Meanings First

Context and Content Lectures, Institut Jean Nicod

June 6: General Introduction and "Framing Event Variables"

June 13: "I-Languages, T-Sentences, and Liars"

June 20: "Words, Concepts, and Conjoinability"

June 27: "Meanings as Concept Assembly Instructions"

SLIDES POSTED BEFORE EACH TALK
terpconnect.umd.edu/~pietro
(OR GOOGLE 'pietroski' AND FOLLOW THE LINK)
pietro@umd.edu

Reminders of last week...

Human Language: a language that human children can naturally acquire

(D) for each human language, there is a theory of ***truth*** that is also
the core of an adequate theory of meaning for that language

(C) each human language is an i-language:
a biologically implementable *procedure that generates*
expressions that connect meanings with articulations

(B) each human language is an i-language for which
there is a theory of truth that is also
the core of an adequate theory of meaning for that i-language

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Alvin chased Theodore joyfully and athletically, but not skillfully.

$\exists e[\text{Chased}(e, \text{Alvin}, \text{Theodore}) \ \& \ J(e) \ \& \ A(e) \ \& \ {\sim}S(e)]$

$\text{Chased}(e1, \text{Alvin}, \text{Theodore}) \ \& \ J(e1) \ \& \ A(e1) \ \& \ {\sim}S(e1)]$

Theodore chased Alvin joylessly and unathletically, but skillfully.

$\exists e[\text{Chased}(e, \text{Theodore}, \text{Alvin}) \ \& \ {\sim}J(e) \ \& \ {\sim}A(e) \ \& \ S(e)]$

$\text{Chased}(e2, \text{Theodore}, \text{Alvin}) \ \& \ {\sim}J(e2) \ \& \ {\sim}A(e2) \ \& \ S(e2)]$

$e1 = e2$

YES — *same sortal, same participants, same spatiotemporal region*

NO — *different properties, which can be specified adverbially or thematically*

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

Alvin married Theodore joyfully.

∃e[Married(e, Alvin, Theodore) & Joyful(e)]

Married(e1, Alvin, Theodore) & Joyful(e1)]

Theodore married Alvin joylessly.

∃e[Married(e, Theodore, Alvin) & ~Joyless(e)]

Married(e2, Theodore, Alvin) & ~Joyless(e2)]

e1 = e2

YES

same sortal, same participants, same spatiotemporal region

NO

different properties, which can be specified adverbially or thematically

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Simon played the song on his tuba in a minute.

∃e[Played(e, Simon, the song) & On-his-tuba(e) & In-a-minute(e)]

Played(e1, Simon, the song) & On-his-tuba(e1) & In-a-minute(e1)

Simon played his tuba for a minute.

∃e[Played(e, Simon, his tuba) & For-a-minute(e)]

Played(e2, Simon, his tuba) & For-a-minute(e2)

e1 = e2

YES

same sortal, same agent

same spatiotemporal region

NO

?? *Simon played his tuba on his tuba in a minute.*

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

The red ball ***struck*** *the green ball* ***from the west***.	(e1)
The green ball ***struck*** *the red ball* ***from the east***.	(e2)
The red ball ***collided*** *with the green ball.*	(e3)
The green ball ***collided*** *with the red ball.*	(e4)
Two balls ***collided***.	(e5)
There was a ***collision***.	(e6)

e1 = e2 = e3 = e4 = e5 = e6

YES — NO

same (nonagentive) participants, same spatiotemporal region

different properties, which can be specified adverbially or thematically

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Davidson's Good Idea

(*well...Panini's Good Idea, rediscovered by Davidson via Ramsey, and then developed by Evans, Taylor, Higginbotham, Parsons, Schein, et. al.*)

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Davidson's Good Idea

"event positions" allow for more conjunction reductions

Bessie is a brown cow.	$\exists x[\text{BESSIE}(x)\ \&\ \text{BROWN}(x)\ \&\ \text{COW}(x)]$
Bessie is a cow.	$\exists x[\text{BESSIE}(x)\ \&\ \text{COW}(x)]$
Bessie ran quickly.	$\exists e \exists x[\text{BESSIE}(x)\ \&\ \text{RAN}(e, x)\ \&\ \text{QUICK}(e)]$
Bessie ran.	$\exists e \exists x[\text{BESSIE}(x)\ \&\ \text{RAN}(e, x)]$

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Davidson's Good Idea

"event positions" allow for more conjunction reductions

Al chased Theo joyfully.

Al chased Theo.

$\exists e \exists x \exists y[AL(x)\ \&\ CHASED(e, x, y)\ \&\ THEO(y)\ \&\ JOYFUL(e)]$

$\exists e \exists x \exists y[AL(x)\ \&\ CHASED(e, x, y)\ \&\ THEO(y)]$

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Davidson's Good Idea

"event positions" allow for more conjunction reductions

The Bad Companion Idea

these "event positions" are Tarski-style variables that have mind-independent values

Al chased Theo joyfully.

Al chased Theo.

$\exists e \exists x \exists y[AL(x) \ \& \ CHASED(e, x, y) \ \& \ THEO(y) \ \& \ JOYFUL(e)]$

$\exists e \exists x \exists y[AL(x) \ \& \ CHASED(e, x, y) \ \& \ THEO(y)]$

(D) for each human language, there is a theory of <u>*truth*</u> that is also
the core of an adequate theory of meaning for that language

<u>Davidson's Good Idea</u>

"event positions" allow for more conjunction reductions

<u>The Bad Companion Idea</u>

these "event positions" are Tarski-style variables that have mind-independent values

<u>*Al chased Theo joyfully.*</u>

Al chased Theo.

$\underline{\exists e \exists e' \exists e''[\mathrm{AL}(e') \ \& \ \mathrm{CHASED}(e, e', e'') \ \& \ \mathrm{THEO}(e'') \ \& \ \mathrm{JOYFUL}(e)]}$

$\exists e \exists e' \exists e''[\mathrm{AL}(e') \ \& \ \mathrm{CHASED}(e, e', e'') \ \& \ \mathrm{THEO}(e'')]$

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

Davidson's Good Idea

more "e-positions" allows for more conjunction reductions

Al chased Theo joyfully.

Al chased Theo.

The Bad Companion Idea

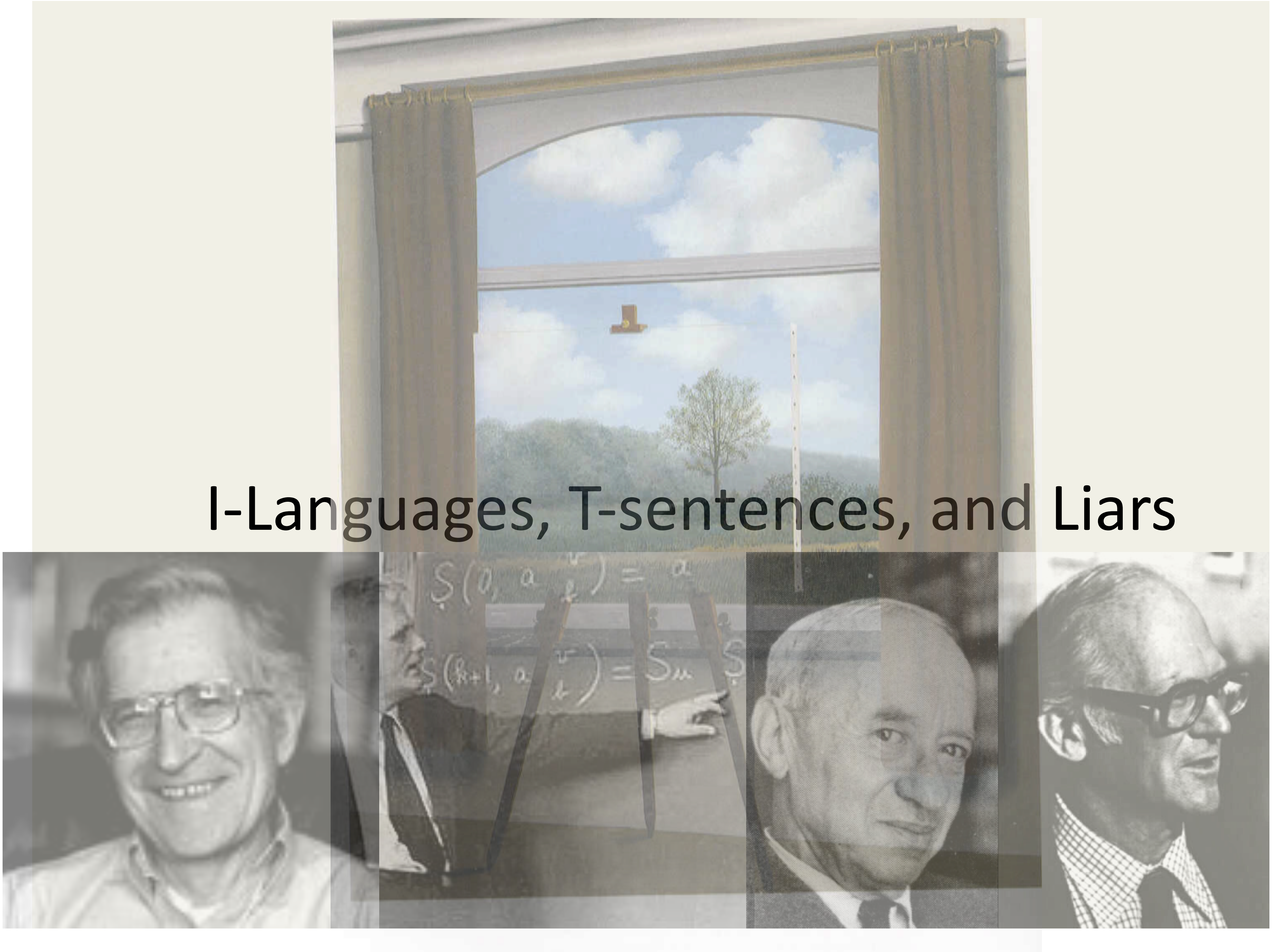
these "e-positions" are Tarski-style variables that have mind-independent values

but "event" variables are not *especially* problematic...

∃e∃e'∃e''[AL(e') & CHASED(e, e', e'') & THEO(e'') & JOYFUL(e)]

∃e∃e'∃e''[AL(e') & CHASED(e, e', e'') & THEO(e'')]

I-Languages, T-sentences, and Liars



2. René Magritte, *La Condition humaine*, 1933.

James Atlas on Global Warming
(NY Times: Nov 25, 2012)

”a good chance that New York City will sink beneath the sea”

but...

"...the city could move to another island, the way Torcello was moved to Venice, stone by stone, after the lagoon turned into a swamp and its citizens succumbed to a plague of malaria. The city managed to survive, if not where it had begun."

One City, Described Many Ways?

Torcello was moved to Venice.
Venice is a nice place.
<u>Venice may need to be moved.</u>
Torcello was moved to a nice place that may need to be moved.

London has geographical properties (e.g., being on The Thames).
<u>London has political properties (e.g., having an elected mayor).</u>
Something has both geographical properties and political properties.

France is hexagonal.	Hexagonal(France)
<u>France is a republic.</u>	<u>Republic(France)</u>
There is a hexagonal republic.	$\exists e$[Hexagonal(e) & Republic(e)]

One City, Described Many Ways?

Torcello was moved to Venice.
Venice is a nice place.
Venice may need to be moved.
Torcello was moved to a nice place that may need to be moved.

Chomsky's Diagnosis (and mine):

It is a *hypothesis*—and so probably *false*—that
'Torcello' and 'Venice' have *denotations*.

It is a *hypothesis* that 'chase' and 'play' have *satisfiers*.

It is a *hypothesis* that
'Alvin chased Theodore.' is *true if and only if*
Alvin chased Theodore.

Some Other Dubious Hypotheses

‘There is milk in the refrigerator.’ is true if and only if
There is milk in the refrigerator.

‘Kent is ready, and Francois prefers the rabbit.’ is true if and only if
Kent is ready, and Francois prefers the rabbit.

‘France is a hexagonal republic.’ is true iff France is hexagonal republic.

‘France is hexagonal.’ is true iff France is hexagonal.

$$\text{True}([\text{France}_{NP}\ [\text{is hexagonal}_{A}]_{VP}]_{S}) \equiv \text{Hexagonal}(\text{France})$$

$$\text{Satisfies}(\sigma, [\text{France}_{NP}\ [\text{is hexagonal}_{A}]_{VP}]_{S}) \equiv \text{Hexagonal}(\sigma[\text{France}_{NP}])$$

$$\text{Satisfies}(\sigma, [\text{France}_{NP}\ [\text{is hexagonal}_{A}]_{VP}]_{S}) \equiv \text{Hexagonal}(\sigma[\text{France}_{NP}], \sigma[t])$$

Some Other Dubious Hypotheses

$\text{True}([\text{France}_{NP}\ [\text{is hexagonal}_{A}]_{VP}]_{S}) \equiv \text{Hexagonal}(\text{France})$

$\text{Satisfies}(\sigma, [\text{France}_{NP}\ [\text{is hexagonal}_{A}]_{VP}]_{S}) \equiv \text{Hexagonal}(\sigma[\text{France}_{NP}], \sigma[t])$

'Hexagonal(...)' and 'France' are expressions of a *metalanguage* in which we formulate *theories* that are actually *true*.

The *metalanguage* expression 'Hexagonal(x)' has satisfiers.

The *metalanguage* expression 'France' has a denotation.

The *object language* expression hexagonal_{A} has satisfiers.

The *object language* expression France_{NP} has a denotation.

Some Other Dubious Hypotheses

Stipulation: ‘Linus’ is a name for (1).

(1) The first numbered sentence in this talk is not true.

Linus = (1) = the first numbered sentence in this talk

Linus = ‘The first numbered sentence in this talk is not true.’

Hypothesis: ‘Linus is not true.’ is true if and only if Linus is not true.

Hypothesis: ‘Linus is not blue.’ is true if and only if Linus is not blue.

Hypothesis: ‘The sky is blue.’ is true if and only if the sky is blue.

Some Other Dubious Hypotheses

Stipulation: ‘Linus’ is a name for (1).

(1) The first numbered sentence in this talk is not true.

Linus = (1) = the first numbered sentence in this talk

Linus = ‘The first numbered sentence in this talk is not true.’

Hypothesis: ‘Linus is not true.’ is true ~~if and only if Linus is not true~~.

Hypothesis: ‘Linus is not blue.’ is true ~~if and only if Linus is not blue~~.

Hypothesis: ‘The sky is blue.’ is true ~~if and only if the sky is blue~~.

Note that (D) is a hypothesis about ***both*** truth ***and*** meaning.

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of ***meaning*** for that language

This hypothesis is tendentious,
even before we add any hypothesis about what human languages ***are***.

(C) each human language is an i-language in Chomsky's sense:
a biologically implementable ***procedure that generates*** expressions that connect meanings with articulations

footnote: prior to "A Nice Derangement of Epitaphs," Davidson said little about what human languages ***are*** (or how they relate to *human* cognition)

OK, (D) is tendentious. But at least it offers <u>*an*</u> account of meaning.

(D) for each human language, there is a theory of <u>*truth*</u> that is also the core of an adequate theory of <u>*meaning*</u> for that language

Or does it? If sentences of a human language have truth conditions...

<u>*Foster's Problem*</u>: True('Snow is white.') ≡ Prime(7)

But maybe given a <u>*trivial*</u> "background logic" for <u>*deriving*</u> T-sentences, a truth theory can be a meaning theory for a human language

<u>*Liar Sentences*</u>: True('Linus is not true.') ≡ ~True(Linus)

But maybe given a <u>*sophisticated*</u> "background logic," a truth theory can be a meaning theory for a <u>*regimentation of*</u> a human language

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of *meaning* for that language

Foster's Problem: True('Snow is white.') ≡ Prime(7)

But maybe given a *trivial* "background logic" for *deriving* T-sentences, a truth theory can be a meaning theory for a human language

Maybe so, at least if we take human languages to be i-languages.

But then we need to understand (D) accordingly.

(D) is a hypothesized generalization over human languages.

If these languages have a shared nature, that may be relevant.

Procedures vs. Sets of Input-Output Pairs

Given x: subtract one, and take the absolute value of the result

$|x - 1|$

Given x: square it and double it; subtract the 2nd result from the 1st, add one to the result; take the positive square root of the result.

$^{+}\sqrt{}(x^2 - 2x + 1)$

$\{\ldots(-2, 3), (-1, 2), (0, 1), (1, 0), (2, 1), \ldots\}$

$\lambda x\, .\, |x - 1| \neq \lambda x\, .\, ^{+}\sqrt{}(x^2 - 2x + 1)$ different procedures

$\lambda x\, .\, |x - 1| = \lambda x\, .\, ^{+}\sqrt{}(x^2 - 2x + 1)$ same extension

Extension[$\lambda x\, .\, |x - 1|$] = Extension[$\lambda x\, .\, ^{+}\sqrt{}(x^2 - 2x + 1)$]

Intensions vs. Extensions

function in Intension — a procedure that pairs inputs with outputs

Frege's notion of a Function

$|x - 1|$

$^{+}\sqrt{}(x^2 - 2x + 1)$

function in Extension — a set of input-output pairs

Frege's notion of a Course-of-Values (of a Function)

$\{\ldots(-2, 3), (-1, 2), (0, 1), (1, 0), (2, 1), \ldots\}$

$$\lambda x \,.\, |x - 1| \;=\; \lambda x \,.\, {}^{+}\sqrt{}(x^2 - 2x + 1)$$

$$\lambda x \,.\, |x - 1| \;\neq\; \lambda x \,.\, {}^{+}\sqrt{}(x^2 - 2x + 1)$$

$$\text{Extension}[\lambda x \,.\, |x - 1|] = \text{Extension}[\lambda x \,.\, {}^{+}\sqrt{}(x^2 - 2x + 1)]$$

Church (1941, pp. 1-3) on Lambdas

- a function is a "rule of correspondence"
- underdetermines when "*two* functions shall be *considered the same*"
- functions in extension, functions in intension
- "In the calculus of L-conversion and the calculus of restricted λ-*K*-conversion, as developed below, *it is possible, if desired*, to interpret the expressions of the calculus as denoting functions in extension.

  However, in the calculus of λ-δ-conversion, where the notion of identity of functions is introduced into the system by the symbol δ, *it is necessary, in order to preserve the finitary character of the transformation rules,* so to formulate these rules that an *interpretation by functions in extension becomes impossible*. The expressions which appear in the calculus of λ-δ-conversion are interpretable as denoting *functions in intension* of an appropriate kind."
- "The notion of difference in meaning between two rules of correspondence is a vague one, but *in terms of some system of notation*, it can be made exact *in various ways*."

Chomsky (1986, ch. 1) on Languages

i-language:

a procedure (intensional, internal, individual, *implementable*)
that connects articulations with meanings in a particular way

e-language:

a set of articulation-meaning pairs,
or any another nonprocedural notion of language

- Lewis: "What is a language? Something which assigns meanings to certain *strings* of types of sounds or marks. It could therefore be a function, a *set* of ordered pairs of strings and meanings."

Chomsky (1986, ch. 1) on Languages

i-language:

a procedure (intensional, internal, individual, *implementable*)
that connects articulations with meanings in a particular way

e-language:

a set of articulation-meaning pairs,
or any another nonprocedural notion of language

- Lewis: a set of string-meaning pairs
- Quine: complexes of "dispositions to verbal behavior"
- Harris: strings of an elicited corpus
- strings of (perhaps written) words in a nonelicited corpus, like the Wall Street Journal

I Before E (especially after C)

- each human language L has *unboundedly many* expressions
- theorists want to *specify* these languages
- no finite upper bound on how many expressions of L can be *understood* by speakers of L
- speakers of L understand expressions of L *systematically*, as if each speaker instantiates a corresponding generative procedure
- constrained homophony..."Poverty of the Stimulus Revisited"

The duck is ready to eat.	(duck as eater, duck as eaten)
The duck is eager to eat.	(duck as eater, #duck as eaten)
The duck is easy to eat.	(#duck as eater, duck as eaten)

Elizabeth, on her side, had much to do. She wanted ascertain the feelings of each of her visitors, she wanted to compose her own, and to make herself agreeable to all; and in the latter object, where she feared most to fail, she was most sure of success, for those to whom she endeavoured to give pleasure were prepossessed in her favour.

Bingley was ready,

Georgiana was eager, and

Darcy determined to be pleased.

Jane Austen

Pride and Predjudice

Elizabeth, on her side, had much to do. She wanted ascertain the feelings of each of her visitors, she wanted to compose her own, and to make herself agreeable to all; and in the latter object, where she feared most to fail, she was most sure of success, for those to whom she endeavoured to give pleasure were prepossessed in her favour.

Bingley was ready (to be pleased),

Georgiana was eager (to be pleased), and

Darcy (was) determined to be pleased.

Jane Austen

Pride and Predjudice

Elizabeth, on her side, had much to do. She wanted ascertain the feelings of each of her visitors, she wanted to compose her own, and to make herself agreeable to all; and in the latter object, where she feared most to fail, she was most sure of success, for those to whom she endeavoured to give pleasure were prepossessed in her favour.

Bingley was ready to please.

Georgiana was eager to please.

Darcy was easy to please.

Austen-Chomsky

Contrast and Constraint

Darcy was ready to please.

Darcy was ready to *please someone*

Darcy was ready to *be pleased by someone*

Darcy was eager to please.

Darcy was eager that *he please someone*

#Darcy was eager that *someone please him*

Darcy was easy to please.

#It was easy for *Darcy to please someone*

It was easy for *someone to please Darcy*

I Before E (especially after C)

- each human language L has *unboundedly many* expressions
- theorists want to *specify* these languages
- no finite upper bound on how many expressions of L can be *understood* by speakers of L
- speakers of L understand expressions of L *systematically*, as if each speaker instantiates a corresponding generative procedure
- constrained homophony..."Poverty of the Stimulus Revisited"

The duck is ready to eat.	(duck as eater, duck as eaten)
The duck is eager to eat.	(duck as eater, #duck as eaten)
The duck is easy to eat.	(#duck as eater, duck as eaten)

You Can't Ask it That Way (Ross 1967)

The hiker was lost.

Yes or No:

The hiker was lost?

Was the hiker lost?

The hiker kept walking in circles.

You Can't Ask it That Way (Ross 1967)

The hiker was lost.

Yes or No:

The hiker was lost?

Was the hiker lost?

The hiker who was lost kept walking in circles.

Yes or No:

The hiker who was lost kept walking in circles?

#Was the hiker who lost kept walking in circles?

You Can't Ask it That Way

The guest was fed.

Yes or No:

The guest was fed?

Was the guest fed?

The guest was fed waffles.

Yes or No:

The guest was fed waffles?

Was the guest fed waffles?

The guest who was fed waffles fed the parking meter.

The guest who was fed waffles fed the parking meter?

#Was the guest who fed waffles fed the parking meter?

A Point Worth Repeating (Repeatedly)

In acquiring a human language, children do not merely acquire a capacity to connect word-strings with their meaning(s).

Children acquire a **procedure**
(*an algorithm, an i-language in Chomsky's* sense)
that connects articulations with meanings
in a way that yields **certain homophonies** but **not others**.

This is the heart of many "poverty of stimulus" arguments:
it's hard to ***learn*** that a procedure ***over***generates homophony;
but kids ***acquire*** procedures that ***don't*** overgenerate homophony.

I Before E (especially after C)

- each human language L has ***unboundedly many*** expressions
- theorists want to ***specify*** these languages
- no finite upper bound on how many expressions of L can be ***understood*** by speakers of L
- speakers of L understand expressions of L ***systematically***, as if each speaker instantiates a corresponding generative procedure
- constrained homophony..."Poverty of the Stimulus Revisited"

  an i-language perspective is not an "optional supplement" to a "more fundamental" e-language perspective

Lewis, "Languages and Language"

- "What is a language? Something which assigns meanings to certain *strings* of types of sounds or marks. It could therefore be a function, a *set* of ordered pairs of strings and meanings."
- "What is language? A *social* phenomenon which is part of the natural history of human beings; a sphere of human *action* ..."

Later, in replies to objections...

"We may define a class of objects called *grammars*...

A grammar uniquely determines the language it generates. But a language does not uniquely determine the grammar that generates it."

Lewis: E Before I

I know of no promising way *to make objective sense of* the assertion that a grammar Γ is used by a population *P*, whereas another grammar Γ', which generates the same language as Γ, is not. I have tried to say how there are facts about *P* which *objectively select* the languages used by *P*. I am not sure there are facts about *P* which *objectively select* privileged grammars for those languages...a *convention of truthfulness and trust in* Γ will also be a *convention of truthfulness and trust in* Γ' whenever Γ and Γ' generate the same language.

I think it *makes sense to say* that languages might be used by populations even if there were no internally represented grammars. I can tentatively agree that £ is used by P if and only if everyone in P possesses an internal representation of a grammar for £, if that is offered as a scientific hypothesis. But I cannot accept it as any sort of analysis of "£ is used by P", since *the analysandum clearly could be true* although *the analysans was false*.

Human Language: a language that human children can naturally acquire

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

(C) each human language is an i-language: a biologically implementable *procedure that generates* expressions that connect meanings with articulations

Enough about i-languages for today...Back to T-sentences and Liars

Foster's Challenge

(D) for each human language, there is a theory of *truth* that is also
the core of an adequate theory of meaning for that language

given any one Tarski-style theory that might be offered as
the core of a correct theory of meaning for human language **H**,
there are boundlessly many equally good truth theories for **H**
that are quite implausible as meaning theories for **H**

given a truth theory whose theorems include
'Snow is white.' is true if and only if snow is white.
there will be equally good truth theories whose theorems include
'Snow is white.' is true if and only if grass is green.

Foster's Challenge

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

given any one Tarski-style theory that might be offered as
the core of a correct theory of meaning for **H**,
there are boundlessly many equally good truth theories for **H**
that are quite implausible as meaning theories for **H**

given a truth theory whose theorems include

$\text{True}([\text{Snow}_{NP}\ [\text{is white}_{A}]_{VP}]_{S}) \equiv \mathbf{R}[\text{Snow}(\_), \text{White}(\_)]$

there will be equally good truth theories whose theorems include

$\text{True}([\text{Snow}_{NP}\ [\text{is white}_{A}]_{VP}]_{S}) \equiv \mathbf{R}[\text{Grass}(\_), \text{Green}(\_)]$

Suppose that Bert snores, and Ernie yells.

(1) Bert snores.

(1-T) True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Snores(Bert)

(2) Ernie yells.

(2-T) True($[\text{Ernie}_{NP}\ \text{yells}_{VP}]_S$) ≡ Yells(Ernie)

(1-U) True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Yells(Ernie)

(1-U') True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Snores(Bert) & Yells(Ernie)

(1-U'') True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Yells(Ernie) ⊃ Snores(Bert)

True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Snores(Bert) & Γ

True($[\text{Bert}_{NP}\ \text{snores}_{VP}]_S$) ≡ Γ ⊃ Snores(Bert)

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$$

$$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)]$$

$$\forall x[\text{TrueOf}(\text{Bert}_{NP}, x) \equiv (x = \text{Bert})]$$

$$\forall x[\text{TrueOf}(\text{snores}_{VP}, x) \equiv \text{Snores}(x)]$$

$$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[\text{TrueOf}(\text{Bert}_{NP}, x)\ \&\ \text{TrueOf}(\text{snores}_{VP}, x)]$$

$$\ldots$$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[(x = \text{Bert})\ \&\ \text{Snores}(x)]$$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$

$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)\ \&\ \Gamma]$

$\forall x[\text{TrueOf}(\text{Bert}_{NP}, x) \equiv (x = \text{Bert})]$

$\forall x[\text{TrueOf}(\text{snores}_{VP}, x) \equiv \text{Snores}(x)]$

$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[\text{TrueOf}(\text{Bert}_{NP}, x)\ \&\ \text{TrueOf}(\text{snores}_{VP}, x)\ \&\ \Gamma]$

...

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[(x = \text{Bert})\ \&\ \text{Snores}(x)\ \&\ \Gamma]$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$$

$$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)]$$

$$\forall x[\text{TrueOf}(\text{Bert}_{NP}, x) \equiv (x = \text{Bert})\ \&\ \Gamma]$$

$$\forall x[\text{TrueOf}(\text{snores}_{VP}, x) \equiv \text{Snores}(x)]$$

$$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[\text{TrueOf}(\text{Bert}_{NP}, x)\ \&\ \text{TrueOf}(\text{snores}_{VP}, x)]$$

...

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[(x = \text{Bert})\ \&\ \Gamma\ \&\ \text{Snores}(x)]$$

$$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)$

$True([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[TrueOf(\ldots_{NP}, x)\ \&\ TrueOf(\ldots_{VP}, x)]$

$\forall x[TrueOf(Bert_{NP}, x) \equiv (x = Bert)]$

$\forall x[TrueOf(snores_{VP}, x) \equiv Snores(x)\ \&\ \Gamma]$

$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv \exists x[TrueOf(Bert_{NP}, x)\ \&\ TrueOf(snores_{VP}, x)]$

...

$True([Bert_{NP}\ snores_{VP}]_S) \equiv \exists x[(x = Bert)\ \&\ Snores(x)\ \&\ \Gamma]$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ \Gamma$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$

$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)]$

$\forall x[\text{TrueOf}(\text{Bert}_{NP}, x) \equiv (x = \text{Bert})]$

$\forall x[\text{TrueOf}(\text{snores}_{VP}, x) \equiv \text{Snores}(x)]$

$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)\ \&\ \Gamma$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[\text{TrueOf}(\text{Bert}_{NP}, x)\ \&\ \text{TrueOf}(\text{snores}_{VP}, x)]$

...

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \exists x[(x = \text{Bert})\ \&\ \text{Snores}(x)]$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)$

$True([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \Gamma \supset \exists x[TrueOf(\ldots_{NP}, x)\ \&\ TrueOf(\ldots_{VP}, x)]$

$\forall x[TrueOf(Bert_{NP}, x) \equiv (x = Bert)]$

$\forall x[TrueOf(snores_{VP}, x) \equiv Snores(x)]$

$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv \Gamma \supset \exists x[TrueOf(Bert_{NP}, x)\ \&\ TrueOf(snores_{VP}, x)]$

...

$True([Bert_{NP}\ snores_{VP}]_S) \equiv \Gamma \supset \exists x[(x = Bert)\ \&\ Snores(x)]$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv \Gamma \supset Snores(Bert)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)$

How bad is this?

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ \Gamma$

(H) OneToOne(X, Y) ≡ #(X) = #(Y)

(D) Fregean Definitions for (nonlogical) Arithmetic Notions

(F) Frege's Versions of the Dedekind-Peano Axioms for Arithmetic

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ (H\ \&\ D \supset F)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ (F\ \&\ D \supset InfManyPrimes)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ (H\ \&\ D \supset InfManyPrimes)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv (H\ \&\ D) \supset Snores(Bert)\ \&\ InfManyPrimes$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)$

$True([Bert_{NP}\ snores_{VP}]_S) \equiv Snores(Bert)\ \&\ \Gamma$

OK, how do we block this?

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

(C) each human language is a *constrained* generative procedure

Kids don't consider all the *possible* interpretations for word-strings.

So maybe meanings are *generable via operations available to kids*.

Not all *provable* T-sentences are interpretive.

Maybe the good ones are *computable via operations available to kids*.

Larson & Segal, *Knowledge of Meaning*

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores(Bert)}$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores(Bert)}\ \&\ \Gamma$

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

(C) each human language is a ***constrained*** generative procedure

Maybe "interpretive" T-sentences are "kid-computable."

But ***many*** Γ will have to be kid-computable...

$\text{True}([\text{Ernie}_{NP}\ \text{yells}_{VP}]_S) \equiv \text{Yells(Ernie)}$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

(C) each human language is a ***constrained*** generative procedure

Maybe "interpretive" T-sentences are "kid-computable," but not even theorem-introduction or conditionalization is available to kids.

$$\frac{\text{True}([\ldots]_S) \equiv P}{\text{True}([\ldots]_S) \equiv P\ \&\ \Gamma} \qquad \frac{\text{True}([\ldots]_S) \equiv P}{\Gamma \supset \text{True}([\ldots]_S) \equiv P}$$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

(C) each human language is a ***constrained*** generative procedure

Maybe "interpretive" T-sentences are "kid-computable," but not even theorem-introduction or conditionalization is available to kids.

Maybe given a super-weak system of derivation: $\text{Means}([\ldots]_S, P)$

iff

$\vdash \text{True}([\ldots]_S) \equiv P$

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_{A}]_{VP}]_{S}) \equiv \text{Blue}(\text{Kermit})$

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_{A}]_{VP}]_{S}) \equiv \text{Blue}(\text{Kermit})\ \&\ \Gamma$

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

(C) each human language is a ***constrained*** generative procedure

Maybe "interpretive" T-sentences are "kid-computable," but not even theorem-introduction or conditionalization is available to kids.

Maybe given a ***super-weak*** system of derivation: $\text{Means}([...]_{S}, P)$

iff

$\vdash \text{True}([...]_{S}) \equiv P$

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_A]_{VP}]_S) \equiv \text{Blue}(\text{Kermit})$

$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)]$

$\forall x[\text{TrueOf}(\text{Kermit}_{NP}, x) \equiv (x = \text{Kermit})]$

$\forall x[\text{TrueOf}([\text{is blue}_A]_{VP}, x) \equiv \text{Blue}(x)]$

$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$

to generate T-sentences, you don't need LOGIC: *schema-instantiation* and *replacement of identicals* (pattern matching) will do

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_A]_{VP}]_S) \equiv$

$\exists x[\text{TrueOf}(\text{Kermit}_{NP}, x)\ \&\ \text{TrueOf}([\text{is blue}_A]_{VP}, x)]$

...

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_A]_{VP}]_S) \equiv \exists x[(x = \text{Kermit})\ \&\ \text{Blue}(x)]$

$\text{True}([\text{Kermit}_{NP}\ [\text{is blue}_A]_{VP}]_S) \equiv \text{Blue}(\text{Kermit})$

$\text{True}([\text{not}\ [\text{Kermit}_{NP}\ [\text{is blue}_A]_{VP}]_S]_S) \equiv {\sim}\text{Blue}(\text{Kermit})$

$True([Kermit_{NP}\ [is\ not\ blue_{A}]_{VP}]_{S}) \equiv {\sim}Blue(Kermit)$

$$True([\ldots_{NP}\ \ldots_{VP}]_{S}) \equiv \exists x[TrueOf(\ldots_{NP}, x)\ \&\ TrueOf(\ldots_{VP}, x)]$$

$$\forall x[TrueOf(Kermit_{NP}, x) \equiv (x = Kermit)]$$

$$\forall x[TrueOf([is\ not\ blue_{A}]_{VP}, x) \equiv {\sim}Blue(x)]$$

$$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$$

$True([Kermit_{NP}\ [is\ not\ blue_{A}]_{VP}]_{S}) \equiv$

$$\exists x[TrueOf(Kermit_{NP}, x)\ \&\ TrueOf([is\ not\ blue_{A}]_{VP}, x)]$$

...

$True([Kermit_{NP}\ [is\ not\ blue_{A}]_{VP}]_{S}) \equiv \exists x[(x = Kermit)\ \&\ {\sim}Blue(x)]$

$True([Kermit_{NP}\ [is\ not\ blue_{A}]_{VP}]_{S}) \equiv {\sim}Blue(Kermit)$

$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_A]_{VP}]_S) \equiv {\sim}\text{True}(\text{Linus})$

$$\text{True}([\ldots_{NP}\ \ldots_{VP}]_S) \equiv \exists x[\text{TrueOf}(\ldots_{NP}, x)\ \&\ \text{TrueOf}(\ldots_{VP}, x)]$$

$$\forall x[\text{TrueOf}(\text{Linus}_{NP}, x) \equiv (x = \text{Linus})]$$

$$\forall x[\text{TrueOf}([\text{is not true}_A]_{VP}, x) \equiv {\sim}\text{True}(x)]$$

$$\exists x[(x = \alpha)\ \&\ \Phi(x)] \equiv \Phi(x)$$

$$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_A]_{VP}]_S) \equiv$$
$$\exists x[\text{TrueOf}(\text{Linus}_{NP}, x)\ \&\ \text{TrueOf}([\text{is not true}_A]_{VP}, x)]$$

...

$$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_A]_{VP}]_S) \equiv \exists x[(x = \text{Linus})\ \&\ {\sim}\text{True}(x)]$$

$$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_A]_{VP}]_S) \equiv {\sim}\text{True}(\text{Linus})$$

$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_{A}]_{VP}]_{S}) \equiv \sim\text{True}(\text{Linus})$

Linus = the first numbered sentence in this talk

= [[The first numbered sentence in this talk]$_{NP}$ [is not true$_{A}$]$_{VP}$]$_{S}$

~True(Linus)

True(Linus) ⊃ True(the first numbered sentence in this talk)

True(Linus) ⊃ True('The first numbered sentence in this talk is not true.')

True(Linus) ⊃ The first numbered sentence in this talk is not true.

True(Linus) ⊃ ~True(the first numbered sentence in this talk)

$True([Linus_{NP}\ [is\ not\ true_{A}]_{VP}]_{S}) \equiv {\sim}True(Linus)$

Linus = the first numbered sentence in this talk

= $[[The\ first\ numbered\ sentence\ in\ this\ talk]_{NP}\ [is\ not\ true_{A}]_{VP}]_{S}$

~True(Linus)

$True([Linus_{NP}\ [is\ not\ true_{A}]_{VP}]_{S}) \equiv {\sim}True(Linus)$

$True([Linus_{NP}\ [is\ not\ true_{A}]_{VP}]_{S})$

$True([The\ first\ numbered\ sentence\ in\ this\ talk]_{NP}\ [is\ not\ true_{A}]_{VP}]_{S})$

True(Linus)

The worry here is not about what
ordinary speakers can (unconciously) *derive*.
The worry is about whether
certain *theoretical claims* (about speakers) are *true*.

$\text{True}([\text{Linus}_{NP}\ [\text{is not true}_A]_{VP}]_S) \equiv \sim\text{True}(\text{Linus})$

Linus = the first numbered sentence in this talk

= $[[\text{The first numbered sentence in this talk}]_{NP}\ [\text{is not true}_A]_{VP}]_S$

~True(Linus)

True(Linus)

Charlie = $[[\text{Most of the sentences in the box}]_{QP}\ [\text{are not true}_A]_{VP}]_S$

2 + 2 = 4	2 + 2 = 5
3 + 3 = 6	3 + 3 = 5

Charlie

$True([Linus_{NP}\ [is\ not\ true_{A}]_{VP}]_{S}) \equiv {\sim}True(Linus)$

Linus = the first numbered sentence in this talk

= [[The first numbered sentence in this talk]$_{NP}$ [is not true$_{A}$]$_{VP}$]$_{S}$

~True(Linus)

True(Linus)

Familiar Kinds of Replies:

- Typology (Russell)
- Fixed Points (Kripke)
- Revisions (Gupta/Belnap)

Nontrivial Logic,
usually offered as a
regimentation/reformation
of ordinary lanaguage
for purposes of studying *truth*

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})$

$\text{True}([\text{Bert}_{NP}\ \text{snores}_{VP}]_S) \equiv \text{Snores}(\text{Bert})\ \&\ \Gamma$

(D) for each human language, there is a theory of ***truth*** that is also the core of an adequate theory of meaning for that language

Maybe "interpretive" T-sentences are "kid-computable," but not even theorem-introduction or conditionalization is available to kids.

Maybe given a ***super-weak*** system of derivation: $\text{Means}([...]_S, \text{P})$

iff

$\vdash \text{True}([...]_S) \equiv \text{P}$

Does (D) really offer *any* stable account of meaning?

(D) for each human language, there is a theory of *truth* that is also the core of an adequate theory of meaning for that language

If sentences if a human language have truth conditions...

Foster's Problem for (D): True('Kermit is blue.') ≡ Blue(Kermit) & Γ

But maybe given a *trivial* "background logic" for *deriving* T-sentences, a truth theory can be a meaning theory for a human i-language

Liar Problem for (D): True('Linus is not true.') ≡ ~True(Linus)

But maybe given a *sophisticated* "background logic," a truth theory can be a meaning theory for a *regimentation of* a human language

Human Language: a language that human children can naturally acquire

(D) for each human language, there is a theory of *truth* that is also
the core of an adequate theory of meaning for that language

(C) each human language is an i-language:
a biologically implementable (and hence constrained)
procedure that generates expressions, which connect
meanings of some kind with articulations of some kind

(B) each human language is an i-language for which
there is a theory of truth that is also
the core of an adequate theory of meaning for that i-language

Human Language: a language that human children can naturally acquire

(C) each human language is an i-language:

a biologically implementable (and hence constrained)

procedure that generates expressions, which connect

meanings of some kind with articulations of some kind

(?) these human i-language meanings are...

I-Languages, T-sentences, and Liars

2. René Magritte, *La Condition humaine*, 1933.

Advertising for Weeks 3 and 4

- In acquiring words, kids use available concepts to *introduce* new ones. Lexicalization involves *reformatting*, not merely *labeling* concepts.

  Sound('ride') + RIDE(_, _) ==> RIDE(_) + RIDE(_, _) + 'ride'

- Meanings are *instructions* for how to access and combine *i-concepts*

  lexicalizing RIDE(_, _) puts RIDE(_) at some lexical address λ

  Meaning('ride') = *fetch*@λ

- I(ntroduced)-concepts can be *conjoined* via simple operations that require neither Tarskian variables nor a Tarskian ampersand

  'ride fast horses' RIDE( )^∃[Θ(, _)^FAST(_)^HORSES(_)]

  'ride horses fast' RIDE( )^∃[Θ(, _)^HORSES(_)]^FAST( )

  'ride fast horses fast' RIDE( )^∃[Θ(, _)^FAST(_)^HORSES(_)]^FAST( )

Advertising for Weeks 3 and 4

- In acquiring words, kids use available concepts to *introduce* new ones. Lexicalization involves *reformatting*, not merely *labeling* concepts.

  Sound('ride') + RIDE(_, _) ==> RIDE(_) + RIDE(_, _) + 'ride'

- Meanings are *instructions* for how to access and combine *i-concepts*

  lexicalizing RIDE(_, _) puts RIDE(_) at some lexical address λ

  Meaning('ride') = *fetch*@λ

- I(ntroduced)-concepts can be *conjoined* via simple operations that require neither Tarskian variables nor a Tarskian ampersand

'ride fast'	RIDE( )^FAST( )	
'fast horse'	FAST( )^HORSE( )	
'horses'	HORSE( )^PLURAL( )	HORSES(_)

Advertising for Weeks 3 and 4

- In acquiring words, kids use available concepts to *introduce* new ones. Lexicalization involves *reformatting*, not merely *labeling* concepts.

  Sound('ride') + RIDE(_, _) ==> RIDE(_) + RIDE(_, _) + 'ride'

- Meanings are *instructions* for how to access and combine *i-concepts*

  lexicalizing RIDE(_, _) puts RIDE(_) at some lexical address λ

  Meaning('ride') = *fetch*@λ

- I(ntroduced)-concepts can be *conjoined* via simple operations that require neither Tarskian variables nor a Tarskian ampersand

  'fast horses' FAST( )^HORSES( )

  'ride horses' RIDE( )^∃[Θ(, _)^HORSES(_)]

Advertising for Weeks 3 and 4

- In acquiring words, kids use available concepts to *introduce* new ones. Lexicalization involves *reformatting*, not merely *labeling* concepts.

  Sound('ride') + RIDE(_, _) ==> RIDE(_) + RIDE(_, _) + 'ride'

- Meanings are *instructions* for how to access and combine *i-concepts*

  lexicalizing RIDE(_, _) puts RIDE(_) at some lexical address λ

  Meaning('ride') = *fetch*@λ

- I(ntroduced)-concepts can be *conjoined* via simple operations that require neither Tarskian variables nor a Tarskian ampersand

  'fast horses' FAST( )^HORSES( )

  'ride horses' RIDE( )^∃[Θ(, _)^HORSES(_)]

  'ride fast horses' RIDE( )^∃[Θ(, _)^[FAST(_)^HORSES(_)]]

Lycan's Idea

- spoken English (French, etc.) is not itself a human language

- a speaker "of English" has
  (i) a basic linguistic capacity, corresponding to
    a "core" language H that has no semantic vocabulary
  (ii) a capacity to extend the basic capacity, corresponding to
    a series of languages (H^1, H^2, ...) that have semantic vocabulary

- sentences of H are sentences of H^1, which has a predicate 'true-in-H'
- sentences of H^1 are sentences of H^2, which has a predicate 'true-in-H^1'
- and so on

Lycan's Idea

- spoken English (French, etc.) is not itself a human language

- a speaker "of English" has
  (i) a basic linguistic capacity, corresponding to
  a "core" language H that has no semantic vocabulary
  is H a (biologically implemented) generative procedure?
  are there "fragments" of natural procedures?

- sentences of H are sentences of H^1, which has a predicate 'true-in-H'
- sentences of H^1 are sentences of H^2, which has a predicate 'true-in-H^1'
- and so on

Lycan’s Idea

- spoken English (French, etc.) is not itself a human language

- a speaker “of English” has

  (i) a basic linguistic capacity, corresponding to

  a “core” language H that has no semantic vocabulary

  is H a (biologically implemented) generative procedure?

  are there “fragments” of natural procedures?

- sentences of H are sentences of H^1, which has a predicate ‘true-in-H’

  why think this is true if H and H^1 are generative procedures?

  they may generate *homophonous* expressions.

  but expressions “of” (i.e., generated by) H are not expressions “of” H^1