The phrase-structural diversity of periphrasis: a lexicalist account

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The Theoretical Issue

Words meeting the morphological criteria for periphrastic inflection
(Ackerman and Stump, 2004) may be realized in diverse
phrase-structure configurations (Ackerman and Webelhuth, 1998):

(1) Paul [$_{\mathrm{VP}}$ has [$_{\mathrm{VP}}$ bought this book]].   (English)

(2) dass Paul dieses Buch [$_{\mathrm{VC}}$ gekauft hat].   (German)

(3) Paul [$_{\mathrm{VP}}$ a acheté ce livre].   (French)

(4) Ion [$_{\mathrm{VP}}$ [$_{\mathrm{VC}}$ a cumpărat] această carte].   (Romanian)

Goal and Approach

Our goal:

To design a theory of the morphology-syntax interface of periphrasis that captures the paradigm effects of periphrastic predicates while allowing them to be realized in different phrase-structural configuations.

Properties of our approach:

1. Lexicalist (HPSG) and realizational

2. Periphrasis as extended valence

3. Inflectional rules of periphrasis map lexemes into words which

   1. borrow their phonology from the paradigm of another lexeme and
   2. have an extra syntactic exponent

4. The inflectional rules fill paradigm slots: source of paradigmatic effects

5. Languages (constructions) differ in how they realize the extra syntactic exponent in valence and phrase structure schemas: source of phrase-structural diversity.

English: VP-complements but no verb cluster (Gazdar et al., 1982)
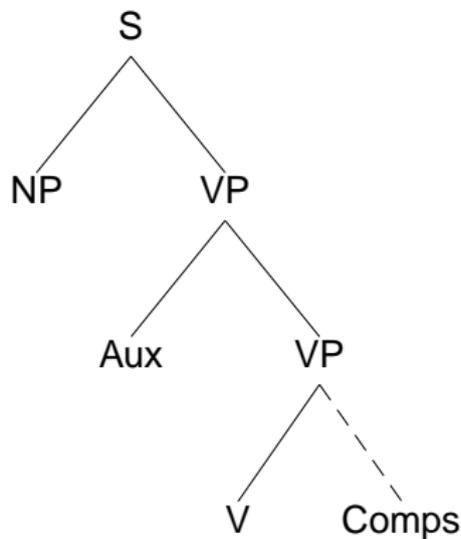
English: VP-complements but no verb cluster

Tense auxiliaries behave like modal auxiliaries in that they embed a VP complement:

(5) Paul [$_{VP}$ may [$_{VP}$ buy this book]].
(6) Paul [$_{VP}$ will [$_{VP}$ buy this book]].

VP-preposing:

(7) a. I was afraid that Paul would buy this book and
    b. [$_S$ [$_{VP}$ buy this book]$_i$ he may t$_i$].
    c. * [$_S$ [$_{VP}$ buy]$_i$ he may t$_i$ this book].

(8) a. I was afraid that Paul would buy this book and
    b. [$_S$ [$_{VP}$ buy this book]$_i$ he will t$_i$].
   c. * [$_S$ [$_{VP}$ buy]$_i$ he will t$_i$ this book].

Clefts:

(9) a. [$_S$ It is [$_{VP}$ buy this book]$_i$ that he may t$_i$].
   b. * [$_S$ It is [$_{VP}$ buy]$_i$ that he may t$_i$ this book].

(10) a. [$_S$ It is [$_{VP}$ buy this book]$_i$ that he will t$_i$].
    b. * [$_S$ It is [$_{VP}$ buy]$_i$ that he will t$_i$ this book].

German: Verb clusters (Hinrichs and Nakazawa, 1989, 1990, 1994)
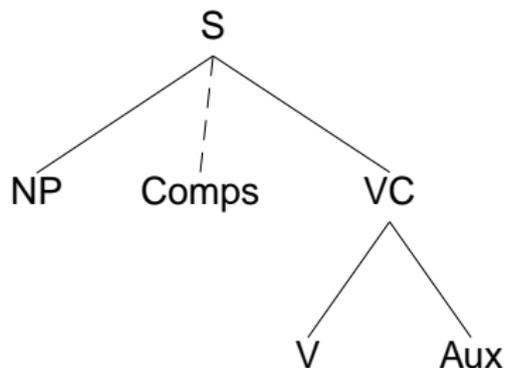
German: Verb clusters

Tense auxiliaries behave like modal auxiliaries in forming a verb cluster with their verbal complement:

(11) weil Paula das Buch [$_{\mathrm{VC}}$ kaufen muss]
     bec. Paula the book   buy   must

'because Paula must buy the book'

(12) weil Paula das Buch [$_{\mathrm{VC}}$ kaufen wird]
     bec. Paula the book   buy   will

'because Paula will buy the book'

German: Verb clusters

The verb cluster forms its own word order domain:

(13) weil jemand   das Buch [$_{VC}$ kaufen muss]
     bec. someone the book   buy   must
     'because someone must buy the book'

(14) weil das Buch jemand   [$_{VC}$ kaufen muss]
     bec. the book someone   buy   must
     'because someone must buy the book'

(15) * weil jemand   [$_{VC}$ kaufen das Buch muss]
      bec. someone   buy   the book must
      'because someone must buy the book'

German: Verb clusters

The verb cluster forms its own word order domain:

(16) weil jemand das Buch [$_{VC}$ kaufen wird]
     bec. someone the book   buy   will
     'because someone must will the book'

(17) weil das Buch jemand [$_{VC}$ kaufen wird]
     bec. the book someone   buy   will
     'because someone will buy the book'

(18) * weil jemand [$_{VC}$ kaufen das Buch wird]
       bec. someone   buy   the book will
       'because someone will buy the book'

German: Verb clusters
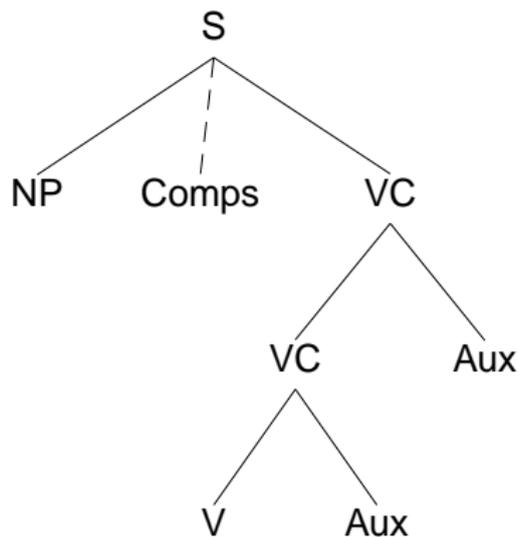
German: Verb clusters, Evidence

The complement of the auxiliary can be preposed without its dependents:

(19) Kaufen$_i$ wird$_k$ Paula das Buch [$_{\mathrm{VC}}$ t$_i$ müssen t$_k$]
  buy   will Paula the book   must

  'Paula will have to buy the book'

(20) Gekauft$_i$ wird$_k$ Paula das Buch [$_{\mathrm{VC}}$ t$_i$ haben t$_k$]
  bought   will   Paula the book   have

  'Paula will have bought the book'

German: Verb clusters, Evidence

Verb clusters can be preposed:

(21) [$_{\mathrm{VC}}$ Kaufen müssen]$_i$ wird$_k$ Paula das Buch [$_{\mathrm{VC}}$ t$_i$ t$_k$]
      buy   must   will   Paula the book

    'Paula will have to buy the book'

(22) [$_{\mathrm{VC}}$ Gekauft haben]$_i$ wird$_k$ Paula das Buch [$_{\mathrm{VC}}$ t$_i$ t$_k$]
      bought have   will   Paula the book

    'Paula will have bought the book'

Complex Predicates in Romance (Abeillé and Godard, 2010)

Criterion for monoclausality and hence for the presence of complex predicates: **clitic climbing.**

(23) a. Il veut boire le vin.
          He wants drink the wine

          'He wants to drink the wine.'

    b. Il a bu le vin.
          He has drunk the wine

          'John drank the wine.'

No complex predicate: the clitic appears on the main verb:

(24) a. Il veut le-boire.
          He wants it-drink

          'John wants to drink it.'

    b. * Il a le-bu.
          He has it-drink

          'He drank it.'

Complex predicate: the clitic appears on the auxiliary:

(25) a. * Il le veut boire.
          He it-wants drink

    b. Il l'a bu.
          He it-has drunk

Tense auxiliaries

(26) * Ion   nu a-l   văzut. (Ro.)
      John not has-him seen
      'John has not seen him.'

(27) * Ion   nu a   văzutu-l. (Ro.)
      John not has seen-him
      'John has not seen him.'

(28)   Ion   nu l-a   văzut. (Ro.)
   John not him-has seen
      'John has not seen him.'

Conclusion: the auxiliary and the main verb are phrase-structural sisters

V(P)

Aux   V
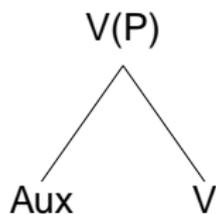
But there is evidence for a distinction
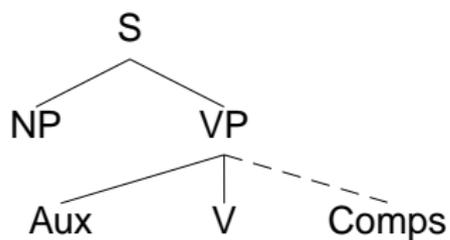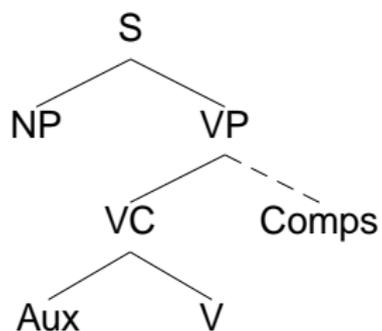
Evidence for a flat VP in French

The participle cannot be preposed with its complements leaving behind the auxiliary, because in the flat structure the smallest constituent containing the participle and its complements also contains the auxiliary:

(29) * [$_{VP}$ Lu   ce livre], vraiment, Jean n'a   pas. (Fr.)
         read this book truly   John NE-has not

    'John truly has not read this book.'

(30) * [$_{VP}$ Lu   ce livre], vraiment, Jean ne l'a   pas. (Fr.)
         read this book truly   John NE it-has not

    'John truly has not read this book.'

Compare:

(31)   [$_{VP}$ Lire ce livre], vraiment, Jean ne   veut pas. (Fr.)
         read this book truly   John NE-wants not

    'John truly does not want to read this book.'

Evidence for a flat VP in French

Adverbs can generally appear between the two verbs:

(32)   Jean lui a   bien souvent généreusement donné des
       John him has well often   generously   given some
       disques. (Fr.)
       records

   'Quite often, John has generously given him some records.'

Remember that this is not possible in German, because this language
has a verb cluster:

(33) * weil Petra angerufen glücklicherweise hat. (Ge.)
        bec. Petra called   fortunately   has

     'because Petra fortunately has called.'

Evidence for a verb cluster in Romanian

The participle cannot be preposed with its complements leaving behind the auxiliary, because in the structure with the verb cluster the smallest constituent containing the participle and its complements also contains the auxiliary:

(34) * [$_{\text{VP}}$ Citit această carte], Ion nu a, în realitate. (Ro.)
    read this   book   John not has truly

   'John truly has not read this book.'

Evidence for a verb cluster in Romanian

The participle and its complements cannot be coordinated without the auxiliary:

(35) * Ion a cumpărat această carte şi citit primul capitol (Ro.)
John has bought this book and read first chapter

'John has bought this book and read the first chapter.'

# Evidence for a verb cluster in Romanian

Adverbs cannot generally appear between the auxiliary and the main verb:

(36) * Maria îi   va eventual asculta. (Ro.)
      Maria them will eventually listen

   'Maria will eventually listen to them.'

The central argument

- Different languages use different phrase structure configurations with 'tense auxiliaries'

English	German, Romanian	French
S	S	S

```
   English              German, Romanian            French
      S                        S                       S
      |                        ⋮                       |
  ··· VP ···               ··· VC ···              ··· VP ···
     ╱ ╲                      ╱ ╲                     ╱   ╲
   Aux   VP                  V   Aux                 ╱     ╲
        ╱ ╲                                    ··· Aux ··· V ···
       ╱   ╲
    ··· V ···
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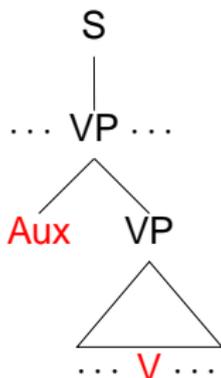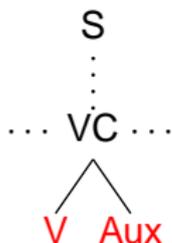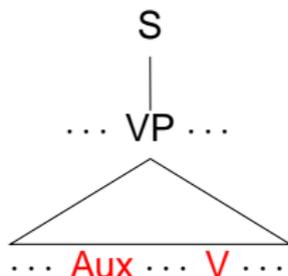
- Yet the constructions show the same level of paradigm integration, motivating a periphrastic analysis.
- Thus a good theory of periphrasis should allow one to abstract away from phrase structure details.

Periphrasis as syntactic exponence

- Blevins (to appear), building on (Ackerman and Webelhuth, 1998)

$$
\begin{bmatrix}
\text{VP} & \\
\text{LID} & \textit{leave} \\
\text{VFORM} & \textit{prs} \\
\text{PRF} & +
\end{bmatrix}
$$

H

$$
\begin{bmatrix}
\text{V} & \\
\text{LID} & \textit{have} \\
\text{VFORM} & \textit{prs} \\
\text{PRF} & -
\end{bmatrix}
\qquad
\begin{bmatrix}
\text{V} & \\
\text{LID} & \textit{leave} \\
\text{VFORM} & \textit{pst-prt} \\
\text{PRF} & -
\end{bmatrix}
$$

has   left
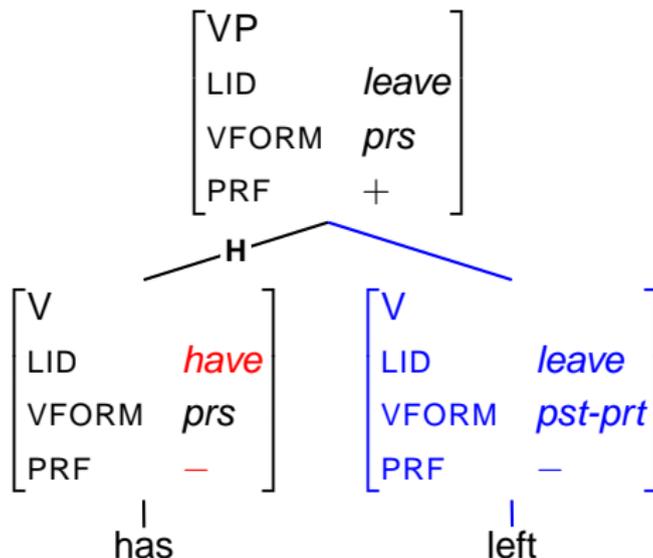
LID is a unique LEXEME IDENTIFIER (Spencer, 2005; Sag, 2007)

- Our proposal: this should be lexicalized
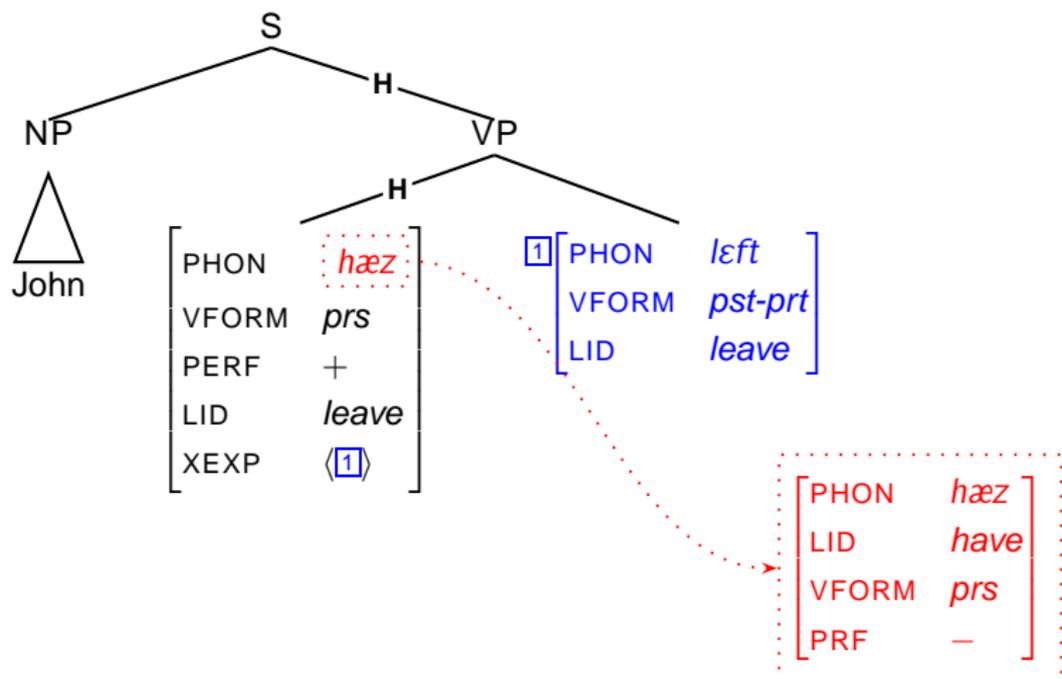
The framework: HPSG+PFM

- We use (slightly reorganized) HPSG grammars, combined with a PFM approach to inflection.
- There is a single synthetic inflection rule, which calls a paradigm function to output the word's phonology.

(37) Definition of *synthetic-infl*:

$$
\begin{bmatrix} lexeme \\ \text{SYN} \quad \boxed{1} \\ \text{SEM} \quad \boxed{2} \end{bmatrix}
\mapsto
\begin{bmatrix} word \\ \text{PHON} \quad \textbf{pdgm-fn(}\boxed{3},\boxed{4}\textbf{)} \\ \\ \text{SYN} \quad \boxed{1}\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{LID} & \boxed{3} \\ \text{MORSYN} & \boxed{4} \end{bmatrix} \end{bmatrix} \\ \\ \text{SEM} \quad \boxed{2} \end{bmatrix}
$$
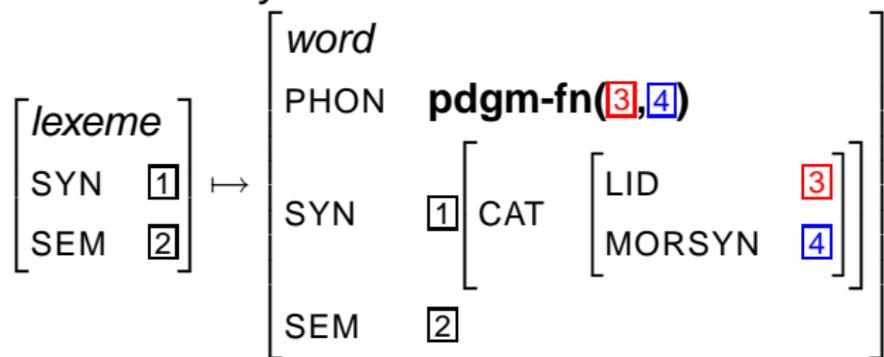
A sample rule of periphrasis

- Rules of periphrasis are *lexeme* ↦ *word* rules which:
  - Refer the paradigm function to the inflection of some other lexeme
  - Add a requirement for extra exponents

$$
\begin{bmatrix} lexeme \\ \text{SYN} \begin{bmatrix} \text{CAT} & \boxed{1} \\ \text{XEXP} & \langle\,\rangle \end{bmatrix} \\ \text{SEM} \quad \boxed{2} \end{bmatrix} \mapsto
\begin{bmatrix} word \\ \text{PHON} \quad \textbf{pdgm-fn}\left(have, \begin{bmatrix} \text{VFORM} & \boxed{4} \\ \text{PRF} & - \end{bmatrix} \right) \\[2ex]
\text{SYN} \begin{bmatrix} \text{CAT} \quad \boxed{1} \begin{bmatrix} \text{LID} & \boxed{3} \\ \text{MORSYN} \begin{bmatrix} \text{VFORM} & \boxed{4} \\ \text{PRF} & + \end{bmatrix} \end{bmatrix} \\[3ex] \text{XEXP} \quad \left\langle \begin{bmatrix} \text{LID} & \boxed{3} \\ \text{MORSYN} \begin{bmatrix} \text{VFORM} & pst\text{-}pcp \\ \text{PRF} & - \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \\[2ex]
\text{SEM} \quad \boxed{2} \end{bmatrix}
$$
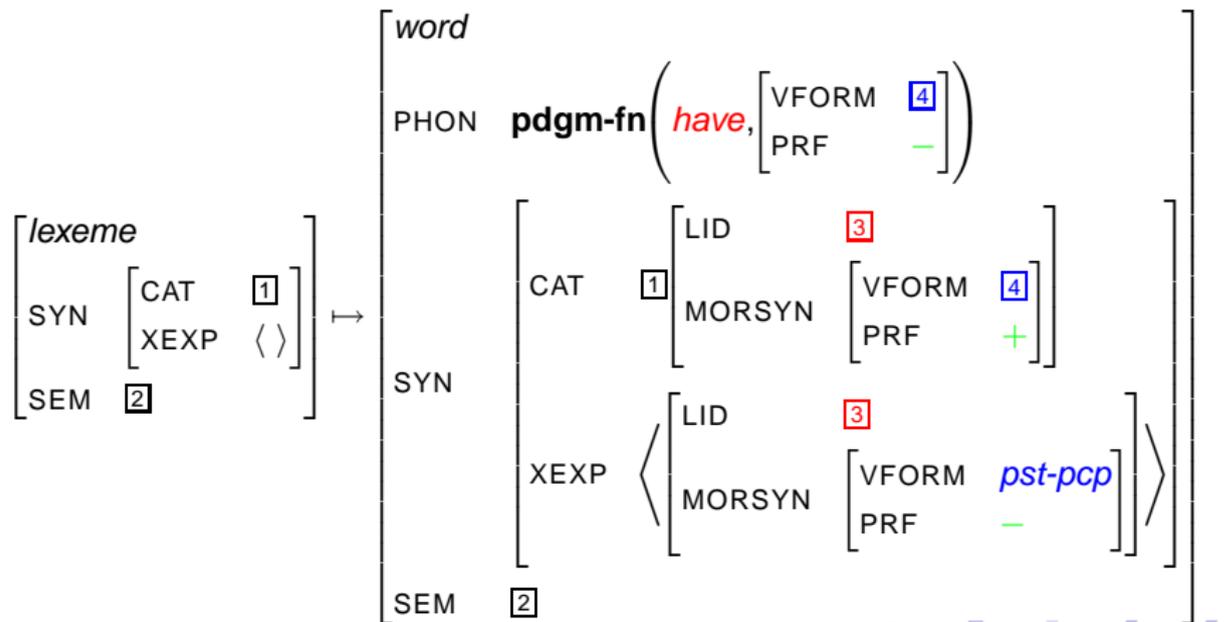
Exponence as complementation

- In languages/constructions where periphrasis relies on head-complement structures, the XEXP feature constrains valence.
  - The head is a raising verb taking the extra exponent as a complement.
  - Any complements the XEXP might have become complements of the head, through argument attraction.
  - Whether that happens or not depends on independent syntactic properties of the language.

$$
\begin{bmatrix}
\text{XEXP} & \left\langle \boxed{2}\begin{bmatrix} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{3} \end{bmatrix} \right\rangle \\
\text{SUBJ} & \boxed{1} \\
\text{COMPS} & \langle \boxed{2} \rangle \oplus \boxed{3}
\end{bmatrix}
$$
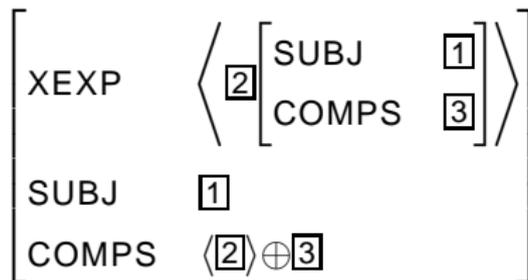
English: constraints

- In English, there is a single, simple head complement schema.

$$
\begin{bmatrix} phrase \\ \text{SUBJ} & \boxed{0} \\ \text{COMPS} & \langle\,\rangle \\ \text{LIGHT} & - \end{bmatrix}
$$

H

$$
\begin{bmatrix} sign \\ \text{SUBJ} & \boxed{0} \\ \text{COMPS} & \langle\boxed{1},\ldots\boxed{n}\rangle \\ \text{LIGHT} & + \end{bmatrix}
$$

$\boxed{1}$ $[\text{LIGHT} -]$ ... $\boxed{n}$ $[\text{LIGHT} -]$
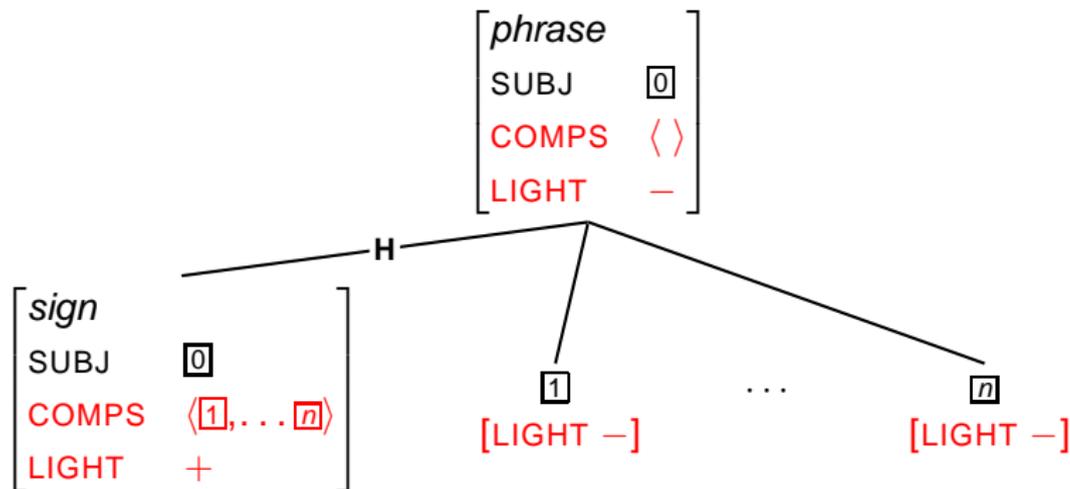
- Because of this, XEXPs need to be VPs, and give rise to nested structures.
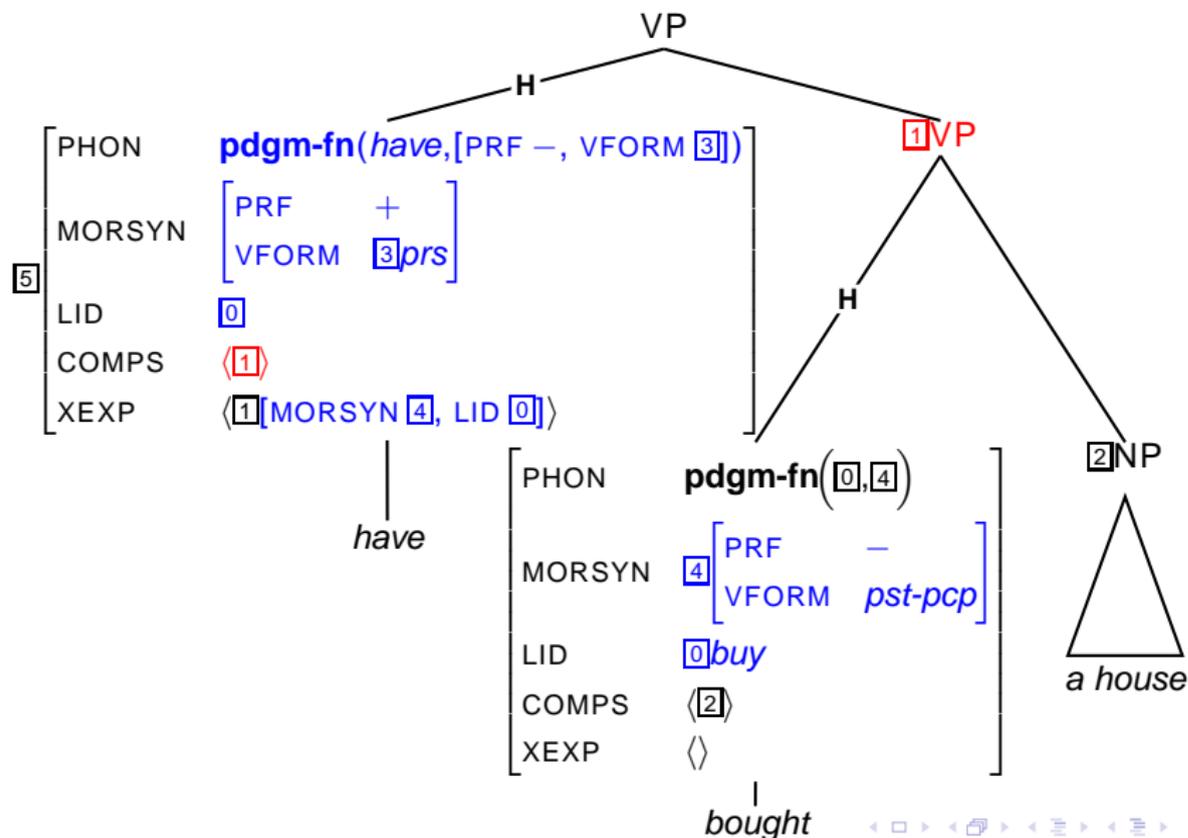
English: discussion

- The analysis extends readily to compositional combination of multiple periphrastic inflection (future, perfect, progressive)
- Can be integrated directly with a variant of Sag (2005)'s description of the English auxiliary system:
  - Most lexemes are unspecified for the AUX feature in the lexicon.
  - Synthetic forms are marked as [AUX −],
  - Periphrastic forms are marked as [AUX +]
- Synthetic/periphrastic expression of negation can be accounted for by allowing <u>not</u> to occur on XEXP under certain conditions.

German: constraints

- In German there are two distinct head complement schemas:

(phrasal complements)
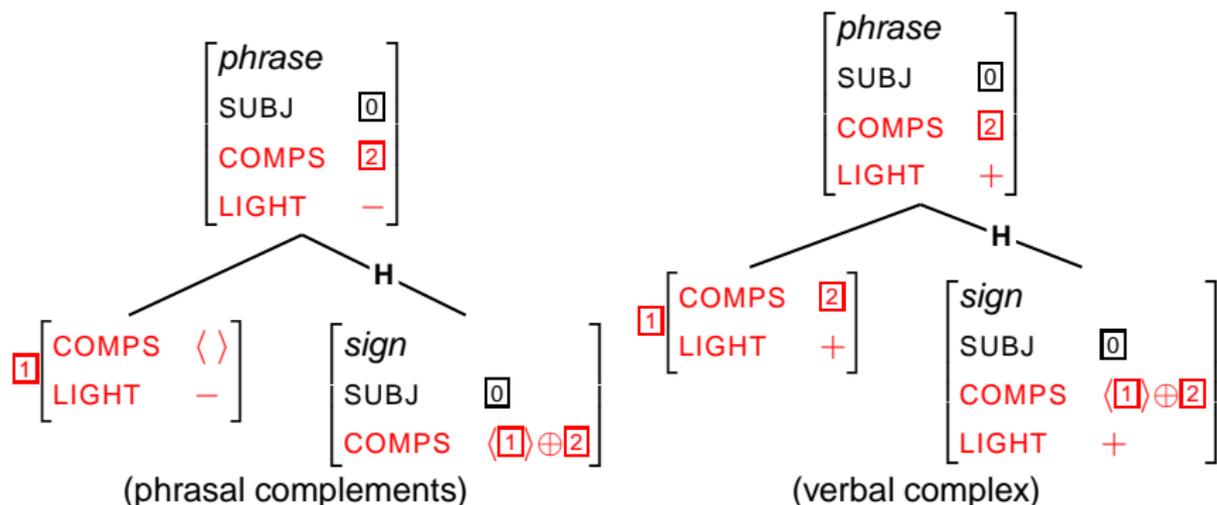
(verbal complex)

- NB: these two modes of combination are needed independently of inflection (coherent/incoherent constructions)
- Periphrastic inflection happens to rely on verbal complex formation
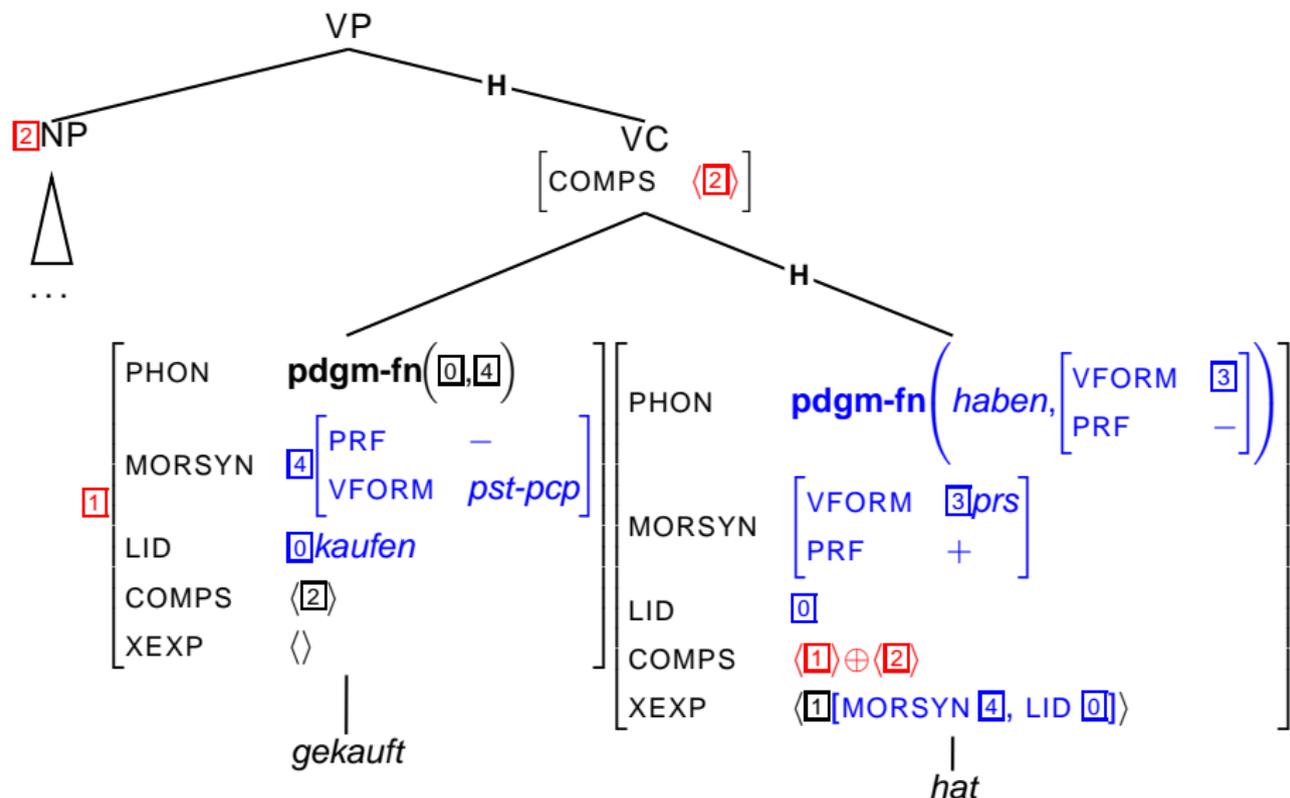
German: discussion

- The analysis extends readily to compositional combination of multiple periphrastic inflection (future, perfect)
- Auxiliary selection is reduced to inflection class: LID values are segregated in two classes that trigger different rules of periphrasis.

- French has a single head complement schema, but allows for both lexical and phrasal complements

$$
\begin{bmatrix}
\textit{phrase} \\
\text{SUBJ} & \boxed{0} \\
\text{COMPS} & \langle\,\rangle \\
\text{LIGHT} & -
\end{bmatrix}
$$

H

$$
\begin{bmatrix}
\textit{sign} \\
\text{SUBJ} & \boxed{0} \\
\text{COMPS} & \langle\boxed{1},\dots\boxed{n}\rangle \\
\text{LIGHT} & +
\end{bmatrix}
$$

$\boxed{1}$ $\cdots$ $\boxed{n}$
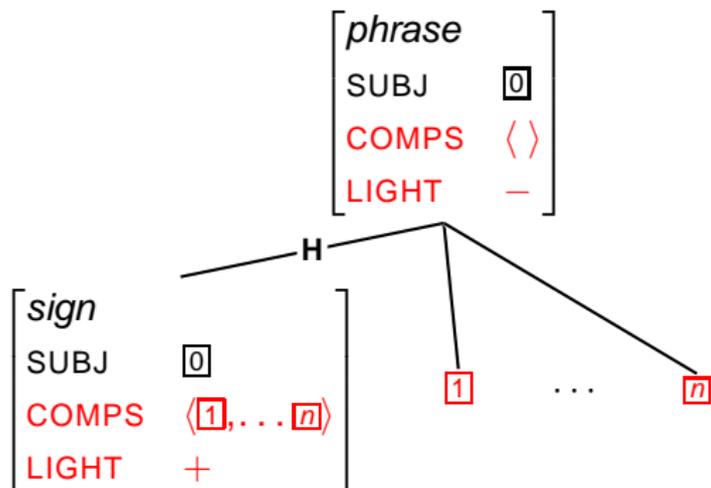
- NB: the possibility of mixed complements is needed independently of inflection (causative verbs)
- Periphrastic inflection happens to rely on lexical complements
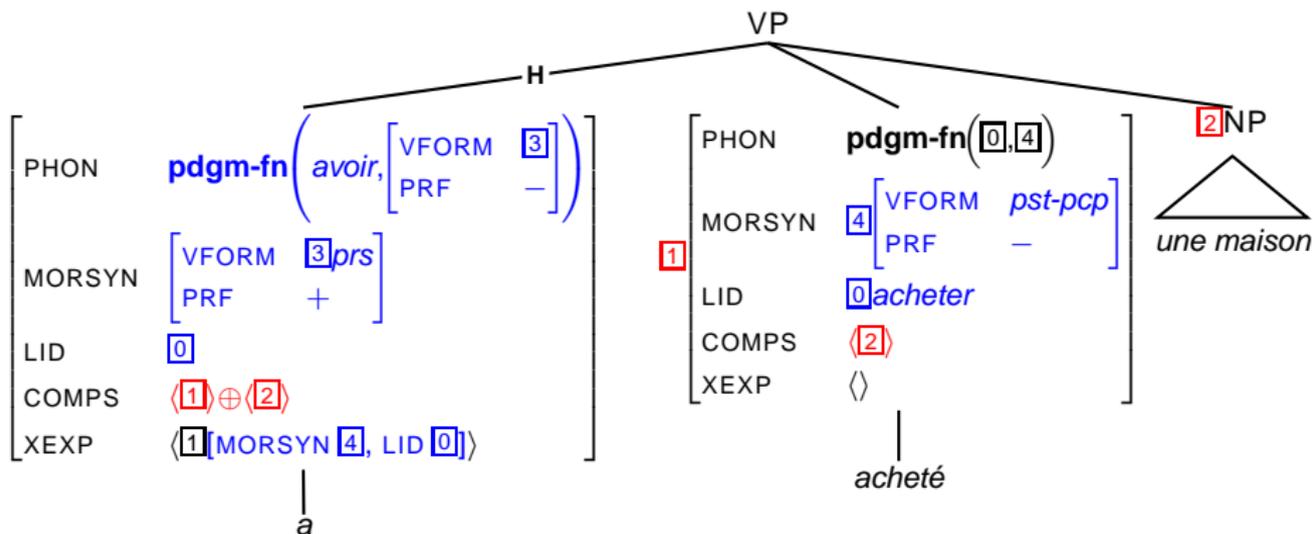
French: discussion

- The use of the simple past as a present perfect is just a matter of decoupling a bit more morphosyntactic features of the head word and of the auxiliary form providing its phonology.
- Auxiliary selection is reduced to inflection class: LID values are segregated in two classes that trigger different rules of periphrasis.
- 'Double perfect' puzzle
  - a double use of a tense auxiliary triggers a past perfect interpretation
  - however this cannot be compositional, because there is no (periphrastic) perfect form of the past participle.
  - solution: a rule of periphrasis with two elements on XEXP.

(38) Quand Paul a   eu lu   le livre, Marie est partie.
     when   Paul has had read the book, Marie is left

     'When Paul had read the book, Mary left.'

Conclusions

- Periphrases are not syntactically uniform; in particular they may be associated with various phrase structure configurations
- We defend a lexicalist approach to periphrasis: periphrasis as extended valence
  - Intuition similar to Blevins's (to appear) periphrasis as syntactic exponence.
- Such an approach says very little on the phrase-structure relation between the two elements
- Usually a language will pick among its complementation structures an appropriate choice for periphrases
- The HPSG formalization integrates directly with current hypotheses on the structure of English, German, and French.
- TO DO: extend the analysis to periphrases relying on other syntactic relations (specifier, adjunct)

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