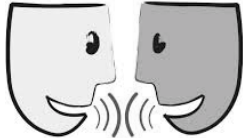


Cogsci 300
Week 10: Language
 Please turn off and put away all electronics.



1

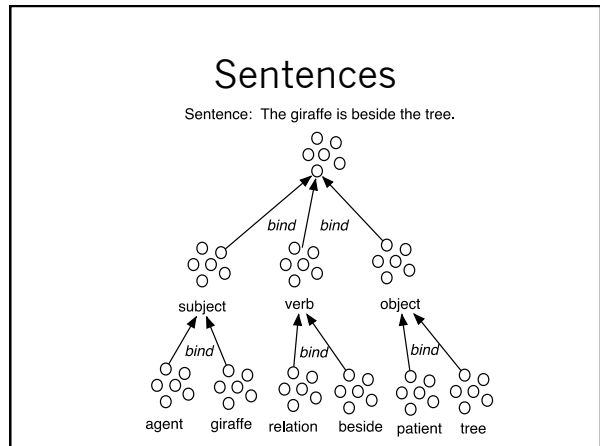
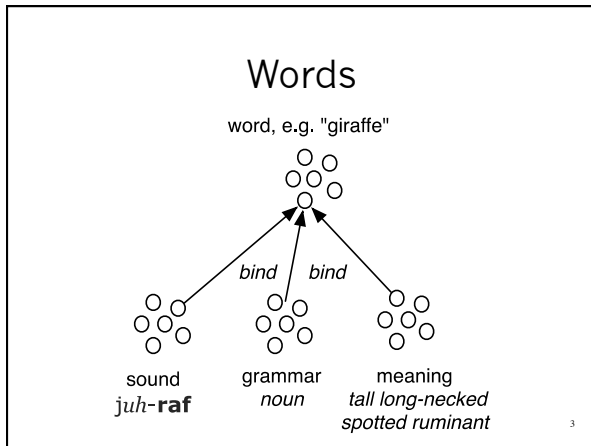
Approaches to Language

Syntax first (Chomsky, logic, computers)

Cognitive linguistics: integrate syntax with semantic (meaning) and pragmatics (purpose, context)

Semantic pointers can handle semantics (shallow and deep), syntax (bindings into complex grammar), and pragmatics (goals, emotions)

2



Meaning

1. Not by definitions, which are rigid and circular.
2. Words get their meanings from associated concepts (examples, features, explanations).
3. Sentences get meanings by convolution of words/concepts.
4. Multidimensional: upwards (innate), downwards (world), sideways (other words)

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Metaphor and Metonymy

Metaphors depend on underlying analogies, with meanings furnished by concepts.

Embodied and transbodied.

Metonymy, e.g. the heart wants what it wants.

6

Discussion Questions

1. Can semantic pointers explain key features of language such as metonymy?
2. Can syntax, semantics, and pragmatics be integrated?

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How Siri Works

Representations: Sound waves, natural language

Procedures:

1. Speech recognition: Input sound waves and output query in natural language.
2. Question answering: Input query and output answer. Lookup + Internet search.

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How Google Translate Works

Representations: 90 natural languages + data bases of past translations.

Procedures:

1. Input sentence from language 1 and find statistically best match from language 2 using data bases.
2. If no direct translations exist, then use third language such as English.

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Siri & Google Translate Versus Humans

1. Advantages of computers: many languages, huge data bases, fast search
2. Advantages of humans: understand meaning, context, purpose

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