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Introduction to Linguistic Theory

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Language Acquisition

Language Acquisition

- Language is extremely complex, yet children already know most of the grammar of their native language(s) before they are five years old

- Children acquire language without being taught the rules of grammar by their parents

    – In part because parents don't consciously know the many of the rules of grammar

What's Learned, What's Not?

- The **innateness hypothesis** asserts that children do not need to learn universal principles like structure dependency because that is part of UG

  – They only have to learn the language-specific aspects of grammar

- The innateness hypothesis provides an answer to Chomsky's question:

  – What accounts for the ease, rapidity, and uniformity of language acquisition in the face of impoverished data?

What's Learned, What's Not?

- An argument for the innateness hypothesis is the observation that we end up knowing more about language than we hear around us

  – This argument is known as the **poverty of the stimulus**

  – Children are exposed to slips of the tongue, false starts, ungrammatical and incomplete sentences

  – Also, children learn aspects of language about which they receive no information
    - Such as **structure dependent** rules
    - The data the children is exposed to is **impoverished**

What's Learned, What's Not?

- For example, children somehow know to invert the auxiliary of the main clause when forming a question like:

    - *Is the boy who is sleeping __ dreaming of a new car?*

    Rather than

    - **Is the boy __ sleeping is dreaming of a new car?*

- To do this, the child must somehow understand structure dependency and constituent structure, something that adults do not consciously know

Stages in Language Acquisition

- Children acquire language in similar stages across the world

- When children are acquiring language, they do not speak a degenerate form of adult language

    - Rather, they speak a version of the language that conforms to the set of grammatical rules they have developed at that stage of acquisition

The Perception and Production of Speech Sounds

- Infants display an ability to discriminate and recognize speech sounds

    - They will even respond to linguistic contrasts when those contrasts are not present in the language(s) spoken around them

    - They can perceive differences in voicing, place of articulation, manner of articulation

    - But they do not react to nonlinguistic aspects of speech (loudness, gender-based pitch differences, etc.)

The Perception and Production of Speech Sounds

- Infants appear to be born with the ability to perceive and focus on the sounds that are important for language, so they can learn any human language

    - But by 6 months babies begin to lose to ability to discriminate between sounds that are not phonemic in the language(s) they are acquiring

Babbling

- Babbling begins at about 6 months and is considered the earliest stage of language acquisition

    - Babies may babble phonemes that do not occur in the language(s) they are acquiring

    - 95% of babble is composed of the 12 most common consonants around the world
        - Early babbles mostly consist of CV sequences but become more varied later on
        - By 1 year babbles are composed only of the phonemes used in the language(s) they hear

    - Deaf babies babble with their hands like hearing babies babble using sounds

First Words

- After the age of one, children figure out that sounds are related to meanings and start to produce their first words

- Usually children go through a **holophrastic** stage, where their one-word utterances may convey more meaning
  - *up* used to indicate something in the sky or to mean "pick me up"

- This suggests that children know more language than they can express

Segmenting the Speech Stream

- A major obstacle that babies must overcome is to be able to identify where word boundaries are

- English-speaking children may be able to use stress as a cue for word boundaries (**prosodic bootstrapping**)

  - Every content word in English has stress
    - If a word has two syllables, the stress either falls on the first syllable (**trochaic stress**) or the second syllable (**iambic stress**), but the vast majority of English words have trochaic stress

  - Experiments have shown that children do use stress as a cue for word boundaries since most English words have stress on the first syllable

Segmenting the Speech Stream

- But how do children know the stress pattern of the language they are acquiring?

  - Babies may use statistical frequency of syllable sequences to determine word boundaries

    - In one experiment, babies were able to recognize the nonsense words *pabiku, tutibu, golabu*, and *babupu* out of strings of nonsense syllables because those strings of syllables in the 'words' occurred more frequently than the random strings of syllables

    - Children may use statistical strategies to determine a few words, and from there may be able to determine the rhythmic, allophonic, and phonotactic properties of the language and then can determine even more words from this knowledge

The Acquisition of Phonology

- Children tend to acquire the sounds common to all languages first, followed by the less common sounds of their own language

- Vowels tend to be acquired first, and consonants are ordered:
  - Manner of articulation: nasals, glides, stops, liquids, fricatives, affricates
  - Place of articulation: labials, velars, alveolars, palatals

- Uncommon but high frequency sounds may be acquired earlier than expected

The Acquisition of Phonology

- Children can perceive more sound contrasts than they can make in early stages

  – Thus they know more about phonology than we can tell by listening to them speak

- When they cannot yet produce a sound, they may substitute an easier sound

  – These substitutions are rule-governed
  – Children tend to reduce consonant clusters ([pun] for *spoon*), reduplicate syllables ([wawa] for *water*), and drop final consonants ([ke] for *cake*)

The Acquisition of Word Meaning

- When children learn the meanings of words they must learn the relevant features of the class of things that are referred to by that word

  - They must learn that *dog* refers to pugs and Great Danes, but not cats

- When learning words, children often **overextend** a word's meaning

  - For example, using the word *dog* to refer to any furry, four-legged animal (overextensions tend to be based on shape, size, or texture, but never color)

- They may also **underextend** a word's meaning

  - For example, using the word *dog* to refer only to the family pet, as if *dog* were a proper noun

The Acquisition of Word Meaning

- The whole object principle: when a child learns a new word, (s)he is likely to interpret the word to refer to a whole object rather than one of its parts

  - This principle and others may help the child learn 5,000 words per year

- It has also been put forth that children can learn the meaning of verbs based on the syntactic environments of the verbs
  - This is known as **syntactic bootstrapping**

The Acquisition of Morphology

- The acquisition of morphology clearly demonstrates the rule-governed nature of language acquisition
  - Children typically learn a morphological rule and then **overgeneralize**
  - Children go through three stages in the acquisition of an irregular form:

    - In phase 1 they use the standard irregular past tense forms because they have learned these irregulars as separate lexical items (*broke, brought*)
    - In phase 2 the child has learned the rule for past tense and therefore attaches the regular past tense morpheme to the irregular verb (*breaked, bringed*)
    - In phase 3 the child realizes that there are exceptions to the morphological rule and bring the standard irregular forms back into their vocabulary (*broke, brought*)

The Acquisition of Morphology

- The "wug test" demonstrates that children apply the correct plural allomorph to nouns they have never heard before
  - Which shows they have an understanding of natural classes of phonemes and are not just imitating words they have heard before

- Children acquiring languages other than English learn subject-verb agreement very early

- Children also demonstrate their knowledge of derivational rules and can create new words
  - E.g. *broomed* ("swept")

The Acquisition of Syntax

- At about two years of age, children start to put words together to form two-word utterances

    – The intonation contour extends over the two words as a unit, and the two-word utterances can convey a range of meanings:
    - *mommy sock* = subject + object or possessive

- Chronological age is not a good measure of linguistic development due to individual differences, so instead linguists use the child's mean length of utterance (MLU) to measure development

The Acquisition of Syntax

- The **telegraphic stage** describes a phase when children tend to omit function morphemes such as articles, subject pronouns, auxiliaries, and verbal inflection
  - For example: *He play little tune* or *Andrew want that*

- However, while function morphemes are absent, these sentences have hierarchical constituent structure like adult sentences
  - Telegraphic utterances are not just words strung together and reveal the child's knowledge of syntactic rules

The Acquisition of Syntax
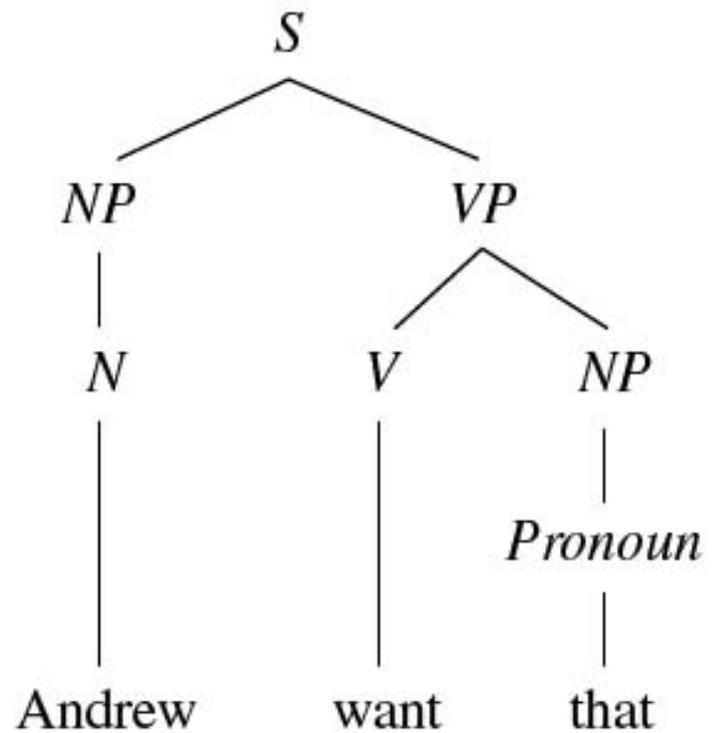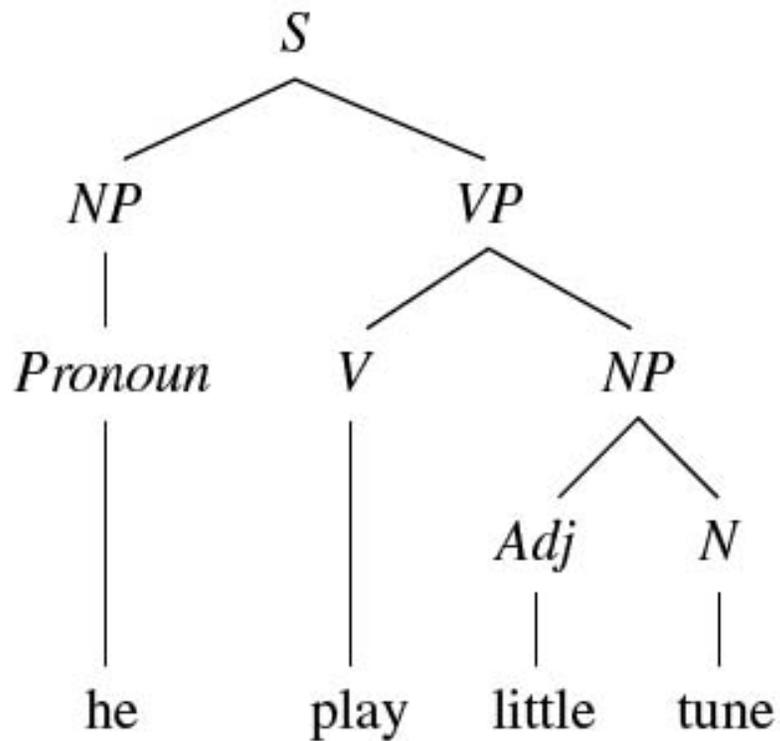
The Acquisition of Syntax

- A child must know the syntactic categories of words in order to apply syntactic rules

  - **Semantic bootstrapping**: the notion that children first use the meaning of a word to figure out its syntactic category

  - Word frames may also help children determine the syntactic categories for words
    - Some frames such as *you__it* and *the___one* occur frequently enough that kids may be able to identify which words can occur in each frame (verbs for the former and adjectives for the latter)

The Acquisition of Syntax

- Between 2;6 and 3;6 a language explosion occurs and children undergo rapid development

    - By the age of 3, most children consistently use function morphemes and can produce complex syntactic structures:

        - *He was stuck and I got him out*
        - *It's too early for us to eat*

- After 3;6 children can produce *wh*-questions, and relative pronouns

- Sometime after 4;0 children have acquired most of the adult syntactic competence

Acquisition of movement

What do you think what is in that
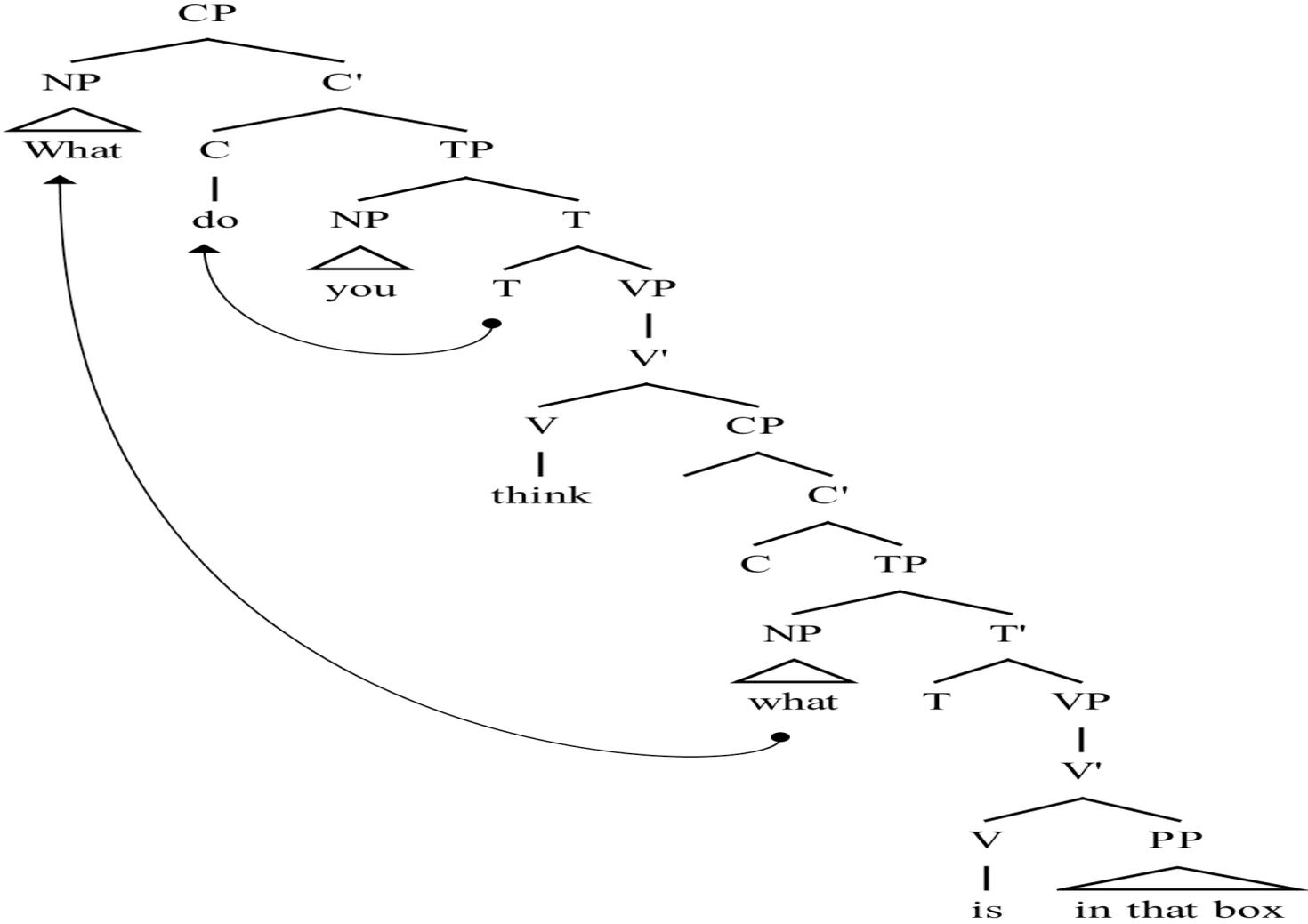
The Acquisition of Pragmatics

- Deixis:
  - Children often have problems with the shifting reference of pronouns
    - Children may refer to themselves as 'you'

  - Problems with the context-dependent nature of deictic words
    - Children often assume the hearer knows who she is talking about

The Development of Auxiliaries:
A Case Study

- In the telegraphic stage children often omit auxiliaries from their speech but can form questions (with rising intonation) and negative sentences
  - *I ride train?   I not like this book*

- As children acquire auxiliaries in questions and negative sentences, they generally use them correctly
  - The child always places the negation in the correct position in relation to the auxiliary

Setting Parameters

- Children acquire the parameters of UG very early

  - The child listens to the language around her and then chooses between the options provided to her by UG

    - Does this language have the head or the complement come first?
    - Are VPs in this language ordered VO or OV?
    - Does this language allow verb movement?

  - Parameters greatly reduce the difficulty of acquiring a language because, rather than starting from scratch, a child only needs to choose between a small set of linguistic options based on what she hears

Parameters

- X′ theory says structures are all built hierarchically like this—but different languages can choose different *orders*.
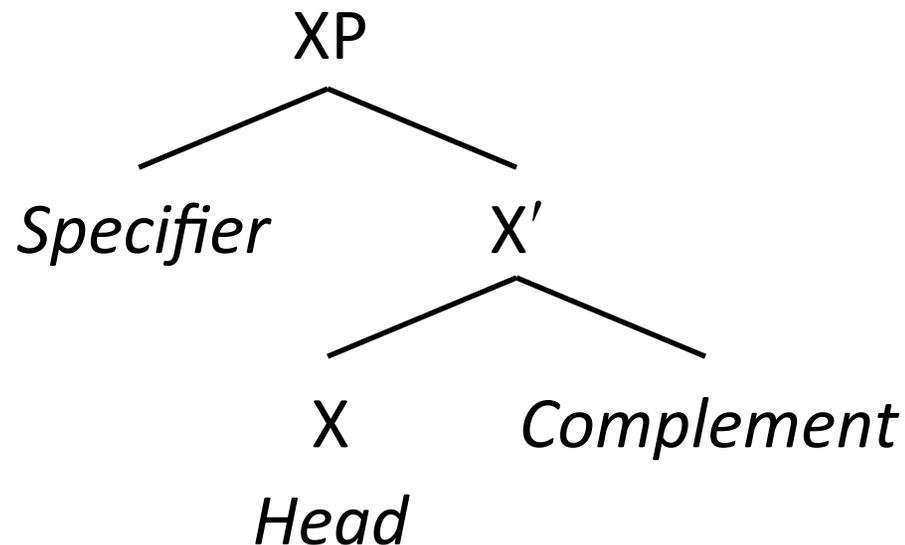
The Acquisition of Signed Languages

- Deaf babies acquire sign language in the same way that hearing babies acquire spoken language:
  - babbling, holophrastic stage, telegraphic stage

- When deaf babies are not exposed to sign language, they will create their own signs, complete with systematic rules
  - This demonstrates the drive humans have to communicate, and also the innate basis for language since these children create a rudimentary language without any input

The Role of Imitation, Reinforcement, and Analogy

- Children do imitate the speech heard around them to a certain extent, but language acquisition goes beyond imitation

  - Children produce utterances that they never hear from adults around them, such as *holded* or *tooths*

  - Children cannot imitate adults fully while acquiring grammar
    - Adult: *Where can I put them?*
    - Child: *Where I can put them?*

  - Children who develop the ability to speak later in their childhood can understand the language spoken around them even if they cannot imitate it

The Role of Imitation, Reinforcement, and Analogy

- Another theory posits that children learn through positive and negative reinforcement

    - But, parents rarely correct their children's speech, and when they do they correct based on pronunciation and factual accuracy rather than grammatical accuracy

    - Parents do sometimes **recast** children's utterances, but not consistently, and they also tend to recast grammatical sentences to reinforce correct content

Children resist correction

Cazden (1972) (observation attributed to Jean Berko Gleason)

– My teacher holded the baby rabbits and we patted them.

– Did you say your teacher held the baby rabbits?

– Yes.

– What did you say she did?

– She holded the baby rabbits and we patted them.

– Did you say she held them tightly?

– No, she holded them loosely.

The Role of Imitation, Reinforcement, and Analogy

- Another theory asserts that children hear a sentence and then use it as a model to form other sentences by analogy

    - But while analogy may work in some situations, but certainly not in all situations:
        - *I painted a red barn.*
        - *I painted a barn red.*
        - *I saw a red barn.*
        - **I saw a barn red.*

    - Children never make mistakes of this kind based on analogy which shows that they understand structure dependency at a very young age

The Role of Structured Input

- It has also been suggested that children are able to learn language because adults speak to them in a simplified version of language known as **motherese**, **child-directed speech** (**CDS**), or baby talk

  - But, motherese is not syntactically simple and does not drop verb inflections or omit function words

  - In many cultures adults do not engage in motherese, yet children in those cultures acquire language in the same way as children who are exposed to motherese

Childhood Bilingualism

- **Bilingual language acquisition**, or **simultaneous bilingualism** refers to the acquisition of two languages simultaneously from infancy

  - About half the people in the world are bilingual or multilingual
  - In many parts of the world, bilingualism (or multilingualism) is the norm

Theories of Bilingual Development

- **Unitary system hypothesis**: the idea that the child initially constructs only one lexicon and one grammar

  - Evidence *for*: language mixing similar to **codeswitching**; lexical items existing in only one language

  - Evidence *against*: there is a lot of overlap in the lexicon for each language, and children may have gaps because each language is used in different contexts and they can only learn so many words each day

Theories of Bilingual Development

- **Separate systems hypothesis**: the idea that the child builds a distinct lexicon and grammar for each language

    – Evidence *for*:

        - where the two languages diverge grammatically, the child will acquire two different sets of rules
        - bilingual children select which language to use based on the context
        - children bilingual in sign language and a spoken language may say a word in one language and sign it in the other simultaneously

The Role of Input & Cognitive Effects of Bilingualism

- It's unclear how much input in each language a child needs to become bilingual

  - *Une personne-une langue* (one person, one language) is the strategy where one parent speaks only language A to the child and the other speaks only language B

- Bilingual children tend to have better **metalinguistic awareness** than monolingual speakers, meaning they have more conscious knowledge about language

Second Language Acquisition

- Most adult language learners never become fully proficient in their second language
  - They make errors unlike children's errors and these errors may become **fossilized**

- **Fundamental difference hypothesis**: learning a second language is a different process than learning a first language
  - Different principles are drawn upon in L2 learning than L1 acquisition
  - However, L2 learners do demonstrate rule-governed **interlanguage grammars**

Second Language Acquisition

- One obvious difference between L1 and L2 acquisition is that in L2 acquisition a speaker already knows a language

    - Learners often **transfer** phonological, syntactic, and morphological rules from their first language to their second language

        - French speakers learning English may substitute [z] for [⬚]
        - Spanish speakers learning English may insert a schwa to break up word-initial consonant clusters

Second Language Acquisition

- But, not everything transfers from the L1 to the L2, and many errors made by learners are not found in their L1

- Speakers with different L1s go through similar stages when learning their L2s

    – Which points to some possibly universal developmental principles like those in L1 acquisition

Heritage Language Learners

- **Heritage language learners** constitute a unique type of adult language learner

    – Someone who was raised with a strong cultural connection to a language and who then chooses to study that language more formally

        - May have no prior linguistic knowledge of the language
        - May be bilingual

Is There a Critical Period for L2 Acquisition?

- Most researchers would not claim that it is *impossible* to acquire a new language after a certain age
  - But it does get harder as one gets older

  - There may be "sensitive" (rather than critical) periods for acquiring certain aspects of an L2

    - The sensitive period for phonology is the smallest—it is very difficult to acquire an L2 without an accent after the childhood years; other aspects of language have a larger window