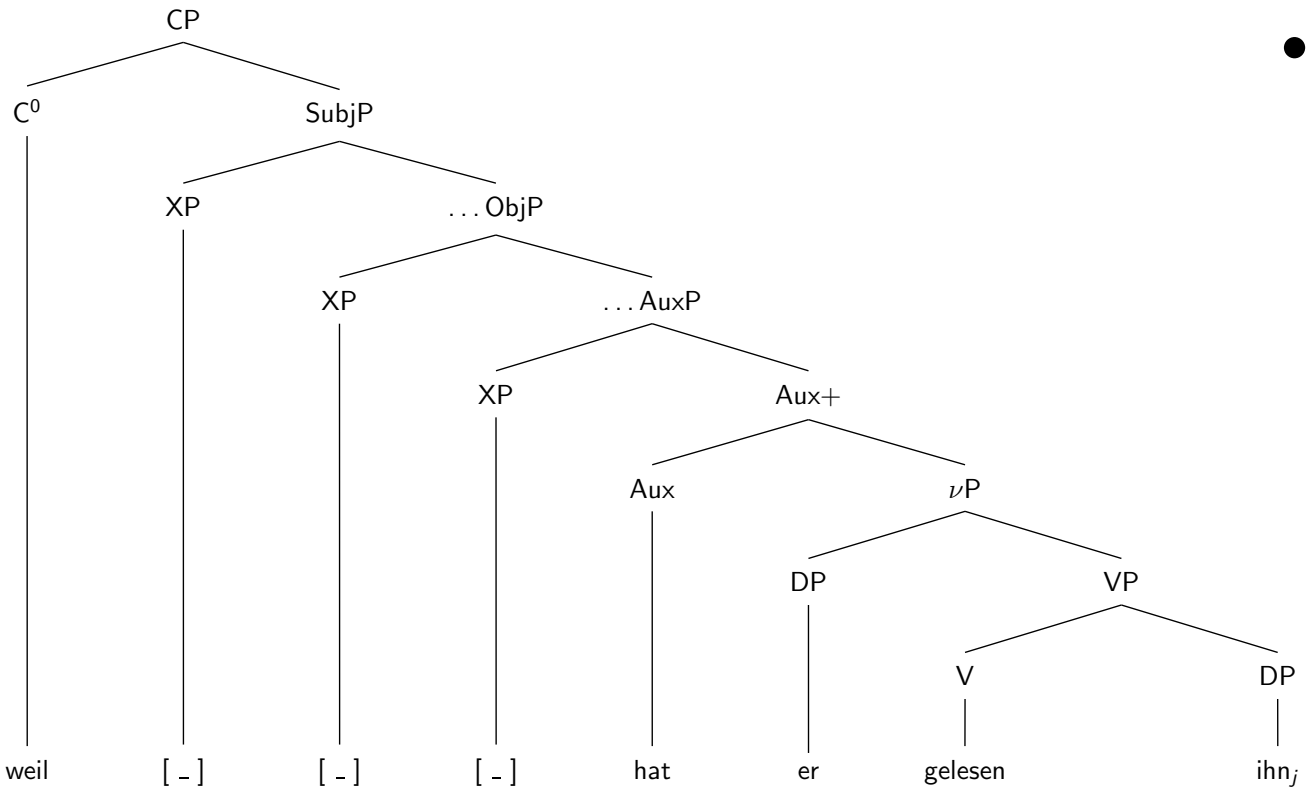
German is English/Romance (SVO, Laenzlinger following Kayne)



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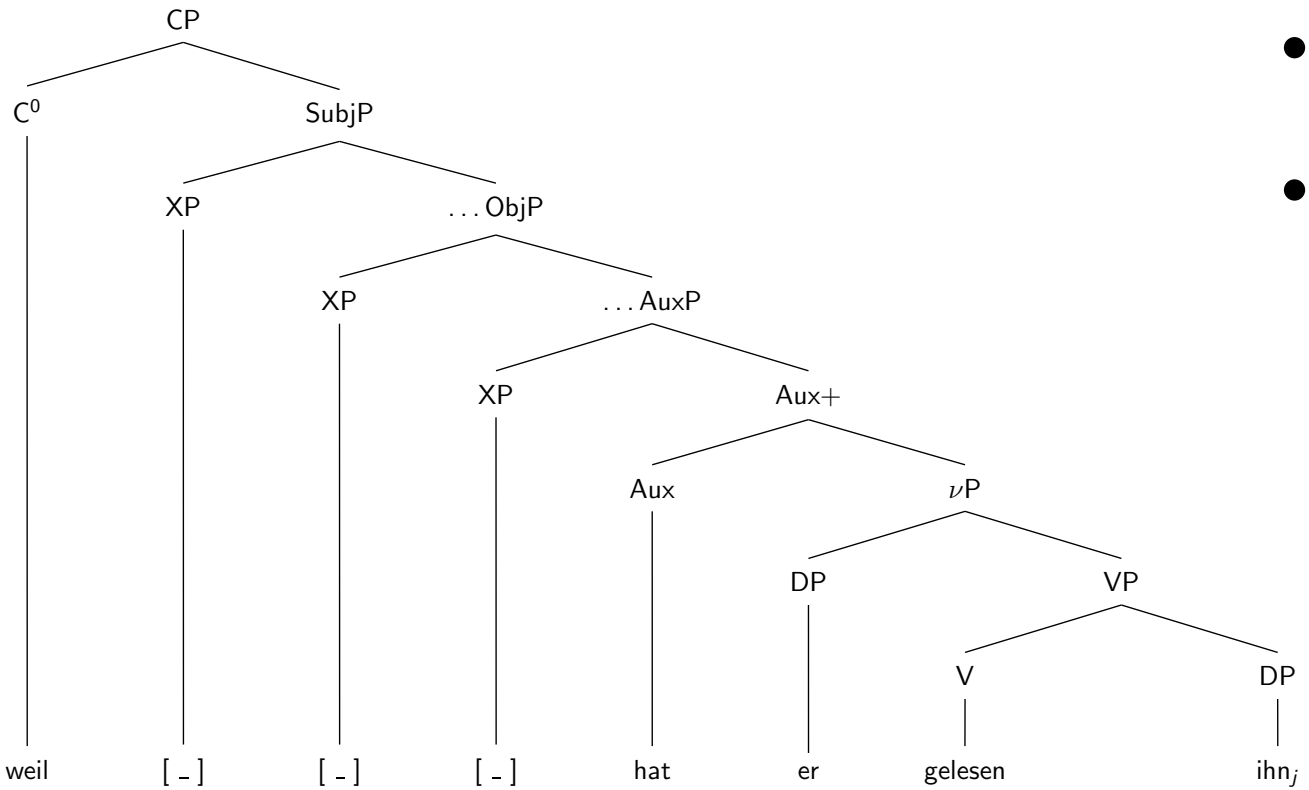

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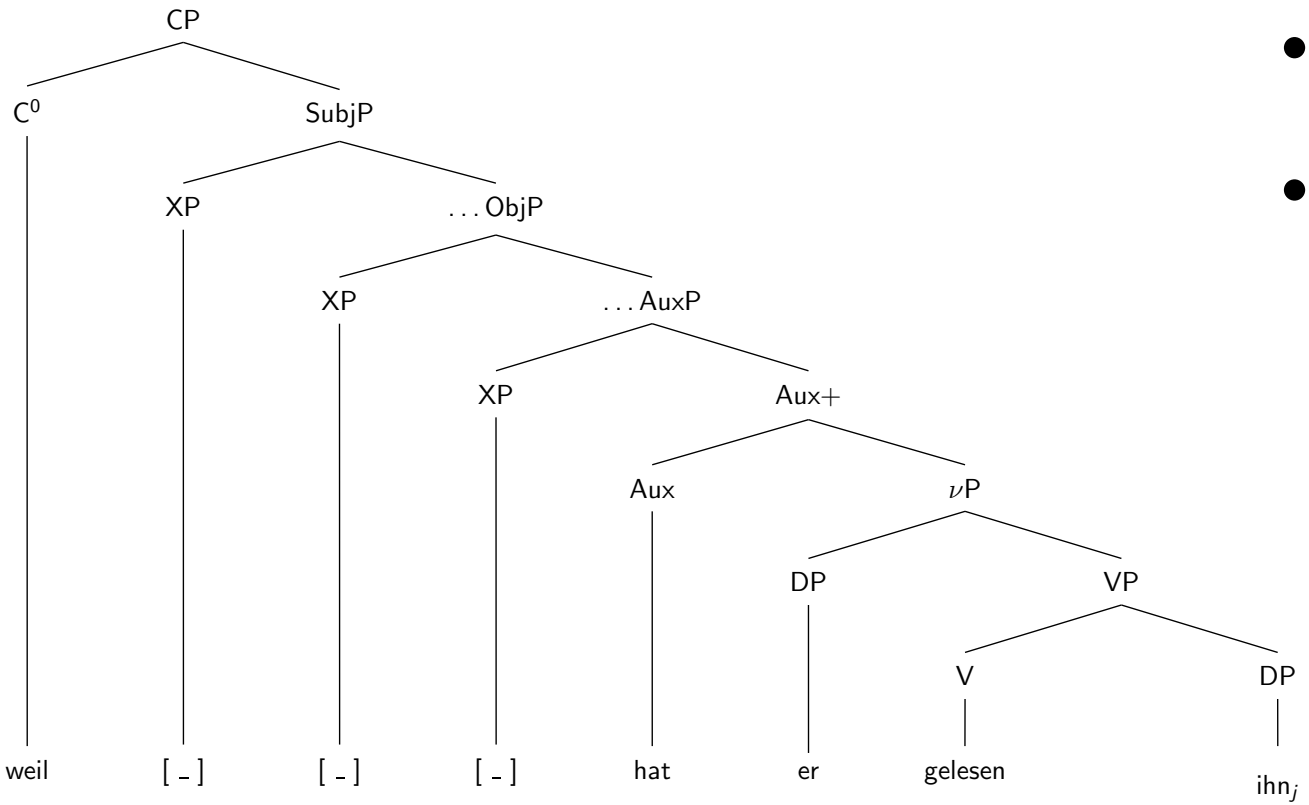

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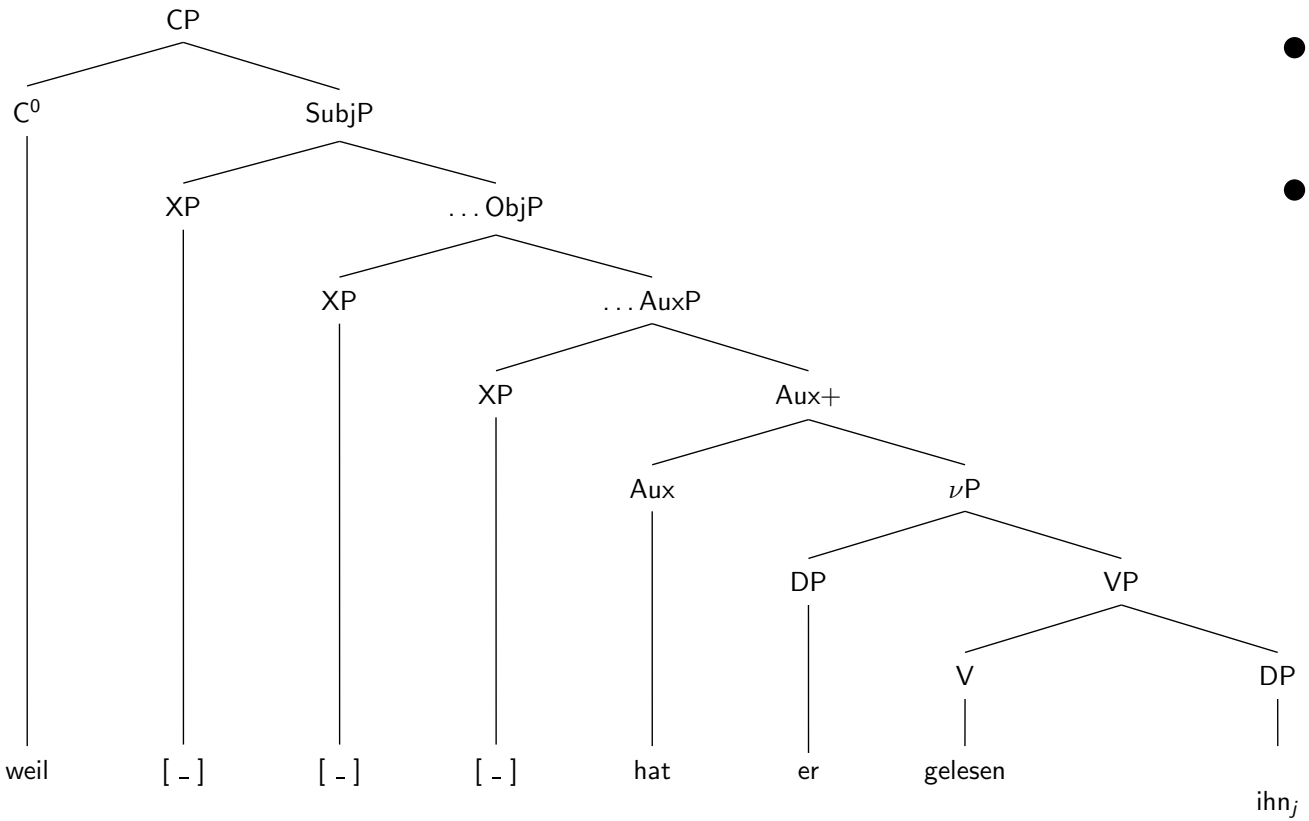

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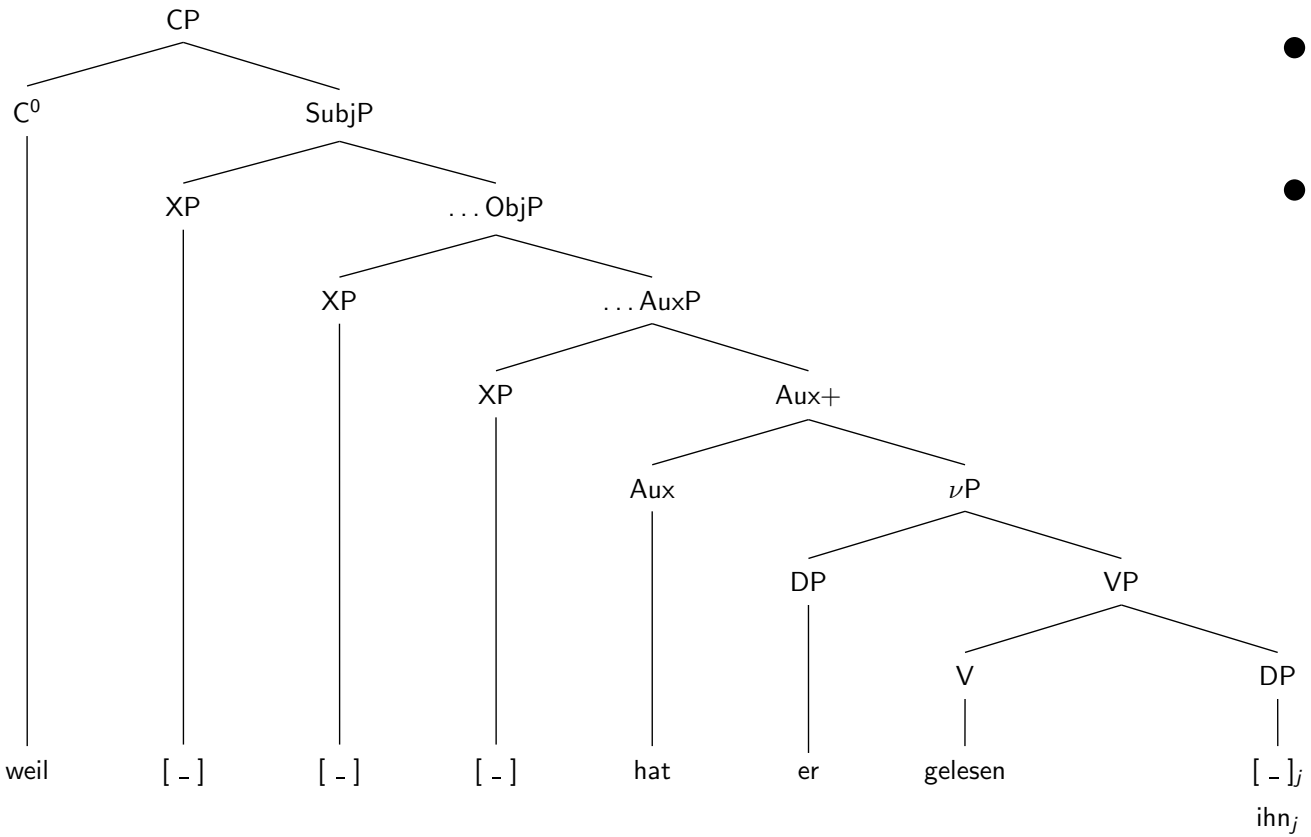

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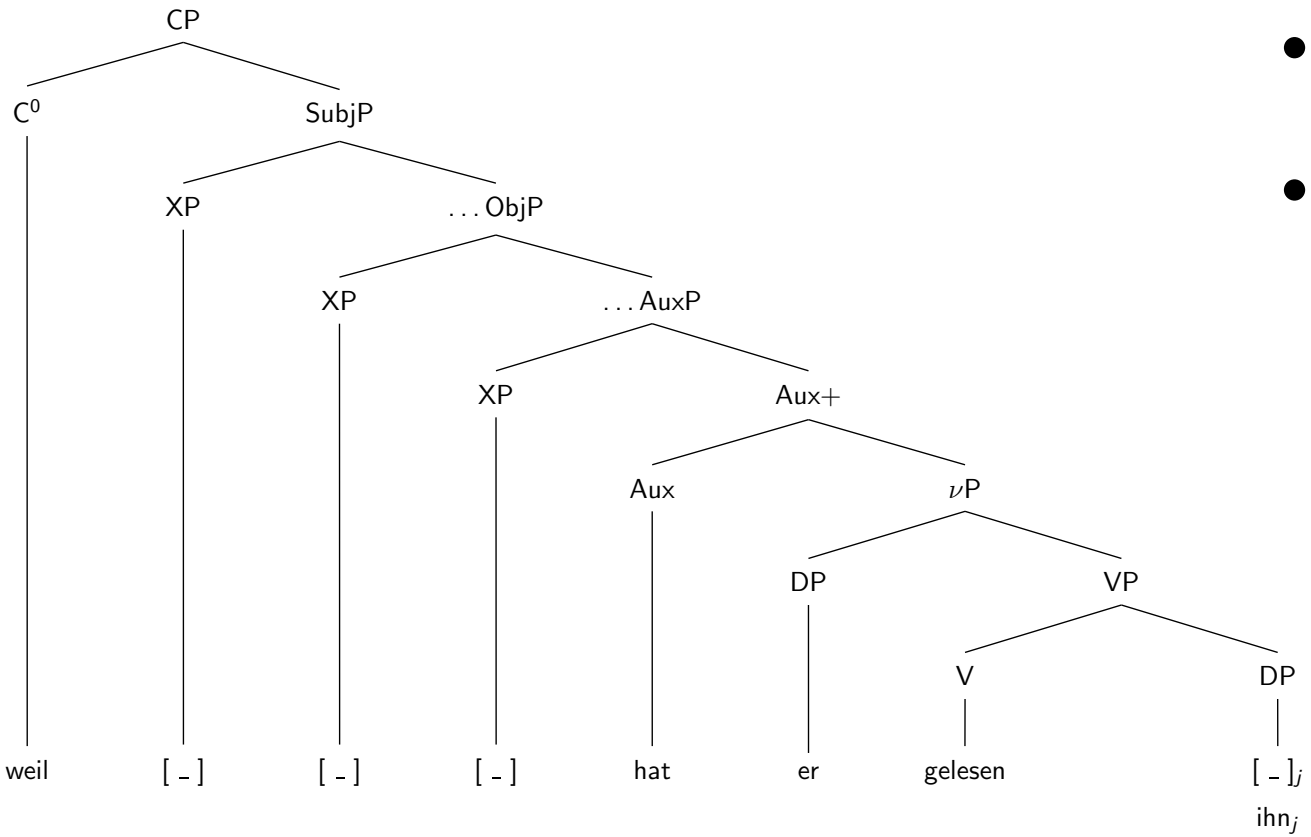

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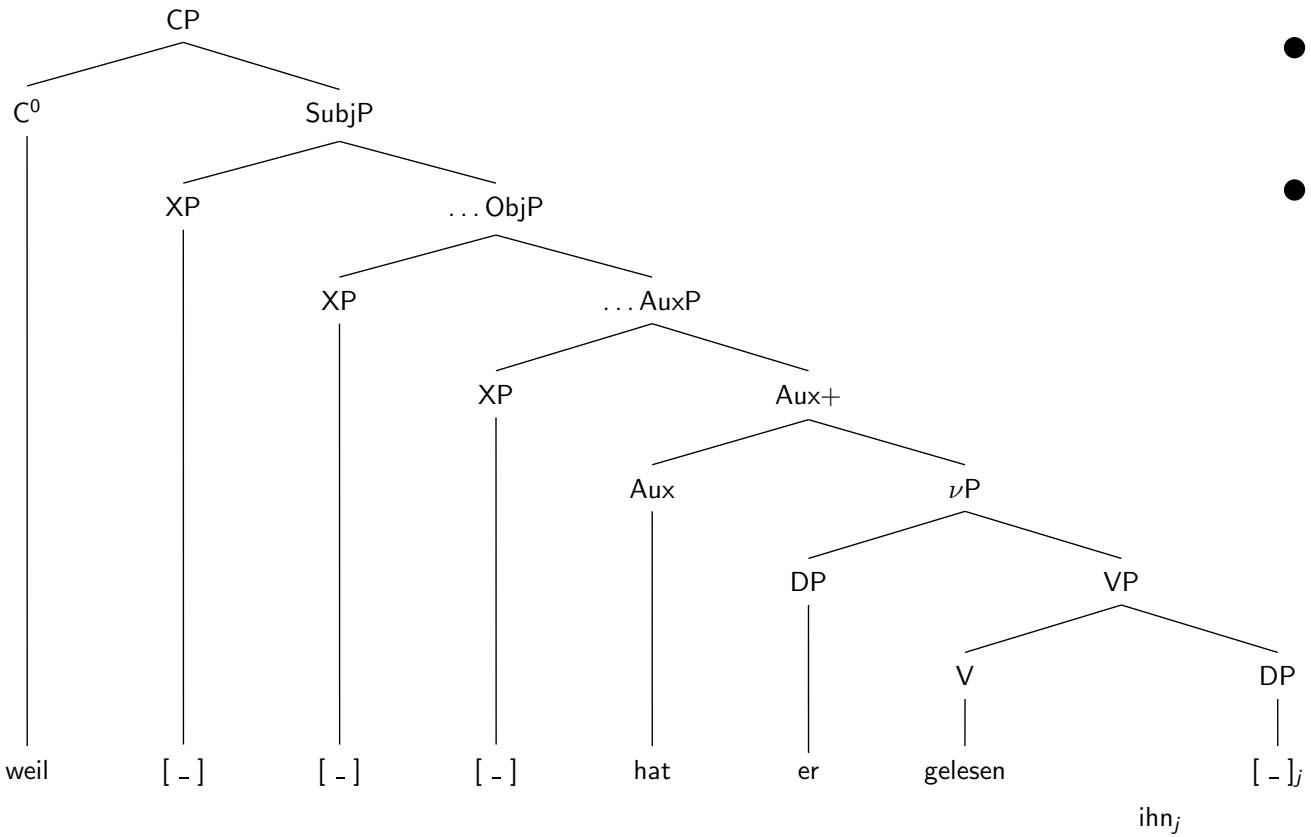

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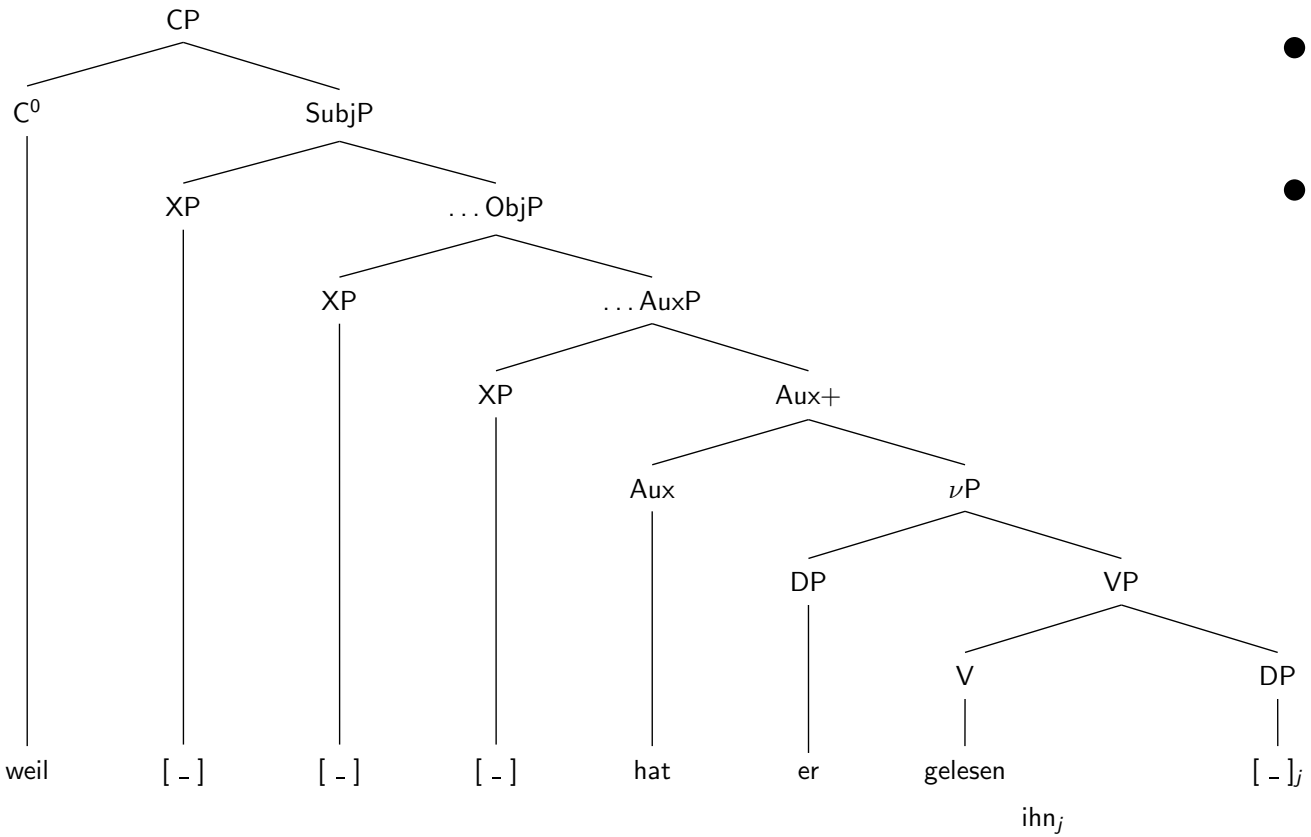

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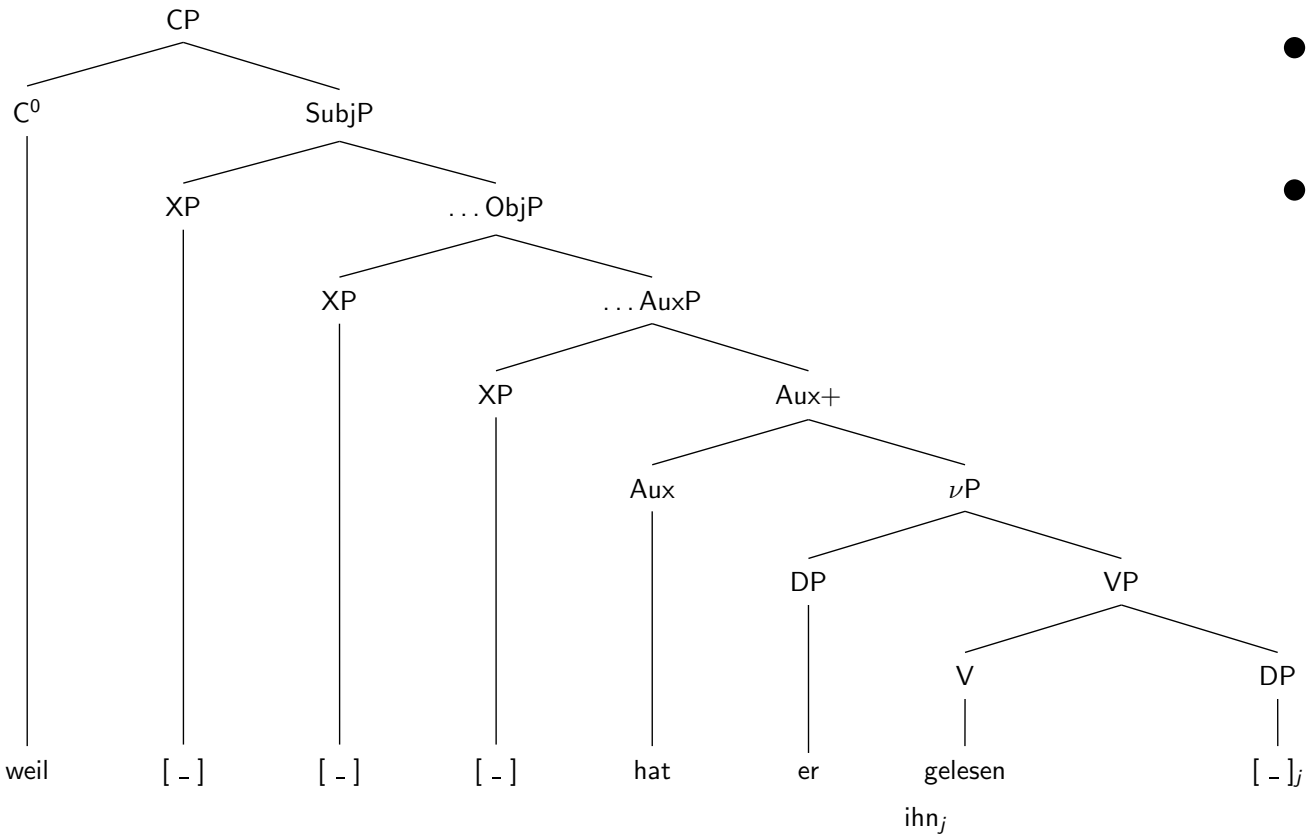

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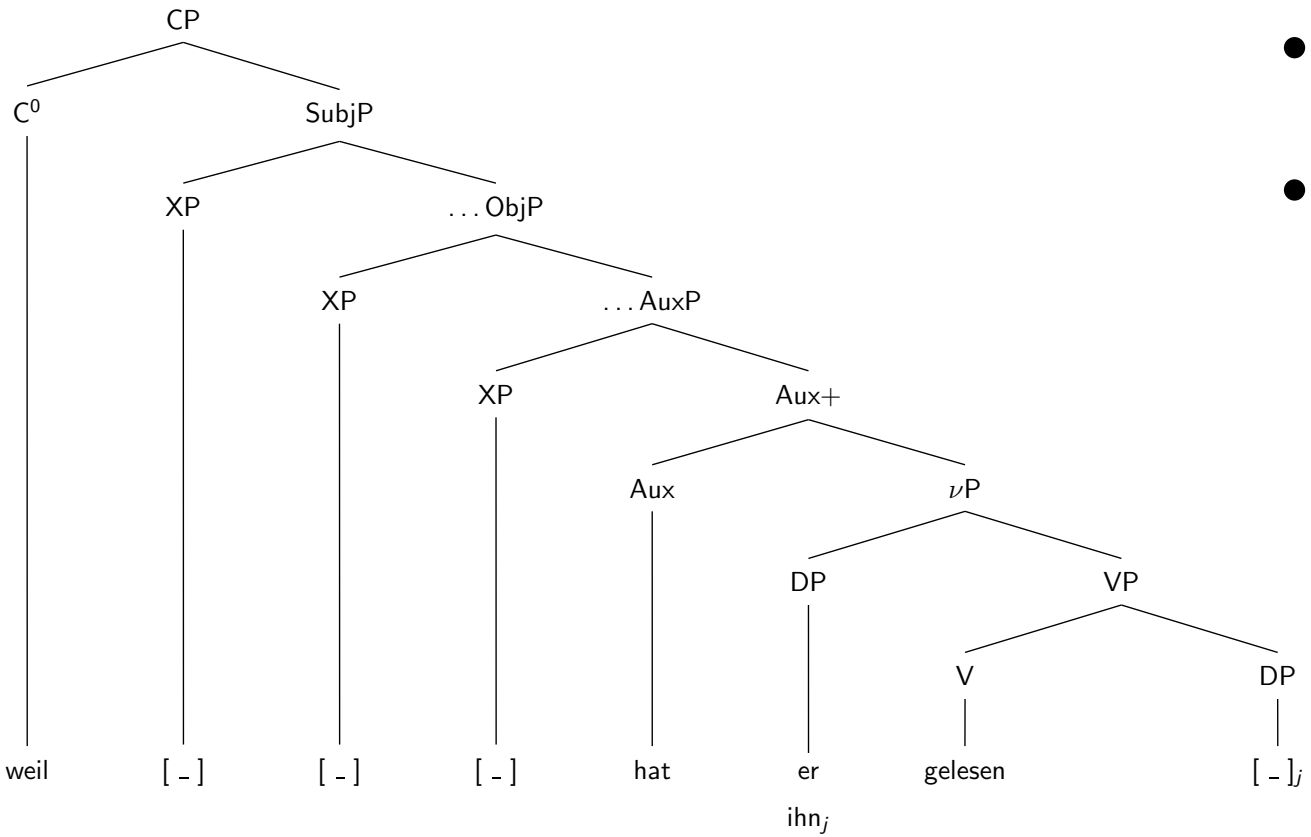

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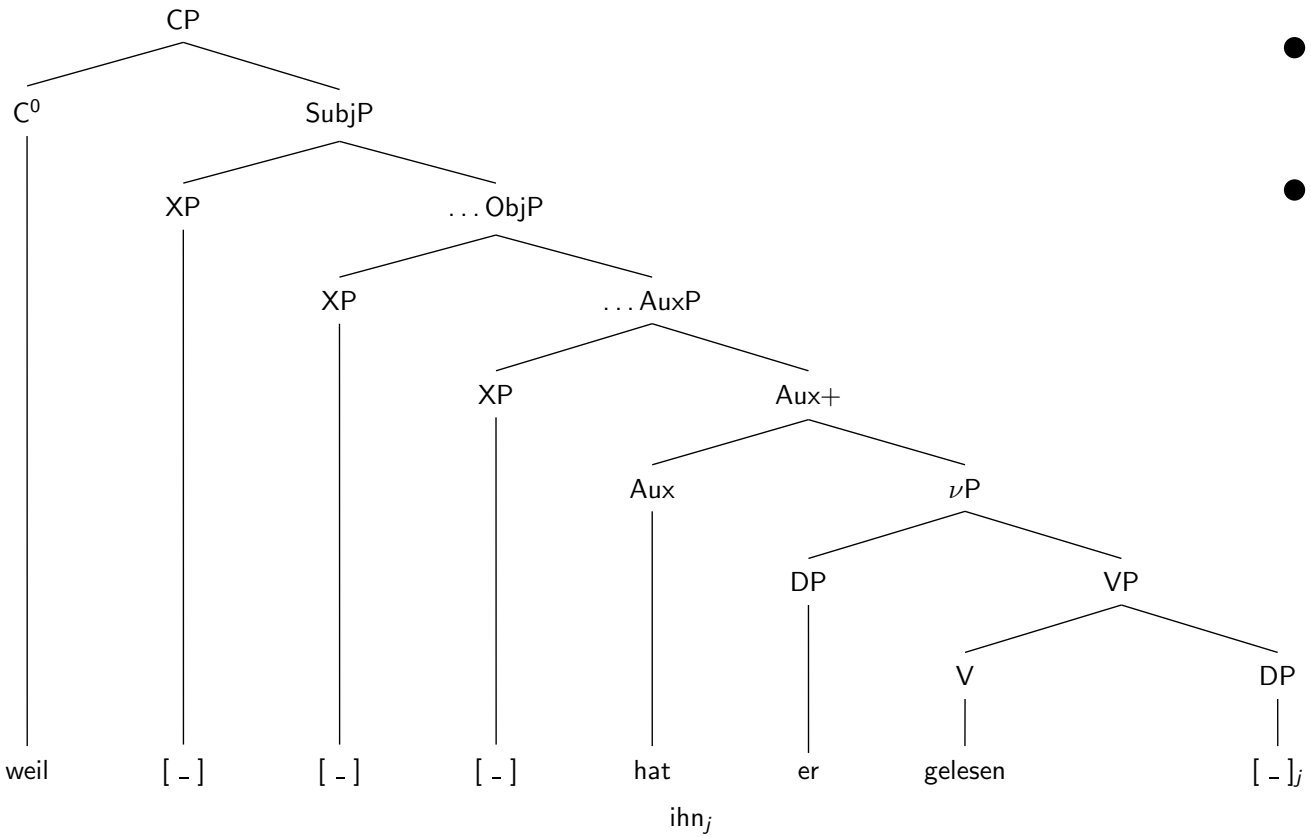

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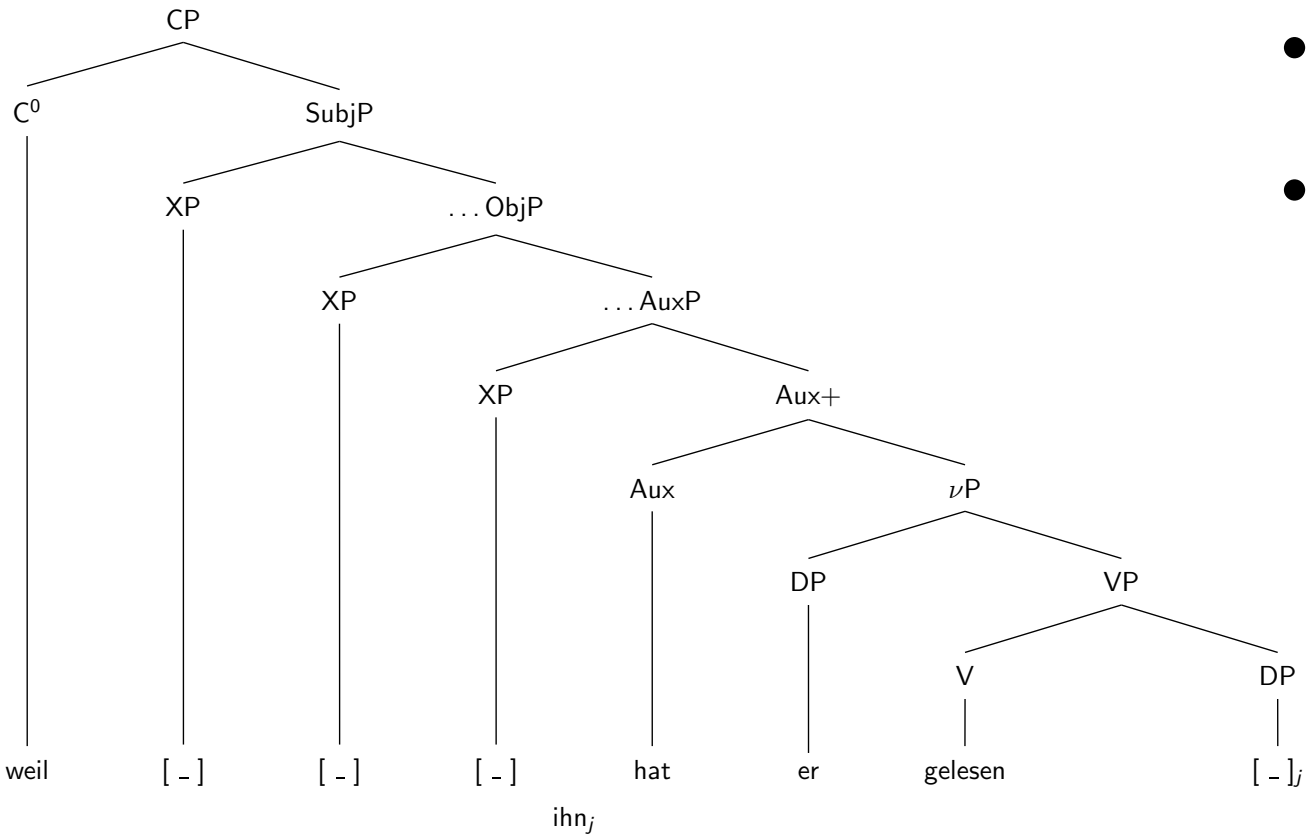

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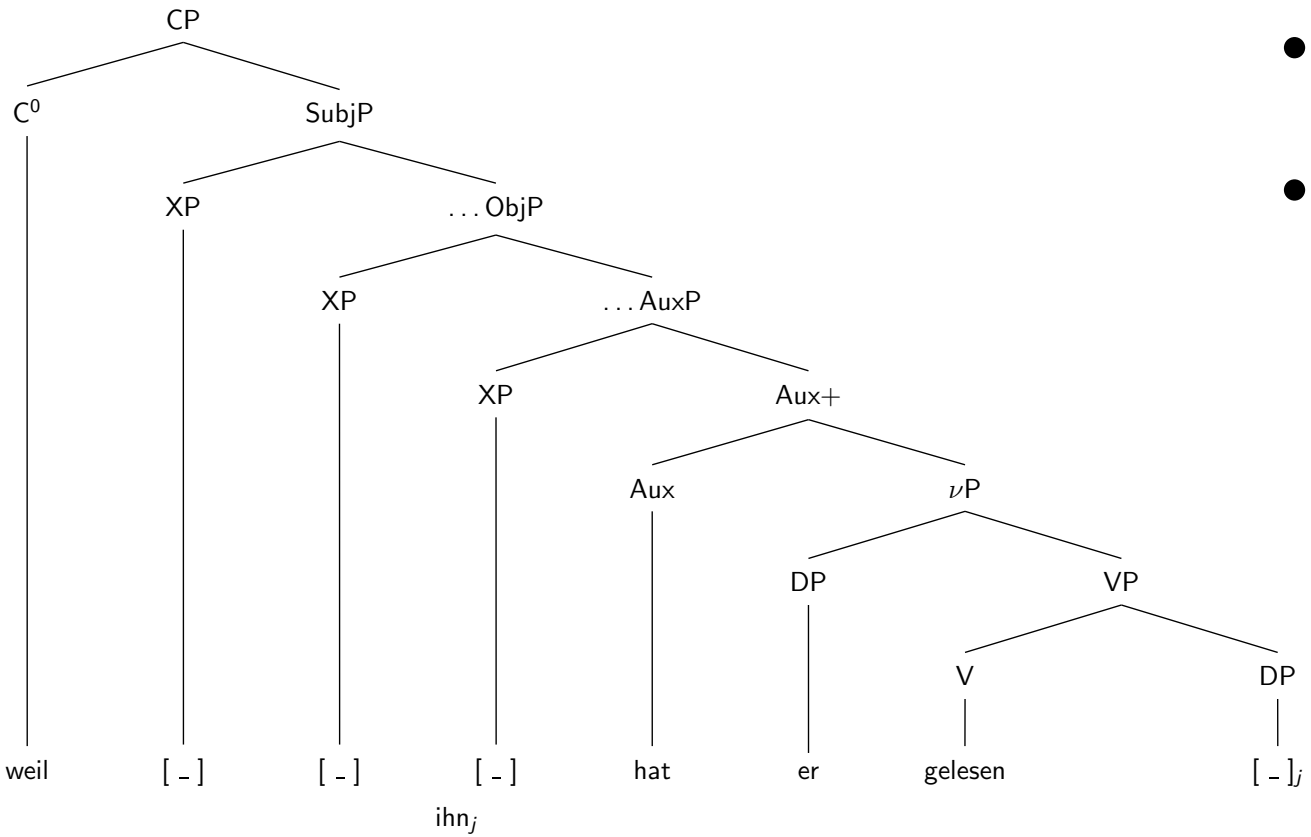

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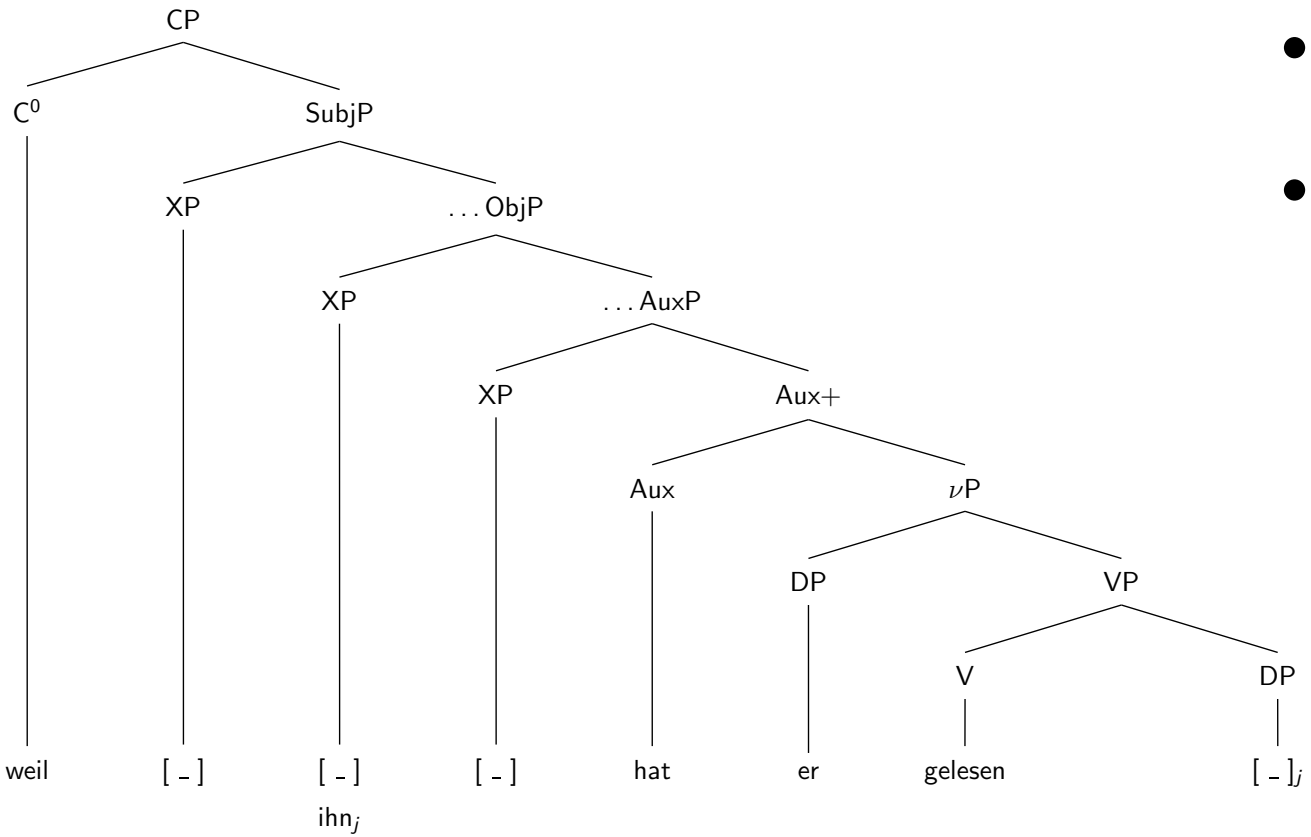

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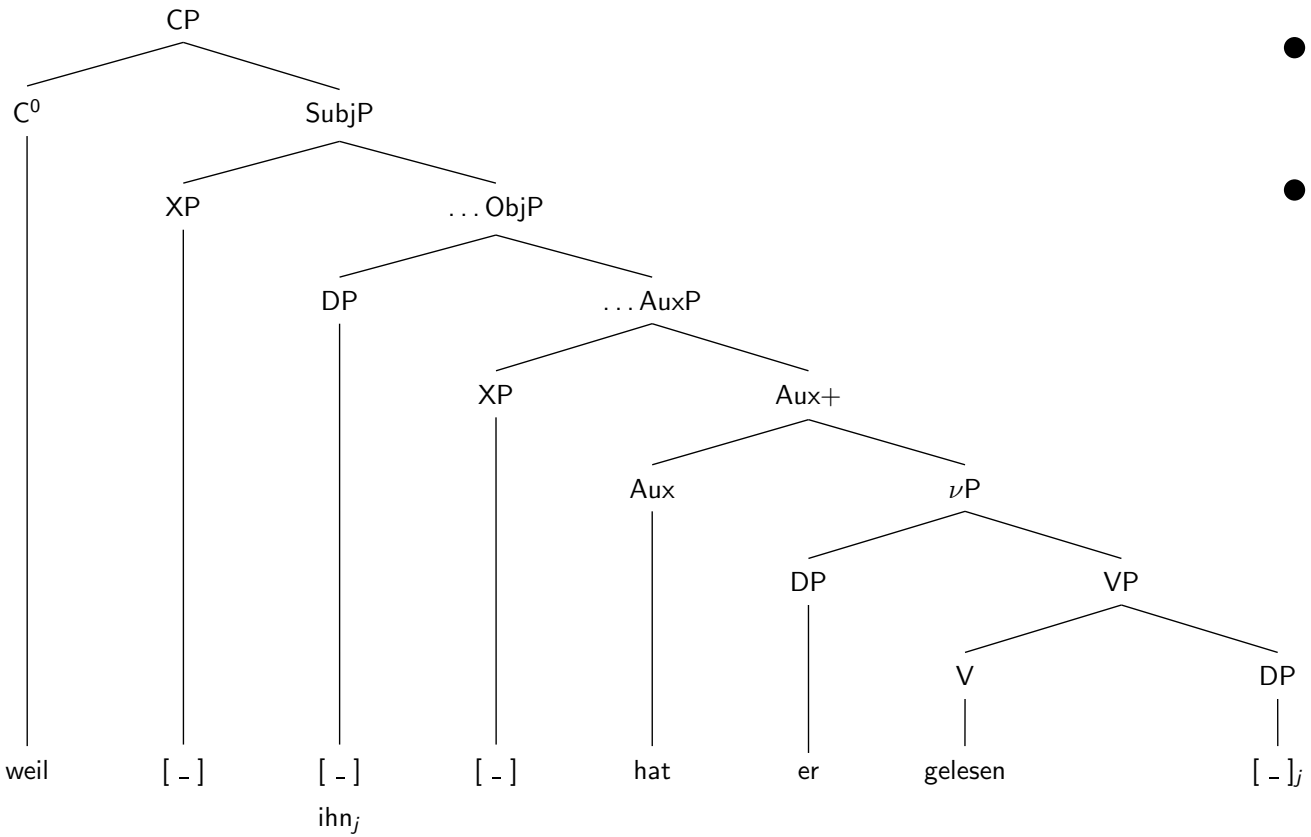

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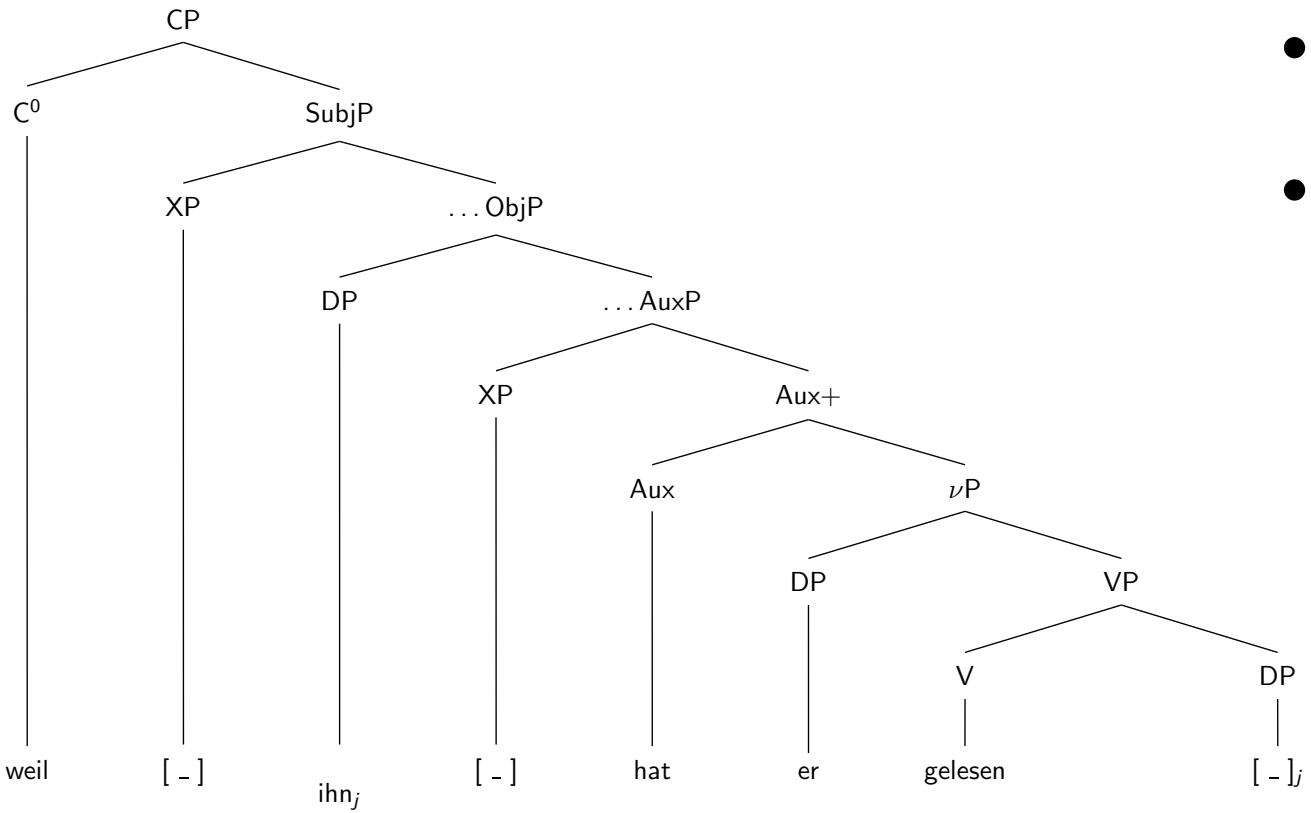

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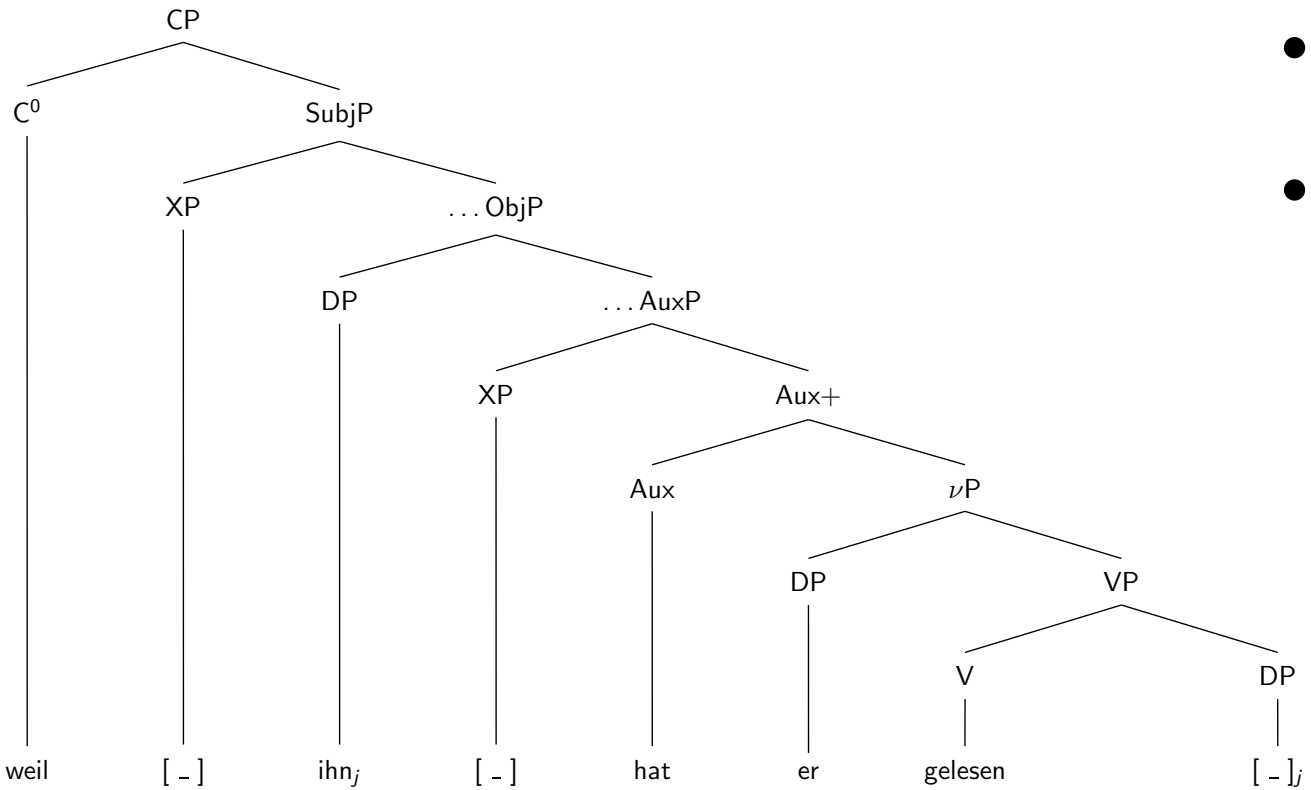

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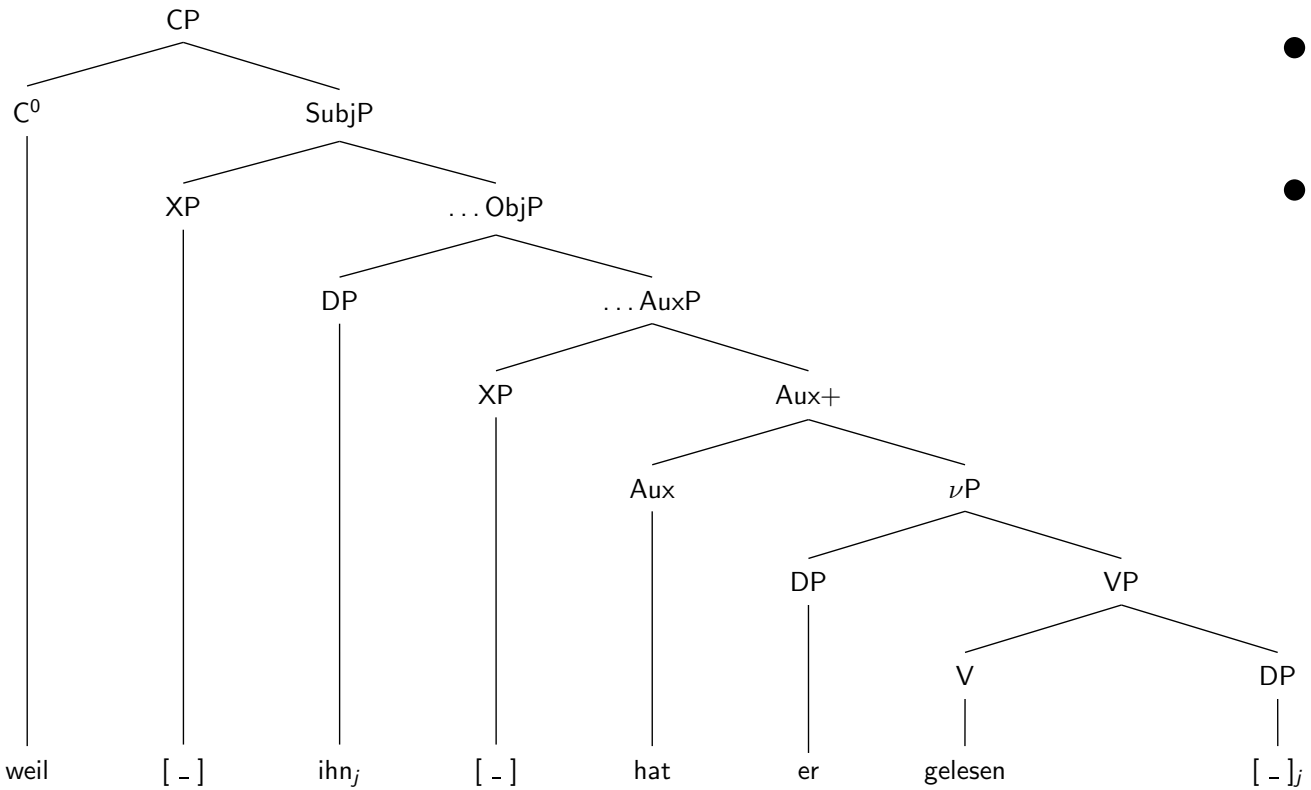

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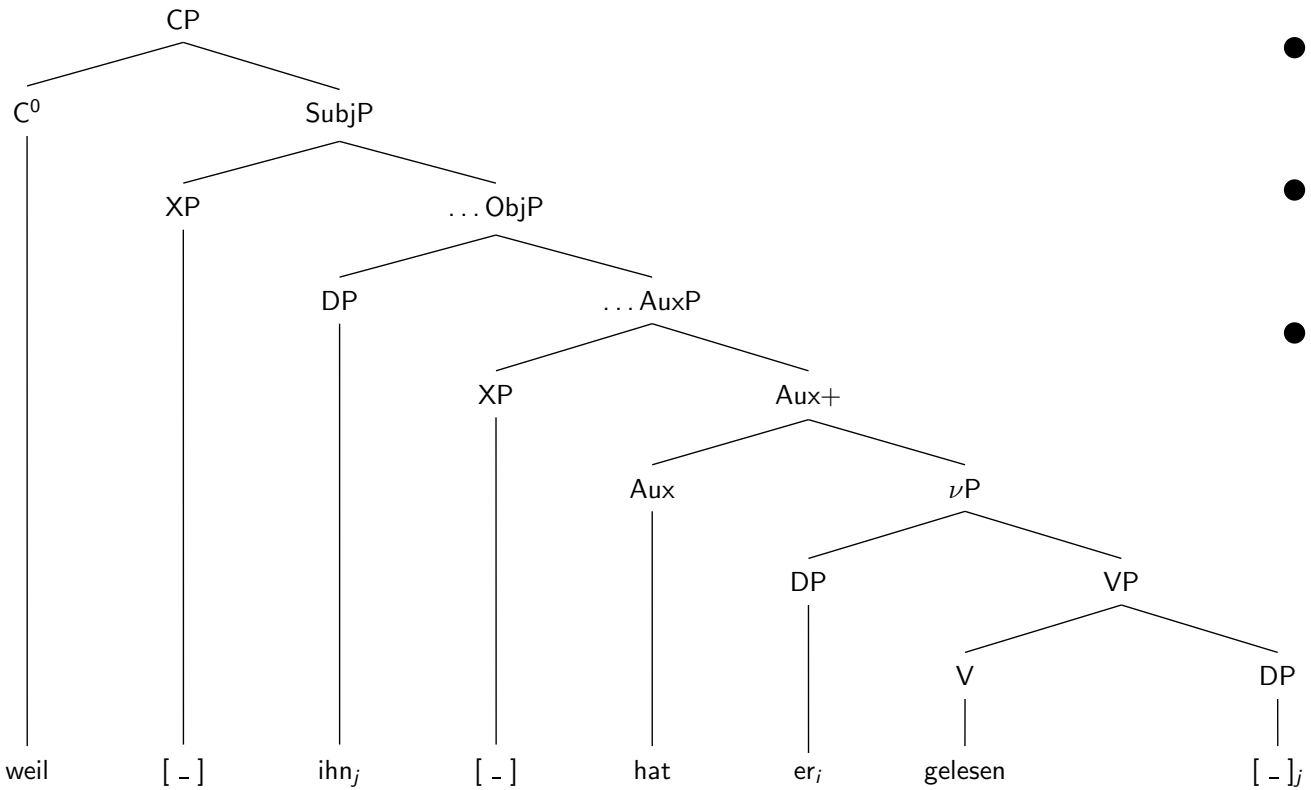

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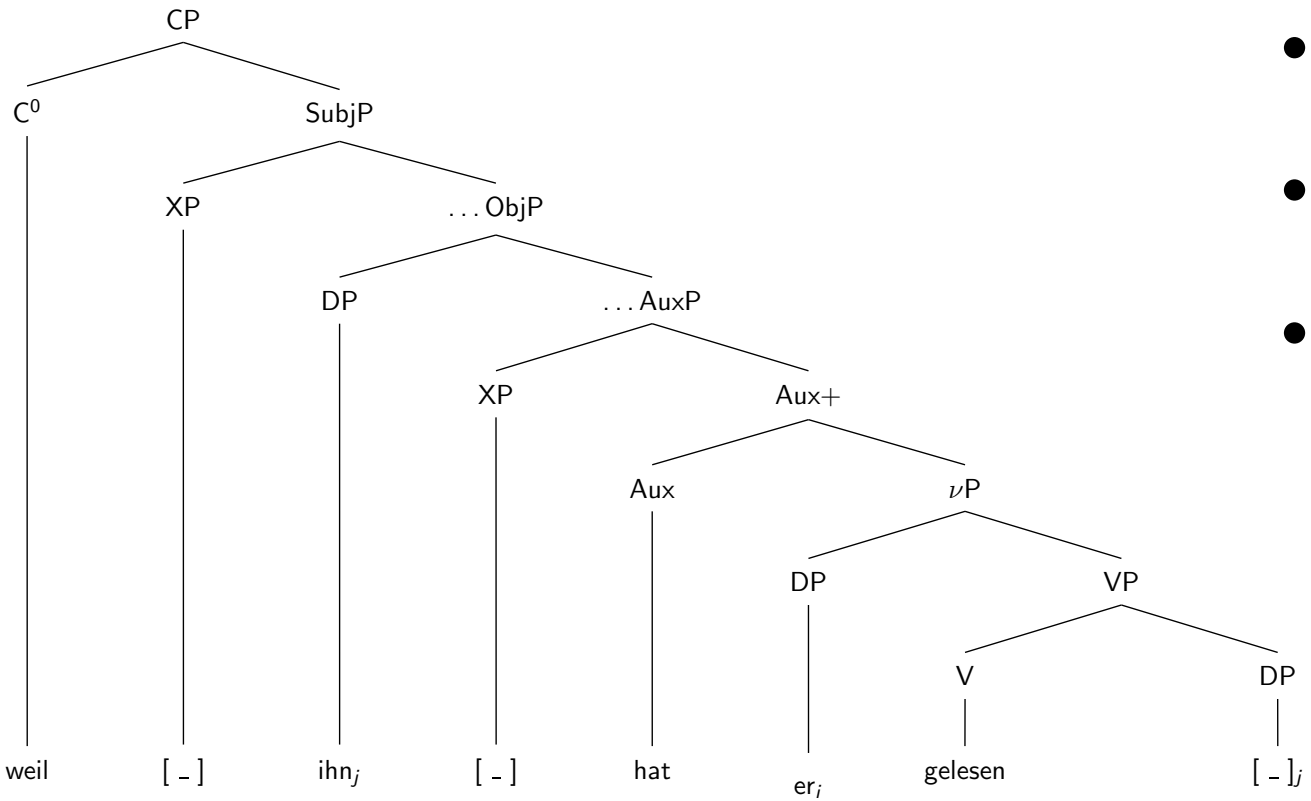

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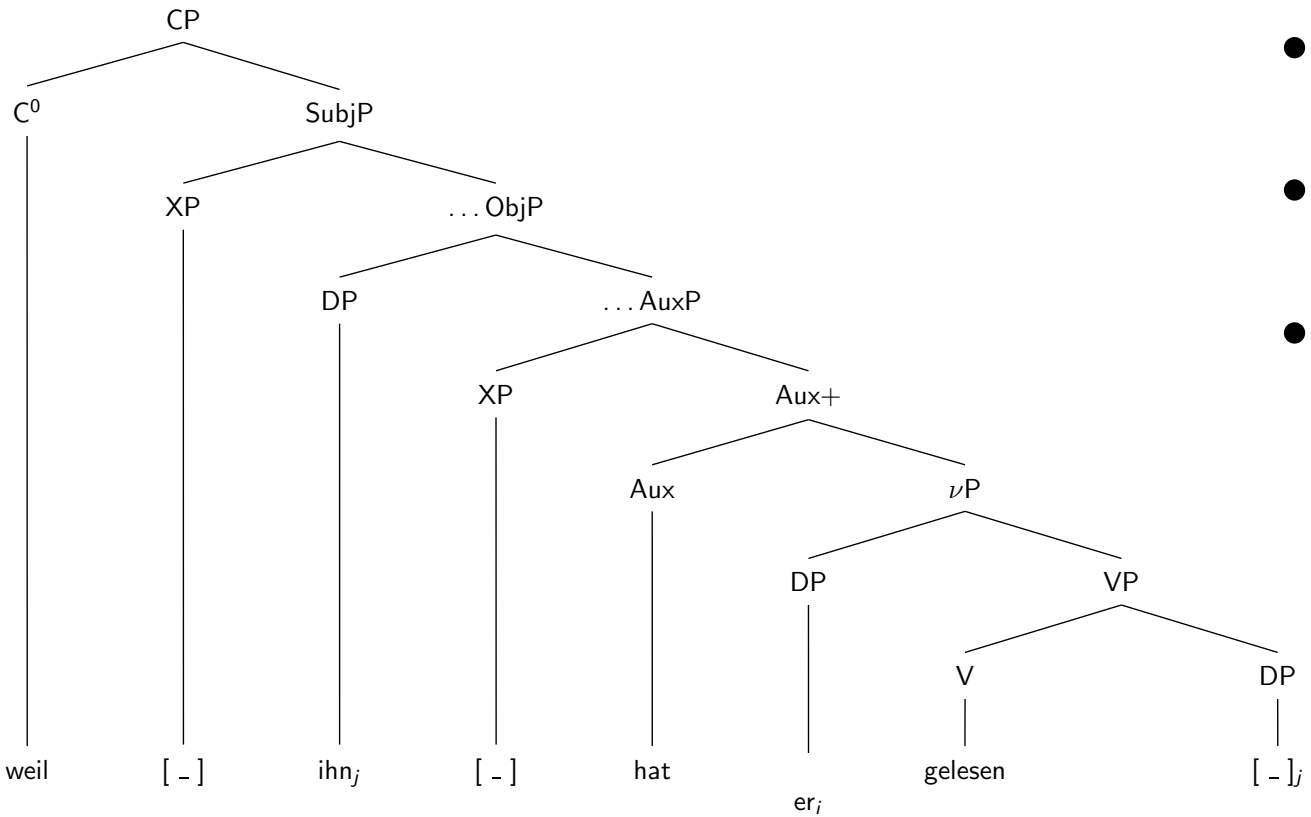

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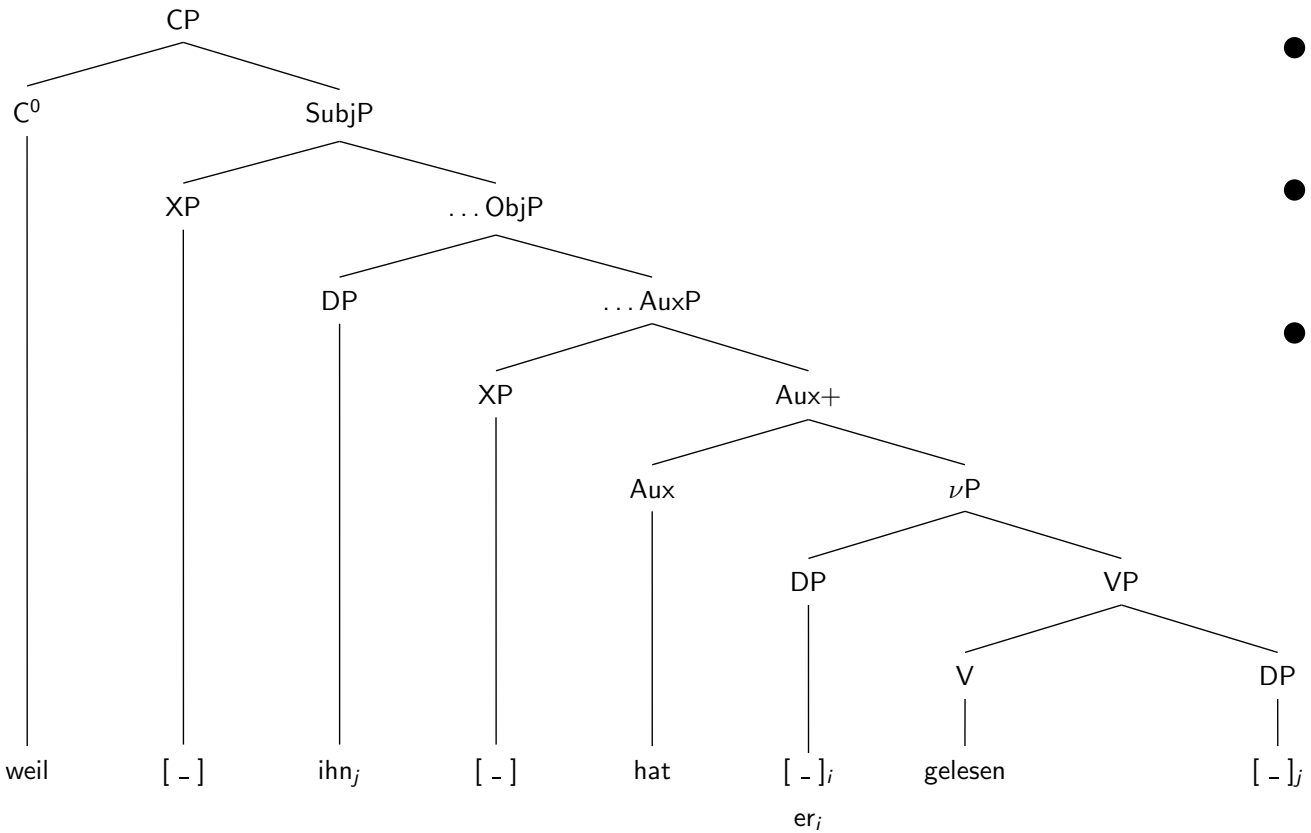

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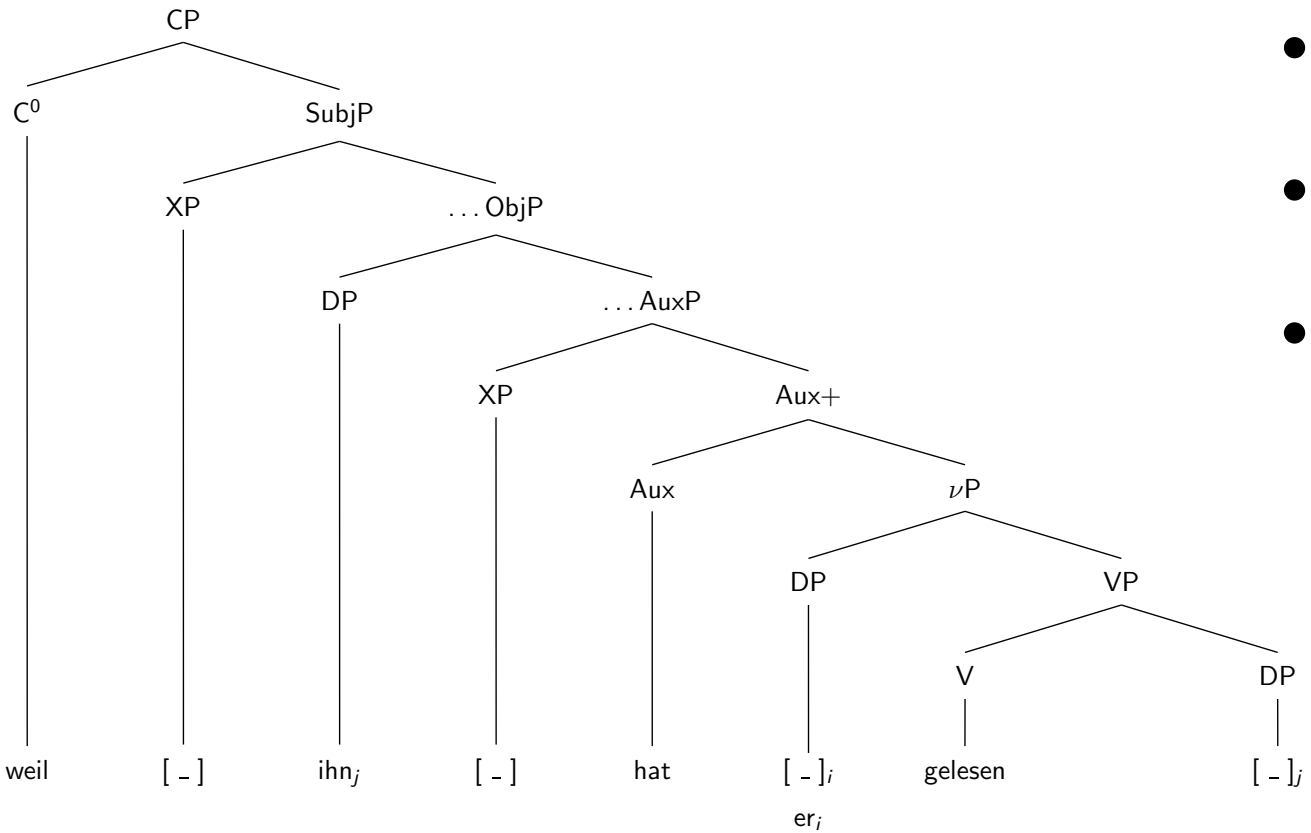

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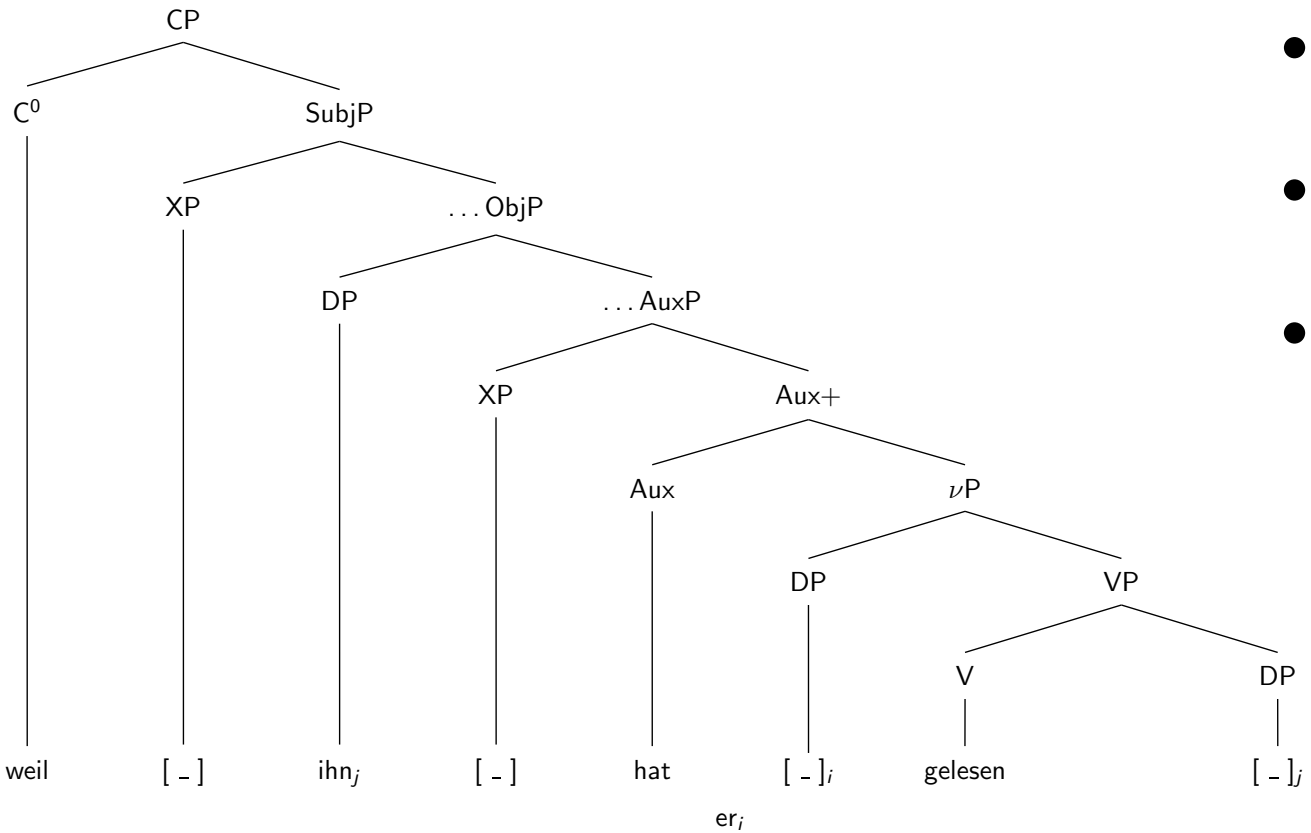

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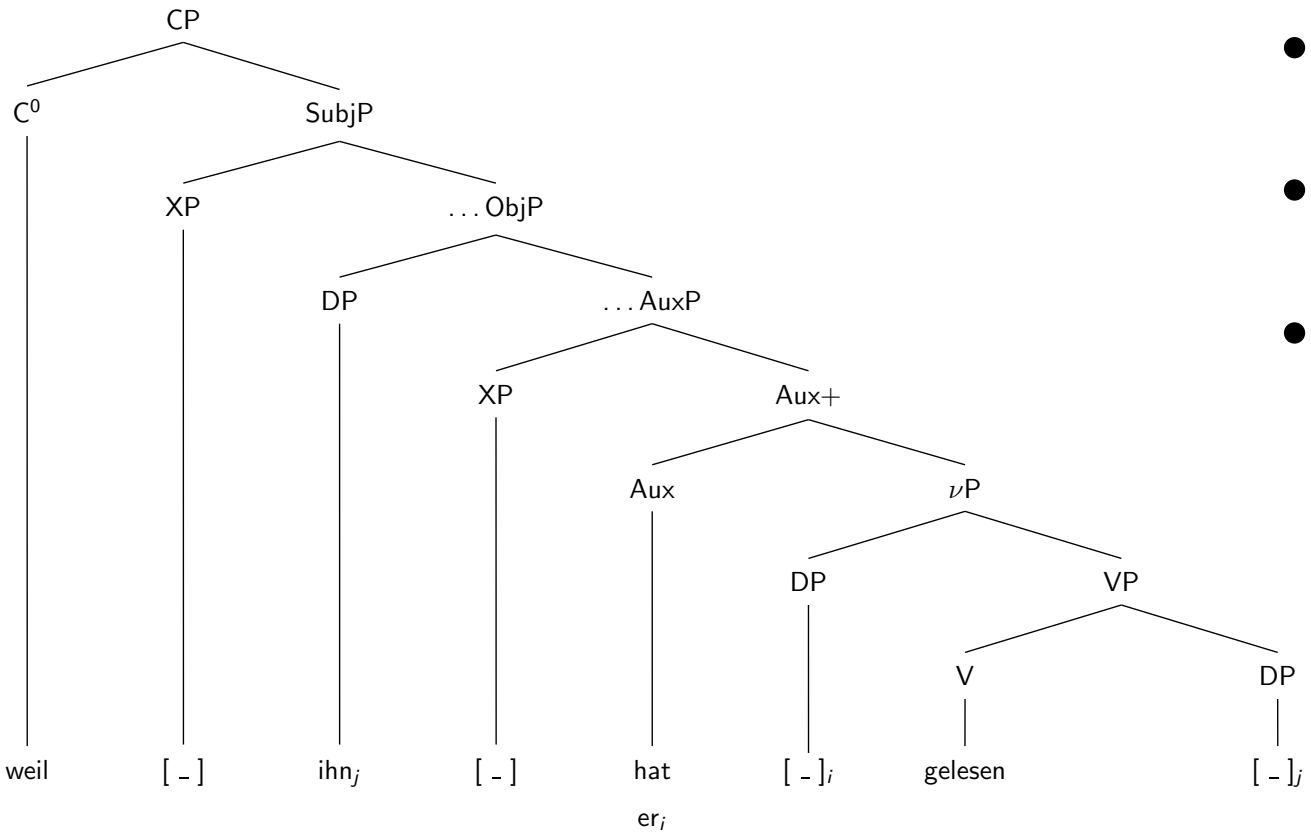

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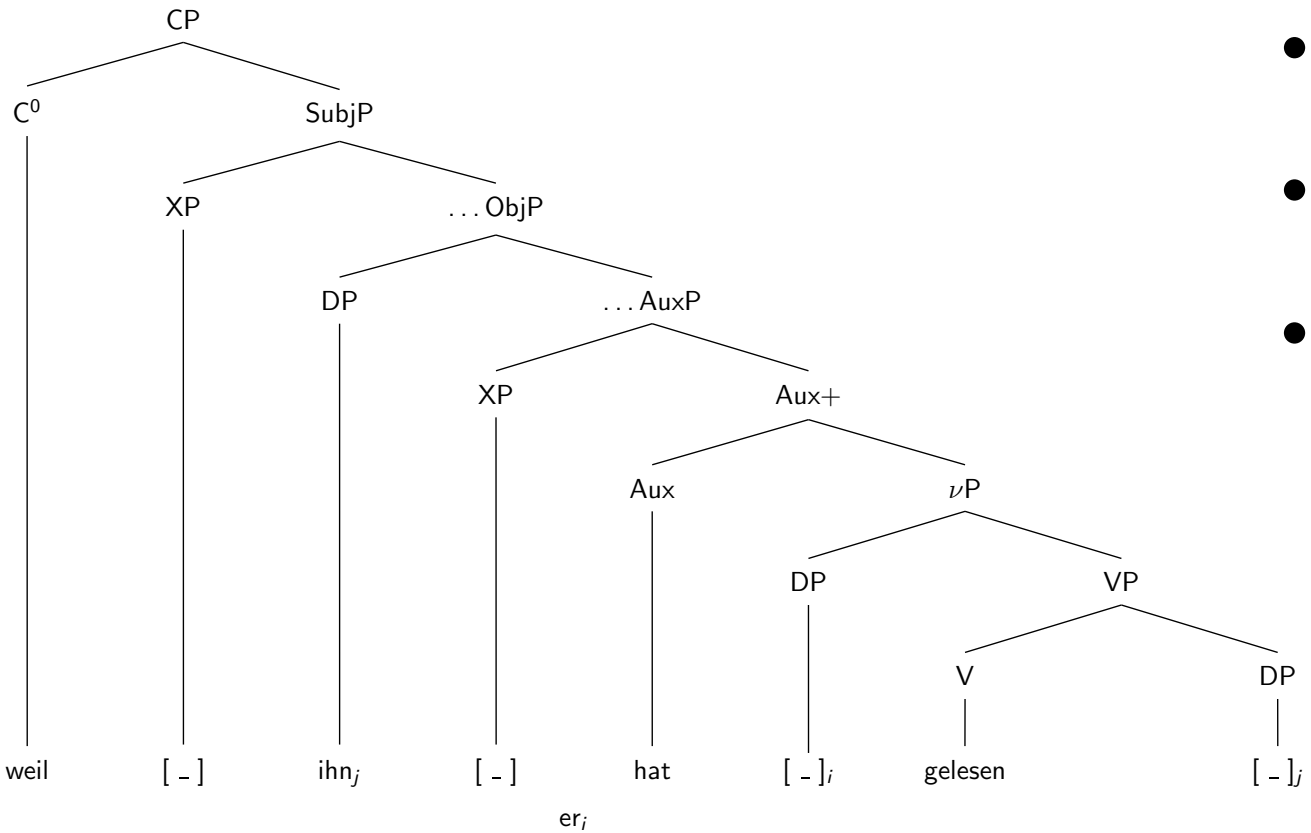

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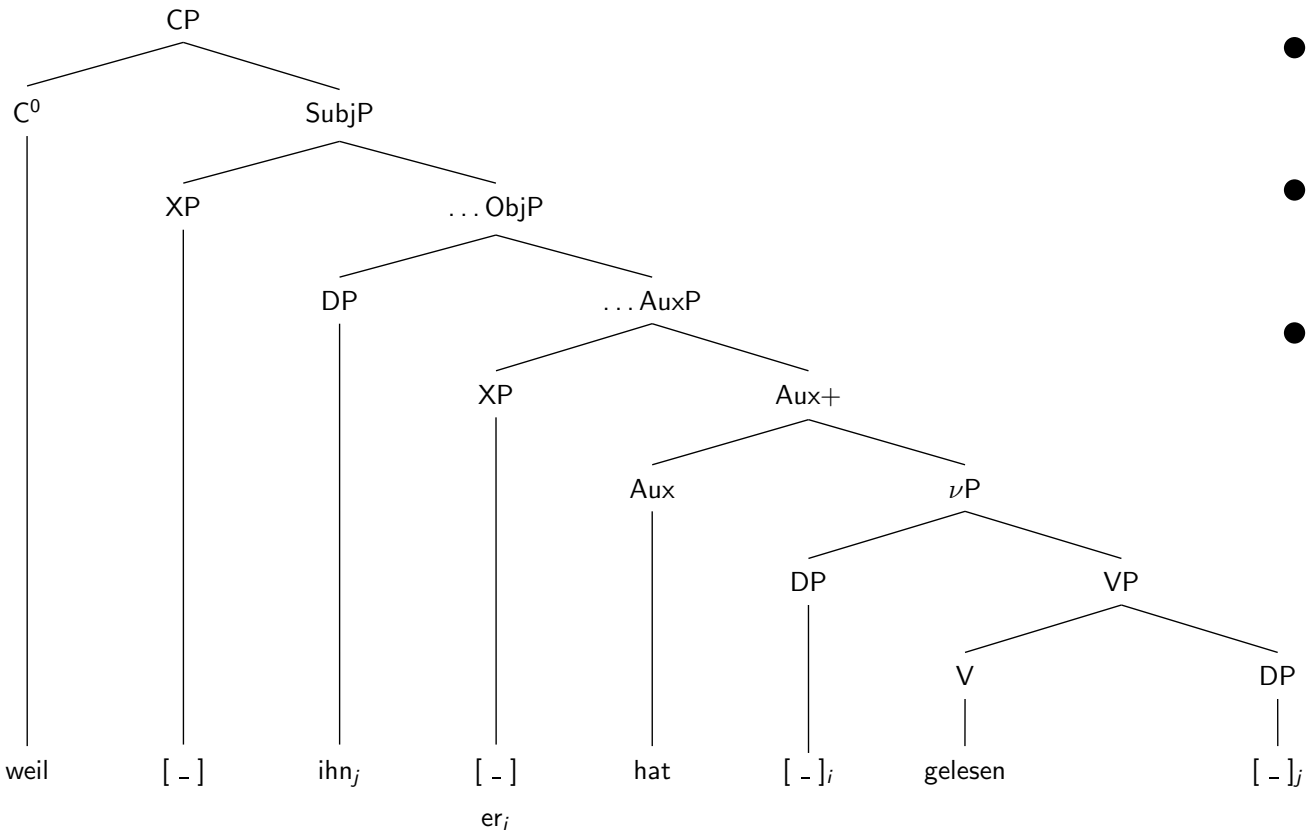

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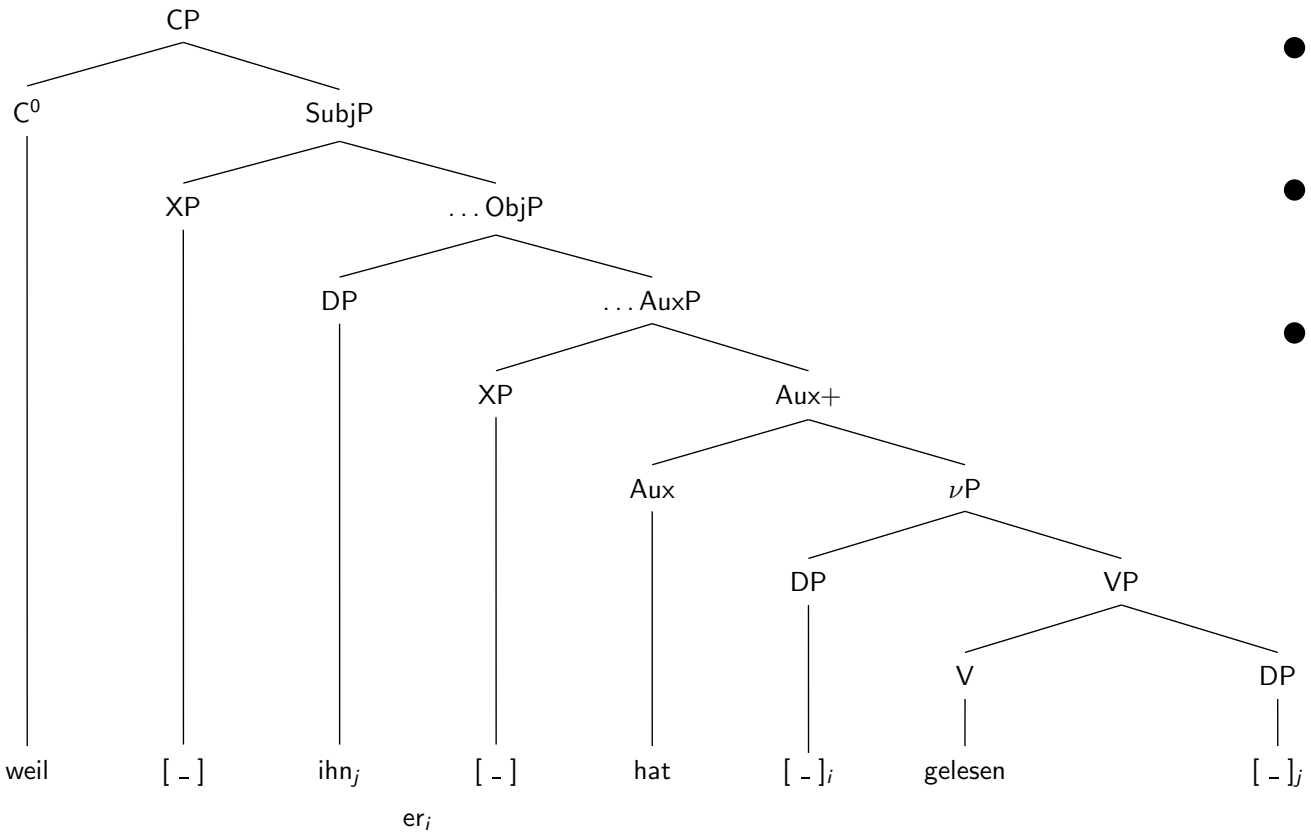

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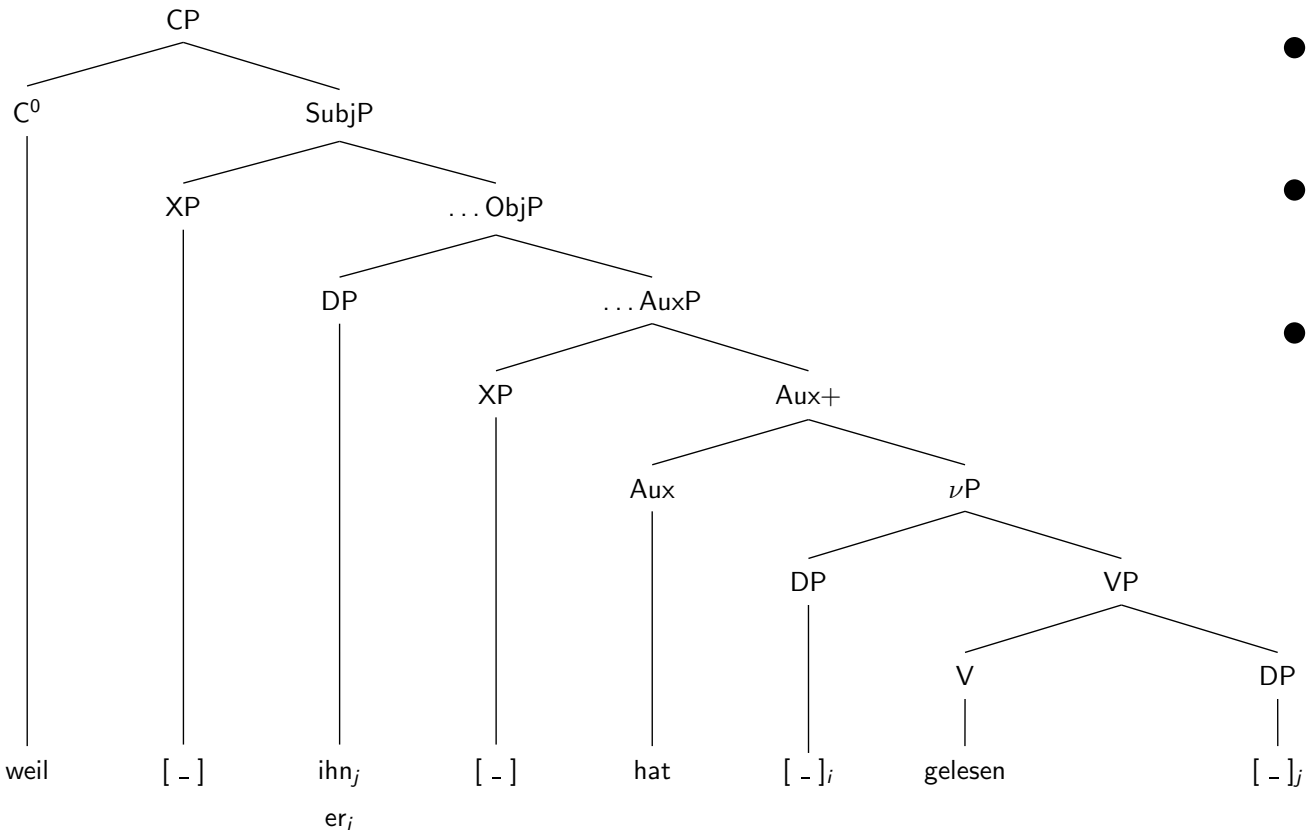

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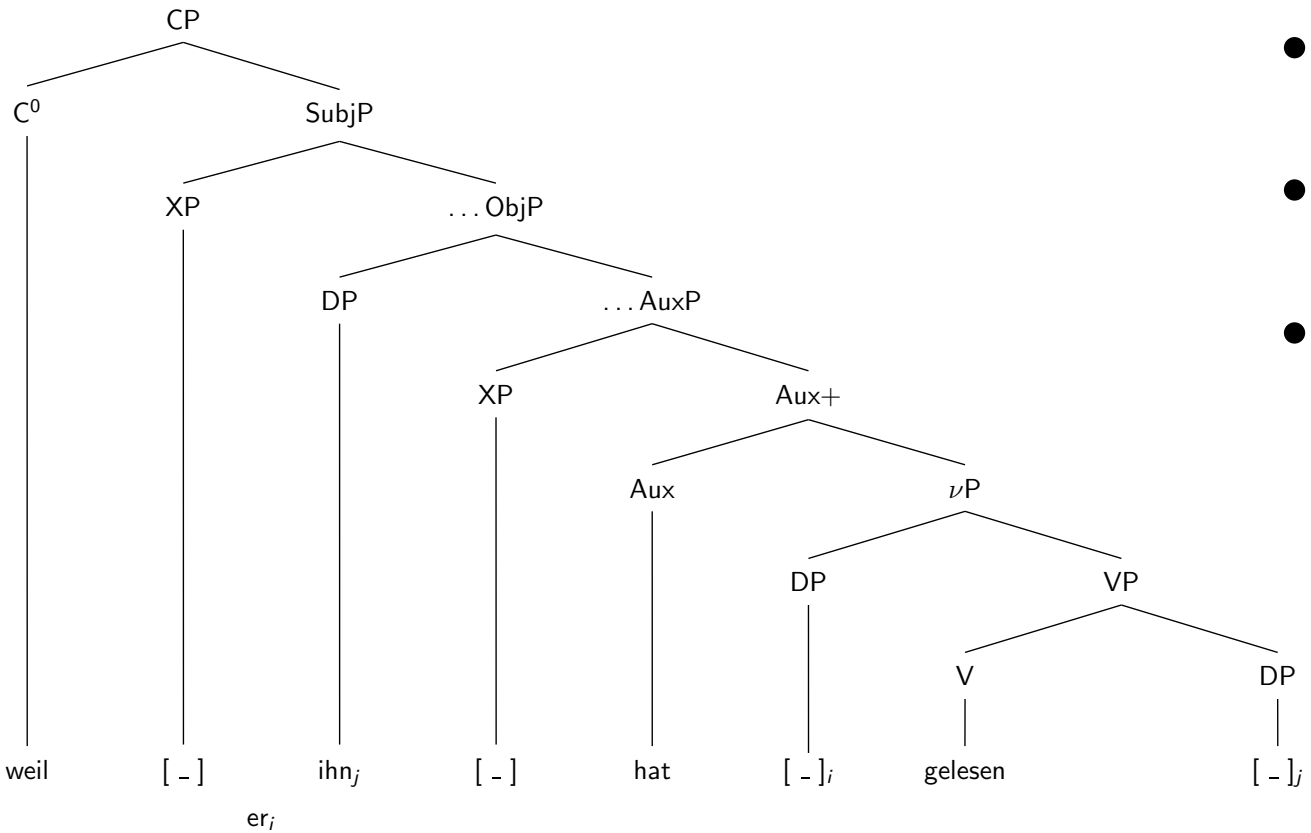

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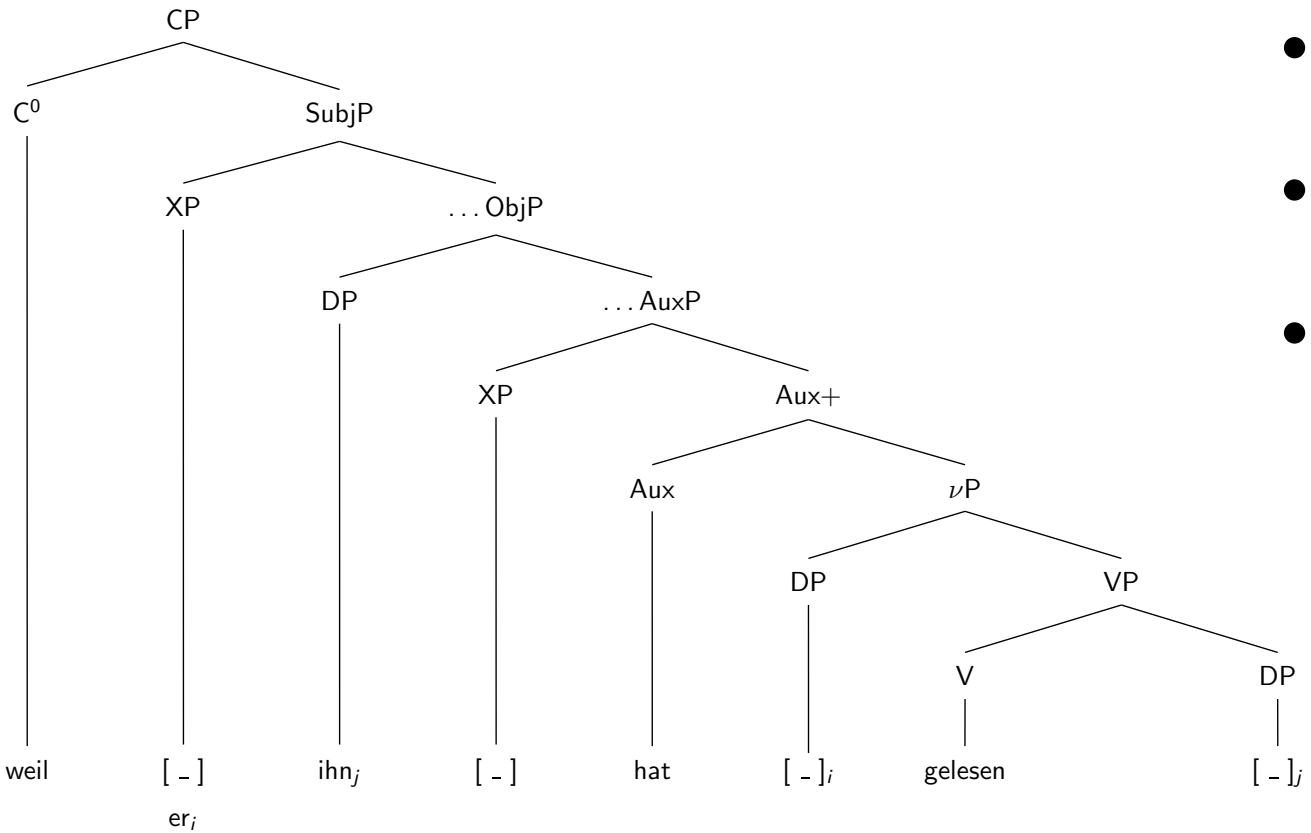

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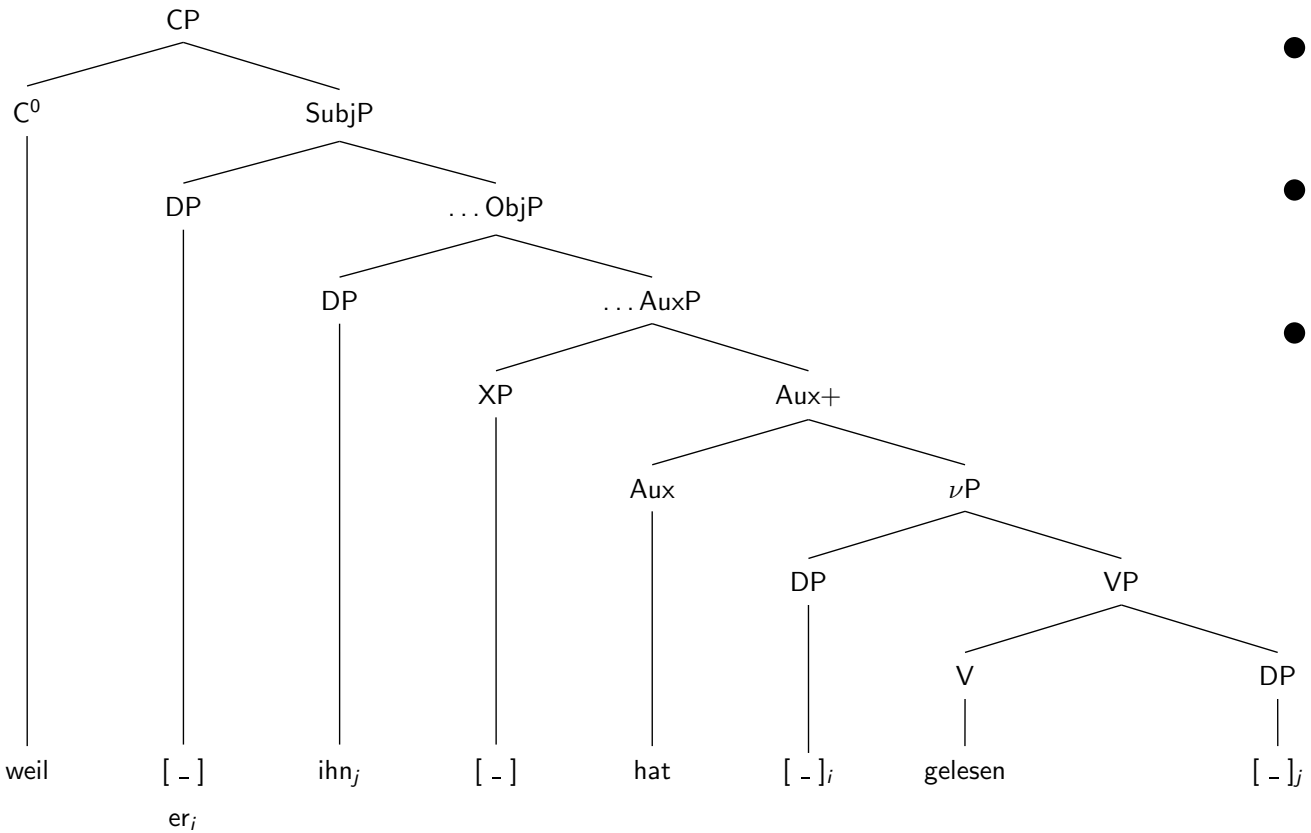

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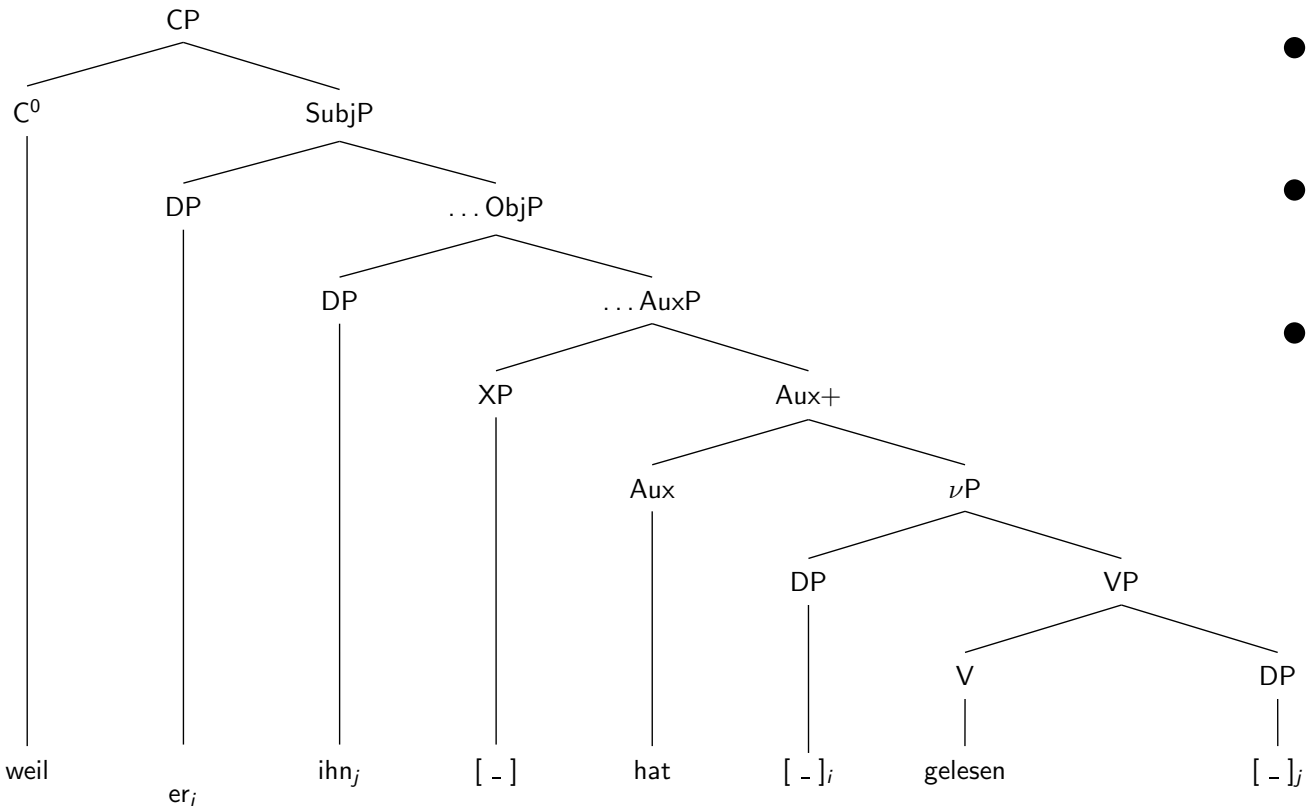

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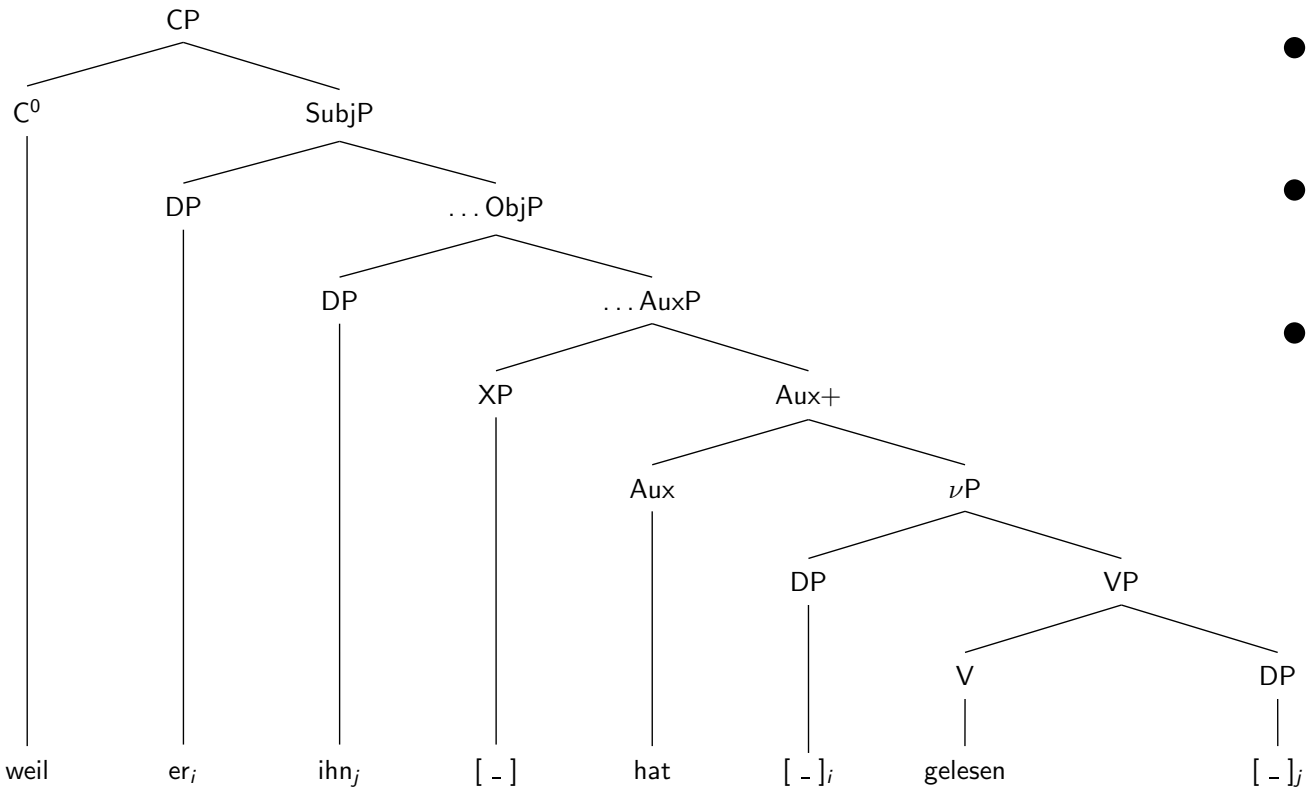

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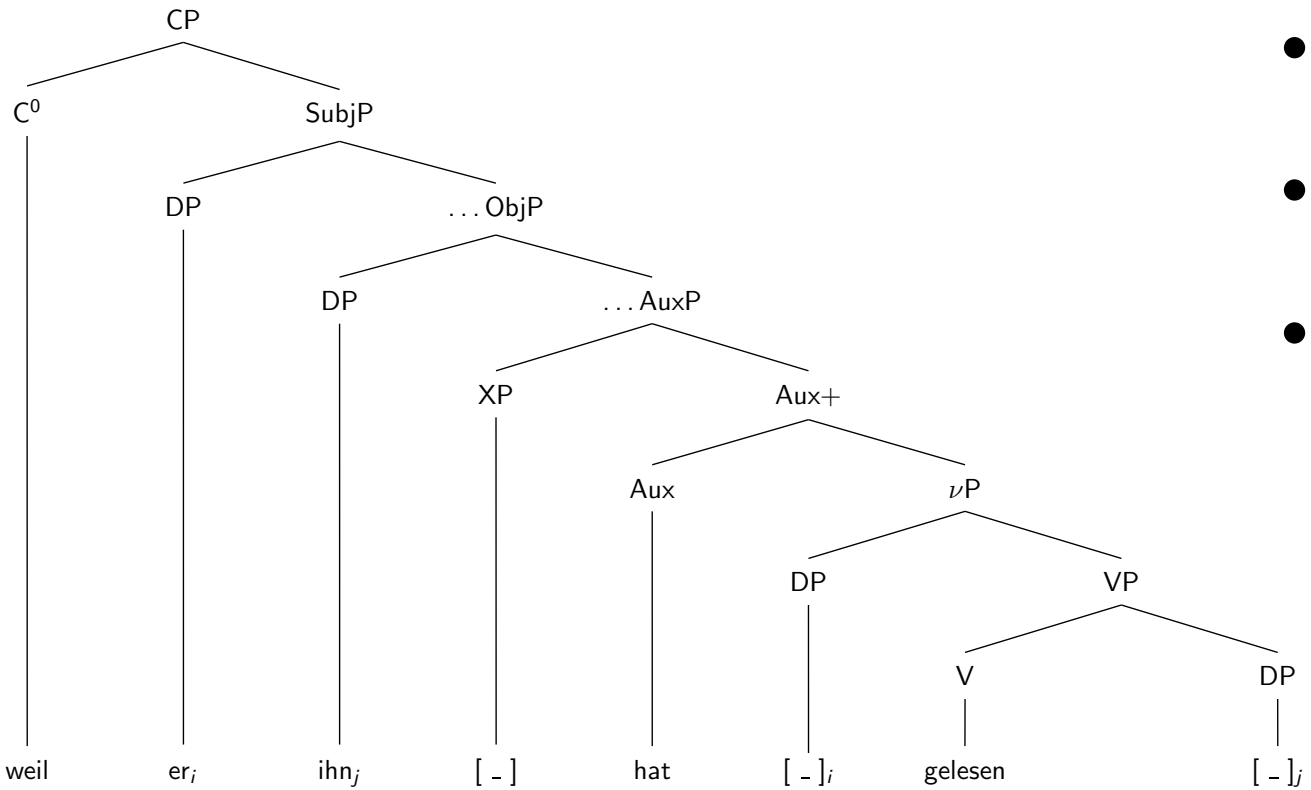

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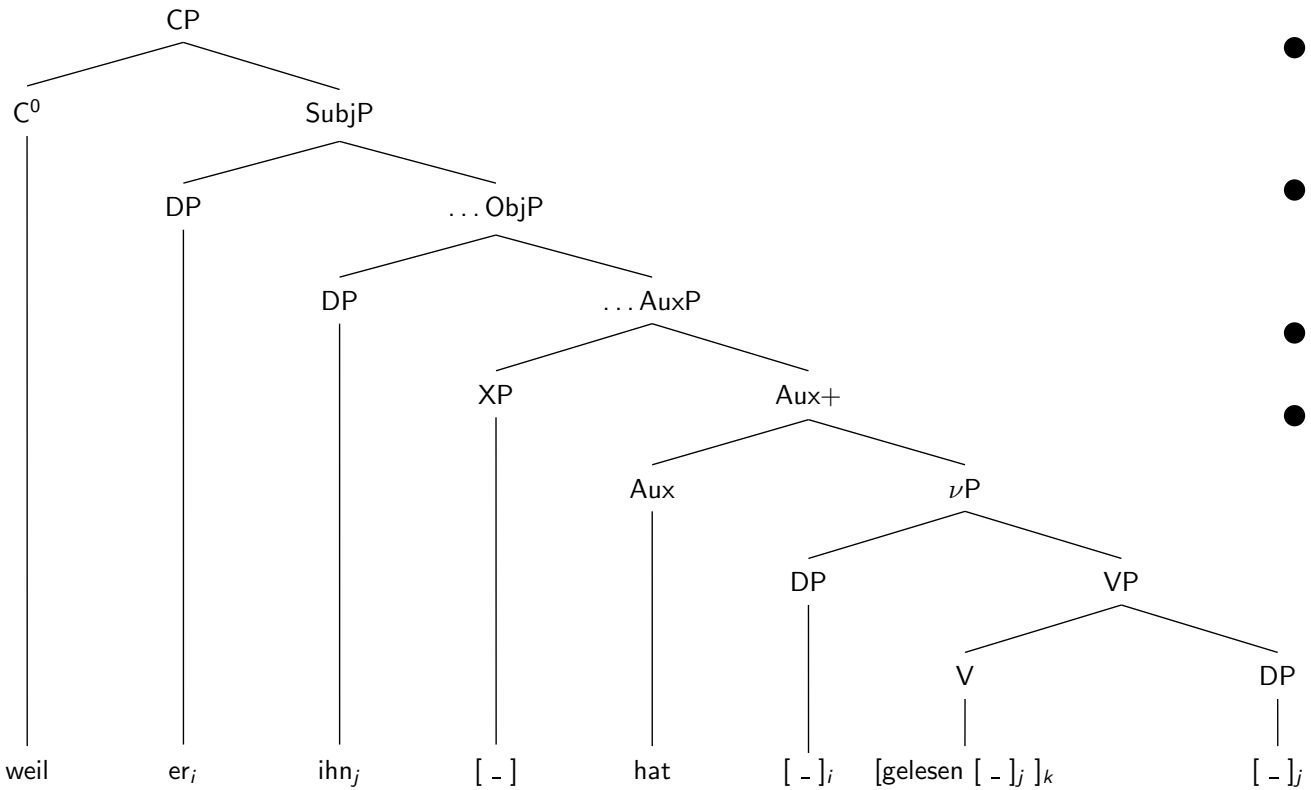

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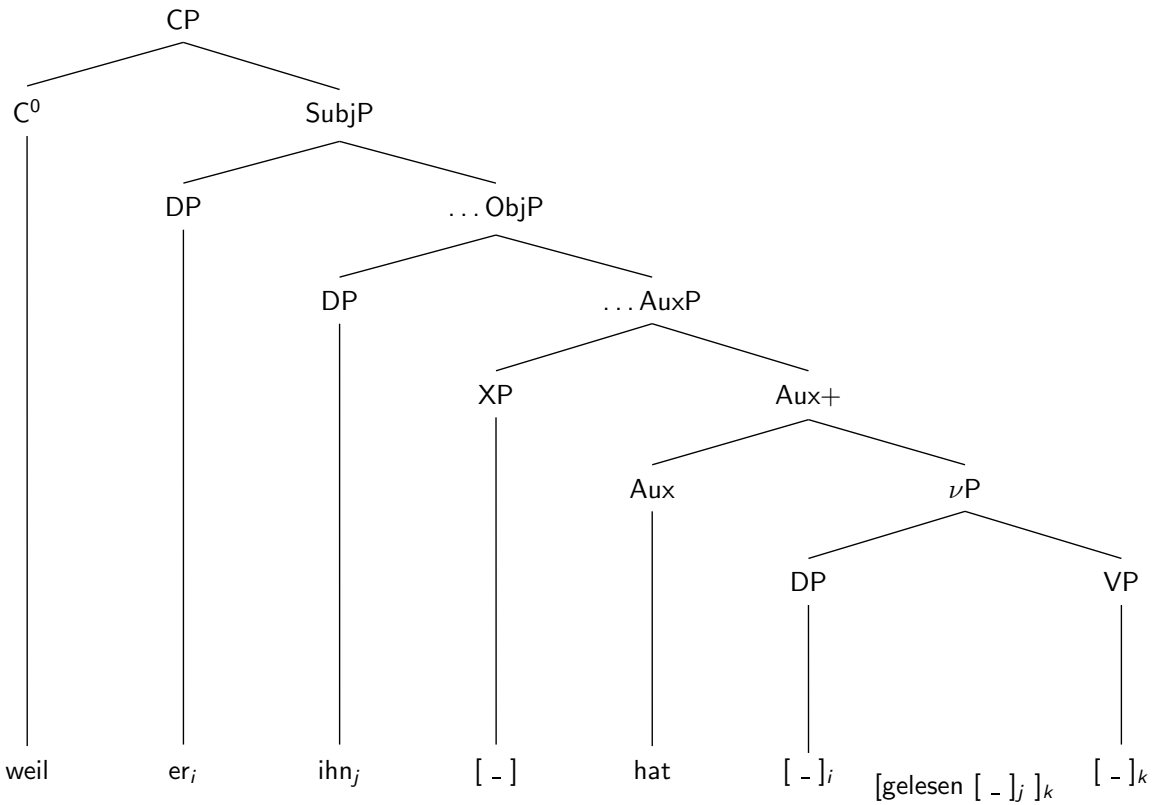

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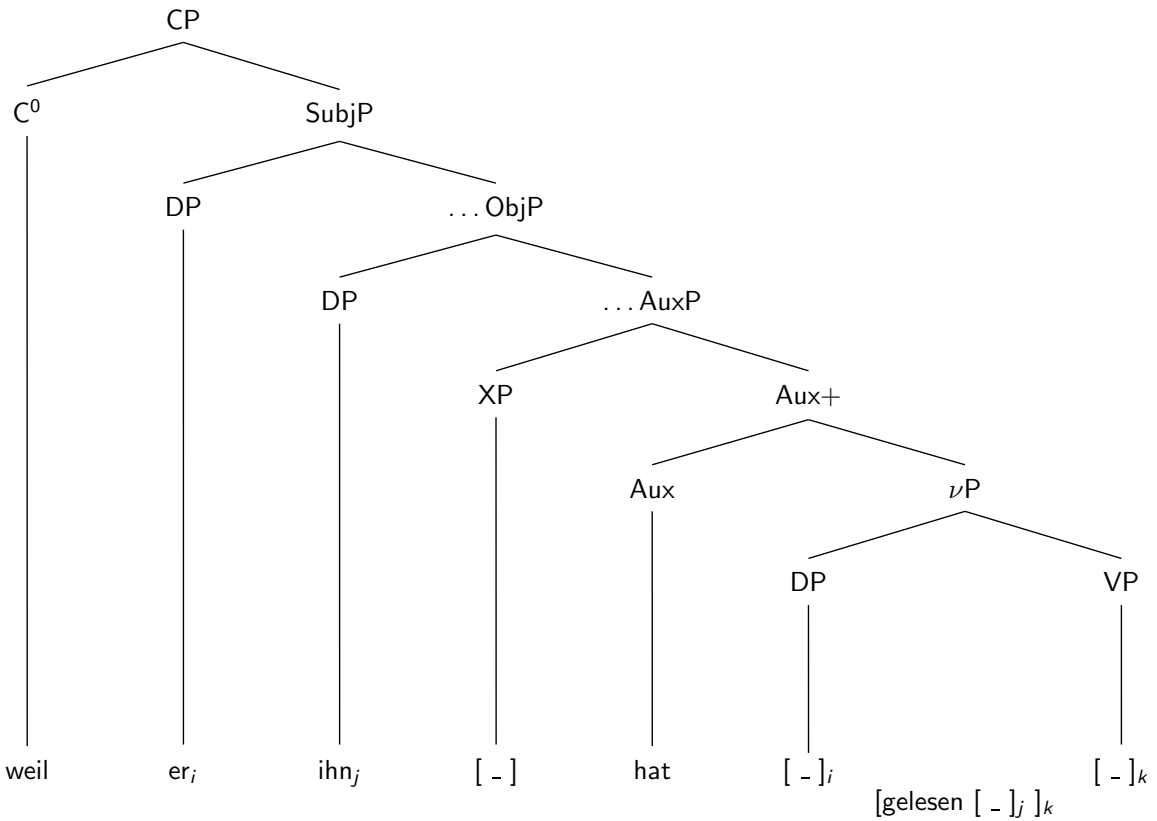

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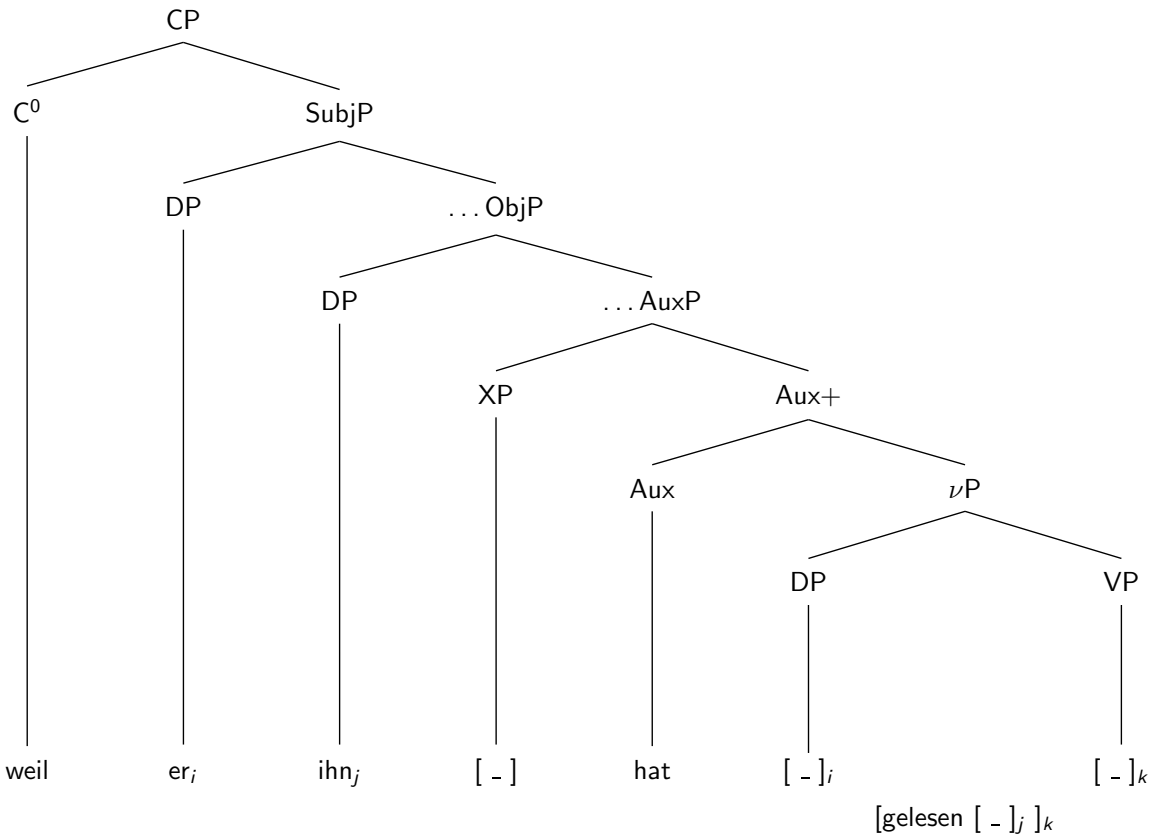

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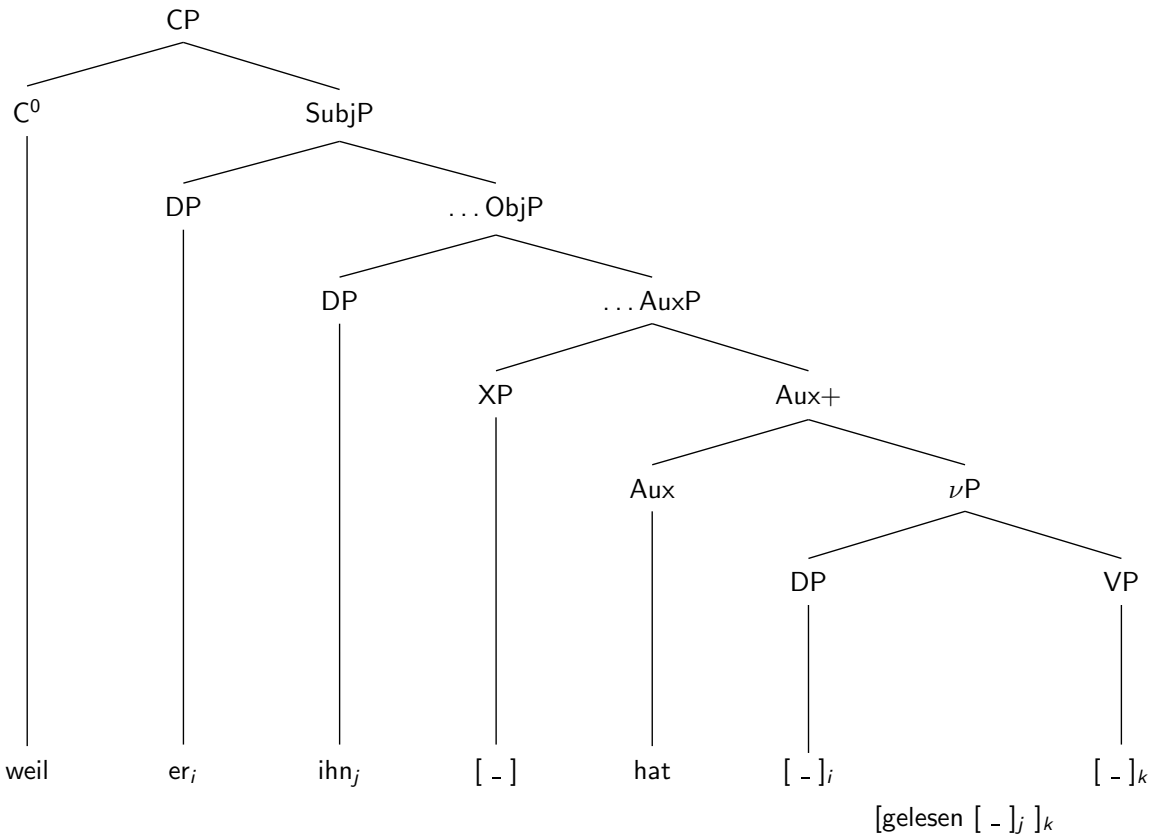

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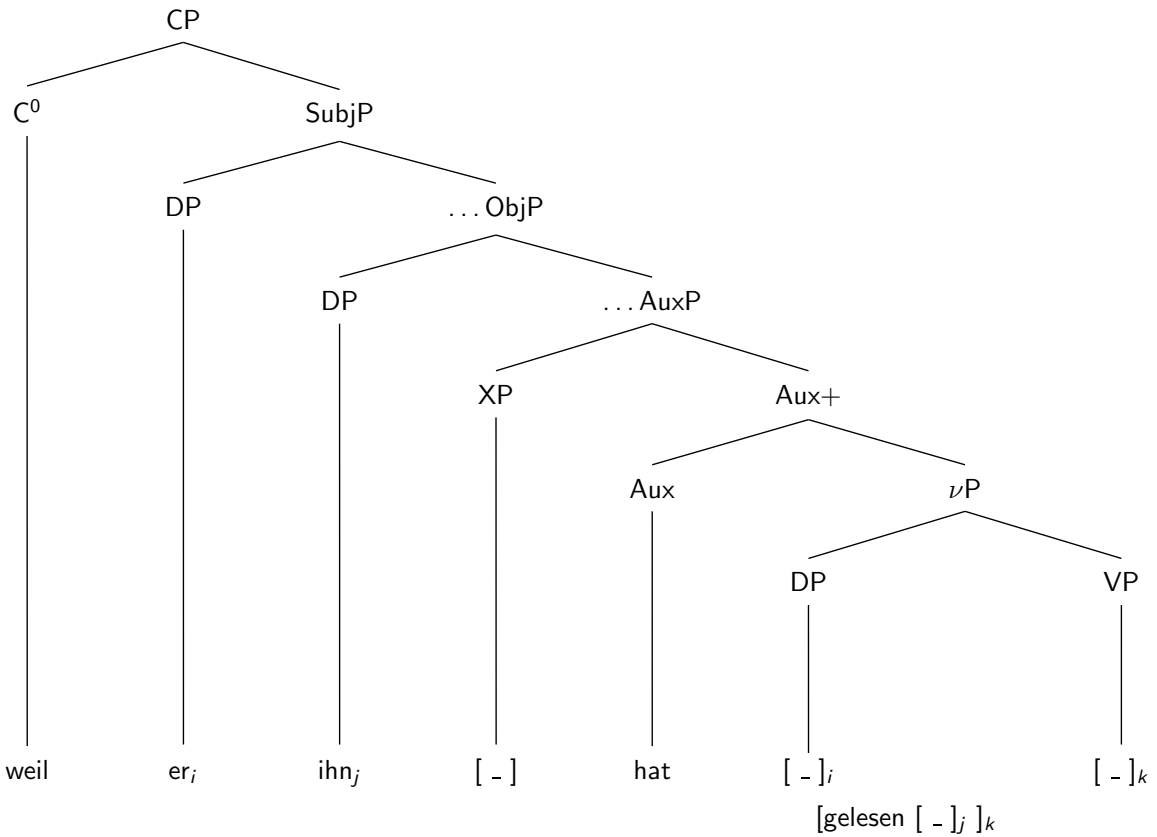

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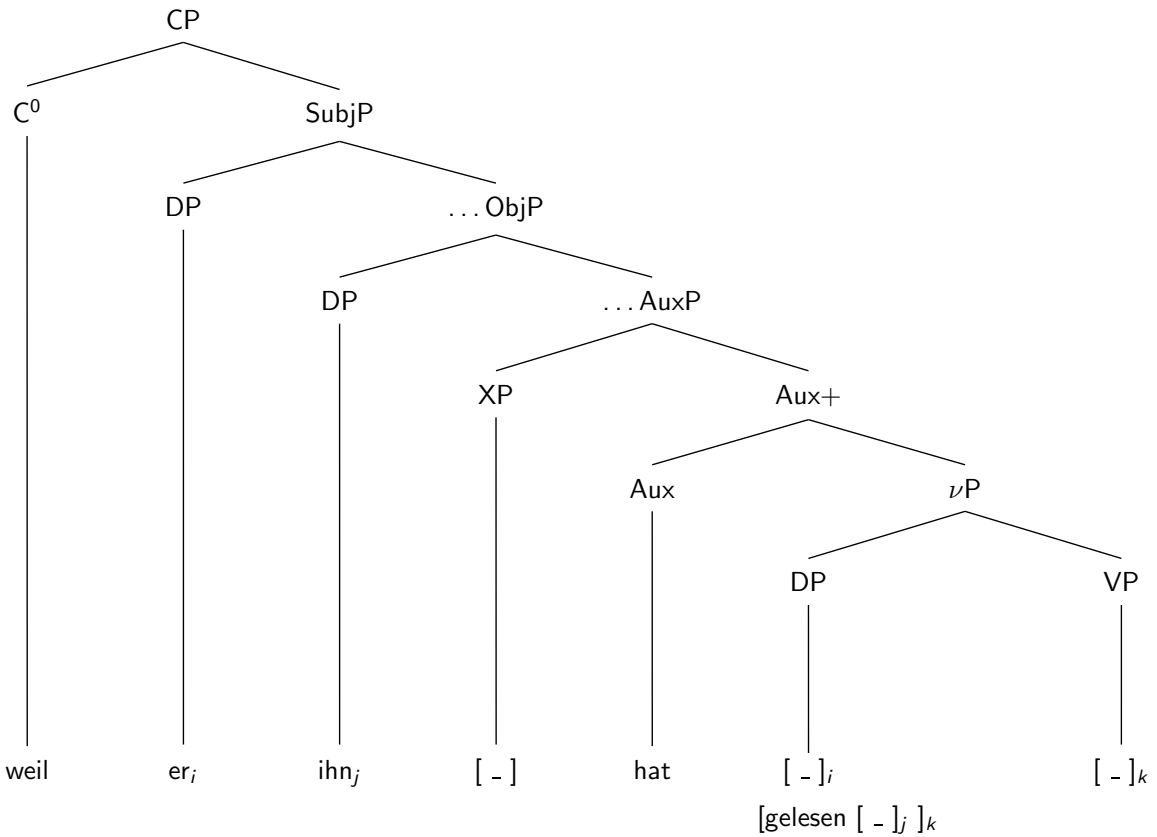

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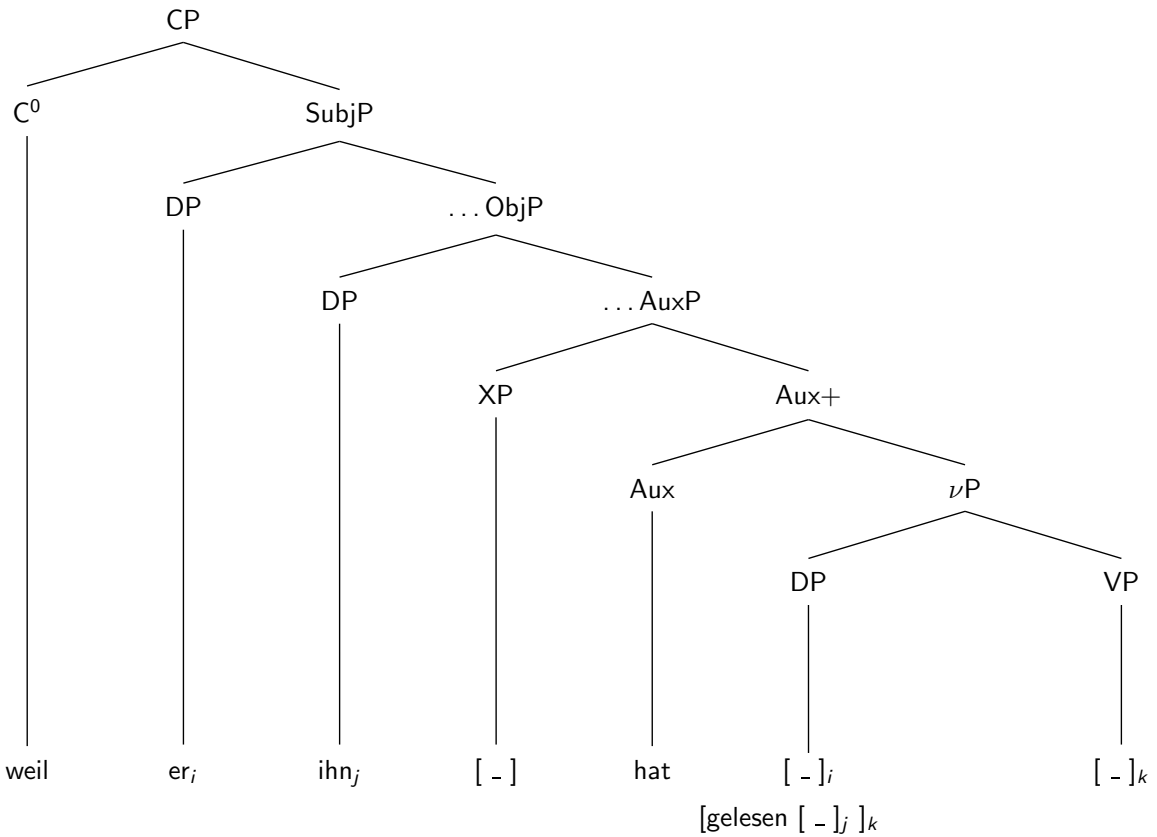

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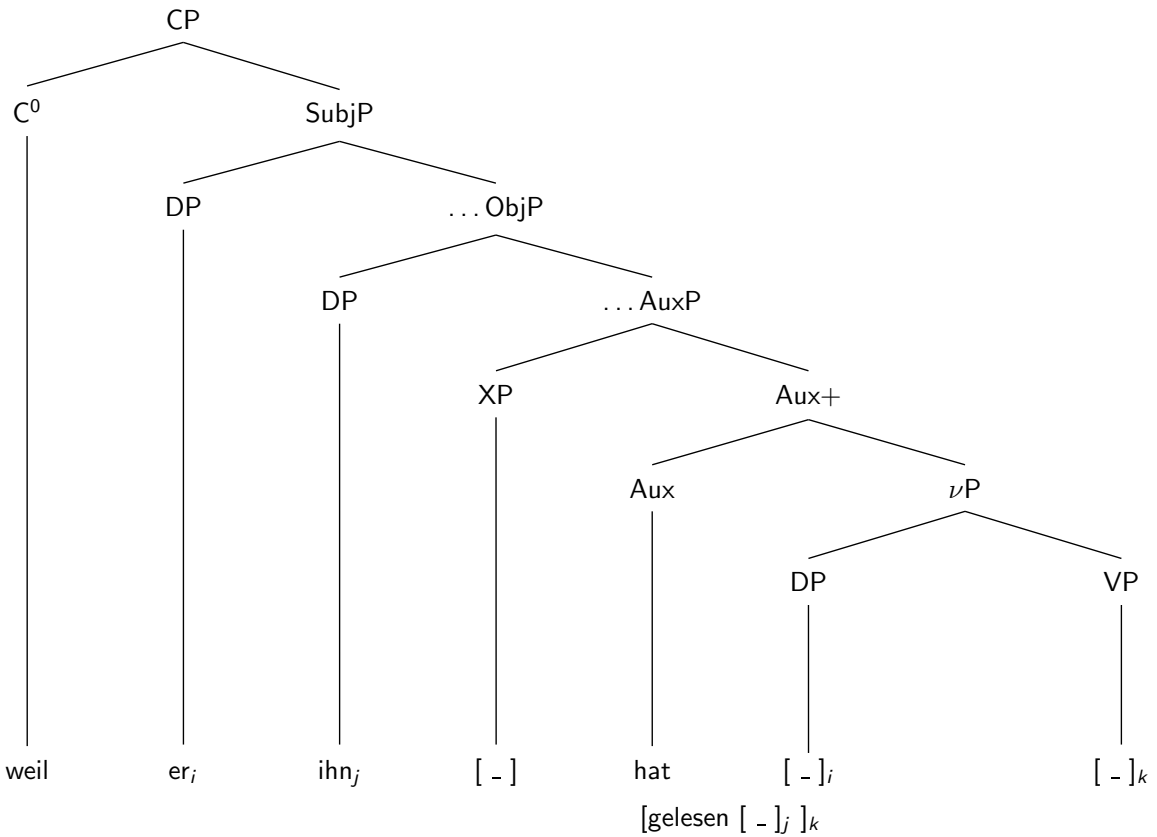

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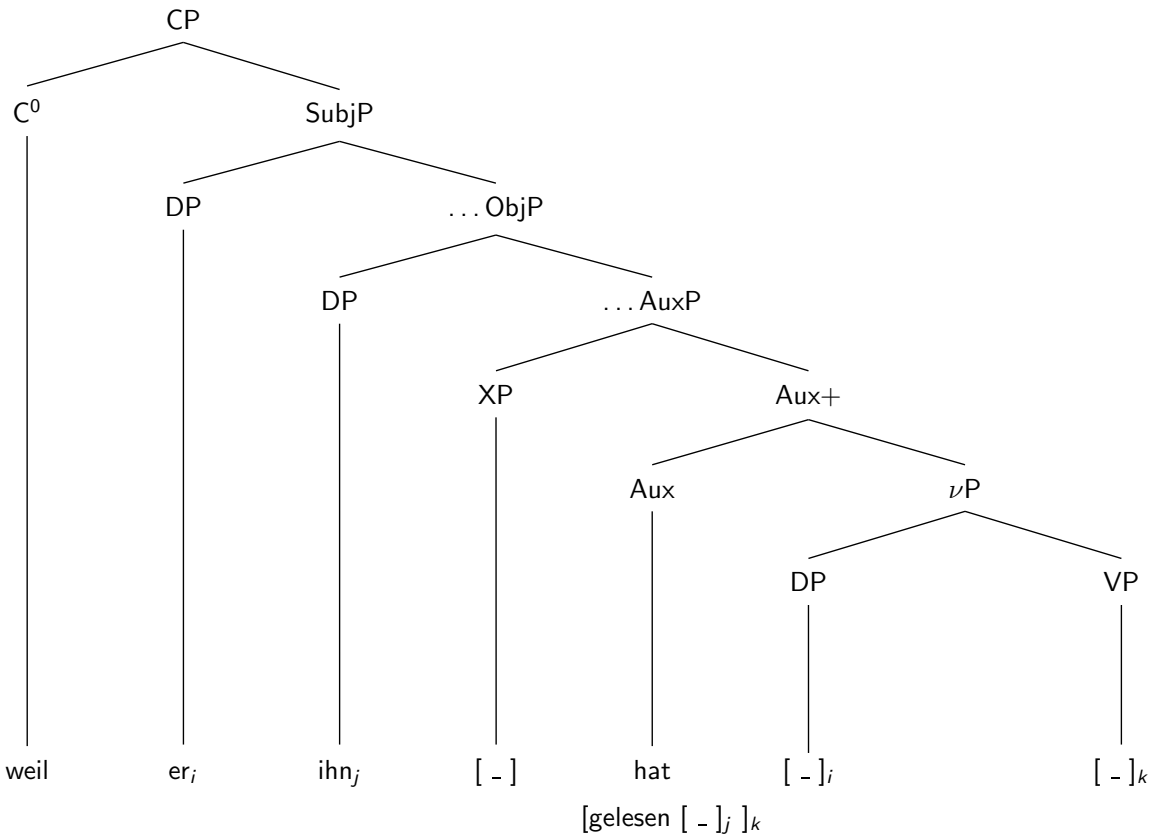

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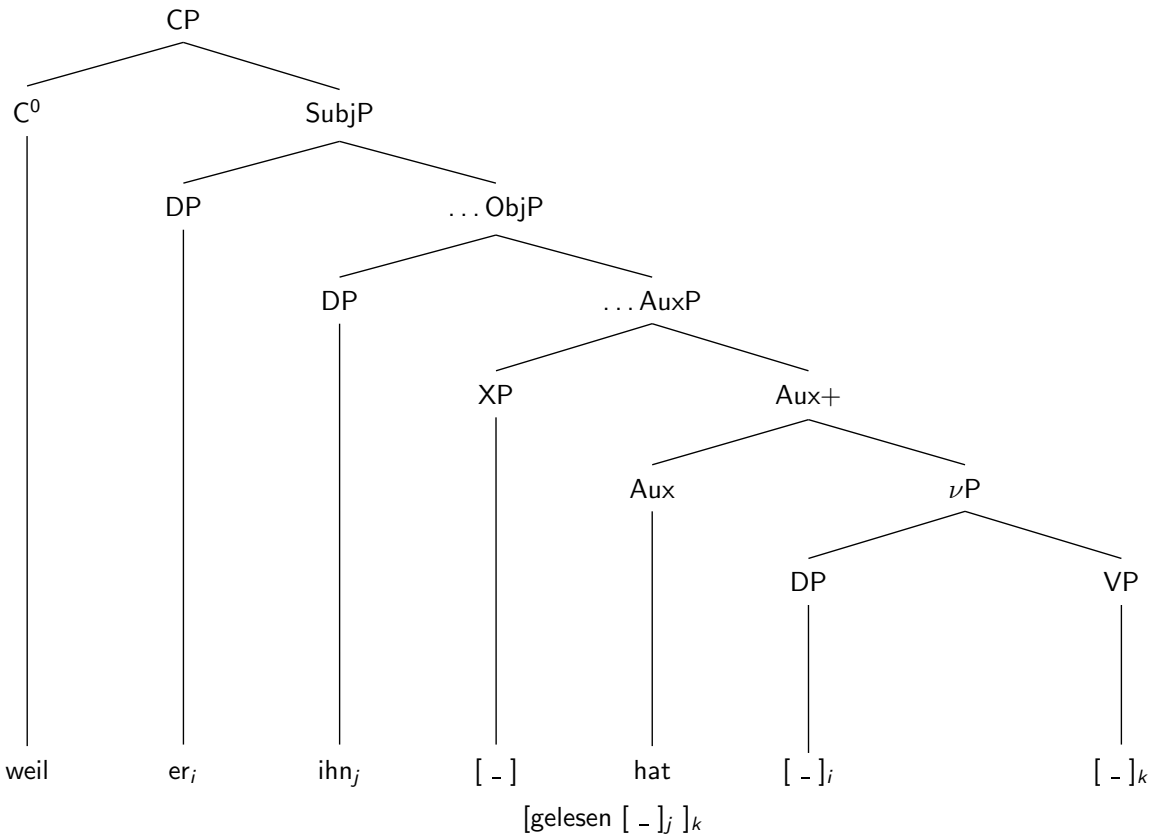

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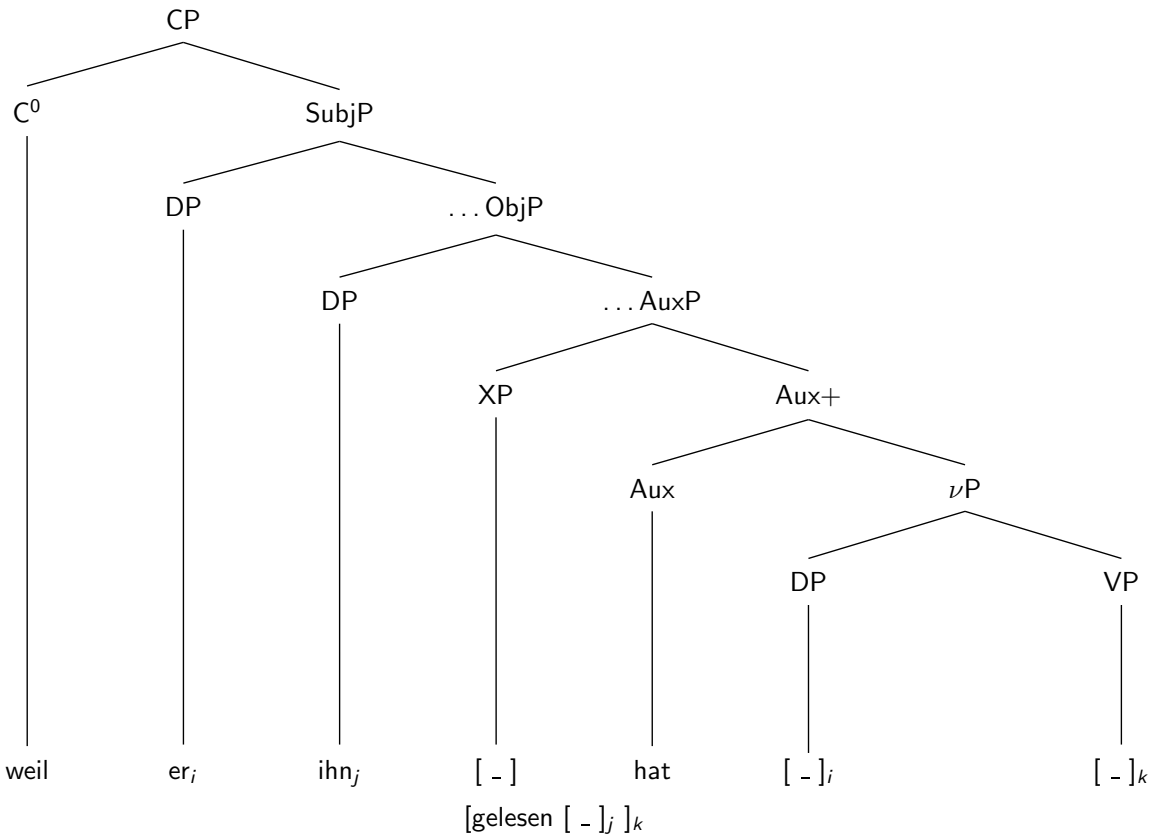

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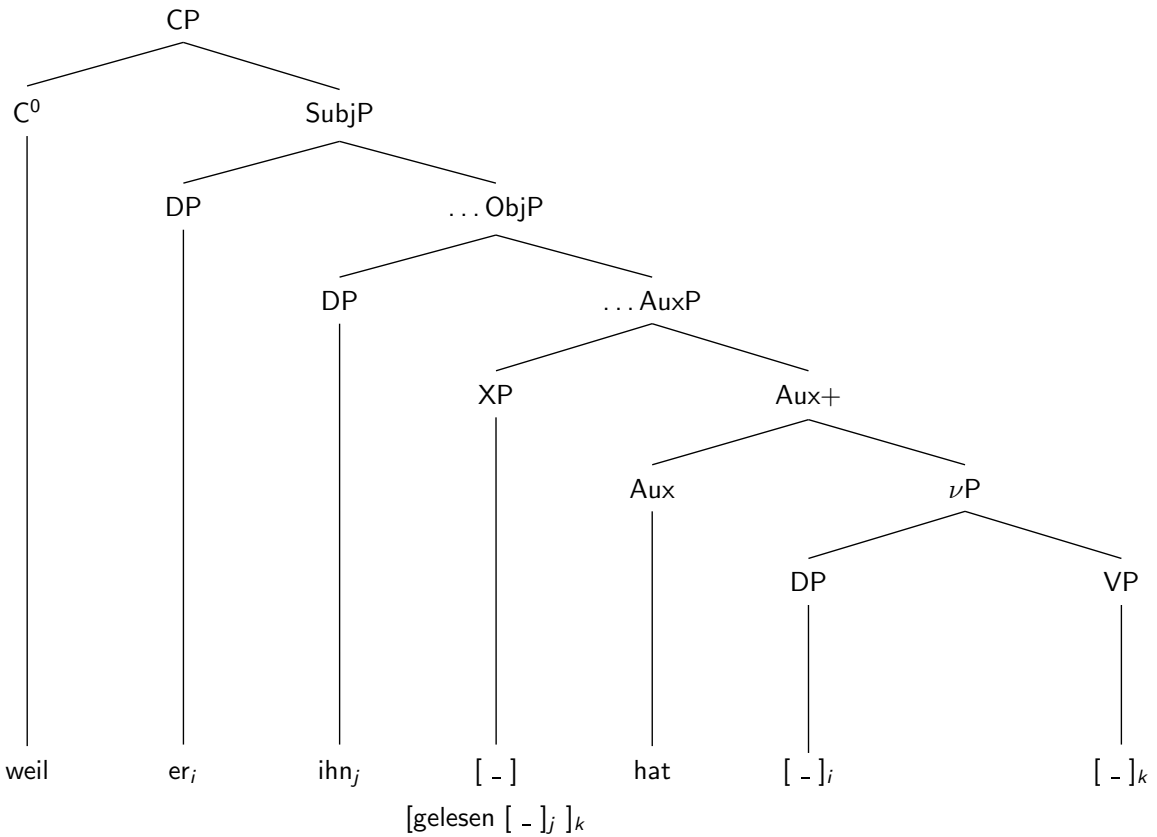

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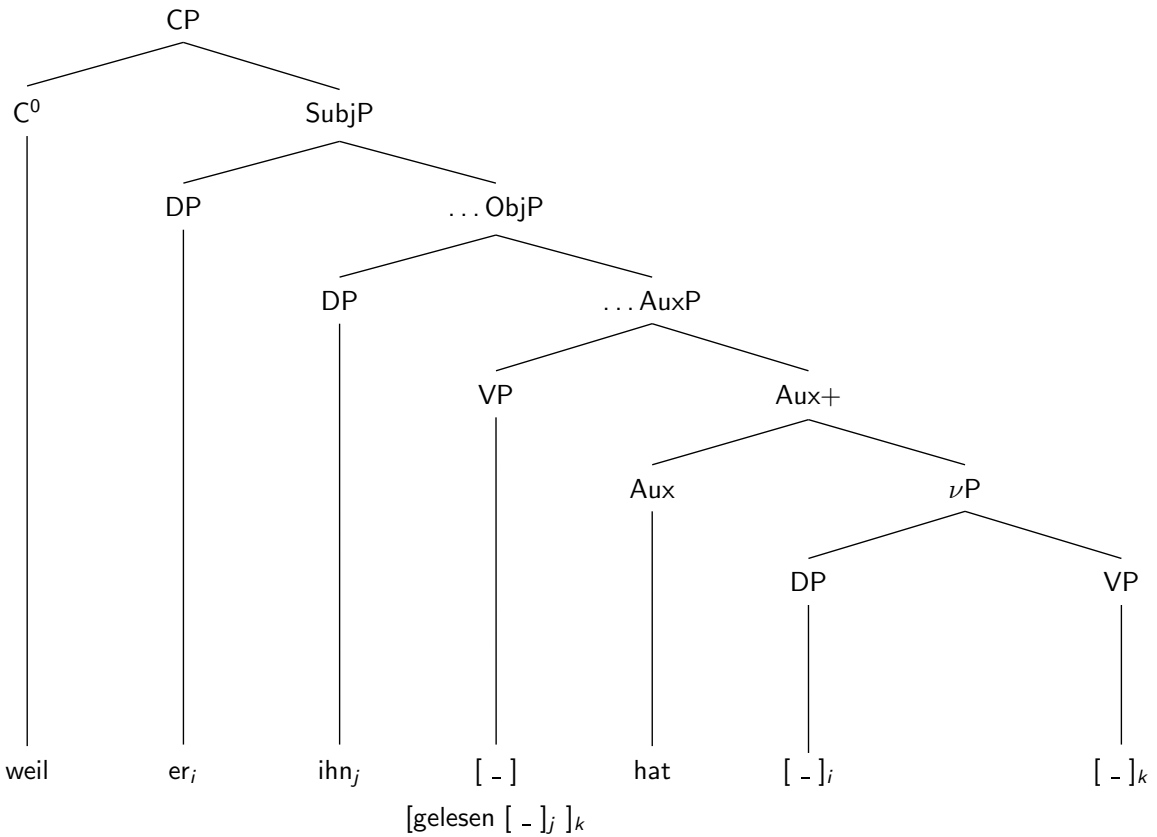

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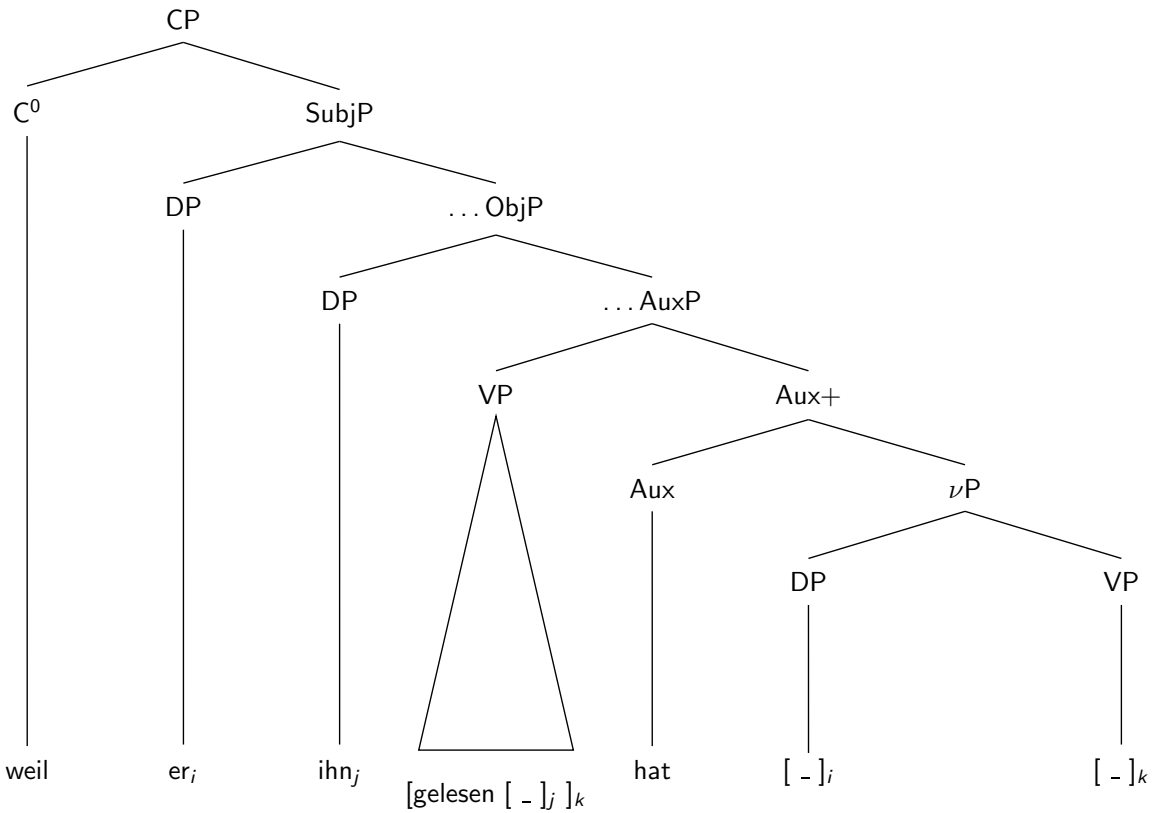

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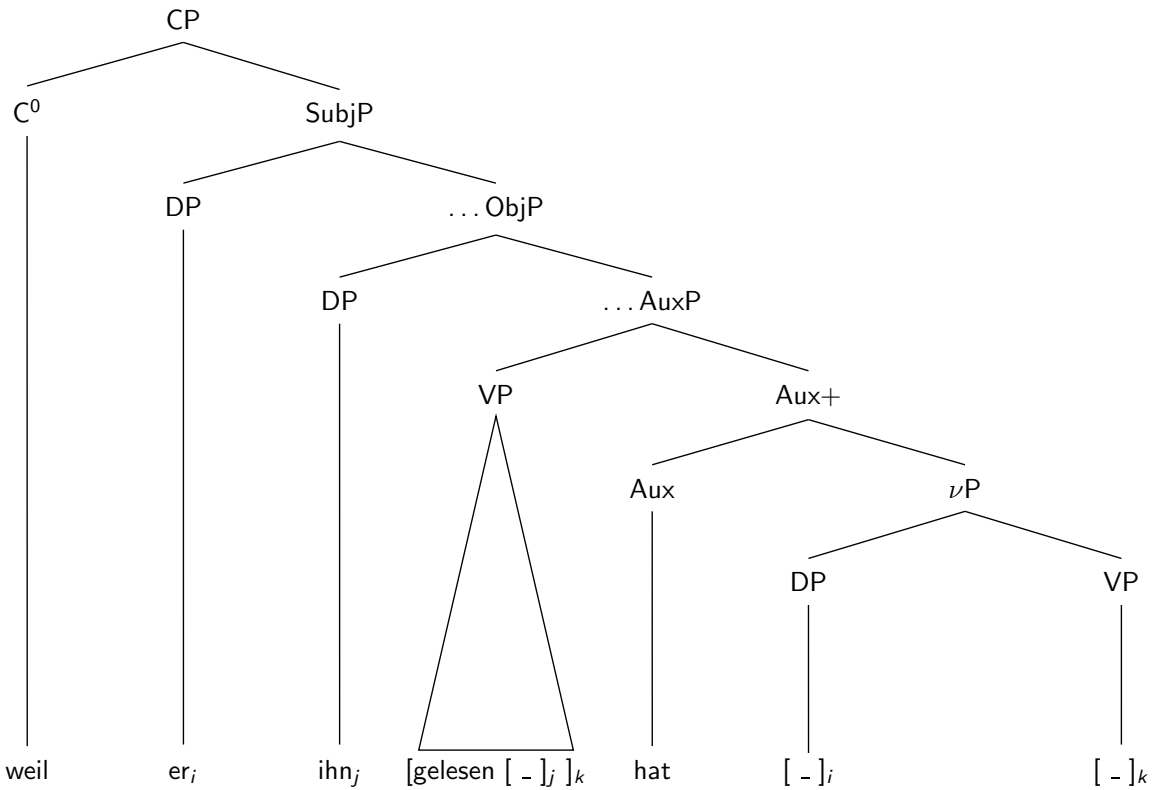

- All languages are SVO underlyingly.
- The object is moved out of the VP.
- The subject is fronted.
- The empty VP is fronted.

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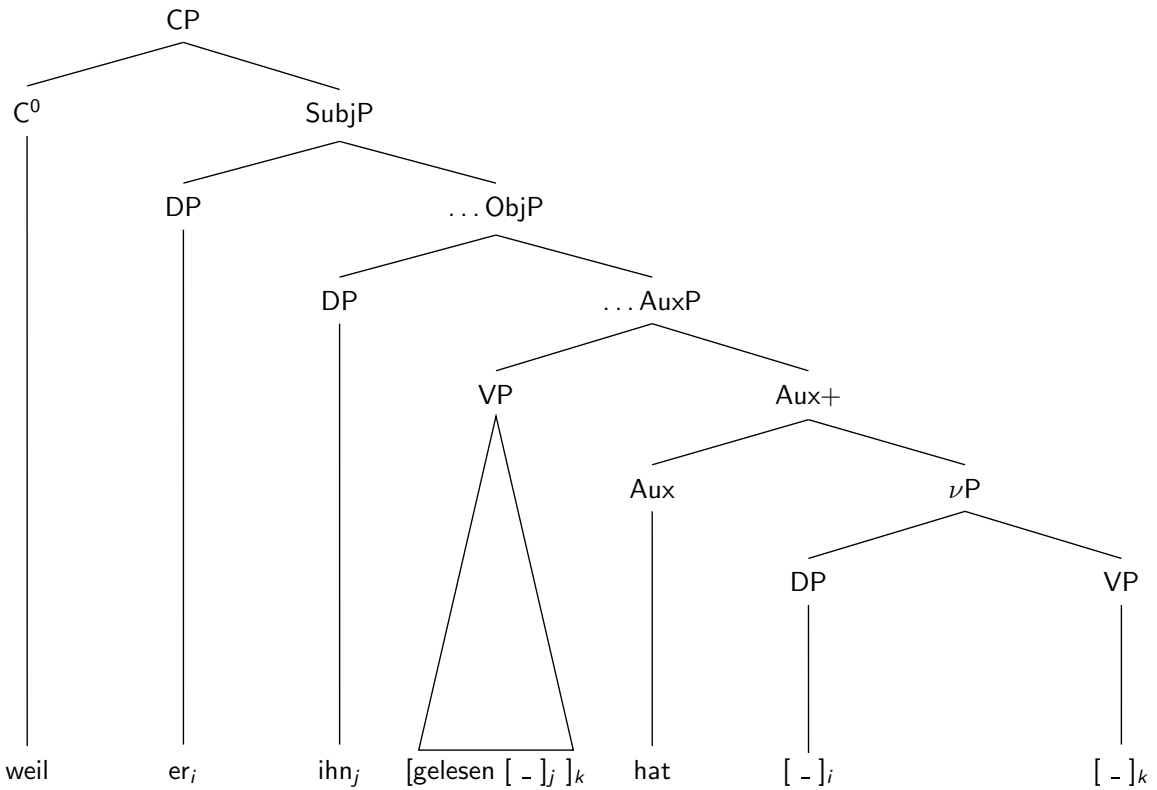

- All languages are SVO underlyingly.
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- There are further empty heads (Cinque, 1999).

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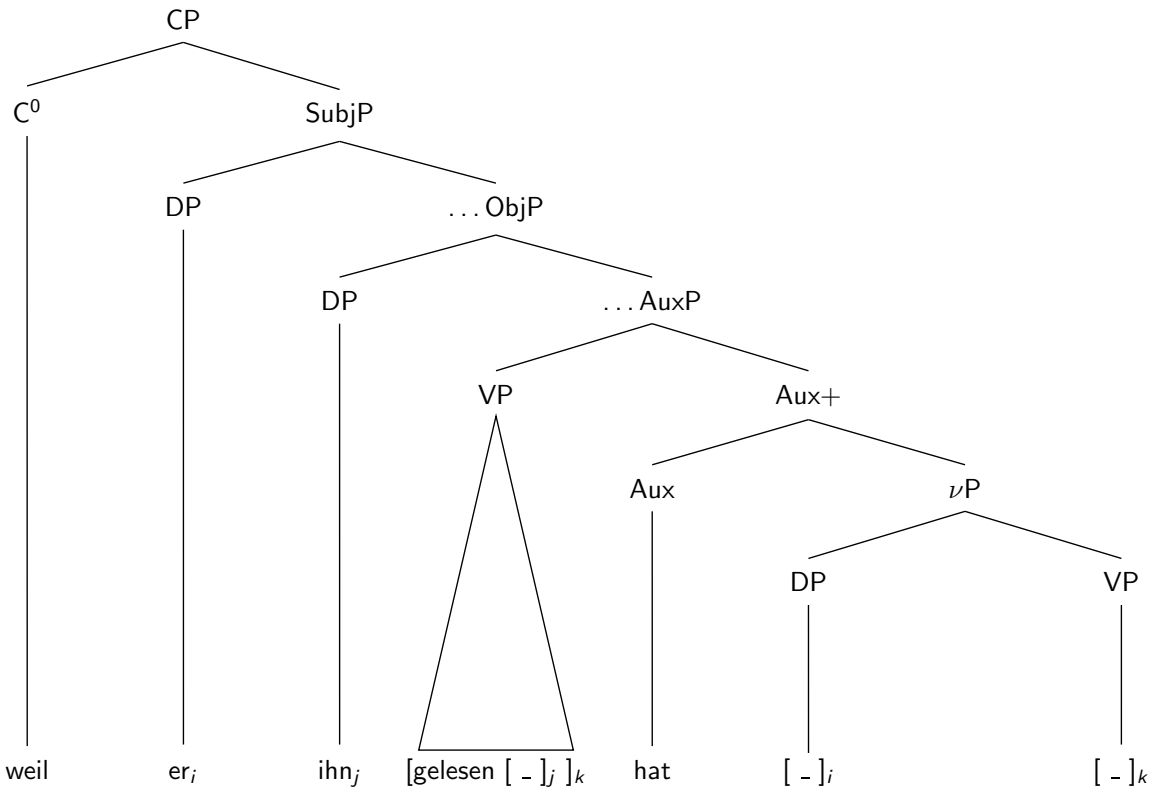

- All languages are SVO underlyingly.
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- There are further empty heads (Cinque, 1999).
- Innateness has to be assumed.

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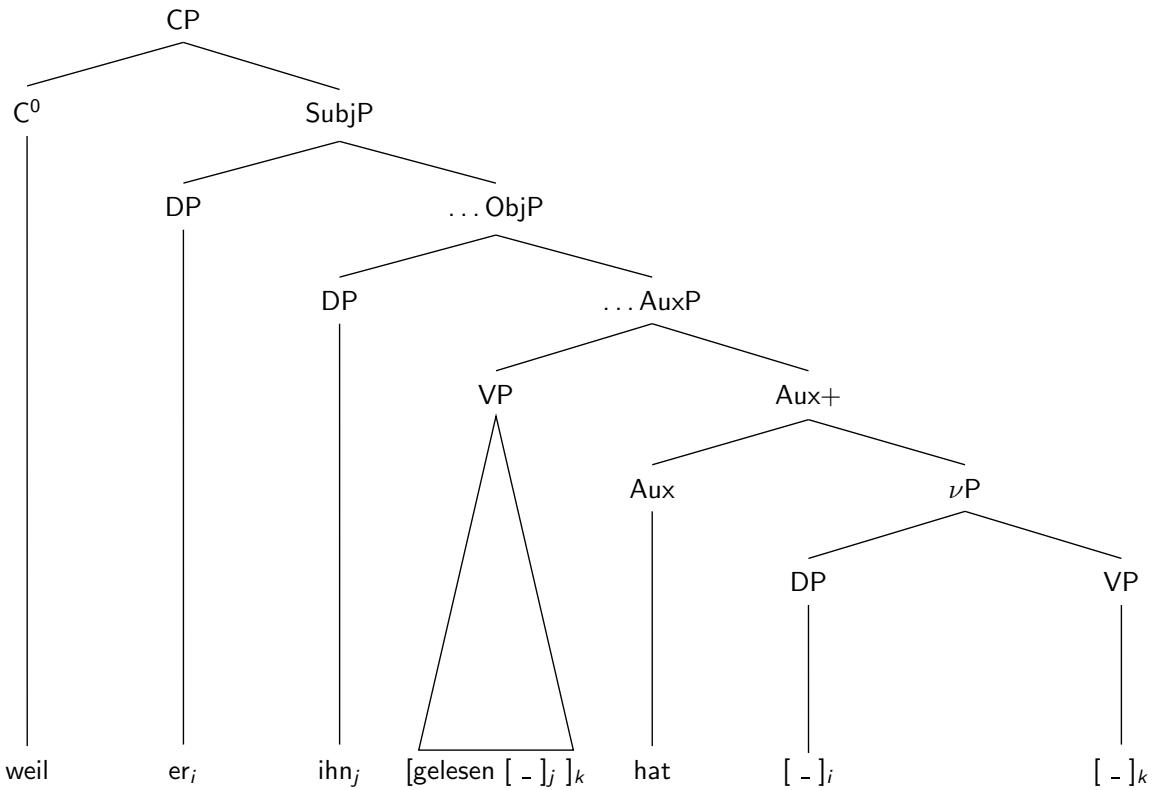
German is English/Romance (SVO, Laenzlinger following Kayne)



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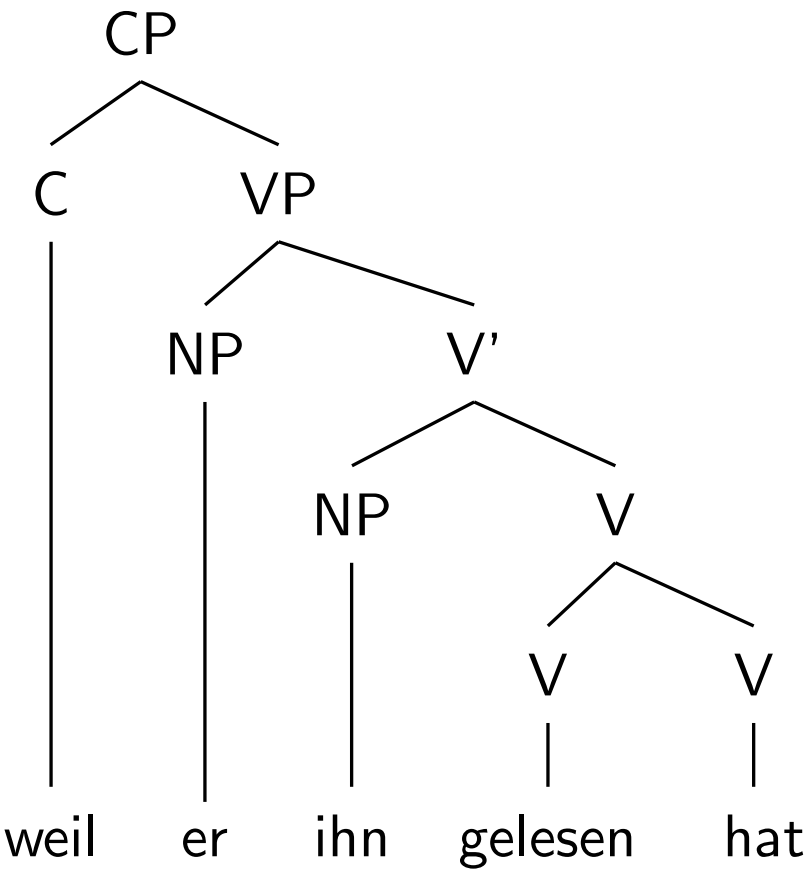
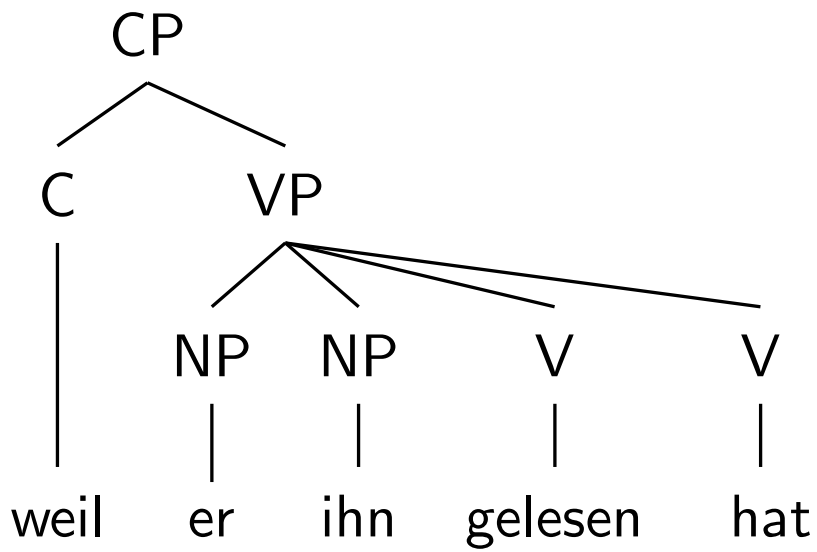
German is German (GB Variants, CG, LFG, HPSG, . . .)





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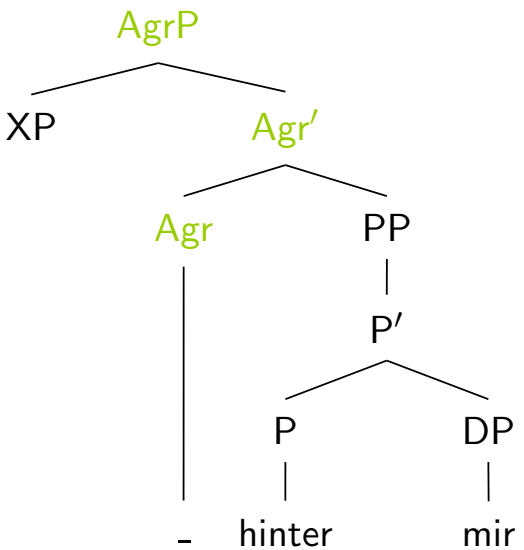
English, German, . . . are Hungarian



- Hornstein, Nunes and Grohmann (2005, p. 124): agreement head for the checking of case features

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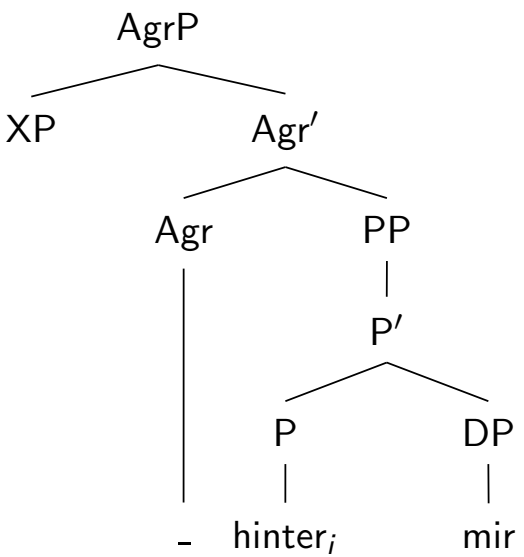

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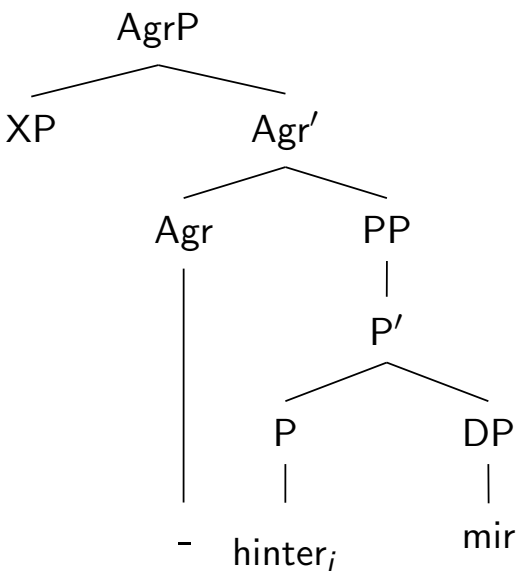

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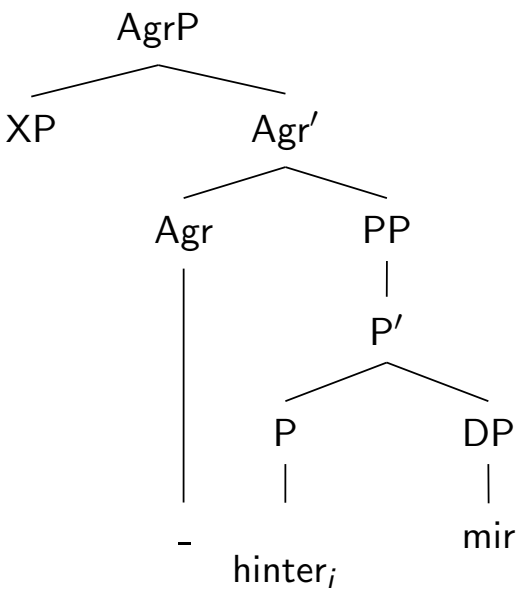

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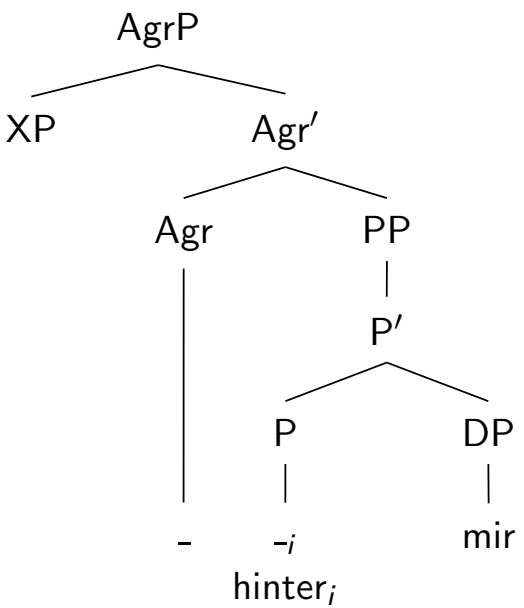

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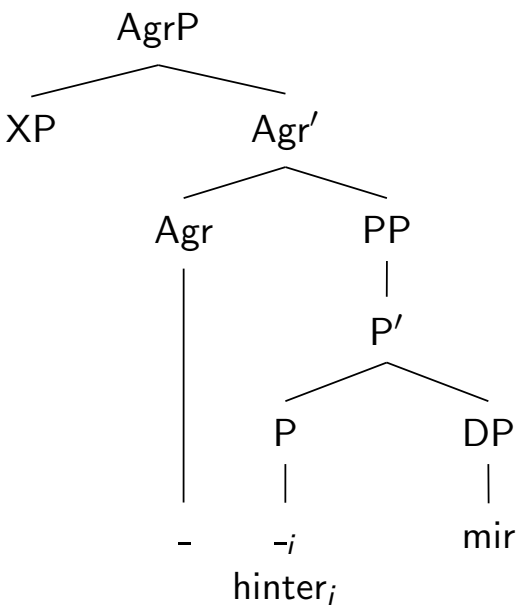

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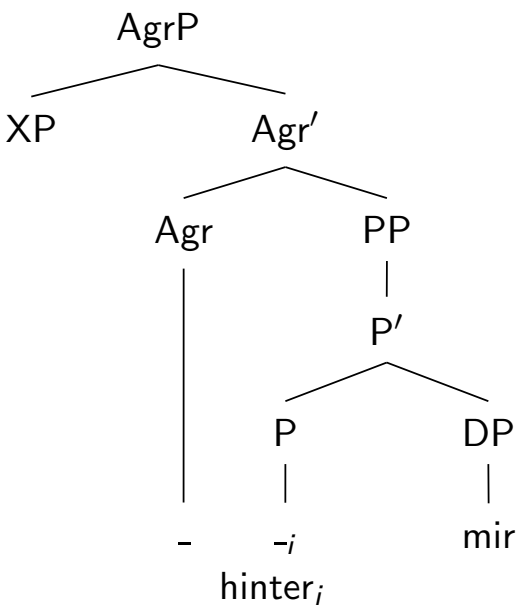

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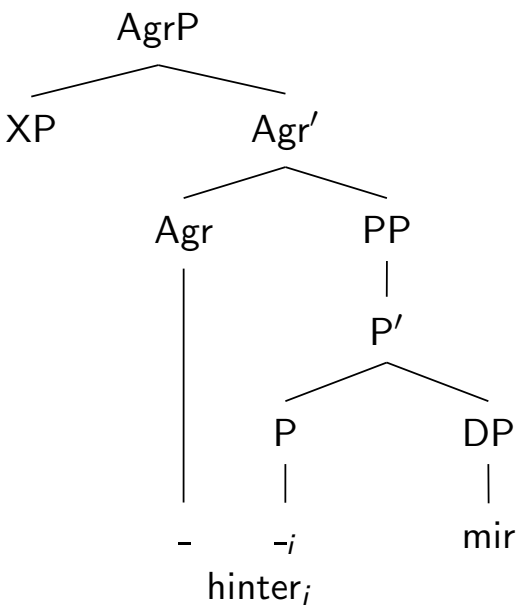

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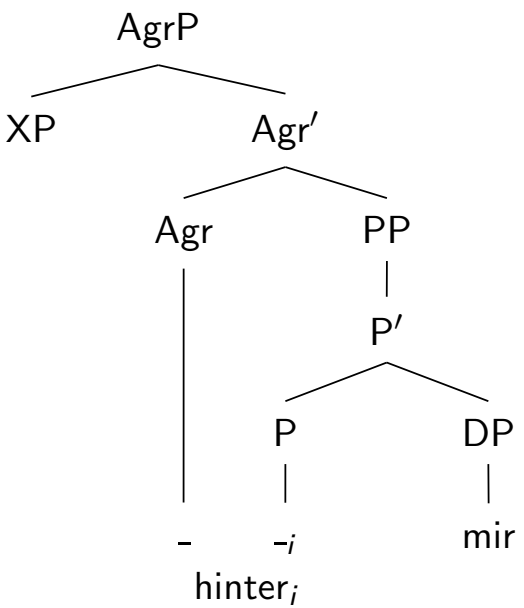

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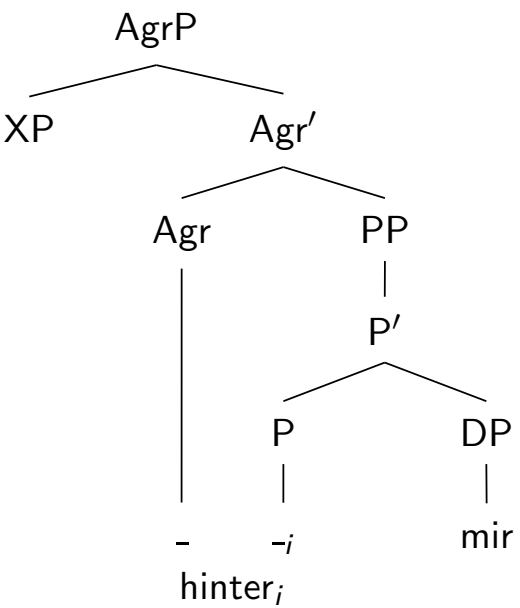

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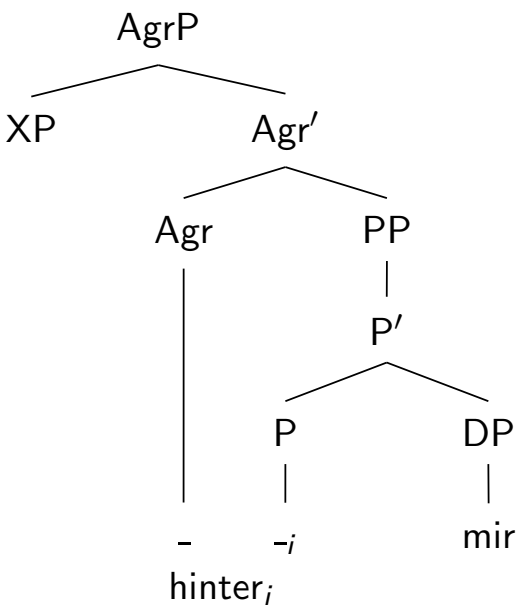

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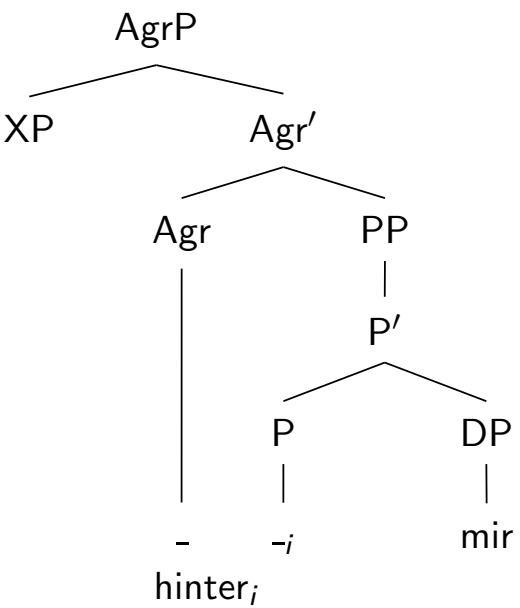

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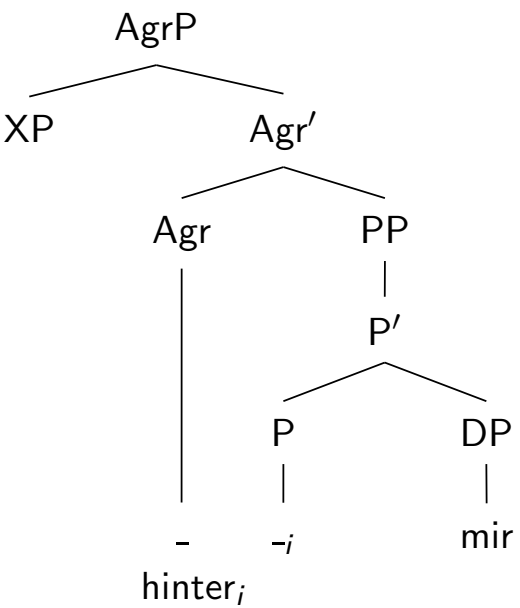

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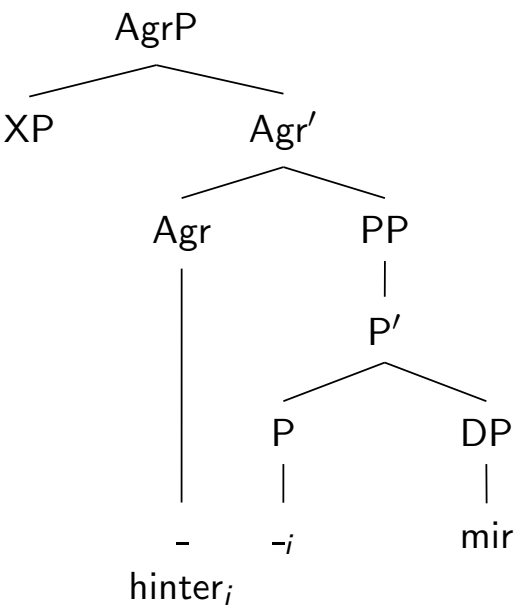

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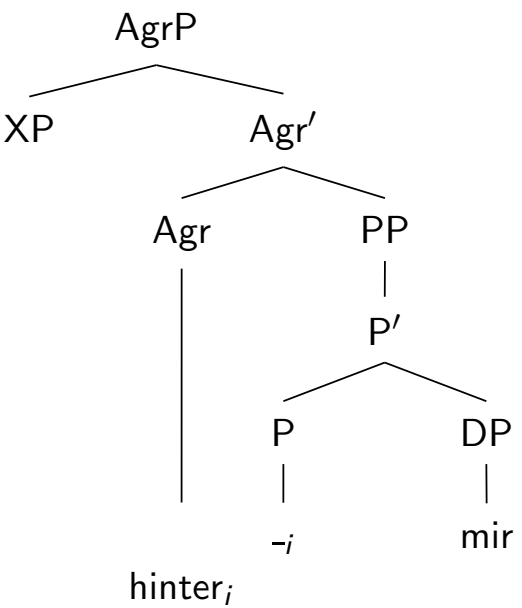

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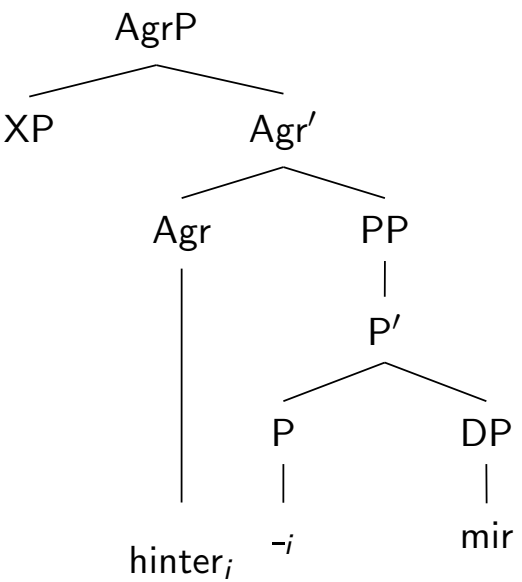

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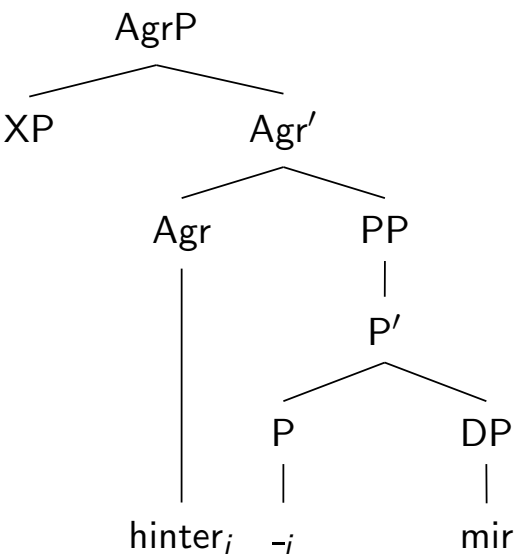

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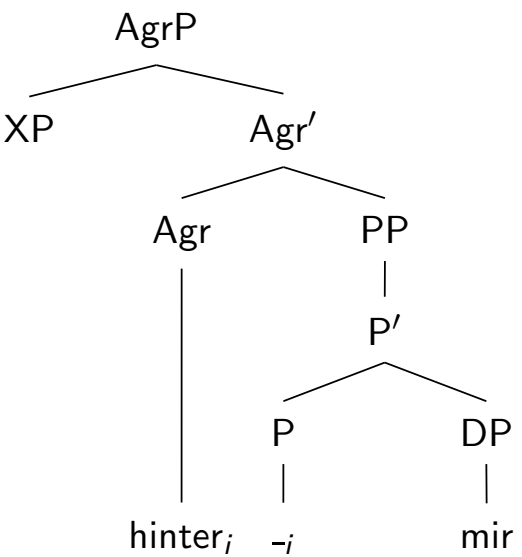

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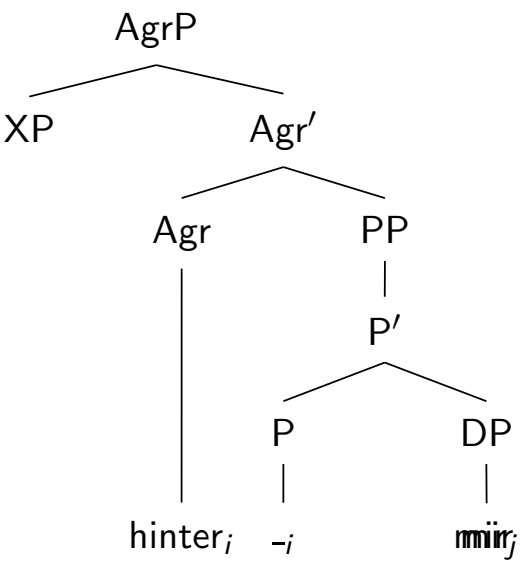

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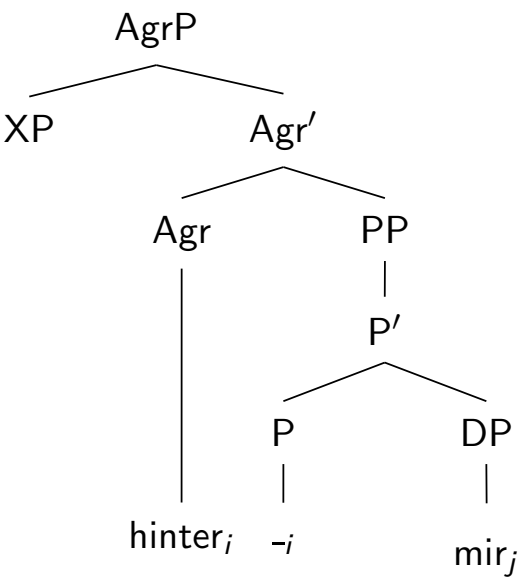

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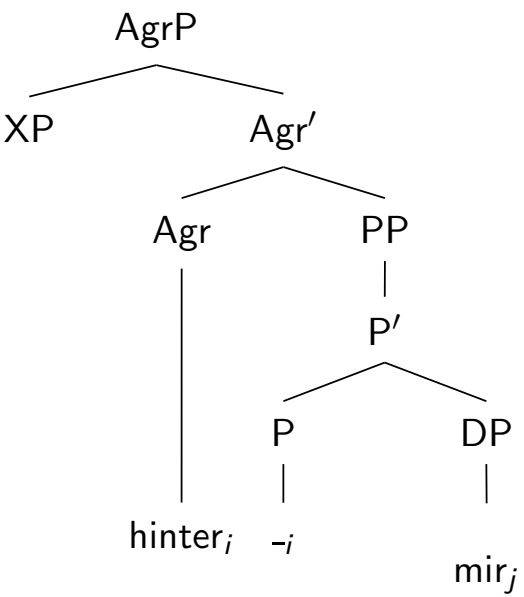

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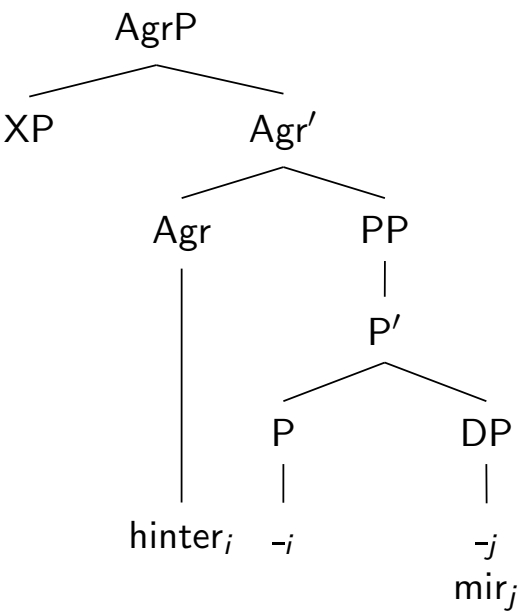

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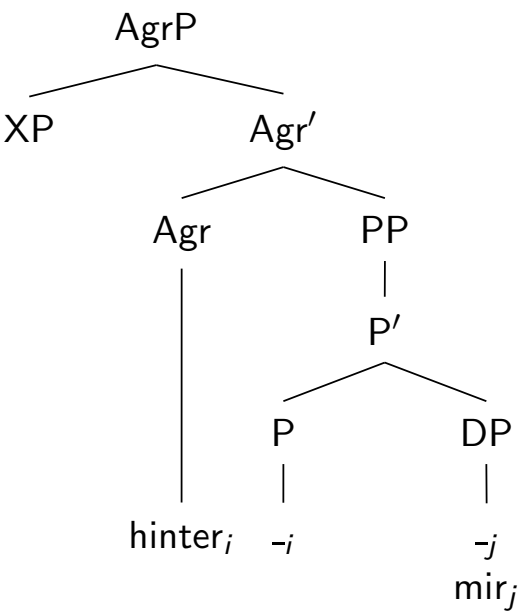

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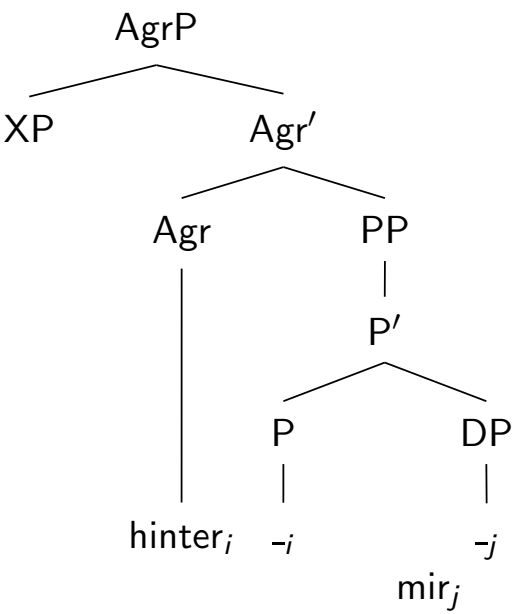

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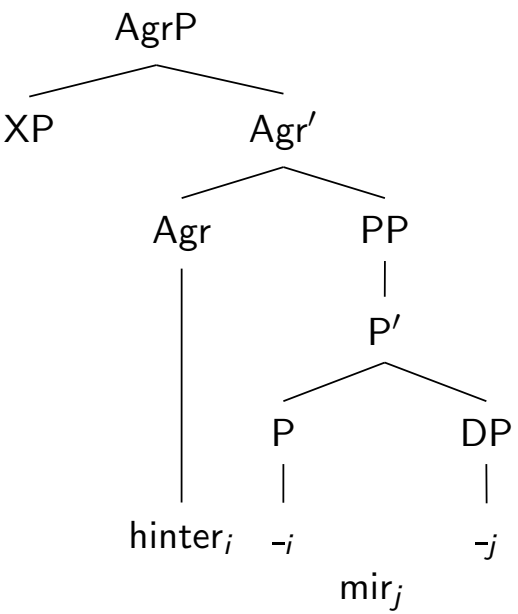

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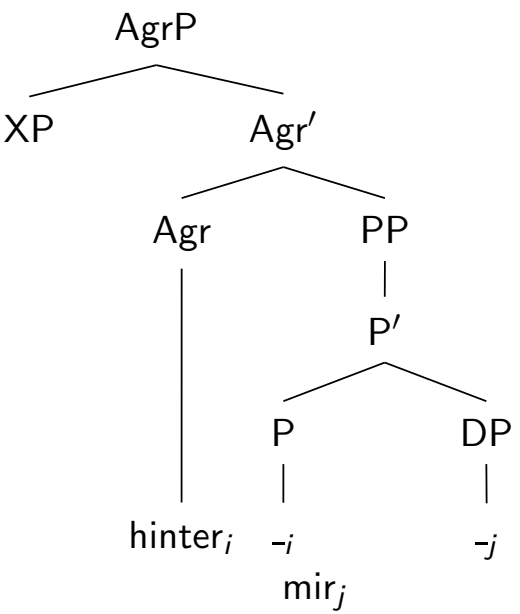

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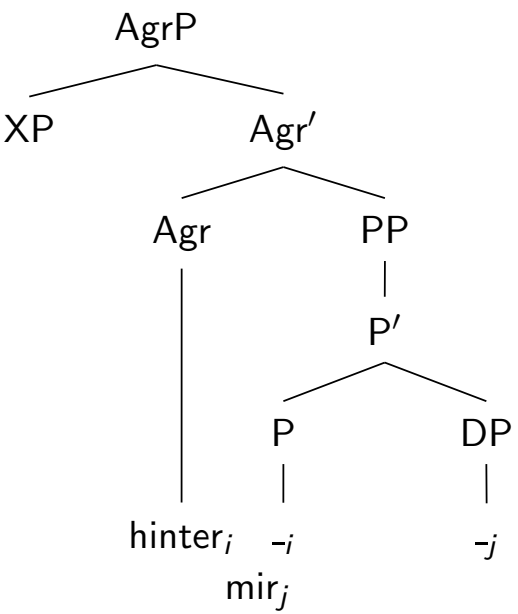

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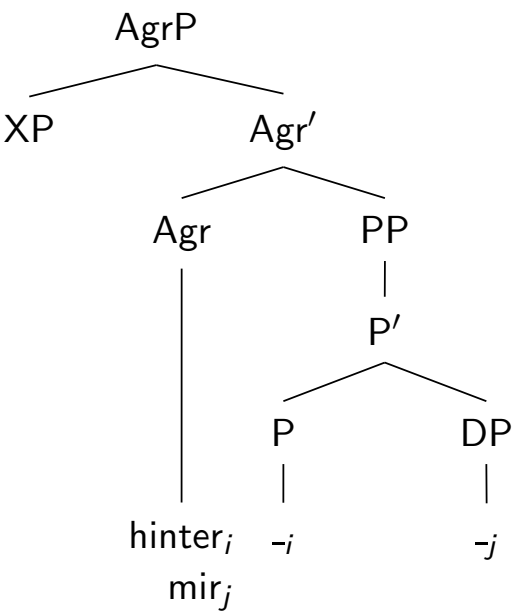

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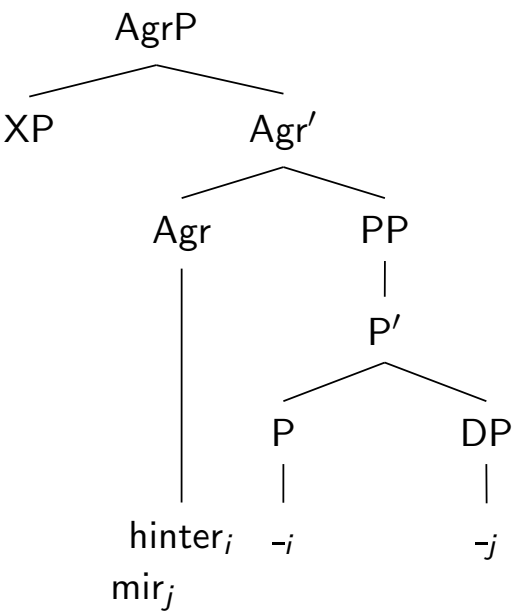

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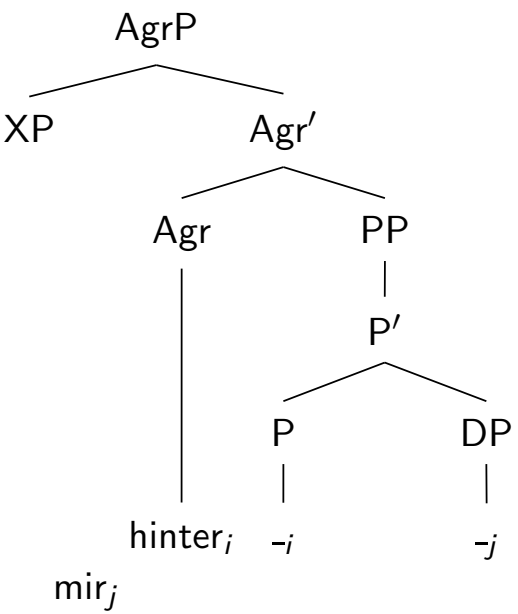

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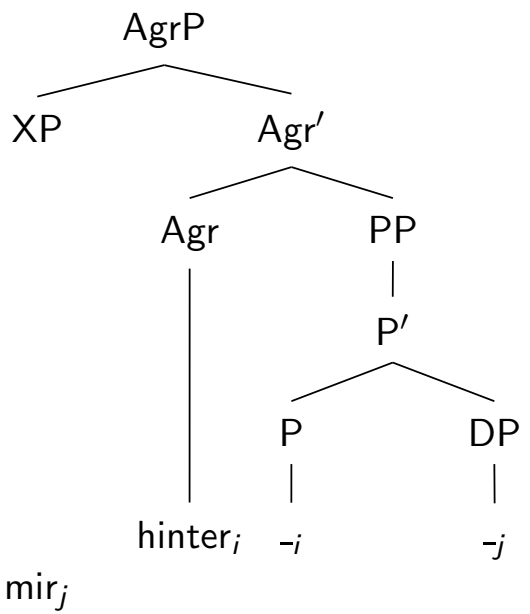

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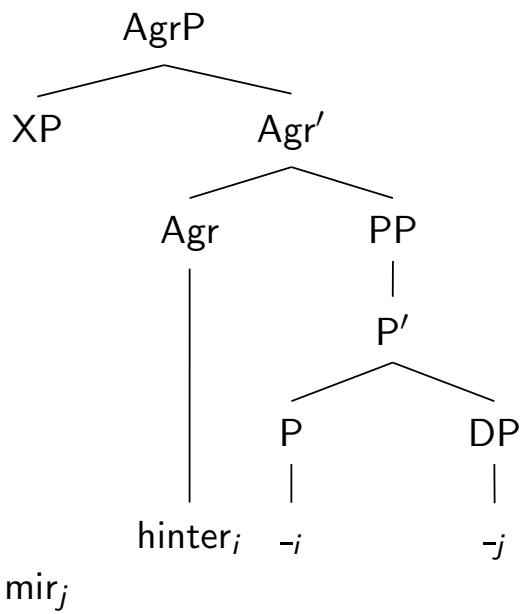

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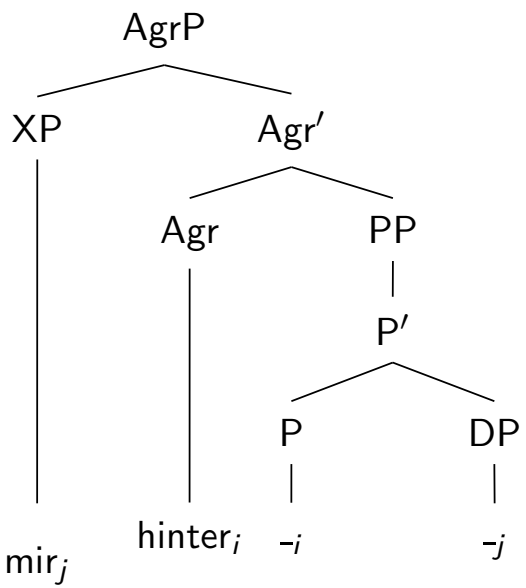

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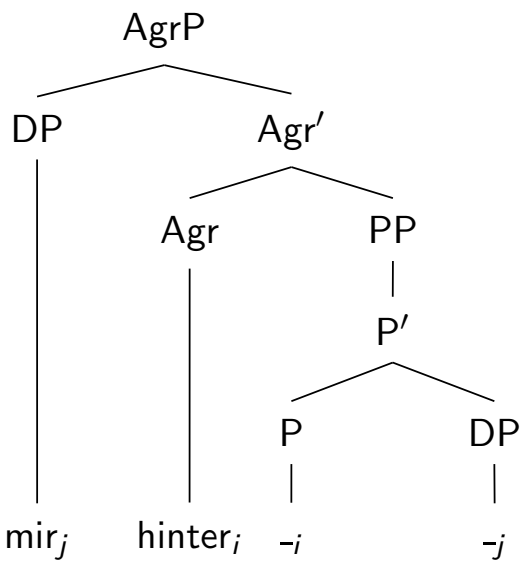

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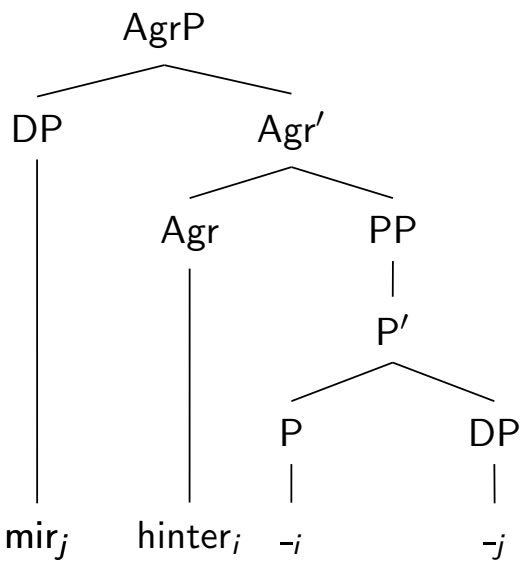

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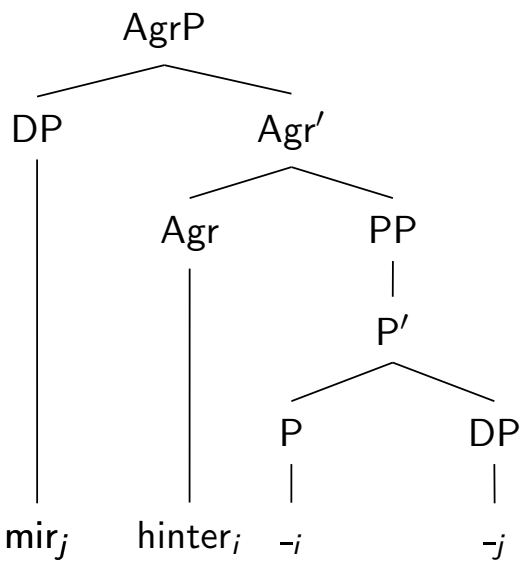

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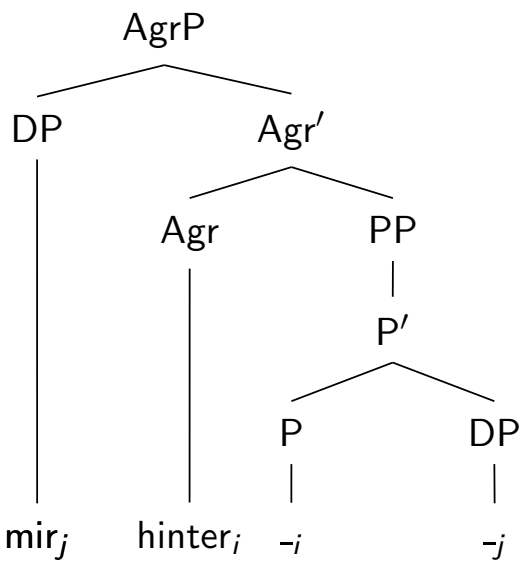

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- English is like Hungarian,
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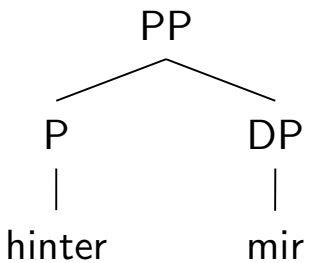

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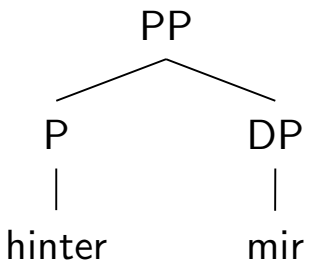

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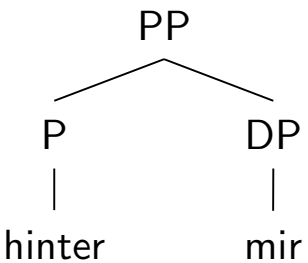

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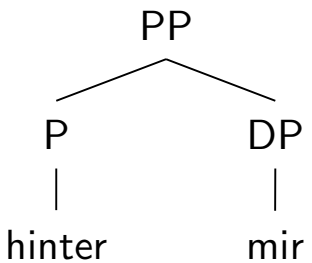

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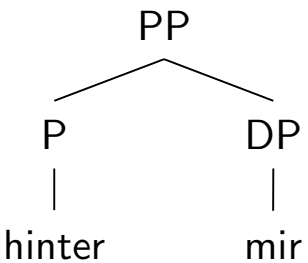

- A PP is a P together with an NP (or DP).
- No movement instead of two movements.
- Structure has five nodes less.
- Truly minimal!
- Question: What constitutes an explanation? Where and how is complexity of language represented?

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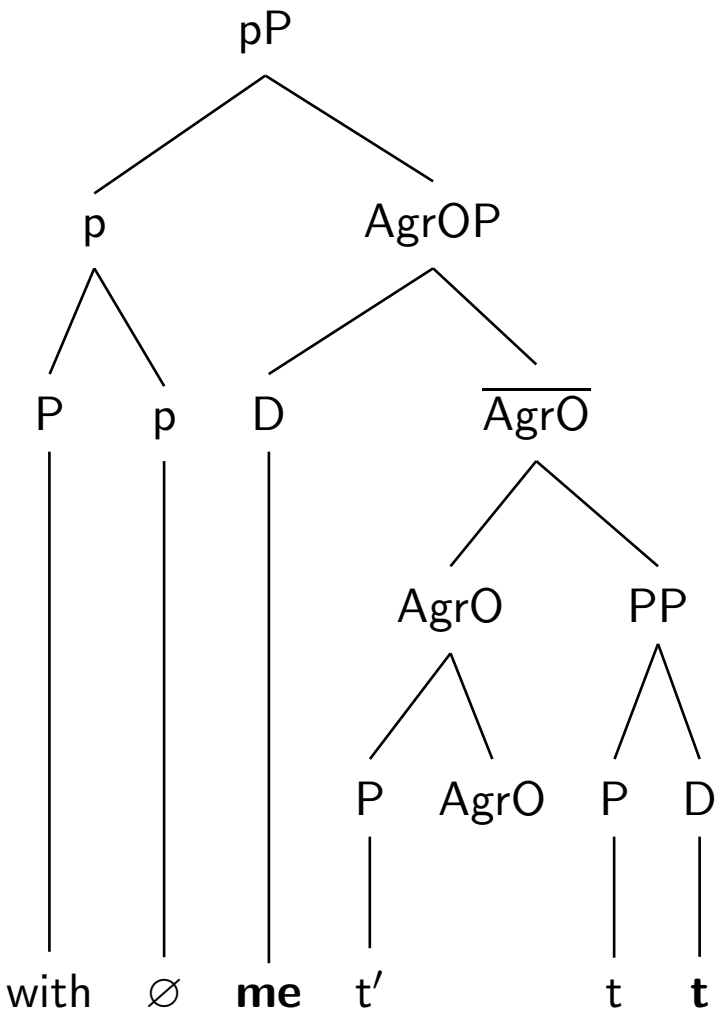
The Swiss Cheese



- from another text book: Radford (1997, p. 452)
- Sternefeld (2006, p. 549–550) calls this a Swiss Cheese analysis, but there are more holes (5) than cheese (2).

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Sociological Differences

- The way arguments work (sometimes) differs dramatically.
  (See Culicover and Jackendoff, 2005 on uniformity)

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- The way arguments work (sometimes) differs dramatically.
  (See Culicover and Jackendoff, 2005 on uniformity)
- Avoid empty elements!
  This should be a strategy for every linguistic theory (Occam's Razor)!

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Minimalism and Psycholinguistic Plausibility

- Derivations are psycholinguistically implausible.
  Derivational Theory of Complexity (DTC) falsified in the 70s (Fodor, Bever and Garrett, 1974, p. 320–328).

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- See Pulvermüller (2003) on how this could be implemented in the brain.

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- HPSG (Sag, 1997) can be seen as a formalized variant of CxG.

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Poverty of the Stimulus and U-DOP

- U-DOP learns from examples that do not contain examples with auxiliary inversion and relative clauses (Bod, 2009).
  Once one learned the correct trees for (12) one can also assign the correct structure to sentences with auxiliary inversion (p. 778):

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  To acquire (12) for example the sentences in (13) are sufficient:

  (13) a. The man who is eating mumbled.
  b. The man is hungry.
  c. The man mumbled.
  d. The boy is eating.

Poverty of the Stimulus and U-DOP – II

- Procedure:
  1. Compute all possible (binary branching) trees (without category symbols) for a set of given sentences.
  2. Compute all subtrees of these trees.
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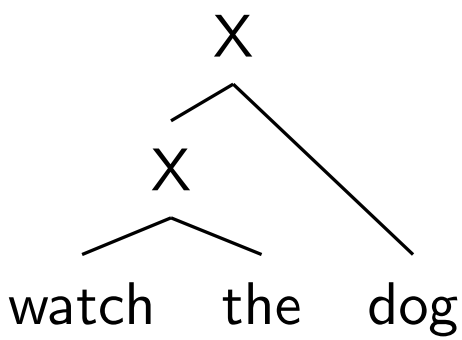
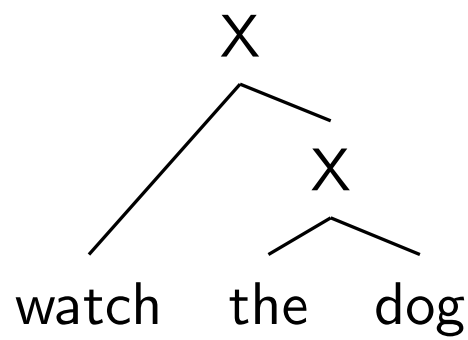
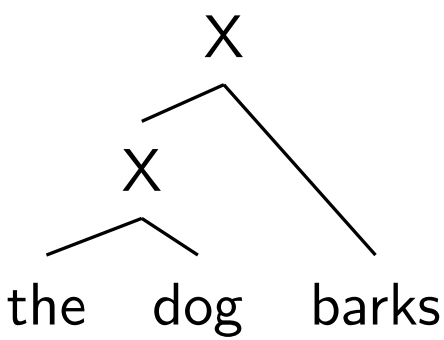
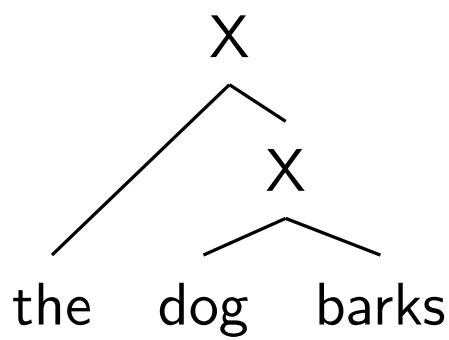
- The acquired grammars make the same mistakes as children!

Possible binary branching structures for *Watch the dog* and *The dog barks*









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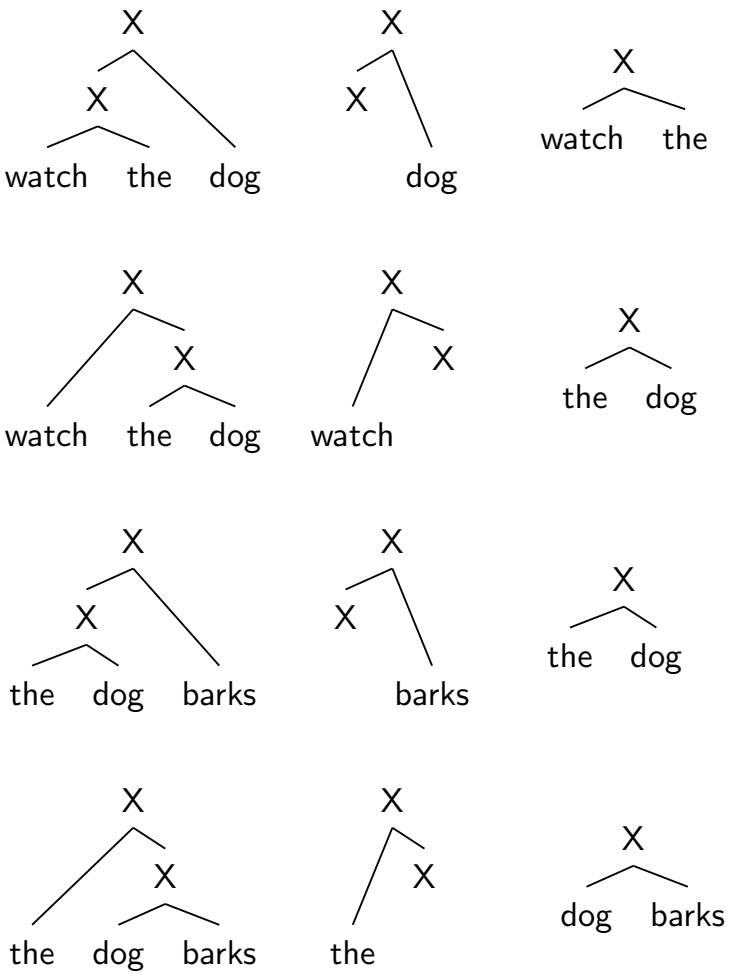
Subtrees



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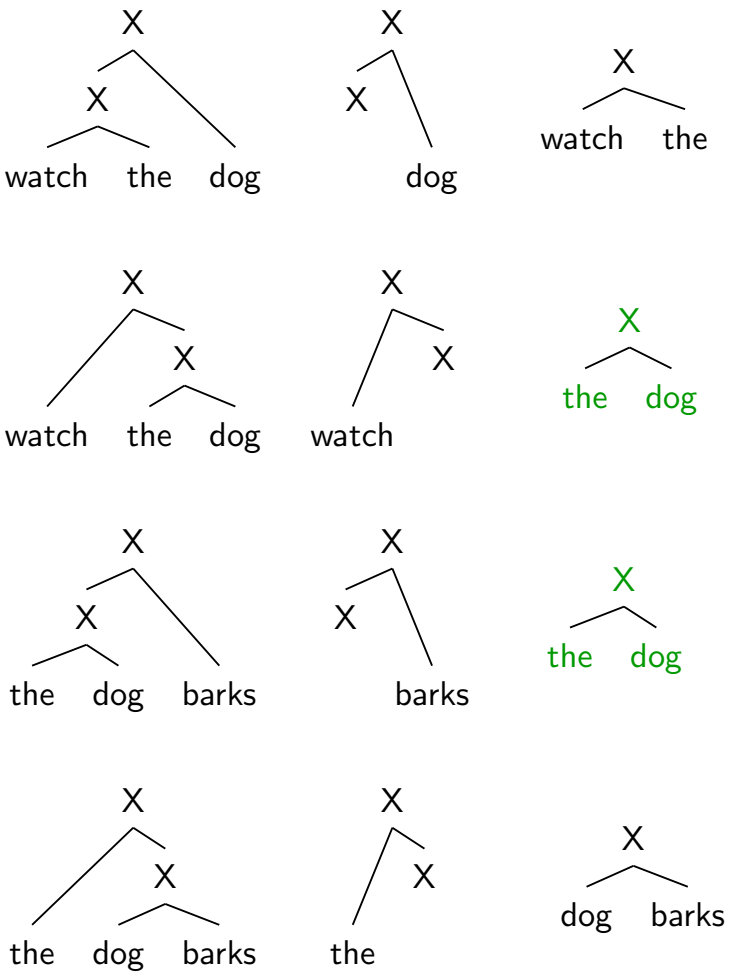
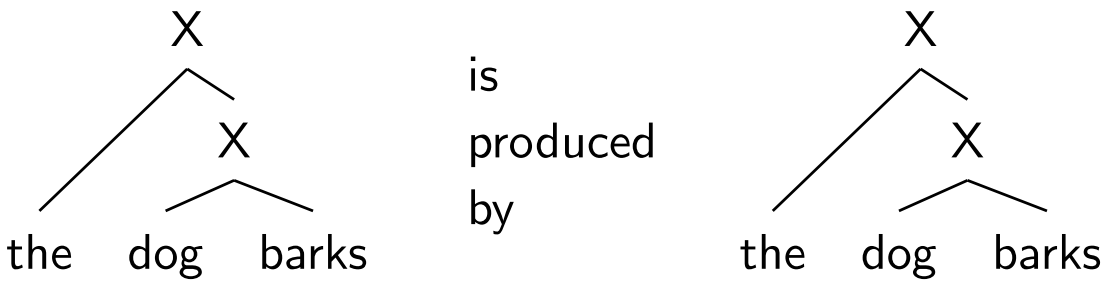


- Jeder Baum hat eine Wahrscheinlichkeit von 1/12.
- *the dog* kommt zweimal vor! Wahrscheinlichkeit = 2/12.

Analysis with Subtrees and Probabilities



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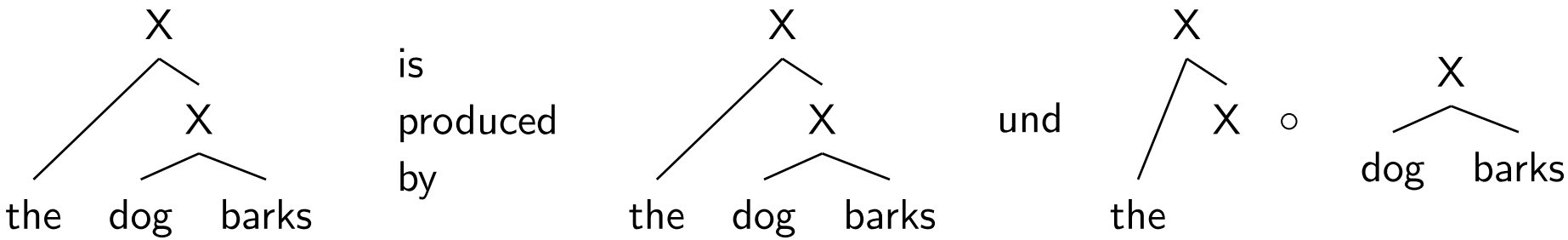

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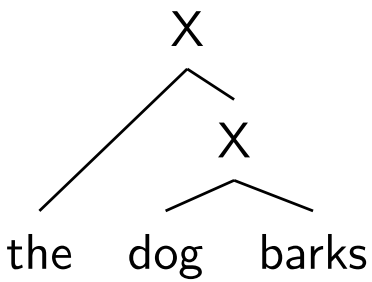

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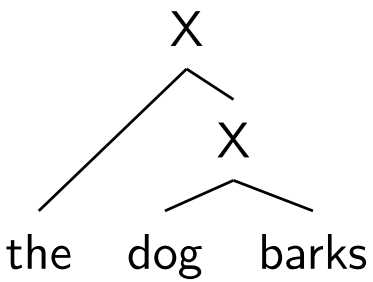

$1/12 = 12/144$

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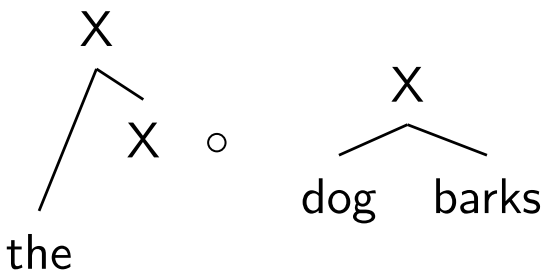

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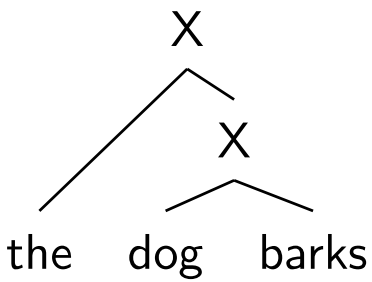

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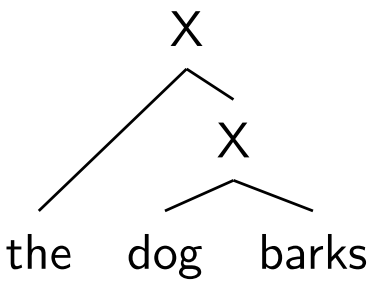

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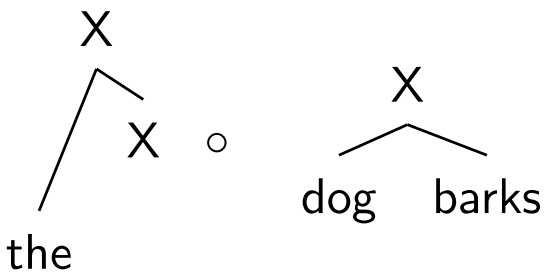

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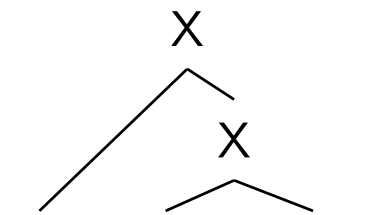

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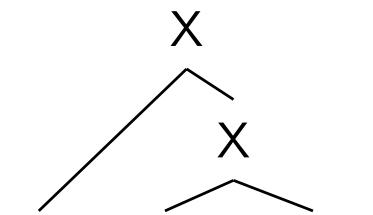

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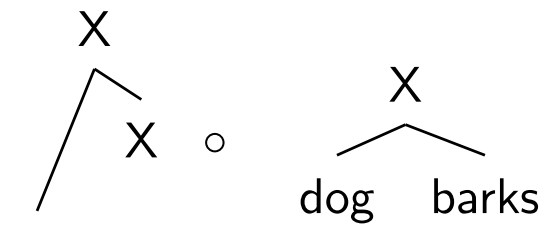

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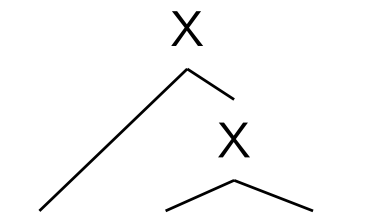

13/144

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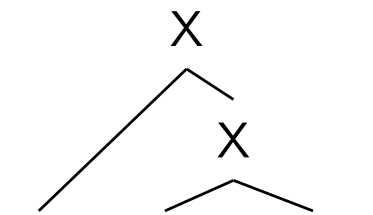
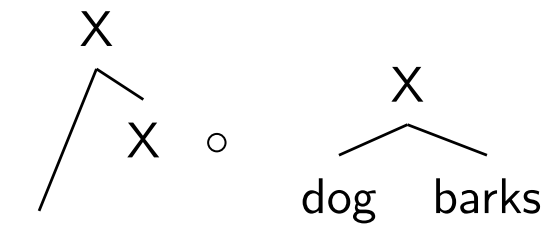
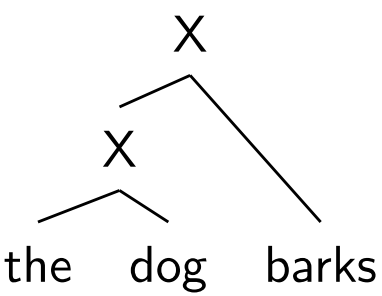


$1/12 = 12/144$

und



$1/12 \times 1/12 = 1/144$



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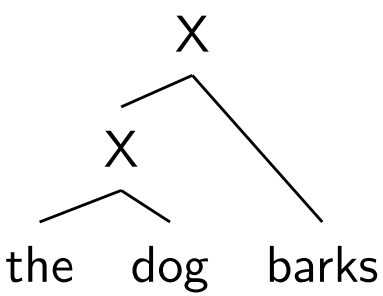

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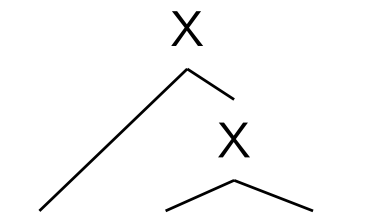

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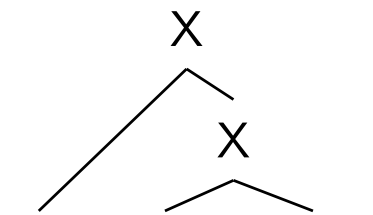

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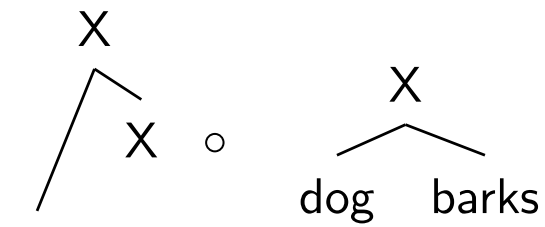

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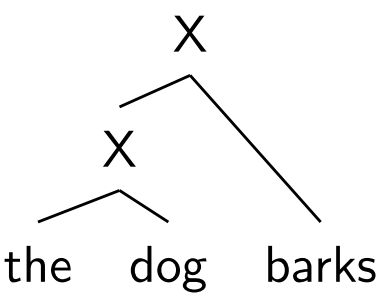

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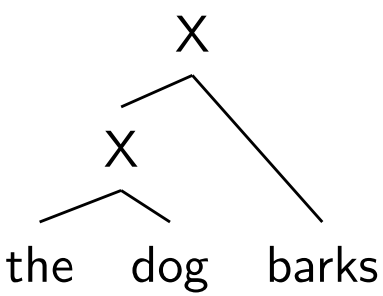

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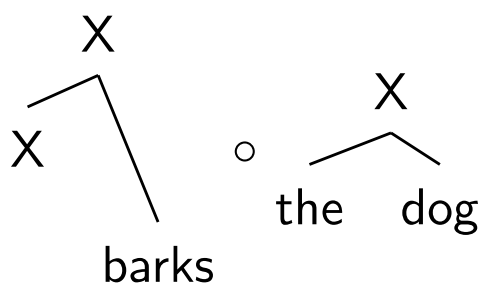

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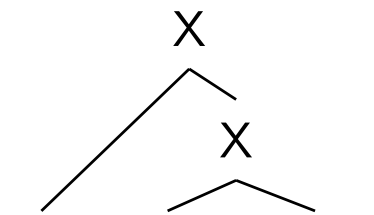

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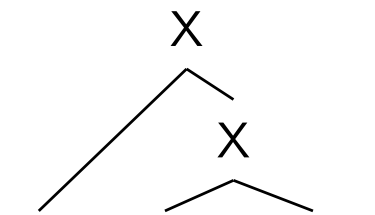

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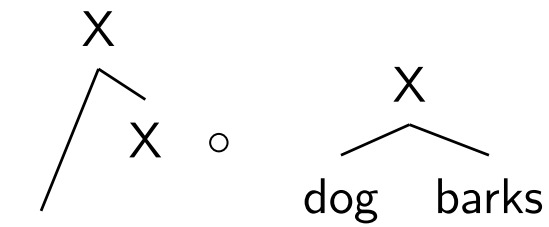

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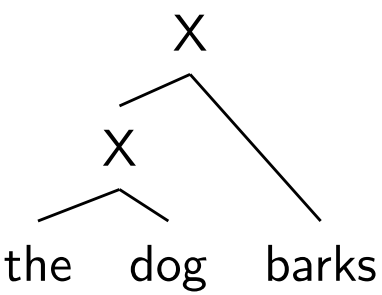

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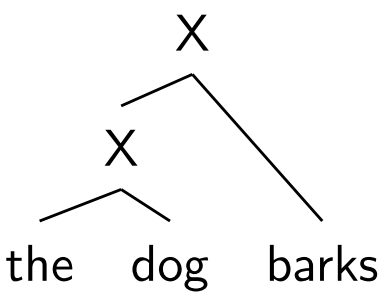

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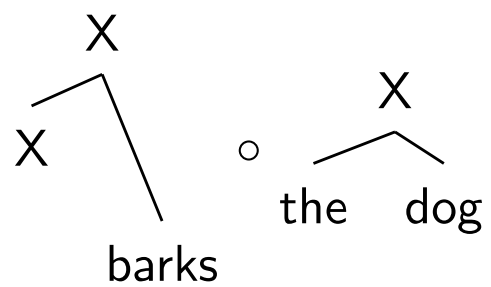

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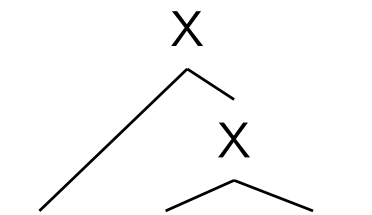

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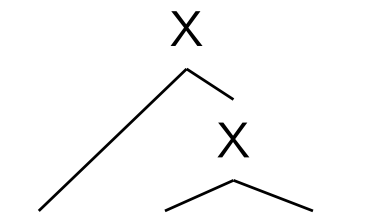

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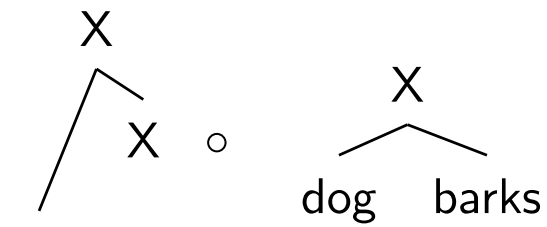

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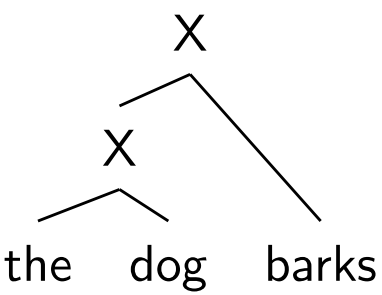

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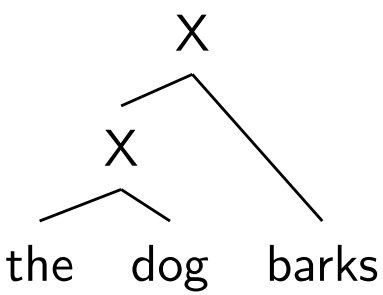

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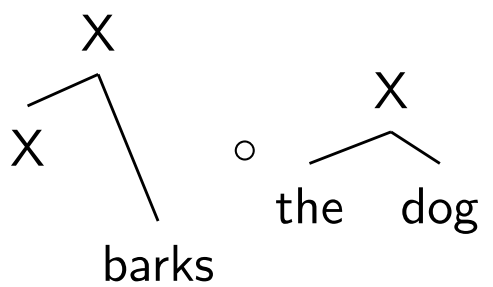

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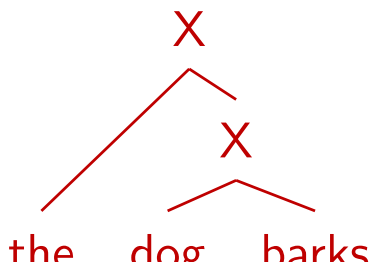

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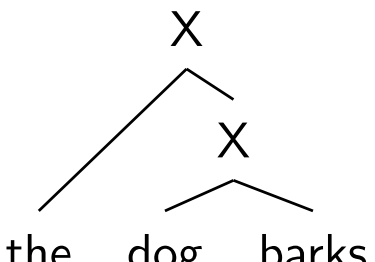

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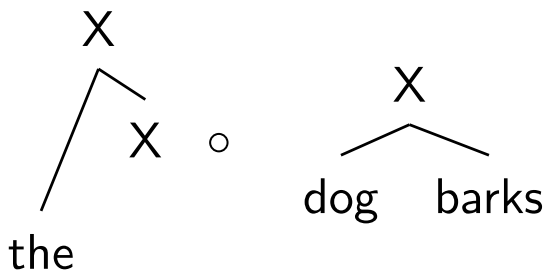

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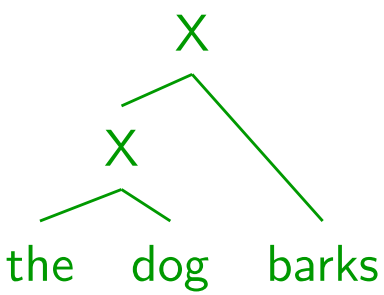

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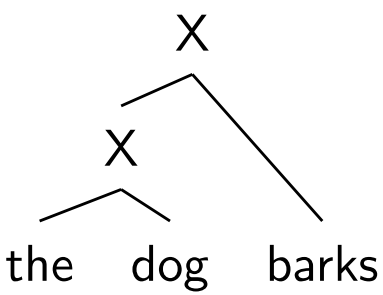

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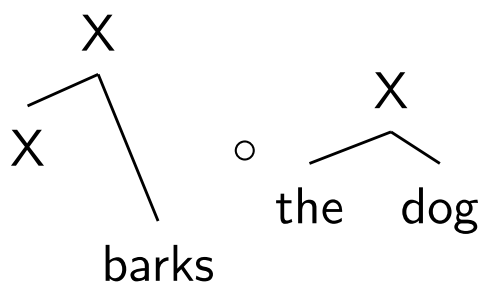

$1/12 \times 2/12 = 2/144$

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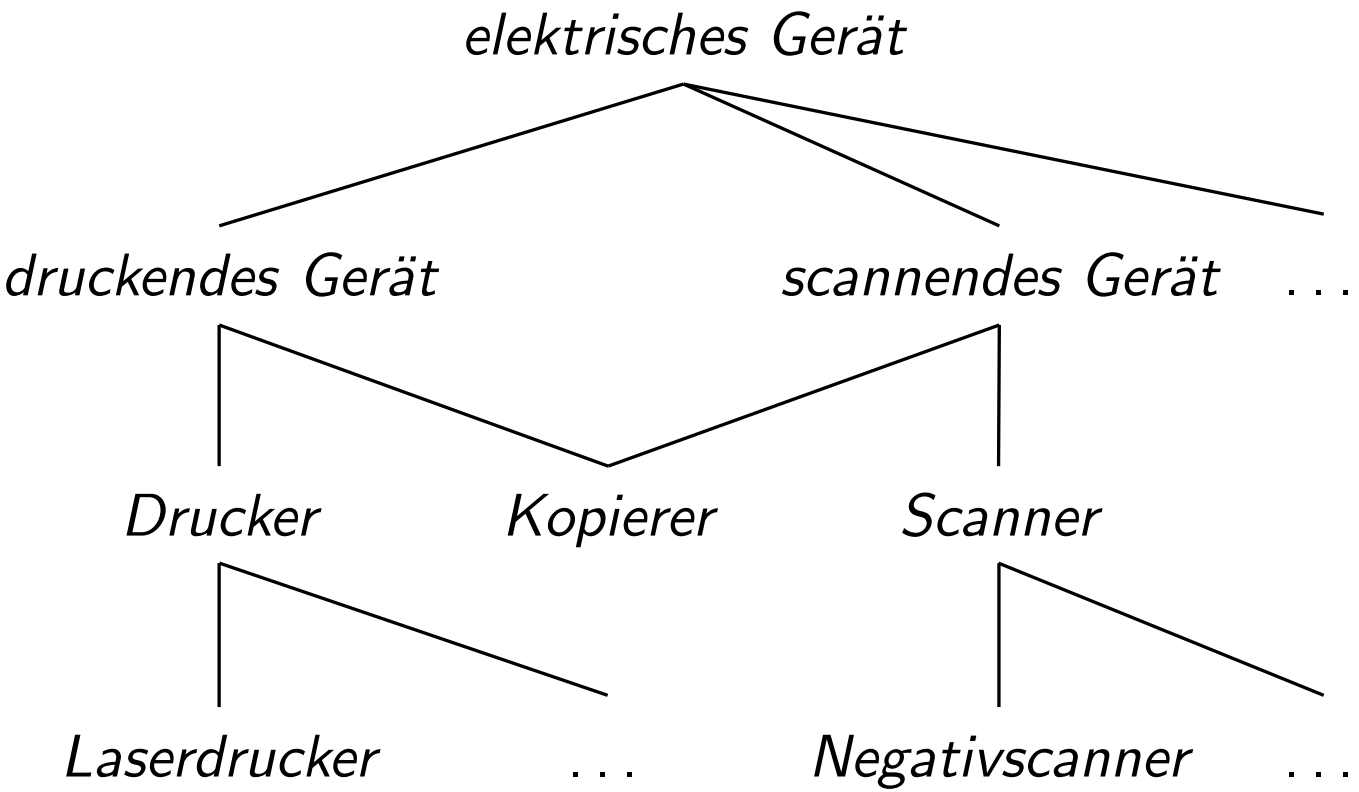
Typen: Ein nicht-linguistisches Beispiel für Mehrfachvererbung



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Eigenschaften von Typhierarchien

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- Dadurch Repräsentation von Information ohne Redundanz möglich

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Linguistische Generalisierungen im Typsystem

- Typen bilden Hierarchie

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- Spezifischere Typen können sprachklassen- oder sprachspezifisch sein.

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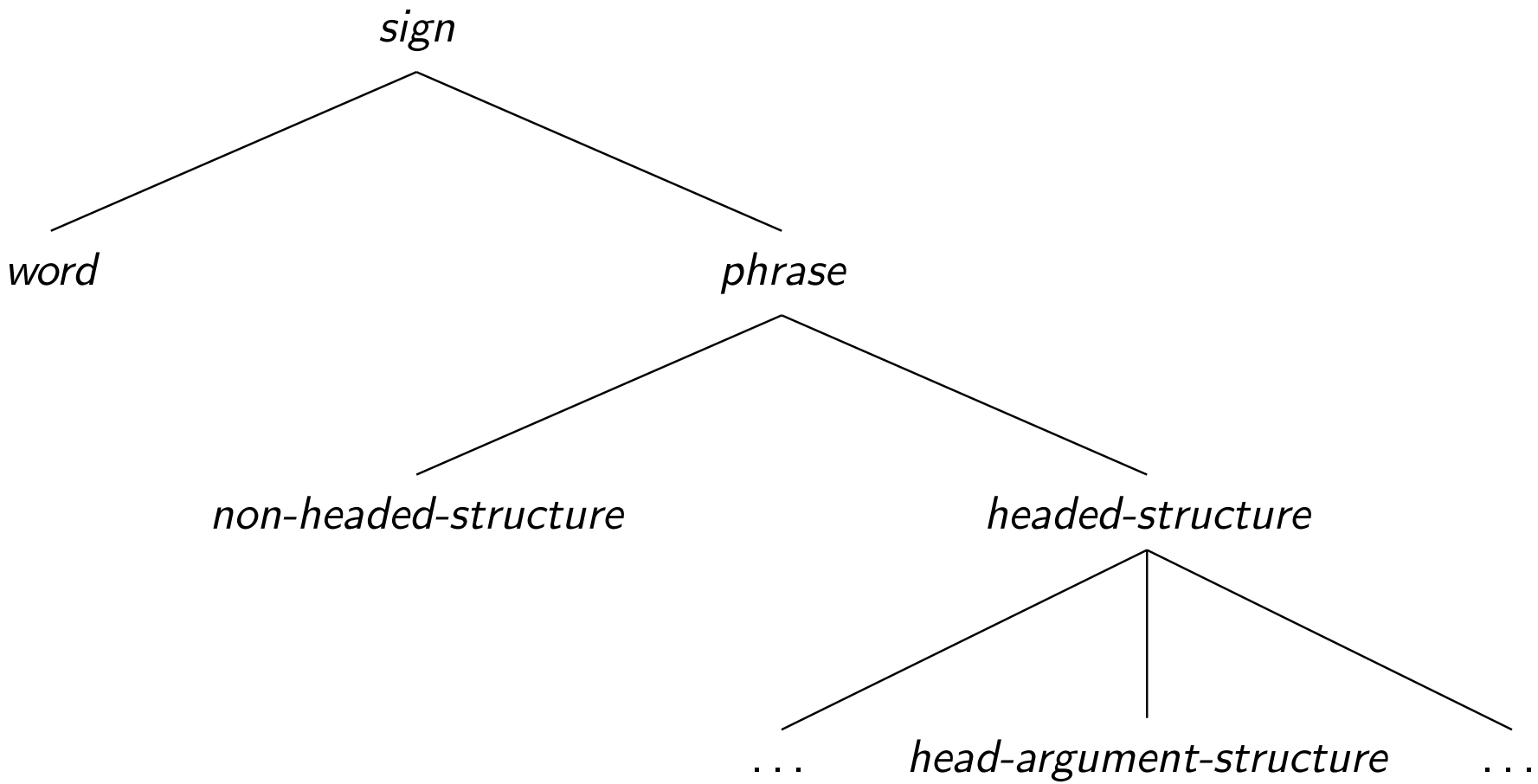
Typhierarchie für *sign*



alle Untertypen von *headed-structure* erben Beschränkung

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Kopf-Komplement-Schema + Kopfmerkmalsprinzip

$$\left[\begin{array}{ll} \textsc{head} & \boxed{1} \\ \textsc{subcat} & \boxed{2} \\ \textsc{head-dtr} & \left[\begin{array}{ll} \textsc{head} & \boxed{1} \\ \textsc{subcat} & \boxed{2} \oplus \langle\, \boxed{3} \,\rangle \end{array}\right] \\ \textsc{non-head-dtrs} & \langle\, \boxed{3} \,\rangle \\ \multicolumn{2}{l}{\textit{head-argument-structure}} \end{array}\right]$$

Typ *head-argument-structure* mit von *headed-structure* ererbter Information

Repräsentation lexikalischer Köpfe

$$\left[\begin{array}{ll} \textsc{phon} & \boxed{1} \\ \textsc{synsem} & \boxed{2} \\ \textsc{dom} & \left\langle \left[\begin{array}{ll} \textsc{phon} & \boxed{1} \\ \textsc{synsem} & \boxed{2} \\ \textsc{dom} & \langle\rangle \\ & \textit{word} \end{array}\right] \right\rangle \\ & \\ \textit{word} & \end{array}\right]$$

- Jeder Kopf enthält in seiner Konstituentenstellungsdomäne eine Beschreibung von sich selbst.

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- Jeder Kopf enthält in seiner Konstituentenstellungsdomäne eine Beschreibung von sich selbst.
- Adjunkt- und Komplementtöchter werden in diese Liste eingesetzt und relativ zu ihm angeordnet.

Domänenbildung

- alle Nicht-Kopftöchter werden in die Domäne des Kopfes eingesetzt

  head-non-cluster-structure $\rightarrow$

$$\begin{bmatrix} \text{HEAD-DTR}|\text{DOM} & \boxed{1} \\ \text{NON-HEAD-DTRS} & \boxed{2} \\ \text{DOM} & \boxed{1} \bigcirc \boxed{2} \end{bmatrix}$$

- dort können sie frei angeordnet werden, solange LP-Regeln nicht verletzt sind
- Die *shuffle*-Relation besteht zwischen drei Listen A, B und C, gdw. C alle Elemente von A und B enthält und die Reihenfolge der Elemente von A und die Reihenfolge der Elemente in B in C erhalten ist.

$$\begin{aligned} \langle a, b \rangle \bigcirc \langle c, d \rangle = & \langle a, b, c, d \rangle \vee \\ & \langle a, c, b, d \rangle \vee \\ & \langle a, c, d, b \rangle \vee \\ & \langle c, a, b, d \rangle \vee \\ & \langle c, a, d, b \rangle \vee \\ & \langle c, d, a, b \rangle \end{aligned}$$

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PHON-Berechnung

- in Domäne entsprechend der Oberflächenreihenfolge angeordnet
- → Berechnung des PHON-Wertes ist einfache Konkatenation

$$\begin{bmatrix} \textsc{phon} & \boxed{1} \oplus \ldots \oplus \boxed{n} \\ \\ \textsc{dom} & \left\langle \begin{bmatrix} \textsc{phon} & \boxed{1} \\ \textit{sign} & \end{bmatrix}, \ldots, \begin{bmatrix} \textsc{phon} & \boxed{n} \\ \textit{sign} & \end{bmatrix} \right\rangle \\ \\ \textit{phrase} & \end{bmatrix}$$

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Alternative: Linearisierungsbasierte HPSG

- Bei binär verzweigenden Strukturen kann man immer nur die beiden Töchter relativ zueinander anordnen.

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- Erweiterung der Linearisierungsdomänen: Reape (1994), Kathol (1995, 2000); Kathol and Pollard (1995), Müller (1995, 1999, 2002)
- Kathol: Linearisierungsdomänen + Topologische Felder, Kopplung an Satztypen

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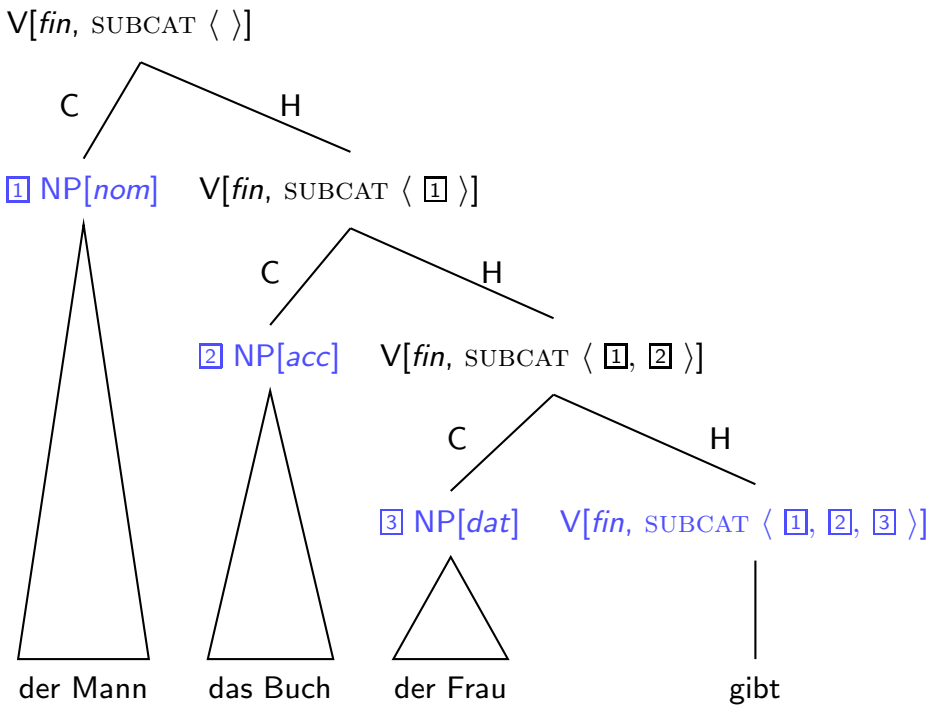
Linearisierungsdomänen und diskontinuierliche Konstituenten



- blaue Knoten werden in eine Liste eingefügt: die Linearisierungsdomäne

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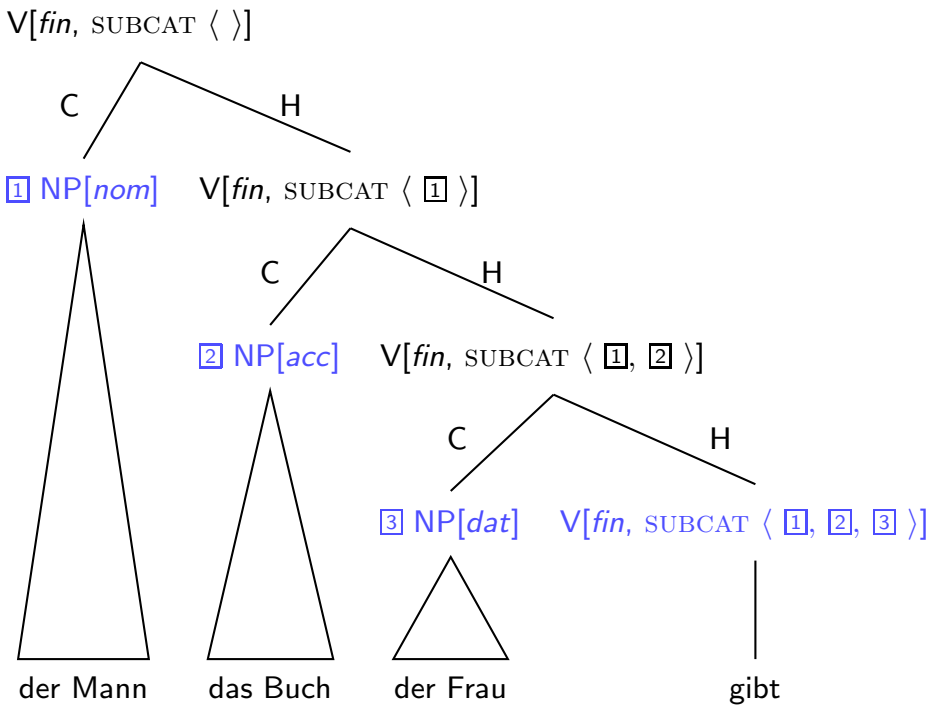
Linearisierungsdomänen und diskontinuierliche Konstituenten



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- die Permutation von Elementen in solchen Domänen ist nur durch Linearisierungsregeln beschränkt

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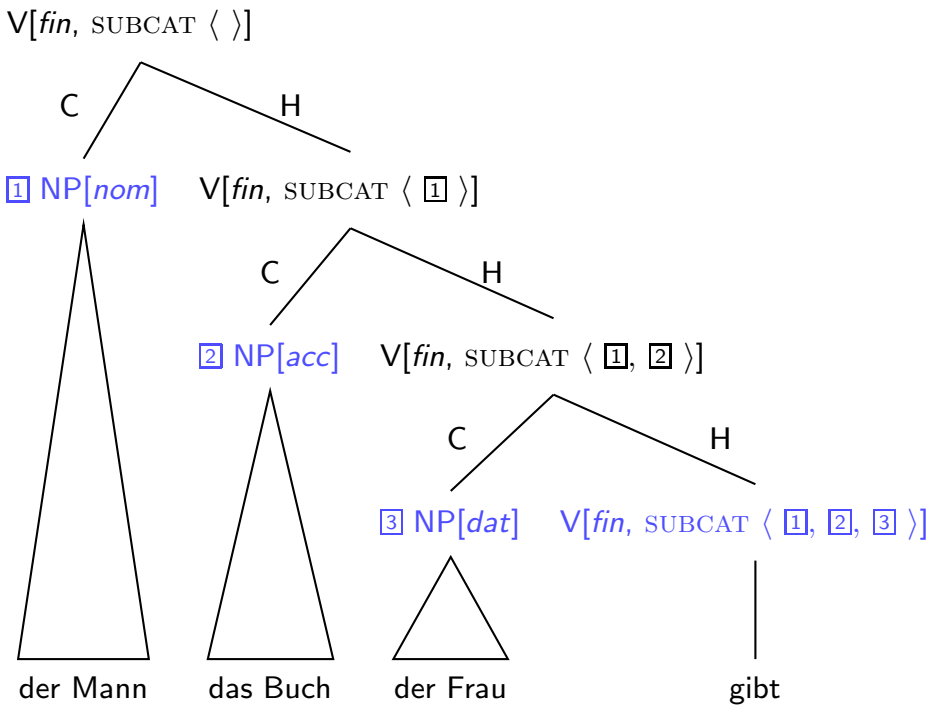
Linearisierungsdomänen und diskontinuierliche Konstituenten



- blaue Knoten werden in eine Liste eingefügt: die Linearisierungsdomäne
- die Permutation von Elementen in solchen Domänen ist nur durch Linearisierungsregeln beschränkt
- Linearisierungsdomänen sind Kopfdomänen ↔ *Scrambling* ist lokal

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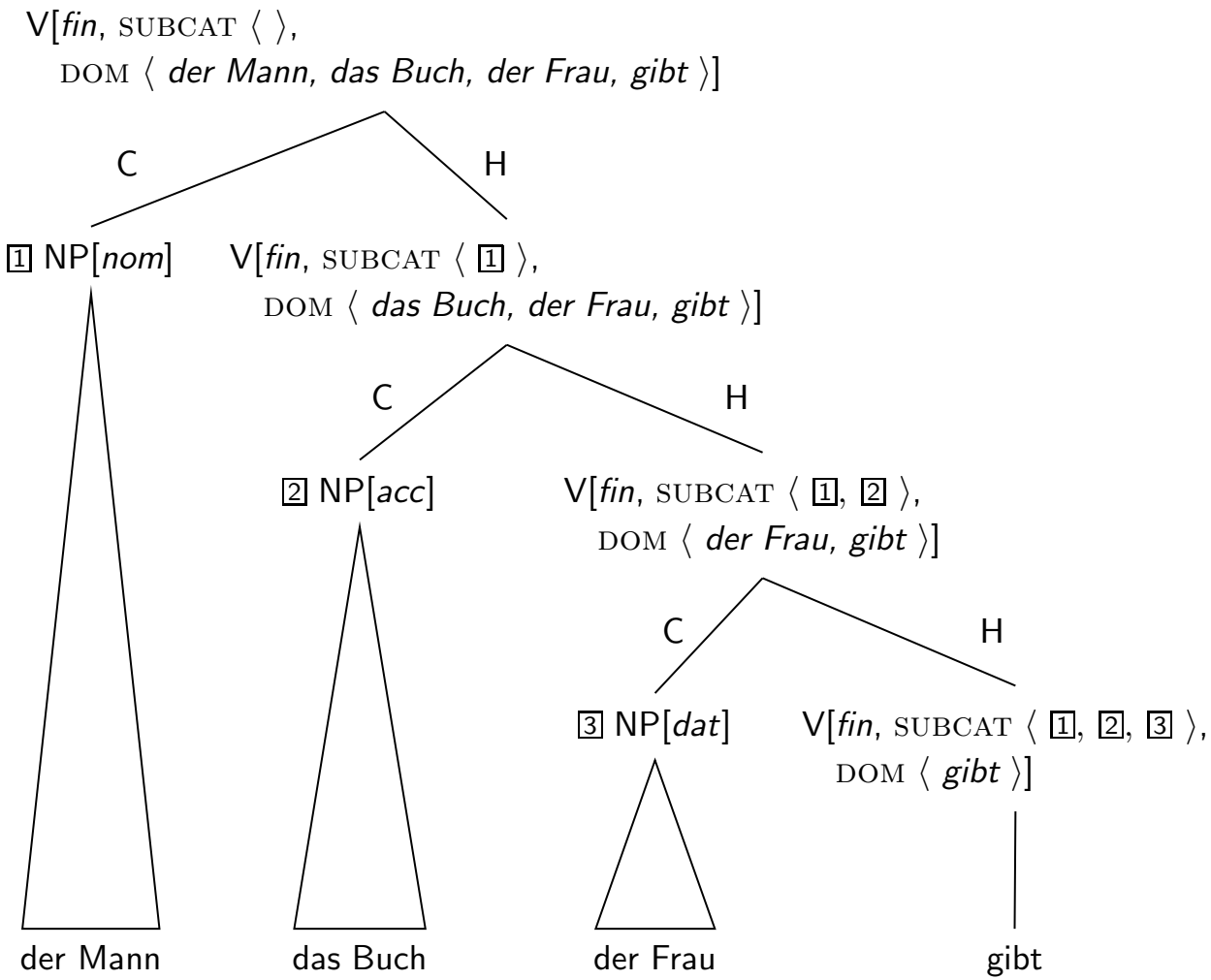
Beispiel: Kontinuierliche Konstituenten



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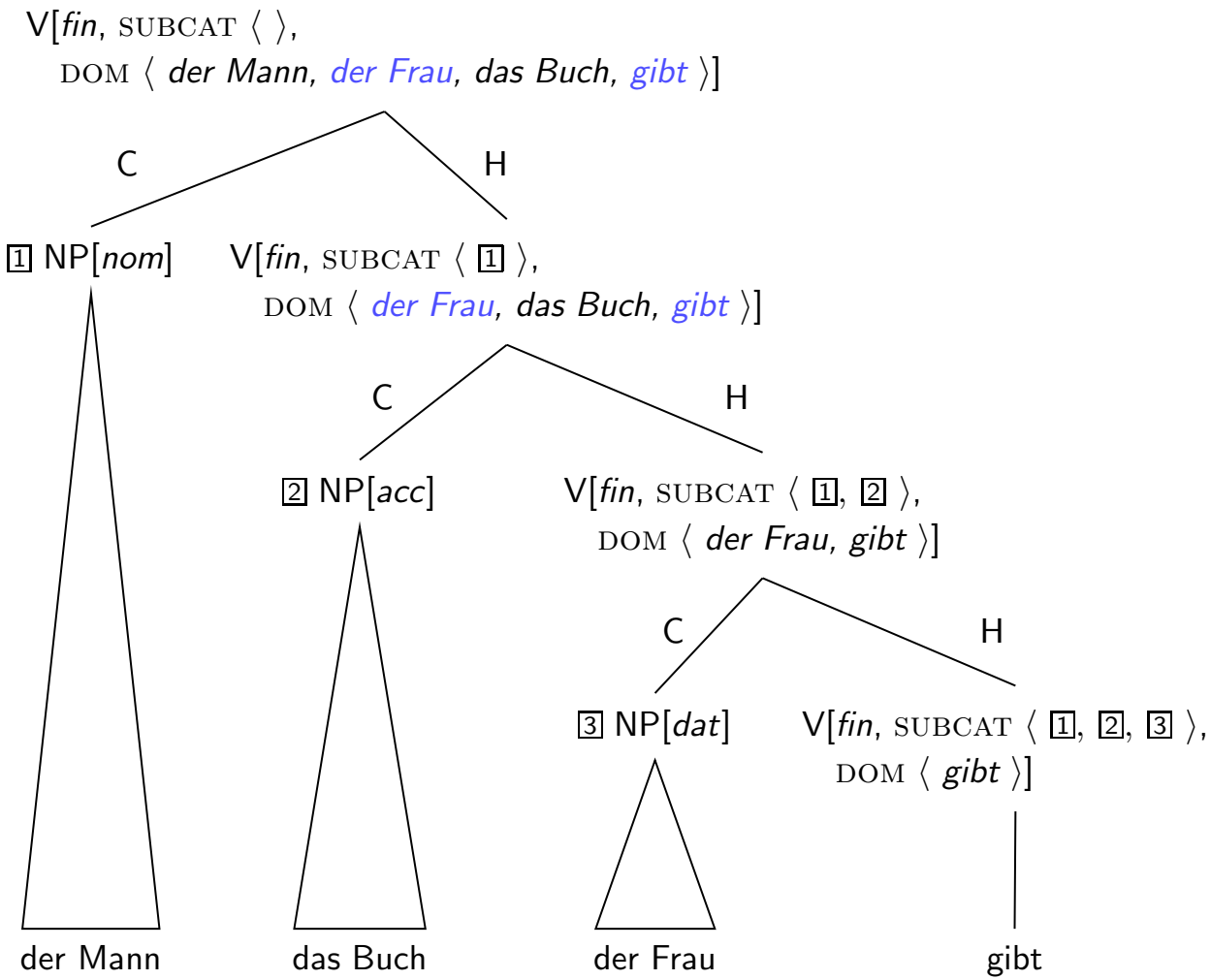
Beispiel: Diskontinuierliche Konstituenten / Anordnung im Mittelfeld



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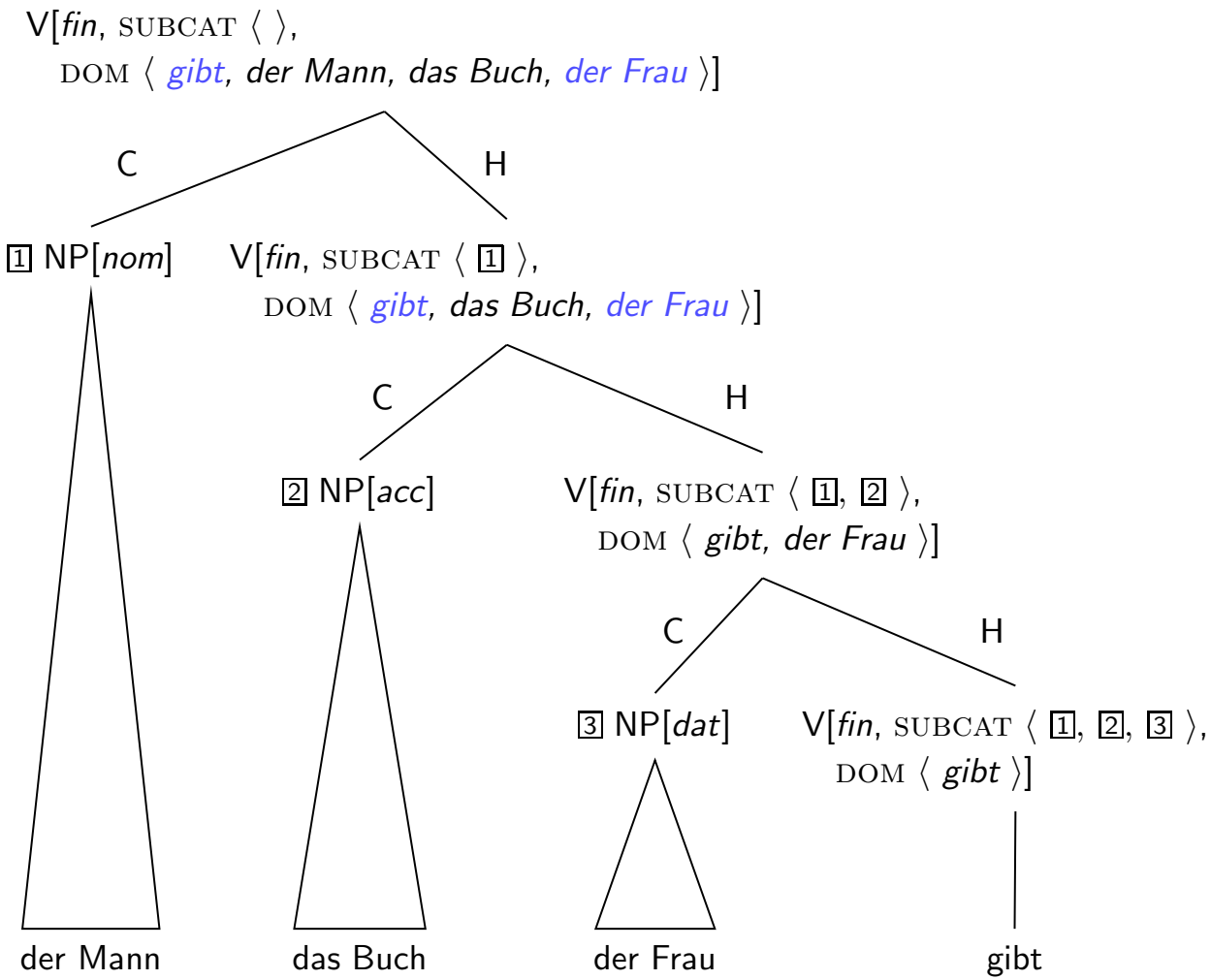
Beispiel: Diskontinuierliche Konstituenten / Verberststellung



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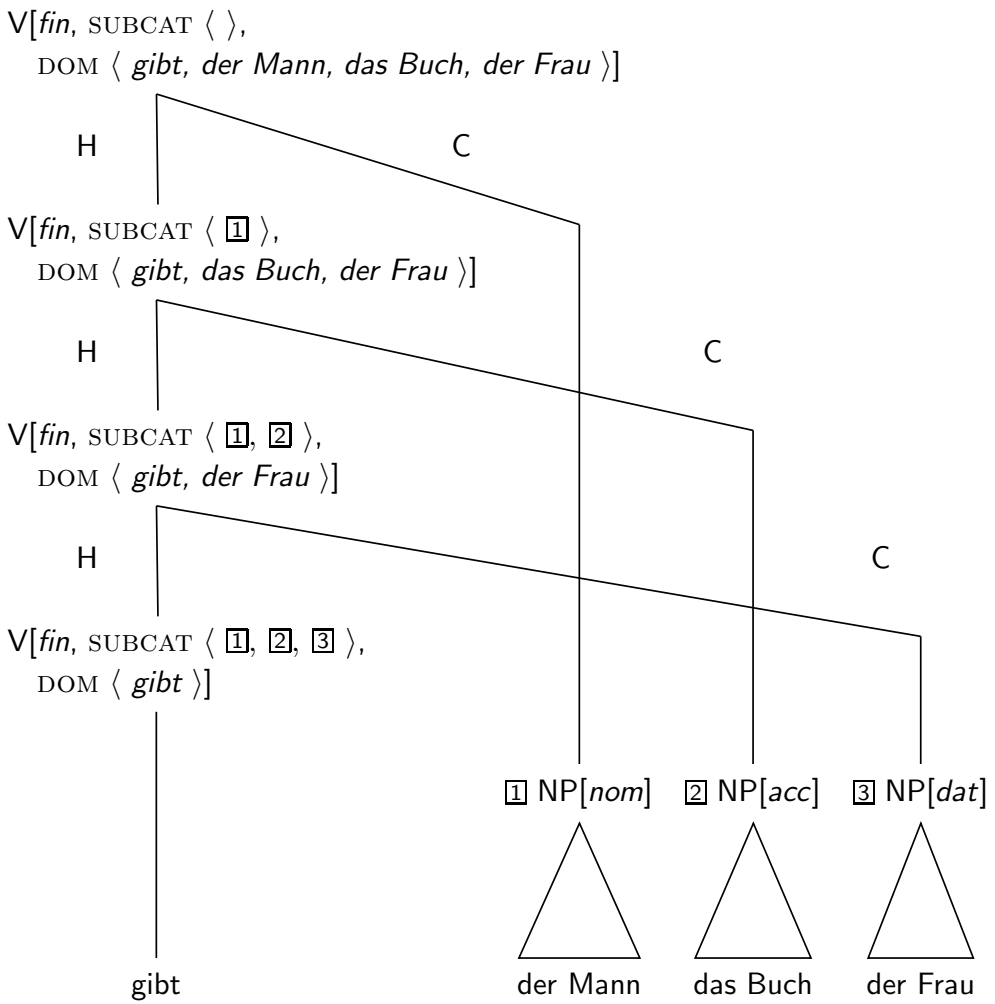
Verbstellung mit den Konstituenten in Oberflächenreihenfolge



Eine Anmerkung

- die Dominanzstrukturen für die Sätze in (14) sind identisch:

  (14) a. der Mann der Frau das Buch gibt.
  b. der Mann das Buch der Frau gibt.
  c. Gibt der Mann das Buch der Frau.

- Nur die Anordnung der Elemente in den Stellungsdomänen ist anders.

Probleme der Linearisierungsansätze: Teilprojektionen im VF

- Man kann nicht ohne weiteres erklären, wieso sowohl Dativobjekte als auch Akkusativobjekte mit dem Verb im Vorfeld stehen können.

(15) a. Den Wählern erzählen sollte man diese Geschichte nicht.
b. Märchen erzählen sollte man den Wählern nicht.

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- In Linearisierungsgrammatiken muß man die Argumente eines Kopfes in einer festen Reihenfolge sättigen, da die Sättigungsreihenfolge von der Oberflächenreihenfolge unabhängig ist.

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- mit SUBCAT list ⟨ NP[*nom*], NP[*acc*], NP[*dat*] ⟩ nur (15a) analysierbar (15b) bleibt unanalysierbar, da *Märchen* erst mit *erzählen* kombiniert werden kann, wenn die Kombination mit dem Dativobjekt erfolgt ist.

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- Kathol (2000): keine Reihenfolge für Objekte in der SUBCAT list Damit sind Sätze in (15) analysierbar, aber (16) hätte zwei Analysen:

  (16) daß er den Wählern Märchen erzählt

Teilprojektionen im VF

- Für den hier vorgestellten Ansatz sind Sätze in (17) unproblematisch:

  (17) a. Den Wählern erzählen sollte man diese Geschichte nicht.
  b. Märchen erzählen sollte man den Wählern nicht.

  Das Kopf-Argument-Schema läßt Kombination von Argumenten mit ihrem Kopf in beliebiger Reihenfolge zu.

Scheinbar mehrfache Vorfeldbesetzung

- Es gibt im Deutschen Sätze mit mehreren Konstituenten im Vorfeld (Müller, 2003; Müller, Bildhauer and Cook, 2012):

(18) a. [Zum zweiten Mal] [die Weltmeisterschaft] errang Clark 1965. (Beneš, 1971)

b. [Der Universität] [zum Jubiläum] gratulierte auch Bundesminister Dorothee Wilms, die in den fünfziger Jahren in Köln studiert hatte. (Kölner Universitätsjournal, 1988, S. 36, zitiert nach Dürscheid, 1989, S. 87)

c. [Trocken] [durch die Stadt] kommt man am Wochenende auch mit der BVG. (taz, 10.07.1998, S. 22)

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- Diese Sätze sind parallel zur Partiellen Voranstellung mit Verb, wenn man über einen leeren Verbkopf verfügt. (Müller, 2005b)

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Probleme für alle Analysen ohne leeres Verb

- Man kann nicht motivieren,
  daß mehrere Konstituenten im Vorfeld eine gemeinsame Konstituente bilden.

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Probleme für alle Analysen ohne leeres Verb

- Man kann nicht motivieren,
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- Wetta (2011) nimmt an, dass im Vorfeld einfacher Sätze mehrere Konstituenten stehen können, die zusammen als ein Objekt in die übergeordnete Domäne eingesetzt werden. Fernabhängigkeiten analysiert er mit SLASH.
  Problem: Scheinbar mehrfache Vorfeldbesetzung kann auch Satzgrenzen kreuzen. Fanselow (1993, p. 67):

  (19) a. Der Maria das Buch wenn du denkst daß du geben darfst bist du schön blöd.

  b. Der Maria einen Ring glaub ich nicht daß er je schenken wird.

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