Language continued...

1. Exam 2 here on Thursday
2. Review class Wednesday 4.30 in BH 255A
3. Paper 1 due in class next Tuesday
4. Rony is accepting drafts until Saturday at 11.59 pm.

“Matthews ... we’re getting another one of those strange ‘aw blah es span yoi’ sounds.”

“Now! That should clear up a few things around here!”
“GAVAGAI”
Strategies of Word Learning: The Problem of Induction (Quine)

Constraints: guiding children’s inferences about word meanings:

Whole Object Assumption:

- Word refers to entire object rather than features, parts, or substance.
Strategies of Word Learning: The Problem of Induction (Quine)

Constraints: guiding children’s inferences about word meanings:

Whole Object Assumption:
- Word refers to entire object rather than features, parts, or substance.

Taxonomic Assumption:
- Names or words label kinds of things (e.g., dogs, cars, animals, vehicles).
More constraints on word-learning

Mutual Exclusivity:

- Things have only one label/name.

Children accept only one name for things.
More constraints on word-learning

Mutual Exclusivity:

- Things have only one label/name.

Children accept only one name for things.
Syntactic Bootstrapping

Use of grammar to infer word meaning.

Children notice where words fall in a sentence.
Syntactic Bootstrapping

Use of grammar to infer word meaning.

Children notice where words fall in a sentence.

When children in Naigles’s (1990) study heard an adult describe this scene as “The duck,” they used the syntactic structure of the sentence to infer that kradding is what the duck was doing to the rabbit.
Extending nouns

Nouns typically refer to a whole category of objects.

What objects should be named with the same label?

• Texture?
• Color?
• Shape?
Methodology

Get me another wug.
<table>
<thead>
<tr>
<th>Exemplar</th>
<th>Shape change</th>
<th>Texture change</th>
<th>Size change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.50</td>
<td>.76</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td>.53</td>
<td>.48</td>
<td>.80</td>
</tr>
</tbody>
</table>
Whole Object Assumption: Revisited

- Word refers to entire object rather than features, parts, or substance.

Step 1.
- Cups are cup-shaped.
- Balls are round.

Step 2.
- Cups are cup-shaped.
- Balls are round.

Step 3.
- Balls are round.
- Cups are cup-shaped.

Step 4.
- -shaped thing is “giraffe”.
- -shaped thing is “crayon”.
- -shaped thing is “tractor”.

“_____’s” are _____-shaped.
Milestones in the Acquisition of Syntax

Grammar requires more than one word:

- **Holophrases**: single word used for an entire phrase or sentence.
  
  For example, “ghetti?” to ask whether .

- **1½ - 2½ years**: first sentence, normally just two words:
  
  • **Telegraphic Speech**: contains only essentials.
  
  For example, “go kitty” or “Mommy drink”.
This graph shows the relation between age and the mean length of utterance for the three children—Adam, Eve, and Sarah—studied by Roger Brown. (Brown, 1973)

What else do you see?
Development of Grammatical Morphemes

- 2½ years: Children create adult-like sentences

Use **grammatical morphemes**: markers that alter sentence meaning

For example, “John’s dog”, or “he is eating”

These morphemes are acquired in a strict order:

<table>
<thead>
<tr>
<th>“-ing” verb ending</th>
<th>“He is singing”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preposition “on”</td>
<td>“On horsie”</td>
</tr>
<tr>
<td>Noun plural “-s”</td>
<td>“Cats”</td>
</tr>
<tr>
<td>Verb Irregular past tense</td>
<td>“He ran”, “It broke”</td>
</tr>
</tbody>
</table>
Regular and irregular verbs

Overregularization:

Children learn irregular verb forms ("I went", "I ran")

But then they start to make errors for these verbs ("I goed", "I runned")

Why do children make these errors?
The Role of Family and School Context in Early Language Development: Individual Differences

- Socioeconomic status of parents is key determinant in the language children hear.
  - After 4 years, there is a vast difference in accumulated experience with words among children from upper middle class, working-class, and families on welfare. (Hart and Risley, 1994)
  - For a variety of reasons, parents' SES affects the way they talk to their children.
    - Those individual differences have a substantial influence on the way their children talk.
Milestones in the Acquisition of Pragmatics:

1st year: Joint attention with caregiver to the environment

• Turn-taking in games and vocalizations with adults:

2nd year: Better understanding of vocal turn-taking

• stand close and/or talk loudly.
• when talking to toddlers, they know to be in proximity of the object of discussion.

Learn the turnabout: Comment on other’s utterance,
The Process of Language Acquisition: Conversational Skills

- The extent to which children talk about the past increases dramatically over the preschool period.
  - Three-year-olds include brief references to past events, 5-year-olds produce narratives—descriptions of past events that have the basic structure of a story.
  - Parents scaffold their young children's narratives by asking for elaboration.
Acquisition: Meaning from Context

- **Pragmatic cues**

  - Children use pragmatic cues—aspects of the social context used for word learning.
  - These include the adult's focus of attention and intentionality.

This child will assume that the novel word she hears the experimenter saying applies to the novel object the experimenter is looking at, even though the child cannot see the object and is looking at a different novel object when she actually hears the word.
The Process of Language Acquisition: Meaning from Context

Pragmatic cues

Having announced her intention to find a “gazzer,” this adult appears displeased when looking in one bucket, but happy when looking in another. The child will infer that the object that elicited the smile is a “gazzer.”
The Process of Language Acquisition: Meaning from Context

- **Linguistic context**

  - When Roger Brown, a pioneer in the study of language development, described this picture as “sibbing,” “a sib,” or “some sib,” preschool children made different assumptions about the meaning of “sib.”
First signs of etiquette in children’s speech

3 years: sensitive to *illocutionary intent*

They know speaker intent, irrespective of linguistic form (e.g., “I need a pencil”).

*Awareness of audience:*

4-year-olds talk differently to a 2-year-old than to an adult:
Current Theoretical Issues in Language Development: Biological perspective

- Are language milestones controlled by maturation?
  - Over time, language becomes lateraledized:
    - Wernicke’s and Broca’s area

- Critical period
  - Genie
Language and the Brain

- Language processing involves a substantial degree of functional localization in the brain
  - The left hemisphere shows some specialization for language in infancy, although the degree of hemispheric specialization for language increases with age

- Individuals with brain damage resulting in aphasia provide evidence of specialization for language within the left hemisphere
  - Damage to Broca’s area, near the motor cortex, is associated with difficulties in producing speech
  - Damage to Wernicke’s area, which is near the auditory cortex, is linked to difficulties with meaning
Current Theoretical Issues in Language Development: Learning Theory

- Product of the environment
- Learned through domain-general mechanisms
  - Association (Smith)
  - Conditioning (Skinner)
  - *fast mapping* used in language is used in other domains
- Imitation
  - abstract modeling
According to language theorist Noam Chomsky, all these children rely on the same innate linguistic structures in acquiring their various languages.
Current Theoretical Issues in Language Development: Chomsky and the Nativist Views

- Chomsky countered Skinner by pointing out why language cannot be learned through processes of reinforcement and punishment.
  - Generativity
  - Recognition of grammatical and non-grammatical sentences and other language structures that have not been taught
Current Theoretical Issues in Language Development

- **Chomsky and the Nativist views**
  - Universal grammar hypothesis: using language requires a universal grammar that is innate and common to all languages.
  - Cognitive abilities that support language development are highly specific to language.
Current Theoretical Issues in Language Development: Nativist Views

- **Evidence for this view**
  - Universal and species-specific nature of language
  - Observations of invented sign language among groups of deaf children that imposes grammatical structure onto simple signs

- **Criticism**
  - View focuses almost exclusively on syntax and ignoring the communicative role of language.

Nicaraguan deaf children signing together in the language that has emerged in their school community.
Current Theoretical Issues in Language Development: Ongoing Debates

- Current theories all acknowledge some of Chomsky's crucial observations.
- Any language theory must explain why all human languages share so many characteristics.
- Theories must explain the ability to generalize.

Theories differ in ways explanations are presented.
- To what degree do explanations lie within the child (nature) versus with the environment (nurture)?
- Did the cognitive and neural mechanisms underlying language learning evolve solely to support language learning (domain-specific) or learning many different kinds of things (domain-general)?
Did the cognitive and neural mechanisms underlying language learning evolve solely to support language learning (domain-specific) or learning many different kinds of things (domain-general)?

- The modularity hypothesis supports Chomsky's view and proposes that the human brain contains a self-contained language module.
- Others suggest that language learning mechanisms are general; fast mapping used in language is used in other domains.
Cognition and Language

- Down’s Syndrome
  - Restricted vocabulary
  - Simplistic grammar
- William’s Syndrome
  - Cognitive deficits
  - Fluent conversationalists