Theoretical Linguistics

COGS 532

Cem Bozsahin
Chomsky’s questions

1. What is knowledge of language? What is in the mind/brain of a speaker/hearer of a language?

2. How does this system of knowledge arise in the mind/brain? (Plato’s Problem)

3. How is this knowledge put to use (perception and production of language)? The latter (creative aspect of language use) is Descartes’s Problem.

4. What are the physical mechanisms that serve as the material basis for this system of knowledge?

- First 3 questions are the concern of Linguistics, Philosophy and Psychology
- The last one depends on the answers for the first three; it is the domain of Brain Sciences.
Theoretical ling v ling theories

Some basic vocabulary as a toolbox for all theories:

<table>
<thead>
<tr>
<th>morphology</th>
<th>syntax</th>
<th>semantics</th>
<th>discourse</th>
</tr>
</thead>
<tbody>
<tr>
<td>stem</td>
<td>N, V, A, P</td>
<td>e, t</td>
<td>clause</td>
</tr>
<tr>
<td>root</td>
<td>NP, VP, AP, PP</td>
<td>individual-level</td>
<td>anaphor</td>
</tr>
<tr>
<td>affix</td>
<td>subject-of</td>
<td>stage-level</td>
<td>abstract object</td>
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<tr>
<td>morpheme</td>
<td>argument</td>
<td>participant</td>
<td>presupposition</td>
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<tr>
<td></td>
<td></td>
<td>anaphor</td>
<td>entailment</td>
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</tbody>
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The real work in cogsci is not to taxonimize, but to see how native speakers can put all that together.
Constructions

There seems to be finitely many of them

• Relativization
• Coordination
• Control
• Nominal predication
• Subordination
• Clause-chaining
• Serial-verbs: *the eagle swims flies

  adam yürü-dü oku-du
  man walked read
  ‘the man walked and read.’
A closer look might suggest there’s more

- **American English -ee construction**
  
  employee, payee, ?runnee, *hittee

- **-ant construction**: servant, attendant, *employant, *arrivant

- **Turkish ki construction**
  
  sen-in-ki
  you-gen-ki
  ‘yours’

  ev-de-ki oyuncak araba
  house-loc-ki toy car
  ‘the toy car in the house’

- **Gapping**: I like cats, and you, dogs.

- **His-way construction**: John slept his way through the exam.

The constructions have **heads**.
Why do we need a theory of Language?

Why can’t general cognitive abilities explain Language?

Is Linguistics a science?

Why is Theoretical Linguistics so syntacto-centric?

Why is a linguistic system (of knowledge) called a computational system?
Empirical basis for Science of Language

- Language as a natural object (domain of linguistics)
- Grammar as a mental object
- Poverty of stimulus

Robustness of Primary Linguistic Data (PLD): Should be available to all children in large quantities for them to acquire complex principles and constructions if language is learned without any prior knowledge (but that’s not enough; cf. below)

- Critical Period (of language acquisition)
- Continuity hypothesis (that children hypothesise different grammars as they converge on adult grammar)
- Structure dependence of language
- Learning linguistic constraints (which are, by their nature, negative statements). They don’t seem to be relevant to other cognitive tasks.
- Negative vs. positive evidence available to a child
• Plato’s vs. Hume’s problem (the latter is: how can humans generalise beyond their experience?)

But Hume also insisted that humans bring their unique capacity into the task
The Theoretical notions for Science of Language

- The task of the Theoretical Linguist:

  Make explicit the implicit knowledge of language that every child seems to have

  Predict possible human languages (as opposed to, say, formal languages or programming languages)

- Generative grammar: Computing the structural descriptions (SDs)

  vs. traditional grammar (descriptive or prescriptive)

- Universal Grammar: the initial grammar

- Competence Grammar: the stabilised grammar set by exposure to PLD

- Performance Grammar: the grammar we put to actual use under available resources

- Linguistic system, computational system, cognitive system and their relation (the Y diagram)

- Descriptive adequacy

- Explanatory adequacy
Structure dependence

Linguistic constructions rely on structure, not on linear arrangement of expressions.*

The man is beating a donkey.

Is the man beating a donkey?

The man who is beating a donkey is mean.

Is the man who is beating a donkey mean?

*Is the man who beating a donkey is mean?

Kitabı okuyan adam şimdi uyuyor.

Adamın okuduğu kitap masanın üstünde.

Adamın kitabı verdiği/*en çocuk uyuyor.

Adamın kitabı okuyan arkadaşı uyuyor.

*Examples in these notes are from Crain & Pietroski 2001, Chomsky 2001, or my own.
• Analogical reasoning from earlier examples won’t work either:

• John ate a fish. (Chomsky)
  
  John ate. (first entails second)

• John is too clever to catch a fish.
  
  John is too clever to catch. (no entailment)

• Linguistic constraints as negative knowledge: Since children do not hear negative evidence as such, what don’t they overgeneralise to problematic cases?
  
  Who does Arnold wanna make breakfast for?

  Who does Arnold want to make breakfast for?

  I don’t wanna make breakfast for Arnold.

  *Who does Arnold wanna make breakfast?

  Who does Arnold want to make breakfast?
Some phenomena is never presented to the child with relevant information:

Mary_i expects to feed herself_i. (Chomsky 2001)

I wonder who_j Mary_i expects to feed herself_j/*i.

Mary_i expects to feed her_*i.

I wonder who_j Mary_i expects to feed her_i.

The relevant constraint is Binding Principles, yet no motherese presents the principles to the child (the parents aren’t aware of them anyway.)

Since these constraints are universal (i.e. every child seems to ‘know’ them), if they are not part of natural endowment, then they must be learnable by all children under any environment.

General learning schemes (e.g. induction) cannot learn these (because the knowledge is negative—i.e. not ‘there’)

“Mental logic” does not fare any better than inductive learning (Johnson-Laird, 1970, 1983)
Children’s “errors”

- What do you think pigs eat?
  
  What do you think what pigs eat?

- Who did he say is in the box?
  
  Who did he say who is in the box?

- Second pattern occurs quite frequently in early childhood, yet parents (people with adult grammars) do not use them.

- The pattern is in the adult grammar of German, Irish, Chamorro etc.:

- Wer glaubst du wer nach Hause geht?
  
  Who do you think who goes home?

These do not appear to be “errors,” but the child hypothesizing over possible grammars as they converge on the adult grammar around them (they seem to have more linguistic ‘knowledge’ than what parents tell them)
Conclusion

- There is convincing and robust empirical basis that language is structure dependent.
- There is also compelling evidence that structure dependence is not enough (type dependence).
- There seems to be enough evidence that children acquire (not learn) a language by bringing in sources of information that are not in the PLD.
- A theory of language has to explain these
  What knowledge does a child bring in to the task of language acquisition?
  What is the nature of that knowledge?
  How does that knowledge allow for apparent diversity in languages of the world (but it’s certainly not “anything goes”)?
  What is a possible human language?