Announcements

Course evaluations now available online

Please email me (lpearl@uci.edu) by Thursday if you are going to write a final paper instead of taking the final exam. Make sure to indicate which article(s) you will be doing a review of.

Review questions for this last topic (learning structure with parameters) are now available.
Computational Problem:
Figure out the order of words (syntax)

Jareth juggles crystals
Subject Verb Object
Noun Verb Noun

Depends on grammatical categories like Nouns and Verbs, but also on more precise distinctions like Subjects and Objects.

Some Noun Phrase distinctions:
Subject = usually the agent/actor of the action, “doer”: Jareth
Object = usually the recipient of the action, “done to”: crystals

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Subject Verb Object

Important idea: The observable word order speakers produce is the result of a system of unconscious word order rules. (This linguistic system is called “syntax”.)

Computational Problem:
Figure out the order of words (syntax)

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Subject Verb Object

One way to generate Subject Verb Object order:
The linguistic system specifies that order as the general pattern of the language.
Computational Problem:
Figure out the order of words (syntax)

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Subject Verb Object

Another way to generate Subject Verb Object order:
The linguistic system specifies Subject Object Verb as the
general pattern, but the Verb in main clauses moves to the
second position and some other phrase (like the Subject)
moves to the first position.

German Subject Object Verb

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A third way to generate Subject Verb Object order:
The linguistic system specifies Subject Object Verb as the
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certain contexts (the Object is unexpected information).

Kannada Subject Object Verb
Computational Problem: Figure out the order of words (syntax)

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Kannada Subject Verb Object

The learning problem: How do children know which system their language uses?

This is a hard question!

Children only see the output of the system (observable word order).
About Language & Variation

Navajo Code Talker Paradox (Baker 2001)

English must be very different from Navajo
Japanese could decode English, but couldn't decode Navajo (when they didn't know it was Navajo).

English must be similar to Navajo
English can be translated into Navajo and back with no loss of meaning. (Languages are not just a product of the culture - pastoral AZ lifestyle couldn’t have prepared them for Pacific Island high tech warfare, but translation was still possible.)

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more than just word-by-word gloss

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Japanese structure is very different from English structure at this level.

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Russian structure is not as different from English structure at this level, though it is still different.
Translation is not so easy: more than just word-by-word gloss

Arabic structure is fairly different from English structure at this level.

Translation is not so easy: more than just word-by-word gloss

Solving the Language Problem
(Artificial Intelligence)
HAL 9000 from 2001: A Space Odyssey (1968)
Perfect production and comprehension of English.

1960s: Language not considered one of the “hard” problems of artificial intelligence.


Contrast: Chess-playing. (This shows that computers’ poor performance on language is not about insufficient computational power.)
Types of Variation

Vocabulary

English “think”: think, know, wonder, suppose, assume, …

Multiple types of the action verb “think”. Each has certain uses that are appropriate.

“I wonder whether the girl saved her little brother from the goblins.” [grammatical]

* “I suppose whether the girl saved her little brother from the goblins.” [ungrammatical]

Types of Variation

Vocabulary

English “think”: think, know, wonder, suppose, assume, …

Navajo “carry”: multiple types, depending on object carried

aah (solid round-ish object)

kaah (open container with contents)

lé (flexible object)

Types of Variation

Sounds: Each language uses a particular subset of the sounds used in all languages put together. There’s often overlap (ex: “m”, “p”), but languages also may make use of the less common sounds.

English: “th”, “f”, “sh”, …

Navajo “whispered l”, “nasalized a”, …
Types of Variation

Morphology (word forms)

English: invariant words
“the girl is crying”, “I am crying”

Navajo: no invariant forms (ex: 100-200 prefixes for verb stems)

At’ëéd yicha. “Girl crying”

Yishcha. “I am crying”
(yi + sh + cha)

Ninááwiishdlaad. “I am again plowing”
(ni + náá + ho + hi + sh + l + dlaad)

Types of Variation

Word order (syntax)

English: Subject Verb Object (invariant word order)
“The boy saw the girl”

Navajo: Subject Object Verb, Object Subject Verb

Ashkii a’ñééd yiylitsá
boy girl saw
“The boy saw the girl”

Ashkii a’ñééd biliistsá
boy girl saw
“The girl saw the boy”
Thinking About Syntactic Variation

Similarities & Differences: Parameters

Chomsky: Different combinations of different basic elements (parameters) would yield the observable languages (similar to the way different combinations of different basic elements in chemistry yield many different-seeming substances).

Big Idea: A relatively small number of syntax parameters yields a large number of different languages’ syntactic systems.

5 different parameters of variation
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Big Idea: A relatively small number of syntax parameters yields a large number of different languages’ syntactic systems.

Chomsky: Children are born knowing the parameters of variation. This is part of Universal Grammar. Input from the native linguistic environment determines what values these parameters should have.
Learning Language Structure

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English

Japanese

Navajo
Questions?