

# HG4041 Theories of Grammar

## Sign-Based Construction Grammar

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Lecture 16

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# Overview

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- Chapter 16 framework (same analyses, different underlying system)
- General wrap up

# Construction Grammar (CxG)

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- A family of grammars based on the idea that
  - Knowledge of a language comes from **form and function pairings**
  - **function** includes meaning, content, or intent (both semantics and pragmatics)
  - **form** includes phonology, syntax, orthography
- CxG grew out of generative semantics and cognitive linguistics, by researchers such as Charles Fillmore, Paul Kay and George Lakoff
- Instead of language as a grammar+lexicon, think of it as a structured network of families of constructions

# Construction Grammars

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- **Sign-based-Construction Grammar** (Berkeley Construction Grammar)  
unification-based framework (with computational implementation)
- **Goldbergian/Lakovian Construction Grammar**  
psychologically plausible
- **Radical Construction Grammar**  
syntactic categories, roles, and relations are not universal:  
they are not only language-specific, but also construction specific
- **Embodied Construction Grammar**  
relates constructions to embodiment and sensorimotor experience
- **Fluid Construction Grammar**  
learns grammars from the environment (with computational implementation)

# Overview of Differences (SBCG vs HPSG)

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- Multiple Inheritance
- Signs
- Grammar rules form a hierarchy — many more rules
- Every tree node has its own phonology
- Many principles become constraints on grammar rules
- The definition of well-formedness is simplified

Look at Ian Sag's slides (from p25) if there is time after the presentations.

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# Wrap Up

## Big picture: Our model

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# HPSG

## Head-driven Phrase Structure Grammar

- Describes a set of strings
- Associates semantic representations (and trees) with well-formed strings
  - Is stated in terms of declarative constraints
    - ... which are order-independent
  - Locates most constraints 'in the lexicon'
  - Is stated in a precise fashion

## Parts of our model

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- Type hierarchy (lexical types, other types)
- Phrase structure rules
- Lexical rules
- Lexical entries
- Grammatical principles
- Initial symbol



## Universals in our model

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- SHAC
- Binding theory
- Head-complement/-specifier/-modifier
- Head Feature Principle
- Valence Principle
- Semantic Compositionality Principle
- ...

# Design Goals of our Model

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- Precise
- Robust
- Psychologically Plausible
- Computationally Tractable

# Course overview

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- Survey of some phenomena central to syntactic theory
- Introduction to the HPSG framework
- Process over product: How to build a grammar fragment
- Value of precise formulation (and of getting a computer to do the tedious part for you!)

# Reflection

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- What was the most surprising thing in this class?
- What do you think is most likely wrong?
- What do you think is the coolest result?
- What do you think you're most likely to remember?
- How do you think this course will influence your work as a (computational) linguist?

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