Overview of Head-driven Phrase Structure Grammar

• Development of the framework
• Characteristics of the theory
• Relevance for this course
Development of the framework

- Formal description of rules of syntax (Chomsky 1957, 1964)

  Mathematical foundations

- Generalizations over phrase structure: transformations (Ross 1968)

  Constraints on transformations


  Feature structures (cf. phonology)

  Minimizing abstract structures to express generalizations

- Generalized phrase structure grammar (Gazdar 1979, GKPS 1984)

  WYSIWYG syntax

  Extension of X-bar syntax

  Metarules over phrase structure rules to express generalizations

- HPSG (Pollard and Sag 1987, 1994)

  Far fewer syntactic rules, no metarules

  More formal semantic composition
Characteristics of HPSG

• A lexical head for most phrases
• A small number of highly schematic phrase structure rules
• A rich lexicon organized as a hierarchy of typed feature structures
• Principles that govern propagation of features in phrase structure
• Tight integration of syntax and semantics
Headed phrases

- Lexical head determines properties of the phrase it projects
  
  *The old brown *dog* near the door is barking.*
  
  *Kim thought the cat *chased* the *dog*.*

- Some properties from the head are preserved, but not all
  
  Agreement on nouns and verbs in English, but not always valence
Schematic phrase structure rules

• Head-specifier rule
  
  those dogs
  
  dogs barked

• Head-complement rule
  
  chased the cat
  
  gave the cat to the aardvark

• Head-modifier rule
  
  the cat near the dog
  
  the large cat

• Filler-head rule
  
  those dogs I like
Lexicon as type hierarchy

• Complementation
  
  *Kim told Sandy to leave*
  
  *Kim promised Sandy to leave*
  
  *Kim made Sandy leave*

• Specialization
  
  *The dog chased the cat*
  
  *It chased the cat*
  
  *Rover chased the cat*

• Cross-categorial regularities
  
  *Kim is really pleasant to talk to*
  
  *Kim is a real pleasure to talk to*
Feature principles

• Head Feature Principle
• Subcategorization Principle
• Semantics Principle
• Non-local Feature Principle
• Anaphoric Binding Principles
Relevance for this course

• X-bar derived notions of specifier and complements
• Typed feature structures to define words and phrases
• Schematic phrase structure rules
• Linguistic principles expressed in feature structures
• Generalizations using types
• Semantic composition via unification
Additional issues

• Bidirectional grammars: both parsing and generation
• Efficiency in processing
• Explicit determinations of grammaticality
• Identification of relevant linguistic phenomena (by example sentences)