

Linguistic Theory - Foundation

- **Chomsky**
 - Born 1928, Ph.D. in 1955
 - Philosopher, Linguist, Political Activist
 - Professor Emeritus at MIT
 - Video interview from 2002
- **Goal was to describe grammar, or rules of language**
- **Competence vs. Performance**

Jabberwocky Activity

- **Read the first stanza of Lewis Carroll's poem, *Jabberwocky*, several times. Try reading it aloud.**

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe.
All mimsy were the borogoves,
And the mome raths outgrabe.
- **Use your *competence* or knowledge of English to describe what you know about the regularities in this poem despite the seeming nonsense.**
 - Does this poem make sense at all? Why? Why not?
- **Carefully consider each aspect of the language**
 - words, parts of words, order of words, sentence structure, pronunciation, meanings of words, punctuation, etc.
- **Are there English language features in these nonsense words that you can describe or understand?**
 - What?

Competence

- **Abstract knowledge of language**
- **Judgments we make**
- **I-language or Internalized language**
 - A mental phenomenon
- **The interest or domain of linguists**

Performance

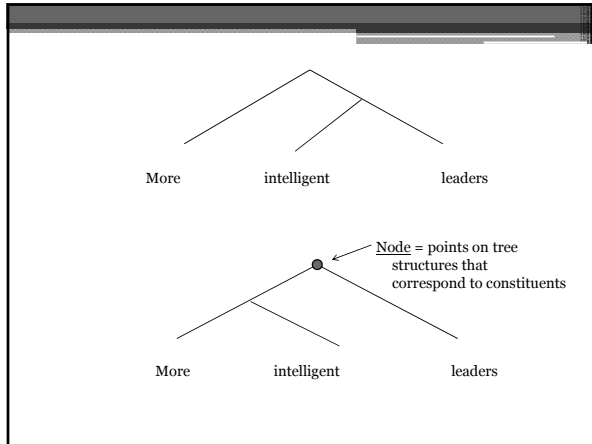
- Language we actually produce
- Less than competence
 - false starts, slips of the tongue
- E-language or Externalized language
 - Collect samples and describe language as it is used
 - A social phenomenon
- The interest or domain of many psycholinguists

Generative Grammar

- Finite set of rules that can generate all the sentences of a language
- Could never list all of the sentences within the grammar, infinite, instead you can describe the grammar's rules
- One constraint – the grammar does not generate non-sentences
 - (Recall errors that are generated are part of the performance not competence)
- Grammar should describe the rules that underlie the language, AND also help explain how children acquire the rules of the language

Ambiguity

- All languages generate syntactic utterances that are ambiguous for meaning
- E.g., "We need *more intelligent leaders.*"
 - What are the two possible interpretations for the phrase above? (NEXT SLIDE)
 - Alternative tree structures are used to describe these differences
 - Example of structural ambiguity
- Language also has lexical ambiguity
 - e.g., "crane" has multiple meanings



Lexical vs Structural Ambiguity

Why are each of the following utterances ambiguous?

Is it lexical or structural ambiguity?

- John sat on Jumbo's trunk.
- The little girl hit the child with the toy.
- Chocolate cakes and pies are my favorite desserts.
- We used to meet near the bank every afternoon.

Phrase Structure Rules

- **Phrase Structure Grammar**
 - consists of grammatical units that can be described in hierarchical relationships
- **Tree structures**
- **Table 2.4 p. 36, basic PS Rules**
- **"Rewrite rules"**
 - able to describe sentences in language with the units and phrase structures

Word Classes

- Grammar needs to describe categories of words or word classes that share grammatical properties
 - e.g., nouns, verbs, adjectives, etc.
- **Determiner**
 - (def) words determining the number of nouns they modify
 - e.g., *a, the, some, most*, etc.
- Known as “parts of speech” in grade school.
- Note that words are not inherently one class or another.
 - i.e., “run” is not always a verb

Word Classes are Contextualized

- It was a cold and dreary day.
- I can't seem to get rid of my cold.
- You must dry cilantro leaves before storing.
- The dry heat of the desert proved to be deadly.
- There has been some improvement in the past week.
- In the past, there has not been much improvement.
- That's a promise.
- I promise to take you to the zoo tomorrow.

Phrasal Categories

- Words can combine to form groupings or **constituents**.
- Phrasal categories are a group of constituents that share the same functions and distributions in sentences.
- “**The joggers** ran through the park.”
 - “The joggers” can be replaced by the following:
 - Susan
 - Students
 - You
 - Most dogs
 - Some children
 - A huge, lovable bear
 - My friend from Brazil
 - The people that we interviewed

Alternate description of word classes:

- **Content words vs. Function words**
- **Content words**
 - the bulk of the semantic system
 - nouns, verbs, adjectives, adverbs
 - Aka Open class words
 - i.e., word classes that can be added to over time
 - Examples: blading, ginormous, emoticon, wac, snail mail
- **Function words**
 - grammatical in nature
 - articles, prepositions, auxiliary verbs, etc.
 - Aka closed class words
 - i.e., do not change quickly, very stable across time in a language

Some Phrase Structure Rules in English (from Language Files, 7th Ed.)

- | | |
|---------------------------|-------------------------------|
| 1. S → NP VP | a) <i>hit ball</i> |
| 2. NP → DET ADJP N | b) <i>they</i> |
| 3. NP → PRO | c) <i>is cooking dinner</i> |
| 4. NP → NP PP | d) <i>playing</i> |
| 5. VP → AUX VP | e) <i>on golden pond</i> |
| 6. VP → V _i | f) <i>the little children</i> |
| 7. VP → V _t NP | <i>were walking to</i> |
| | <i>school</i> |
| 8. PP → P NP | g) <i>those nasty</i> |
| | <i>choices</i> |
| | h) <i>horses in the barn</i> |

Sentence Parsing Practice

- (from Language Files, 7th Ed.)

Themes

- (def) the thing that is being acted on or being moved
- **Thematic Roles** (Aka **semantic roles, theta roles**)
- Sometimes syntax and semantics overlap, as in **active voice sentences**
 - The boy hit the ball.
 - Boy = subject and agent
 - Ball = object of verb and object of the action (i.e., "theme")
- Other times they are separate, as in **passive voice**
 - The ball was hit by the boy.
 - Ball = subject of sentence and object of action or "theme"
 - Boy = object of verb but agent of action

Recursion

- "occurs when a rule uses a version of itself in its definition" p. 39 Harley 2009
- Recursion enables phrases to contain the same type of phrase
- Recursion results in **center-embedding**
 - Embed a sentence within a sentence
 - YES - "The vampire the werewolf hated loved the ghoul"
 - BUT - "The vampire the werewolf the ghost scared hated loved the ghoul"

Old Lady Who Swallowed a Fly
 Materials:
 Disposable plates and paper cups
 Cut along outer line. Attach only
 to inside plate. Attach to other pictures
 to make cubes with string. Add string
 loop for hanging.

- There was an old lady who swallowed a fly.
- She swallowed a fly.
- She swallowed a spider to catch the fly.
- She swallowed a bird to catch the spider to catch the fly.
- She swallowed a cat to catch the bird to catch the spider to catch the fly.
- She swallowed the dog to catch the cat to catch the bird to catch the spider to catch the fly.
- She swallowed the goat to catch the dog to catch the cat to catch the bird to catch the spider to catch the fly.
- She swallowed the cow...
- She swallowed the horse...

Recursion and Infinity

- Little does she know that I know that she knows that I know she's two timing me. Little does she know that I know that she knows that I know she's cheating on me.
- He's a big dog.
- He's a big, furry dog.
- He's a big, furry, shy dog.
- He's a big, furry, shy, energetic dog.
- Mary walked to Zeke's house and delivered the letter.
- Mary walked to Zeke's house, delivered the letter, and ran home.
- Mary walked to Zeke's house, delivered the letter, ran home, and made dinner.

- Internet Grammar of English

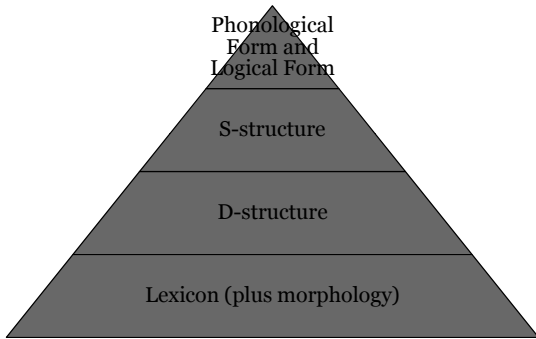
Transformational Grammar

- "Standard Theory" dated to about 1965
- Deep Structure vs. Surface Structure
 - Now called d-structure and s-structure
 - Hierarchical levels of representation
 - Deep = abstract knowledge level, often associated with the semantic/meaning aspects or the "proposition" of an utterance; considered universal
 - Surface = realization of utterance in syntax and phonology
- Transformations
 - (def) rewrite rules that describe changing one sentence type to another (ex. active voice to passive voice)

Principles and Parameters

- **Government and Binding (Chomsky, 1981)**
- **Principles** – common to all languages, so innate, do not need to be learned
- **Parameters** – set in childhood by exposure to a specific language, governs aspects of language, parameters are learned
 - E.g., null subjects permissible in Italian, not English

Levels of Grammar in P&P



- **Gap**
 - **Def. (p. 313) an empty part of the syntactic construction that is associated with a filler.**
 - *Vlad was selling and Agnes was buying.*
 - *Vlad was selling and Agnes __ buying.*
- **Movement**
 - **Related to transformations, example of wh-movement**
 - **Wh-word does not originate in a sentence initial position, instead it originates elsewhere in the syntactic structure**
- **Trace**
 - **When part of the sentence is moved, it leaves a trace**

More Current Versions:

- **Head** – the key word in a phrase
 - E.g., noun is the head of a noun phrase
 - Head-driven grammatical structure
- **X Bar theory:**
 - **Adds a projection between NP and N**
 - “the redheaded student” in “I know this redheaded student better than that one.”
 - **Also, similarities in NP and VP**
 - \bar{X} (or X') \rightarrow X, ZP^+
 - **Allows for adjuncts or modifiers to phrase heads to be differentiated from arguments**
 - “the redheaded music student”
- **Minimalism**
 - **The Principle of Economy** – everything should be described in the most simple way
 - **No rules for verb roles/functions, instead this information is stored in the Lexicon with the specific verbs (see pyramid above)**

Optimality Theory

- **The surface form results from resolving conflicts between varying underlying representations**
 - **Overlaps with Connectionist approaches**
- **Constraint satisfaction**
 - **When processing information, multiple sources of information are used to constrain the outcome**
 - context, prosody, phonology, syntax, semantics, discourse rules
- **Cognitive Linguistics**
 - **branch that proposes general mechanisms for language not specific LAD**
 - **No structures operate separately from meaning**
