Lexicon Formalisms

HPSG lexicon

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Outline

HPSG: From a linguistic perspective

HPSG: From a formal perspective

Signature

Lexicon

Phrases

Summary
Outline

HPSG: From a linguistic perspective

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Summary
An HPSG grammar, from a linguistic perspective, consists of

a) a **lexicon**: licensing basic words

b) **lexical rules**: licensing derived words

c) **immediate dominance (ID) schemata**: licensing constituent structure

d) **linear precedence (LP) statements**: constraining word order

e) a set of **grammatical principles**: expressing generalizations about linguistic objects
Outline

HPSG: From a linguistic perspective

HPSG: From a formal perspective

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Lexicon

Phrases

Summary
An HPSG grammar formally consists of

1. the **signature** as declaration of the domain, and
2. the **theory** constraining the domain.
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The signature of an HPSG grammar

The **signature**

- defines the ontology (‘declaration of what exists’):
  - which kind of objects are distinguished, and
  - which properties of which objects are modeled.
- consists of
  - the **type hierarchy** (or sort hierarchy) and
  - the **appropriateness conditions**, defining which type has which appropriate attributes (or features) with which appropriate values.
Signature: some examples

Signs

```
[sign
 PHON list(phonstring)
 SYNSEM synsem]
```

Part of speech

```
part-of-speech
```

- adj
- adv
- det
- noun
- prep
- verb
Outline

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Summary
The Lexicon

The basic lexicon is defined by the *Word Principle* as part of the theory. It is an implicational statement defining which of the ontologically possible words are grammatical:

\[
\text{word} \rightarrow \text{lexical-entry}_1 \lor \text{lexical-entry}_2 \lor \ldots
\]

*with each of the lexical entries being descriptions, e.g.*:
An example lexicon

word →

\[
\begin{array}{c}
\text{PHON } <\text{drinks}> \\
\text{CAT} \\
\text{HEAD} [\text{verb} [\text{VFORM } fin]] \\
\text{SUBCAT} \langle \text{NP}[\text{nom}]^1 [3rd,sing], \text{NP}[\text{acc}]^2 \rangle \\
\text{drink'} \\
\text{CONT} \langle \text{DRINKER}^1, \text{DRUNKEN}^2 \rangle \\
\text{PHON } <\text{drink}> \\
\text{CAT} \\
\text{HEAD} [\text{verb} [\text{VFORM } fin]] \\
\text{SUBCAT} \langle \text{NP}[\text{nom}]^1 [\text{nom}, \text{NP}[\text{acc}]^2 \rangle \\
\text{drink'} \\
\text{CONT} \langle \text{DRINKER}^1, \text{DRUNKEN}^2 \rangle \\
\end{array}
\]
Outline

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The structure of a simple phrase
Outline

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Summary
Summary: lexicon and its components

- lexical entry in AVM notation
- typed feature structure: of type *word*
- features: PHON, SYNSEM
- synsem structure: LOC and NONLOC
- LOC-value: AVM with CAT, CONT, CONTEXT
- CAT-value of type *cat*, features: HEAD, SUBCAT
- CONT-value of type *semantic relation*, features=corresponding semantic roles
- CONTEXT-value: a *psoa* . . . a *partial state of affairs* of *situation theory*