HG4041 Theories of Grammar

Sign-Based Construction Grammar

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Lecture 16
Location: HSS SR3

Schedule

Lec.	Topic		Reading	Problems
1	Introduction (HPSG)		SWB 1–2	1:1
2	Feature Structures		SWB 3	3:1, 3
3	Complex Feature Values		SWB 4	4:1, 5, 6
4	Semantics		SWB 5–6	5:1; 6:1, 3, 4, 5
5	Binding		SWB 7	7:1, 2
6	The Structure of the Lexicon	**Mid-term**	SWB 8	8:1, 2, 6
7	Realistic Grammar		SWB 9	9:1
8	Passive		SWB 10	10: 1, 3
9	Dummies and Idioms		SWB 11	11:1, 3, 4
10	Raising and Control		SWB 12	12:1, 2, 4, 6
11	Long Distance Dependencies	**Final**	SWB 14	14: 1, 2, 3
12	Wrap-up	**Project Presentations**	SWB 16	
	Research Paper due two weeks after presentations			

Overview

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

Construction Grammar (CxG)

- 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

- **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)

- 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

Wrap Up

Big picture: Our model

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

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

Universals in our model

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

Design Goals of our Model

- Precise
- Robust
- Psychologically Plausible
- Computationally Tractable

Course overview

- 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

- 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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