Language Acquisition
Plato's Problem:

How do children learn language so fast, given the limited and faulty input?
Plato's Problem:

How do children learn language so fast, given the limited and faulty input?

...are we just imitating what we hear? (learning what we're taught?)
(Skinner: behaviorism)
Plato's Problem

- parents' priorities:

child: Momma isn't a boy, he a girl.
mother: That's right.
Plato's Problem

- parents' priorities

child: Momma isn't a boy, he a girl.
mother: That's right.
child: And Walt Disney comes on Tuesday.
mother: No, he does not.
Plato's Problem

• parents' priorities
• when parents do try to teach, they get ignored:

child:  Nobody don't like me.
father:  No, say "Nobody likes me."
          (repeat six times)
child:  Oh! Nobody don't likes me.
Plato's Problem

- parents' priorities
- when parents *do* try to teach, they get ignored
- we acquire complicated things we're never taught

(X-bar theory! conservativity of quantifiers! Tagalog infixation!...)
Plato's Problem

- parents' priorities
- when parents *do* try to teach, they get ignored
- we acquire complicated things we're never taught
- acquisition is unrelated to intelligence (Williams syndrome)
Plato's Problem

- parents' priorities
- when parents *do* try to teach, they get ignored
- we acquire complicated things we're never taught
- acquisition is unrelated to intelligence
- children never make certain errors...
Plato's Problem

The man *is* claiming that 24.900 *is* fun.
Plato's Problem

The man is claiming that 24.900 is fun. Is the man __ claiming that 24.900 is fun?
Plato's Problem

The man \textit{is} claiming that 24.900 \textit{is} fun.
\textbf{Is} the man \underline{__} claiming that 24.900 is fun?
*\textbf{Is} the man \textit{is} claiming that 24.900 \underline{__} fun?
Plato's Problem

The man *is* claiming that 24.900 *is* fun.

Is the man __ claiming that 24.900 is fun?

*Is* the man *is* claiming that 24.900 __ fun?

• Move I of main clause to C?
• Move first I to C?
Plato's Problem

The man is claiming that 24.900 is fun.

Is the man __ claiming that 24.900 is fun?

*Is the man is claiming that 24.900 __ fun?

The man [who is bearded] is tall.

• Move I of main clause to C?
• Move first I to C?
Plato's Problem

The man is claiming that 24.900 is fun. Is the man __ claiming that 24.900 is fun? *Is the man is claiming that 24.900 __ fun?
The man [who is bearded] is tall. Is the man [who is bearded] __ tall?

• Move I of main clause to C?
• Move first I to C?
Plato's Problem

The man **is** claiming that 24.900 **is** fun. 
*Is the man __ claiming that 24.900 is fun?*

The man [who **is** bearded] **is** tall. 
*Is the man [who **is** bearded] __ tall?*

• Move I of main clause to C?
• Move first I to C?
Plato's Problem

The man is claiming that 24.900 is fun. Is the man __ claiming that 24.900 is fun? *Is the man is claiming that 24.900 __ fun?
The man [who is bearded] is tall. Is the man [who is bearded] __ tall? *Is the man [who __ bearded] is tall?

- Move I of main clause to C?
- Move first I to C?
Plato's Problem

Children don't ever make mistakes about this. Human beings aren't able to make mistakes about this; we're set up to only consider certain hypotheses.

- Move I of main clause to C
- Move first I to C
Plato's Problem

Chomsky's solution:

We are genetically endowed with **Universal Grammar**, which limits the hypotheses we consider as we acquire language.
Plato's Problem

Chomsky's solution:

We are genetically endowed with Universal Grammar, which limits the hypotheses we consider as we acquire language.

(careful! UG isn't the grammar of a particular language...)
Principles and Parameters

I think that Susan likes chess.
I think Susan likes chess.

What do you think that Susan likes ___?
What do you think Susan likes ___?

...usually, *that* is optional...
Principles and Parameters

I think that Susan likes chess.
I think Susan likes chess.

What do you think that Susan likes ___ ?
What do you think Susan likes ___ ?

*Who do you think that ___ likes chess?  
Who do you think ___ likes chess?

...but not always.
Principles and Parameters

I think that Susan likes chess.
I think Susan likes chess.

What do you think that Susan likes ___?  
What do you think Susan likes ___?  

*Who do you think that ___ likes chess?  
Who do you think ___ likes chess?

probably hard to acquire: sentences are pretty complicated.
Principles and Parameters
...and it's not universal.

*that*-trace effect:

*Who do you think that ___ likes chess?*

<table>
<thead>
<tr>
<th>Language</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
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<td></td>
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<tr>
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<td>*</td>
<td></td>
</tr>
<tr>
<td>Beni-Hassan Arabic</td>
<td>✓</td>
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Since the "that"-trace effect" isn't universal, it can't be innate. And it looks difficult to acquire; you have to hear (and understand) pretty complicated sentences to know whether it's there.
but if it's linked to something that's easy to observe, that would make things easier...
postverbal subjects

John left.
*Left John.

Gianni è andato.
È andato Gianni.
that-trace  postverbal subjects

English  *  *

French  *  *
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Good news for the learner! You don't have to hear your parents say:

Who do you think (that) ___ likes chess?

You just have to hear them say:

Left John.
Good news for the learner! You don't have to hear your parents say:

Who do you think (that) __ likes chess?

You just have to hear them say:

Left John.

-->no need for **negative evidence**
Principles and Parameters

-->the hope is that every obscure fact is linked to an easy-to-observe fact.
Principles and Parameters
children have some innate principles
(Principle C; phrase structure; if my language has postverbal subjects it'll lack the that-trace effect...)


Principles and Parameters
children have some innate principles (Principle C; phrase structure; if my language has postverbal subjects it'll lack the that-trace effect...)

...and some parameters (does my language have postverbal subjects or not? are my heads initial or final?)
Principles and Parameters
The principles are universal, and can be complicated; they're innate, so you don't have to learn them.

The parameters are not universal, but are set on the basis of easy-to-learn phenomena.
Principles and Parameters
The principles are universal, and can be complicated; they're innate, so you don't have to learn them.

The parameters are not universal, but are set on the basis of easy-to-learn phenomena.

This is the content of UG.
What is innate/universal?
What is learned?
Clearly, something has to be learned...

not all languages are the same...
Clearly, something has to be learned...

not all languages are the same...

critical period (first 7 years or so)
Clearly, something has to be learned...

not all languages are the same...
critical period (first 7 years or so)
• "Genie"
Clearly, something has to be learned...

not all languages are the same...

critical period (first 7 years or so)

• "Genie"
• "Chelsea"
Clearly, something has to be learned...

...but, equally clearly, something must be innate.
Clearly, something has to be learned...

...but, equally clearly, something must be innate.

- study of language in adults
Clearly, something has to be learned...

...but, equally clearly, something must be innate.

- study of language in adults
- study of acquisition directly
The course of acquisition

5 months- babbling
12-18 months one-word stage
18 months 2+ word stage:
          50-word vocab
2-3 years fluent sentences
The course of acquisition

comprehension outpaces production:

• ->10 mo.: 'universal listener' (sucking rate, looking task)
The course of acquisition

comprehension outpaces production:

• ->10 mo.: 'universal listener'
(sucking rate, looking task)

• anecdotes: "no, I say it that way"
The course of acquisition

morphological problems (~2 yrs):

• he **run**
The course of acquisition

morphological problems:

• he **run**

• **me** go
The course of acquisition

morphological problems:

• he run *I runs

• me go *he sees I
The course of acquisition

morphological problems:

- he run  *I runs

- me go  *he sees I

-->use either the default form, or the correct one.
The course of acquisition

morphological problems:

(accusative is the default in English:)

"who's that?"  "me!"

• me go  *he sees I

-->use either the default form, or the correct one.
The course of acquisition

(nominaive's the default in German:)
"wer ist dass?" "ich!"
(accusative is the default in English:)
"who's that?" "me!"
• me go *he sees I
-->use either the default form, or the correct one.
The course of acquisition

(nominative's the default in German:)
"wer ist dass?" "ich!"

(accusative is the default in English:)
"who's that?" "me!"

• me go  *he sees I
• *mich gehe er sieht ich
The course of acquisition

German kids also use infinitives:

Du dass **haben**
you that have-INF

Ich **hab** ein dossen Ball
I have a big ball
The course of acquisition

German kids also use infinitives:

Du dass haben
you that have-INF

Ich hab ein dossen Ball
I have a big ball

FINAL infinitive
SECOND finite
The course of acquisition

German kids also use infinitives:

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The course of acquisition

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The course of acquisition

cf. adult German!

Ich möchte einen großen Ball haben

I 'd.like a big ball have-INF

Ich habe einen großen Ball

I have a big ball
The course of acquisition

English, German kids have a morphological problem: they use default forms in inappropriate contexts.
The course of acquisition

English, German kids have a morphological problem: they use default forms in inappropriate contexts.

-->but they get the syntax right!
Children and Binding Theory

Mama Bear \(_i \) is touching herself \(_i \)

*Mama Bear \(_i \) is touching her \(_i \)
Children and Binding Theory

Mama Bear is touching herself

*Mama Bear is touching her

4-5-year-olds only * this about 50% of the time.
Adults and Binding Theory?

That must be John...
..at least, $\text{he}_j$ looks like $\text{him}_j$. 
Adults and Binding Theory?

That must be John...

..at least, \textit{he}_{j} looks like \textit{him}_{k}.

• "accidental coreference"
Adults and Binding Theory?

That must be John...

..at least, \( \text{he}_j \) looks like \( \text{him}_k \).

*\( \text{He}_i \) saw \( \text{him}_i \) in the mirror.

- "accidental coreference"
- ...plus a principle saying "no gratuitous use of accidental coreference" ("Rule I")
Children and Binding Theory

"Rule I" presumably says something like "If you see a pronoun, think about whether coreference could felicitously be expressed with an anaphor instead: if so, don't interpret the pronoun as coreferring."
Children and Binding Theory

"Rule I" presumably says something like "If you see a pronoun, think about whether coreference could felicitously be expressed with an anaphor instead: if so, don't interpret the pronoun as coreferring." This sounds hard.
Children and Binding Theory

Mama Bear$_i$ is touching herself$_i$

*Mama Bear$_i$ is touching her$_i$

4-5-year-olds only * this about 50% of the time.
Children and Binding Theory

Mama Bear$_i$ is touching herself$_i$

*Mama Bear$_i$ is touching her$_i$

*Every bear$_i$ is touching her$_i$
Children and Binding Theory

Mama Bear$_i$ is touching herself$_i$

*Mama Bear$_i$ is touching her$_i$

*Every bear$_i$ is touching her$_i$

...but on this, they behave perfectly!
**Himself versus him**

- Do children judge the anaphor *himself* to be more informative than the ordinary pronoun *him* on its local co-reference reading?
  - If so, children should prefer (3) over (2)
  - If not, children should judge (2) and (3) to be equivalent (Jakubowicz, 1984).

(2) *Papa bear covered him*

(3) Papa bear covered himself
To address this question we conducted two experiments:

- **Experiment I**: 20 children, age 4;2 to 5;01 (mean age 4;8;15) were tested using a Felicity Judgment Task. At the end of each story children were presented with two sentences:
  
  - Mickey mouse covered **him**.
  - Mickey mouse covered **himself**.
Experiment I: Results

Mickey Mouse covered **him**
Mickey Mouse covered **himself**

Children rewarded the puppet who has used the anaphor **himself** 73 times out of 80 (91%).