Meanings Before Truth Conditions
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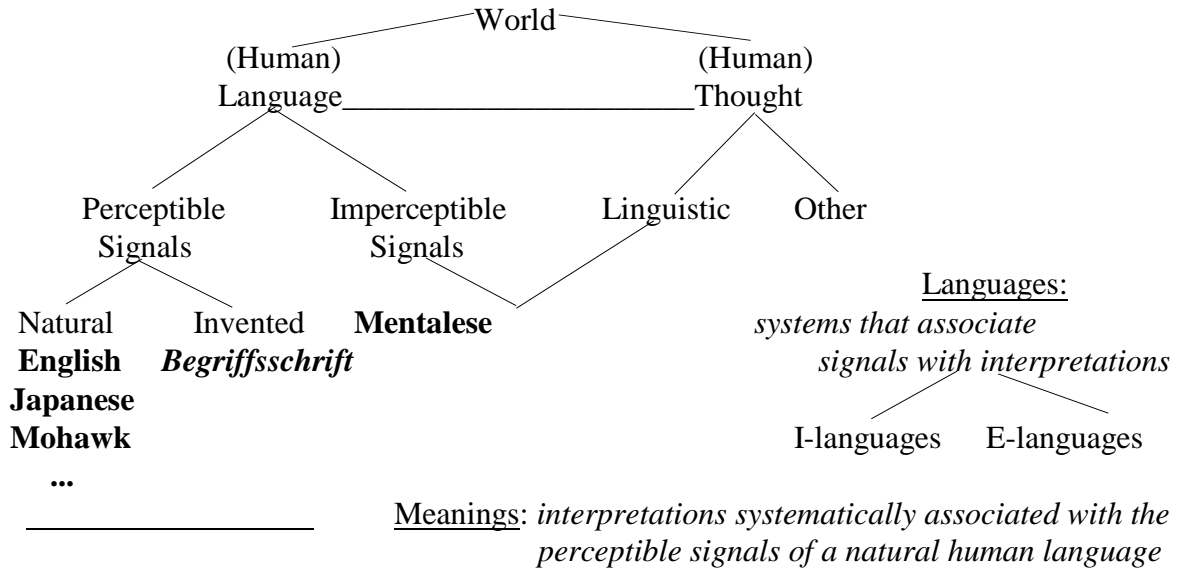University of Maryland
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Cruel Homework
*Provide a compositional semantic theory that associates each of the following word-strings with
a correct truth-condition (or in the case of ambiguity, correct truth-conditions) in a way that also
helps explain any entailments due to meaning. Be sure to specify the domain in a theoretically
perspicuous and metaphysically respectable way. Then show that the theory is acquirable, in
conditions of typical experience, given plausible nativist assumptions.*

(1) The sky is blue
(2) Snow is white
(3) It is blue, and they are white
(4) My house, whose six rooms were painted white, was painted blue
(5) This book is heavy, though it was favorably reviewed, and that one is available everywhere
(6) If every unicycle has wheels, then these unicycles have wheels
(7) Beavers build dams, and poems are written by fools like me
(8) Beavers built those dams if and only if those dams were built by beavers
(9) Birds can fly, except for those that can't; and pigs fly, except for those that don't
(10) Every girl who saw a dog or a cat will get cake or ice cream unless she cleaned her room
(11) While neither of us will go, I would go if I were you, and you would go if you were me
(12) You may not go if it is raining
(13) The weather here is lousy today
(14) Pat married Chris, and we all drank champagne for an hour
(15) Everyone drank the first glass in five minutes
(16) Sherlocke Holmes said that if you ask the average man's wife whether he thinks
        that Hamlet grew up with his parents in Denmark, she'll say that he rarely thinks
(17) This government does little for the sake of average Americans
        whose children will inherit the massive debt that is accumulating
(18) Socrates was mortal and exists no more
(19) Plato died, is dead, or will die
(20) Triangles differ perceptibly from circles, but geometric figures are imperceptible
(21) Aristotle was bald
(22) Aristotle was a bald linguist
(23) France is hexagonal, and it is a republic, though it used to be a monarchy
(24) France is a hexagonal republic
(25) My round square has a colorless green idea attached to each of its right angles

Once upon a time, it was widely agreed that the homework couldn't be done:
    see Frege, Russell, Wittgenstein, Tarski, Strawson, Austin, Chomsky, Fodor, and many others.
The idea was that while sentences of natural language can be used to express thoughts,
    these sentences typically don't themselves have meanings that "match" the thought-structures.

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                              World
          (Human)                          (Human)
          Language_____Thought

      Perceptible        Imperceptible      Linguistic    Other
      Signals            Signals
                                                          Languages:
   Natural      Invented    Mentalese              systems that associate
   English    Begriffsschrift                         signals with interpretations
   Japanese
   Mohawk                                          I-languages    E-languages
      ...
   _____     Meanings: interpretations systematically associated with the
                                     perceptible signals of a natural human language
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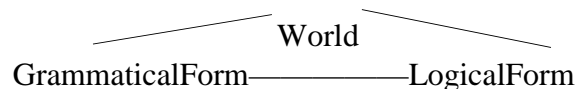
<u>Theories of Meaning/Understanding</u> (for natural human languages with perceptible signals):
 theories of how the relevant signals are systematically associated with their interpretations

<u>a Theory of Truth for Language **L**</u>:
 *associates each (declarative) sentence Σ of **L** with a (perhaps context-sensitive) truth condition*

Some Theses of Varying Plausibility

1. for each natural (i.e., naturally acquirable) human language **L**, there is a theory of truth (DH)
  that can serve as the core of an adequate theory of meaning for **L**

2. naturally acquirable human languages, in so far as we can provide theories of them, (CH)
  are stable states of a "language faculty" that operates in accordance with
  constraints that reflect innately determined aspects of human biology

3. for each stable state **L** of the human language faculty, there is a theory of truth (UC)
  that can serve as the core of an adequate theory of meaning for **L**

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                                                    World
                                          _____/    _____
**Overview, short**: not-(3), and (2); so not-(1).    GrammaticalForm—————LogicalForm
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   less short:
Davidson's Hypothesis (DH) is sustainable only given Chomsky's Hypothesis (CH).
But given (CH) and various linguistic facts discovered in the last forty years,
  (DH) ends up being an Ultrabold Conjecture (UC) about the human language faculty *and*
  how this aspect of human psychology is related to the language-independent world.
And (UC) turns out to be very implausible, absent a benevolent force that somehow ensures *both*
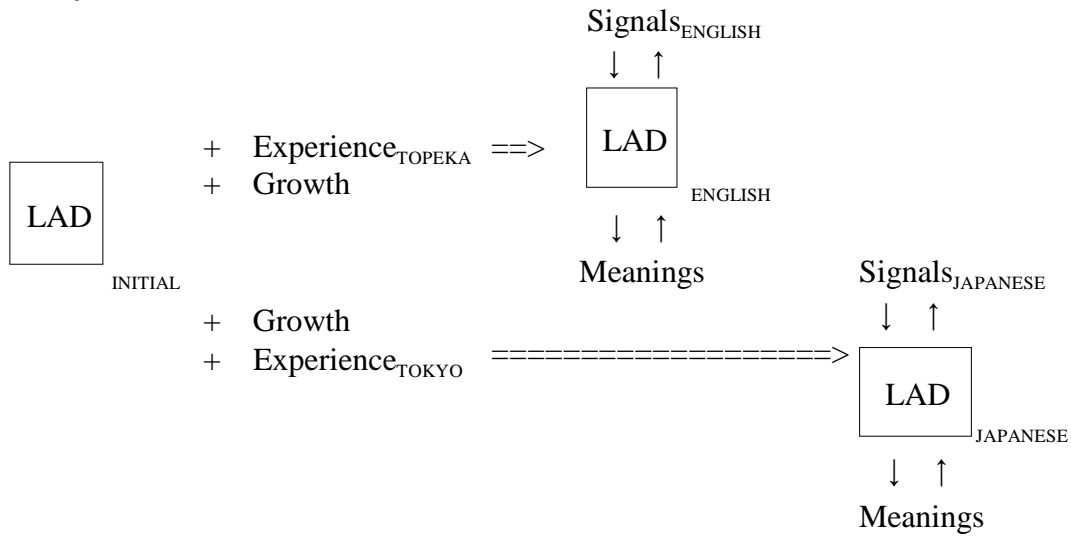 (i) a more-or-less transparent relation between grammatical form and logical form, *and*
  (ii) a more-or-less transparent relation between logical form and the structure of the world.
Nativists can plausibly maintain (i). But given (i), (ii) has to go, along with the idea that
there are theories of truth that can serve as adequate theories of meaning for natural languages.

Some Nearly Truistic Remarks

Signals$_{\text{ENGLISH}}$

↓ ↑

+ Experience$_{\text{TOPEKA}}$ ==> | LAD |

+ Growth

ENGLISH

| LAD |

↓ ↑

INITIAL

Meanings   Signals$_{\text{JAPANESE}}$

+ Growth   ↓ ↑

+ Experience$_{\text{TOKYO}}$ ==================> | LAD |

JAPANESE

↓ ↑

Meanings

at least typically,
a complex expression Σ
of a human language

has a meaning determined by the (meanings of) the *parts* of Σ
and how those parts are *arranged* in Σ

can be *used*, in contexts, to perform *speech acts* with certain
Truth/Reference conditions

the Truth/Reference conditions of utterances (of natural linguistic expressions) are
severely constrained by the meanings of the expressions uttered; and
the Truth/Reference condition of a particular utterance of expression Σ in context **C** is
determined by the meaning of Σ and relevant aspects of **C**

we can invent a *Begriffsschrift* that allows for context-sensitive expressions, in the sense that
(a) the meaning of each expression is
a function from contexts to Truth/Denotation/Satisfaction conditions, and
(b) given a context-sensitive expression, each semantically relevant aspect of context
is explicitly reflected with an index on (or identical with) some constituent

given an invented language of this sort, we can effectively identify contexts (*a la* Kaplan) with
K-tuples of potential (and potentially abstract) denotations for indices

Pat likes Al   L(**p**, **a**)   true iff   entity **p** bears relation L to entity **a**

$$[\|\text{'L'}\|(\|\text{'a'}\|)](\|\text{'p'}\|) = \top$$

Pat likes me   L(**p**, *s*) true relative to **K** iff   **p** bears relation L to the speaker of **K**

$$[\|\text{'L'}\|^{\mathbf{K}}(\|s\|^{\mathbf{K}})](\|\text{'p'}\|^{\mathbf{K}}) = \top$$
$$\|s\|^{\mathbf{K}} = \mathbf{K}\text{-speaker}$$

for every **K**,   **K**-speaker is the entity in **K** that occupies the "speaker"-role
K-place is the entity in **K** that occupies the "place"-role
K-time is the entity in **K** that occupies the "time"-role
K1 is the entity in **K** that occupies the "FirstThingDemonstrated"-role
K2 is the entity in **K** that occupies the "SecondThingDemonstrated"-role
...

Pat likes it	$L(\mathbf{p}, \delta_1)$	true relative to **K** iff	$\mathbf{p}$ bears relation L to **K**1
I like it	$L(s, \delta_1)$	true relative to **K** iff	**K**-speaker bears relation L to **K**1
This trumps that	$T(\delta_1, \delta_2)$	true relative to **K** iff	**K**1 bears relation T to **K**2

Pat liked Al $L^*(\mathbf{p}, \mathbf{a})$ true relative to **K** iff $\exists i[L_3(\mathbf{p}, \mathbf{a}, i) \,\&\, Before(i, \mathbf{K}\text{-time})]$
$L_3(\mathbf{x}, \mathbf{y}, i) \equiv \mathbf{x}$ bears L to $\mathbf{y}$ at i

now	n	denotes x relative to **K** iff	x = **K**-time
here	h	denotes x relative to **K** iff	x = **K**-place
yesterday	y	denotes x relative to **K** iff	x = the day before the day of **K**-time

a Kontext   <speaker, place, time, ..., entity-1, entity-2, ..., entity-z>
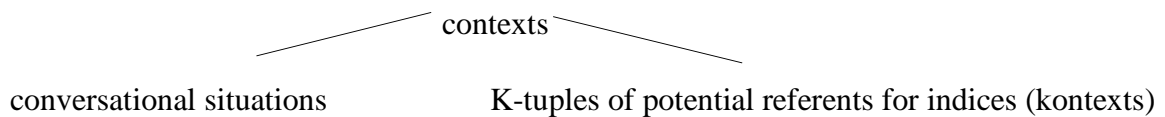|_____| |_____|
potential denotations   potential denotations
for any indexicals used   for any demonstratives used

Al is bald $B\mathbf{a}$ true relative to **K** iff $\mathbf{a}$ is **K**-bald: $\mathbf{a}$ has at least **K**-bawld hairs

K-bawld is the entity in **K** that occupies the "BaldnessStandard"-role

France is hexagonal Hf true relative to **K** iff   **K**-france is **K**-hexagonal: ???

<speaker, place, time, ..., bald-value, country-value, shape-value, ..., entity-1, entity-2, ..., entity-z>

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contexts

conversational situations   K-tuples of potential referents for indices (kontexts)

presumably, many-to-one: many conversational situations will correspond to each K-tuple;
for each kontext, there will be many conversational situations that
differ in (perhaps irrelevant) ways not tracked by the kontext

Imagine two utterances of 'I sang', differing only in that the first (but not the second) occurred in a situation where it was raining. Now imagine the only difference being that in the first situation, it was raining hard...in Paris...on a Tuesday...while the speaker was wearing a hat...

We can *hypothesize* that context-sensitivity in natural language is kontext-sensitivity:
   truth conditions of utterances can depend on many aspects of conversational situations;
   and perhaps this fact about *utterances* can be plausibly explained by saying that
      (i) the relevant *expressions* have indices, and correspondingly,
      (ii) the meanings of such expressions are functions from K-tuples to truth-conditions.
But perhaps not.

Suppose that for some utterance u of natural language sentence Σ in conversational situation **C**,
there is a *Begriffsschrift* sentence β and a kontext **K** corresponding to **C**, such that...

| u | is true iff | β is true relative to **K** |
| Σ | is true relative to **C** iff | β is true relative to **K** |

QUESTIONS: is this relation systematic?
         Does the way that the truth of β depends on kontext *track*
            the way that the truth of Σ depends on aspects of conversational situations?
         And if so, is this systematicity "in sync with" the semantic compositionality of Σ?
         Is the way that the meaning of Σ depends on constituents of Σ tracked by
            the way that the (kontext-relative) truth-condition of β depends on
               the Truth/Denotation/Satisfaction conditions of the parts of β?

Easy to lose sight of such questions if we *assume* a truth-conditional semantics.
But it is an *empirical hypothesis* that in natural language:

   (i) the dependence of utterance-truth on conversational situations is tracked by
      the dependence of sentence-truth on K-tuples of potential denotata for indices; and
   (ii) this dependence can be tracked by the same theory that tracks
      the dependence of sentence-meaning on constituent-meaning

Put another way, it is an empirical hypothesis that constituent meanings can be adequately
characterized in terms of functions from kontexts to Truth/Denotation/Satisfaction conditions.

Critics: death by a thousand counterexamples; see the Cruel Homework

Advocates: it's a research program, with explanatory virtues, and the only (decent) game in town
         (see, especially, Jason Stanley's work; but see also Cappelen and Lepore)

traditional form of stalemate: severe descriptive inadequacy vs. severe explanatory inadequacy

Critics: you gotta be kidding...if that's all to takes to have the best game in town,
         you should either move to a new town, or try a new game

Advocates: descriptive inadequacy is the norm in science, especially in early stages of inquiry;
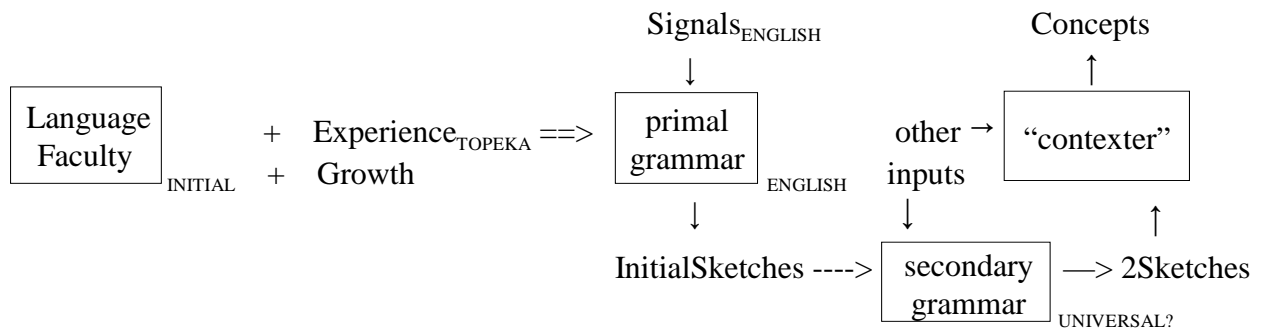   we need to hang on, for dear life, to whatever explanatory structure we can find

   a critic who has ever tried to explain anything will sympathize with this last point...

SympatheticCritic: OK, let's really think about explanatory adequacy, and see where we end up. But no fair *insisting* that we look beyond the particular facts that make truth-conditional semantics seem descriptively implausible, while *refusing* to consider facts that make truth-conditional semantics seem explanatorily inadequate. Once we (justifiably) broaden our scope—and stress the project of carving (human) nature at its joints, with the aim of explaining (as opposed to merely describing) certain phenomena—we should follow this line of thought where it leads: even if it leaves us to reject truth-conditional semantics.

ReasonableAdvocate: OK. But those who reject truth-conditional semantics need to provide an alternative that lets us describe and explain at least as much as truth-conditionalists can describe and explain (however much that is).

Debate: what does truth-conditional semantics really explain, and can we do better?

SympatheticCritic: maybe understanding a linguistic *expression* (as opposed to a *speaker*) is a matter of generating a "primal sketch" of a thought—a rough "blueprint" for building a complex concept from available elements; where this initial sketch gets "fleshed out," in *various* ways, by subsequent cognitive processes; and maybe we shouldn't describe initial sketches in terms of the truth-or-falsity complex linguistic actions, like assertions, in which the "end product" gets used in making complex truth-evaluable claims.

$$\text{Signals}_{\text{ENGLISH}} \qquad\qquad \text{Concepts}$$
$$\downarrow \qquad\qquad\qquad\qquad \uparrow$$

Language Faculty $|_{\text{INITIAL}}$ +   Experience$_{\text{TOPEKA}}$ ==>   primal grammar $|_{\text{ENGLISH}}$ other → inputs   "contexter"
   +   Growth

$$\downarrow \qquad\qquad\qquad \downarrow \qquad\qquad\qquad \uparrow$$

InitialSketches ----> secondary grammar $|_{\text{UNIVERSAL?}}$ —> 2Sketches

We want our theories of (mature states of) the LanguageFaculty to help explain
how adults do *and don't* associate signals with meanings.
And we want our theories of (initial states of) the LanguageFaculty to help explain
how kids end up in the mature states they end up in, given *typical* experience.
But we also want our claims about (initial states of) the LanguageFaculty to be plausible,
given what we know about primate biology and genetic mechanisms.

Of course, we also want universal peace, justice, and prosperity.

But maybe Meanings, the interpretations systematically associated with natural language signals,
are initial inputs to a complex process of creating the concepts that figure in
truth-evaluable judgments corresponding to contextualized utterances.

And maybe this will let us respect an apparent asymmetry highlighted by Cruel Homework:
Meanings seems to be *linguistically* compositional in ways that *Truth*-Conditions are not.

For present purposes, assume that there are many good "poverty of stimulus" arguments
    supporting a substantive version of nativism in this domain.

(1) John expected Bill to leave   (1a) John expected that Bill would leave
(2) John persuaded Bill to leave   (2a) John$_i$ persuaded Bill$_j$ that he$_j$ should leave
                                                    (2b) #John$_i$ persuaded Bill$_j$ that he$_i$ should leave
(3) Bill intended to leave
(4) John expected to leave
        (4a) John$_i$ expected that he$_i$ would leave   (4a') John$_i$ expected himself$_i$ to leave
        (4b) #John expected that someone would leave   (4b') #John expected someone to leave
(5) *John persuaded to leave   [*cf*: the man who John persuaded to leave]

(6) John is eager to please
        (6a) John is eager that he please relevant parties
        (6b) #John is eager that relevant parties please him
(7) John is easy to please
        (7a) #It is easy for John to please relevant parties
        (7b) It is easy for relevant parties to please John
(8) Soliciters who can duck and hide whenever sanctioning solicitors
        might scare them saw every doctor who needed patience with patients

(9) Who said he has the best smile
        (9a)   for which person x: x said ✍that-guy has the best smile
        (9b)   for which person x: x said   x   has the best smile
(10) Who did he say has the best smile
        (10a)   for which person x: ✍that-guy said x has the best smile
        (10b) #for which person x: x   said x has the best smile

(11) Pat$_i$ said Chris$_j$ should wash him$_{i/*j}$
(12) Pat$_i$ said Chris$_j$ should wash himself$_{*i/j}$
(13) Pat$_i$ wants to feed Chris$_j$ and wash him$_{*i/j}$
(14) Pat$_i$ wants to feed Chris$_j$ and wash himself$_{i/*j}$

(15) The hiker who was lost kept walking in circles
(16) The hiker who lost was kept walking in circles
(17) Was the hiker who lost kept walking in circles
        (17a) #Y/N: the hiker who was lost kept walking in circles
        (17b) Y/N: the hiker who lost was kept walking in circles

        (17α) Was {[the [hiker [who ___ lost]$_{RC}$]][kept walking in circles]}
                    |_____*_____|

        (17β) Was {[the [hiker [who lost]$_{RC}$]][___ kept walking in circles]}
                    |_____|

(18) The senator called the millionaire from Texas
        (18a) The senator called the millionaire, and the millionaire was from Texas
        (18b) The senator called the millionaire, and the call was from Texas
        (18c) #The senator called the millionaire, and the senator was from Texas

The senator called the millionaire from Texas   The senator called the millionaire from Texas
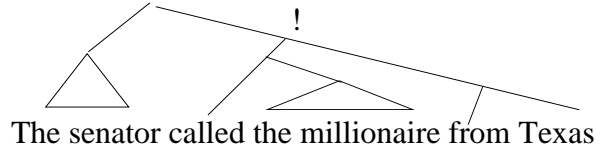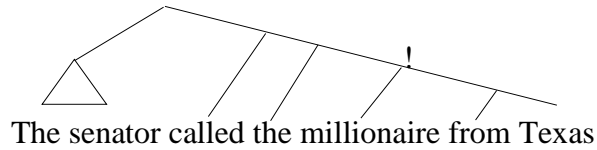
(18a) ==> ∃x[Millionaire(x) & From(x, Texas)]   (18b) ==> ∃e[PastCall(e) & From(e, Texas)]
                                                      #(18c) ==> ∃x[CalledTheMillionaire(x) &
                                                                      From(x, Texas)]
                           (18b) ==> ∃e[PastCallingOfTheMillionaire(e) & From(e, Texas)]

(6) [John [is [eager [__ [to please (   )]]]]]   (7) [John [is [easy [(   ) [to please __]]]]]
        |_____| |_____|

           MORAL: to describe and explain negative facts like these, we need
                   (a) substantive grammatical structures, often involving covert constituents
                   (b) constrained principles of interpretation, often involving covert variables

signal
'patsaweverydog'

| Modest Grammar | | Immodest Mapping from Grammar to Logic |

| Immodest Grammar | | Modest Mapping from Grammar to Logic |
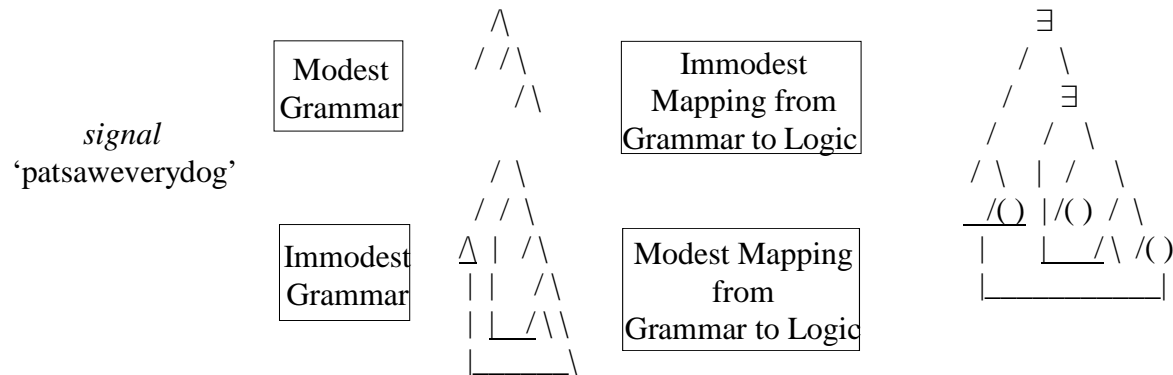
So we have to hope for theories of the LAD that are:
        (i) _substantive_ enough to impose the requisite structures and variables,
                to account for positive facts about what expressions _do_ mean;
        (ii) _constrained_ enough, to account for negative facts about what expressions _don't_ mean;
    and (iii) _simple_ enough, to be plausible candidates for innate specification

Finding such theories is HARD, not least because:
        if we describe a positive fact by saying that a _mature_ state of the LAD generates a certain
        structure, we thereby say that the initial state of the LAD _permits_ such structures; and
        if we explain a negative fact by saying that the _initial_ state of the LAD imposes certain
        constraints, we cannot describe positive facts in terms of structures that violate the constraints.
And the structures would have to be _very complex_ to fully track dependence of utterance-truth on
conversational-situations. This would make the child's task _very hard_, unless it's all innate,
modulo what _every_ normal child can learn given _any_ typical course of experience. So we must ask...
Is the innate endowment required by Truth Conditional Semantics (DH) implemented in our
primate biology? Do _humans understand_ linguistic expressions in ways that reflect composition
of truth-conditions? Is (DH) plausible for human I-languages? Can (DH) be combined with a
good theory of the LAD? For each sentence, we should ask: what is its grammatical structure
and alleged truth condition; what would the requisite (GrammaticalForm-to-LogicalForm)
principles be; and are they compatible with a suitably restrictive Universal Grammar?