INTD0111A/ARBC0111A

The Unity and Diversity of Human Language

Lecture #4
Sept 21st, 2006

Summary of where we are

- There are two approaches to the study of unity and diversity in human language: functionalist and formalist.
- Functionalists' explanations rely on properties of other systems that interact with language, e.g., history, discourse, processing.
- Formalists' explanations rely on the inherent properties internal to the linguistic system, which are assumed to be biologically given.

So rich knowledge, such a poor stimulus

- Our knowledge of language is largely unconscious. We've seen last time that we know what's good and what's bad in English, even though it's very unlikely that any of you guys knew why.

  (Mrs. Advocate enters–quietly. Apparently, D is still not feeling well, but I'll pretend I didn't notice.)
- Let's consider some of these examples again:

So rich knowledge, such a poor stimulus

Who did John say that Mary saw?
Who did John say __ Mary saw?
Who did John say __ saw Mary?
*Who did John say that saw Mary?

- A potential rule to account for this paradigm would be something as complex as this:
- "You can't form a subject wh-question if the embedded clause is introduced by the complementizer *that*; however, if *that* does not introduce the embedded clause, then forming a subject wh-question becomes possible. If the wh-phrase is an object, however, then forming a wh-question is possible, whether or not the embedded clause is introduced by the complementizer *that*."

So rich knowledge, such a poor stimulus

Compare

Who did Mary meet at the party?
Who did John say that Mary met at the party?
Who did Sarah believe that John said that Mary met at the party?
Who do you think that Sarah believed that John said that Mary met at the party?

with

*Who do you believe the claim that Mary met?
*Which book did Mary talk to the author who wrote?
*Who did Mary talk to John without meeting?

So rich knowledge, such a poor stimulus

- What would the rule be like here? Maybe something like this:

"You can form a wh-question no matter what the distance between the wh-word and the verb it is associated with is, unless there is a noun like "claim" followed by "that", or a relative pronoun like "who", or a preposition like "without" in the sentence."

So rich knowledge, such a poor stimulus

- You also know that “klirb” and “rnig” are not English words, but you also know that “klirb” could potentially be an English word (maybe a name of a new kind of edible CDs), whereas “rnig” can never be part of the English lexicon.
- And while you can “eat a turkey sandwich” or just “eat”, you can only “devour a turkey sandwich”, but not just “devour”.
- So, how do we come to know this?

The biological basis for language

- You know all of this (and more) because it is part of your “unconscious” native knowledge of English. And your grammaticality judgments are based on your linguistic “intuitions”, not on what you were taught in school. It’s part of our “competence”.

The biological basis for language

- In other words, every one of us acquires a “system” of linguistic knowledge in our childhood that allows us to know what is possible and what is not possible in our native language.
- And we acquire it so effortlessly, in such a short time (typically five years), and without any need for formal instruction.

The biological basis for language

- So, here’s *Plato’s paradox* from last time rephrased again:

  “How does a system of knowledge with such complexity and abstractness arise in the mind when the stimulus bearing on that system is so impoverished?”

The biological basis for language

- Chomsky’s answer: It must be that part of our linguistic knowledge is “built-in”. In other words, we must be born endowed with an innate faculty to learn language, a faculty that allows us to construct rich and complex systems of knowledge on the basis of poor and noisy input data.

Evidence for language as a biological system

- We already saw how certain types of complex and abstract knowledge are available to us, even though the linguistic input around us is so poor and noisy. In other words, our rich system of linguistic knowledge is quite underdetermined by our experience.

Evidence for language as a biological system

- This is the so-called "poverty of the stimulus" argument for the biological basis for language: If we come to acquire certain types of knowledge which cannot be attributed to the linguistic environment or "nurture", then this knowledge has to come from "nature"; it has to be genetically given.

Question!

- Mrs. Advocate: "I have a question."
- Please.
- "Is there any other evidence for the existence of a language faculty in the human brain? I mean, why can't this ability be part of our general intelligence as human beings?"
- Excellent question. Let's review the evidence.

Language is a biological system

- The main argument against language being part of our general intelligence is the so-called "double dissociation" argument.
- Put simply, there are cases where general intelligence is affected but language ability remains intact. And there are cases where linguistic ability is affected, but other cognitive abilities remain intact.

Language is a biological system

- *Turner's Syndrome* and *Williams Syndrome* are cases of mental retardation, but individuals suffering from them seem to have normal language behavior.
- By contrast, there are individuals with *specific language impairments* whose cognitive abilities are all normal.

Uniformity of language acquisition

- On the other hand, in acquiring their native language, children go through the same stages, with very slight differences, e.g., consider the acquisition of negation in English:

  no Fraser drink all tea
  He no bite you.
  I can't catch you.

Uniformity of language acquisition

- Children also overgeneralize, again showing they're trying to figure out a "mental" grammar:

  comed, goed, bringed,
  mans, foots

Uniformity of language acquisition

- More interesting still is that children go through the same stages across different languages: babbling, one-word stage, two-word stage, telegraphic speech, until they eventually converge on the "adult" grammar.

And, there's also a critical period for language acquisition

- Ever wondered why you're having hard time learning a foreign language, even though you had no trouble whatsoever learning your first language?
- Well, if language is a biological system, we have an answer: Certain biological abilities follow a timetable and then get "turned off" or at least "degrade" considerably, as Eric Lenneberg suggested for language in 1967.

And, there's also a critical period for language acquisition

- The cases of "wild children".
- **Isabelle** discovered at the age of 6 with no language skills, but within a year she learned to speak and was able to function normally in school.
- **Genie** discovered at the age of 13, but her language development never matched what normal children do.
- **Chelsea** misdiagnosed as retarded, fitted with hearing aids at 31, but after 12 years of training her language level remained that of a 2 and ½ year old.

So, …

- There's poverty of the stimulus in language acquisition.
- There's dissociation between language and general intelligence.
- There's uniformity of language acquisition by children within the same language and across languages.
- And there is some evidence for a critical period.
- *Well, … if it looks like biology, then it must be biology!*

Ok, but, there's another paradox

- Mrs. Advocate: "Mr. Linguist. Sorry to interrupt you. I do see your point about the biological basis for language, but if we're all born with the same language faculty, why do we speak different languages, then? Why does all this variation that we've been talking about exist?"
- Another excellent question, Mrs. Advocate. Baker actually calls this the "Code Talker's paradox": "How can languages be simultaneously so different and so similar?"

Time to introduce UG

- Chomsky's answer is this:

  We are born with a *Universal Grammar* (UG), an abstract system of general principles that are tied to all languages. Then, on the basis of the *primary linguistic data* (PLD) that we hear around us in early childhood, we arrive at the *particular grammar* (PG) of our language.

Time to introduce UG

input output
PLD → UG → PG

This is getting too abstract

- Mrs. Advocate: "This is really getting too abstract for me. Could you please explain what's in OG, I mean UG?"
- Sure.

UG: principles and parameters

- UG has two components: **principles** and **parameters**.
- The principles are invariant; they exist in all languages; well, they are universal.
- Parameters are also universal, but unlike principles, they come with options (typically binary), and this is where the locus of variation exists.
- Languages select different values for parameters, and the cumulative effect of a group of parametric settings will be still enough to generate a dramatic diversity on the surface.

One UG principle: structure-dependency

- Let's see a couple of examples. First a UG principle.
- Consider how a child can learn the rule for yes-no question formation in English on the basis of the PLD. Here's a couple of sentences in the input:

  John must leave.

  Must John leave?

One UG principle: structure-dependency

- Hypothesis #1: Invert the first word and the second word to form a yes-no question.
- Does it work?

  Well, let's expand the PLD space:

  This boy must leave.

  *Boy this must leave?
- Something went wrong, and it wasn't the child's error. Children never make these mistakes.

One UG principle: structure-dependency

- Hypothesis #2: Invert the first auxiliary verb and the subject to form a yes-no question.
- Does it work?

  The boy who must leave has been sick.

  *Must the boy who leave has been sick?

Oooops. Something went wrong again.

One UG principle: structure-dependency

- Hypothesis #3: Invert the auxiliary verb of the whole sentence and its subject to form a yes-no question.
- Does it work?

  The boy who must leave has been sick.

  Has the boy who must leave been sick?
- That worked. As it turns out, children never produce any of the bad forms above. Why?

One UG principle: structure-dependency

- Because hypotheses like 1 and 2 are not even considered. Why?
- Because they are not structure-dependent. Structure-dependency is a universal principle of grammar, and it's inviolable.

Ok, what's a parameter then?

Can you give us an example?

One UG parameter: The null subject parameter

- Consider these data from English, French, and Italian, all of which allow SV orders:

  (1) John will leave.

  (2) Jean arrivera. French

  Jean will-arrive

  (3) Gianni verrá. Italian

  Gianni will-come.

One UG parameter: The null subject parameter

- Italian, however, allows the subject of a tensed sentence to be omitted, an option that is not available in English or French:

  (5) *Will leave.

  (6) *Arrivera. French

  will-arrive

  (7) Verrá. Italian

  will-come.

One UG parameter: The null subject parameter

- This is an example of parametric variation: "In some languages (e.g., French, English, Edo) every tensed clause must have an overt subject. In other languages (e.g., Italian, Spanish, Romanian, Navajo, Arabic) tensed clauses need not have an overt subject."
- This is typically referred to as the ***null subject parameter***.

One UG parameter: The null subject parameter

- The child's task in acquiring her language is to "set" the parameter value on the basis of the PLD in her linguistic environment.
- The interesting thing about the null subject parameter is that it also explains to us a "cluster" of facts in these languages.

One UG parameter: The null subject parameter

- For one thing, unlike English and French, Italian also allows VS orders:

(8) *Will leave John.

(9) *Arrivera Jean. French
will-arrive Jean

(10) Verrá Gianni. Italian
will-come Gianni.

One UG parameter: The null subject parameter

- Similarly, an overt "dummy" subject with "weather verbs" is required in both English and French, as opposed to its absence in Italian (and Spanish):

(11) It is raining.

(12) Il pleut. French

(13) Piove. Italian

(14) Lleuve. Spanish
ls-raining.

One UG parameter: The null subject parameter

- These differences (and perhaps a few others) between English/French on the one hand, and Italian/Spanish on the other can also be tied to the null subject parameter.
- Even though we don't have time to explain this now, the parametric approach seems promising: Not only does it tell us why languages differ, but it also ties together what seem to be (at least on the surface) unrelated linguistic phenomena.

So, moral of the story

- UG is a biological given. It consists of a set of general principles (they always hold), and a set of parameters (each with typically binary options) which are set on the basis of PLD.
- This should answer Mrs. Advocate's question: If you're born in Tokyo, then your PLD are different from the PLD of someone born in Montreal, hence the acquired system will be different.
- Language acquisition is thus the result of interaction between nature (principles and parameters) and nurture (PLD).

Next class agenda

- Word order variation revisited: The head parameter
- And of course comes with it an introduction to syntax (be ready).
- Keep reading Baker's book. We're pretty much done with Chapters 1 and 2, but we'll be covering materials from Chapter 3 on Tuesday.