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.
World

(Human) Language (Human) Thought

Perceptible Signals

Imperceptible Signals

Linguistic Other

Languages:

Natural Invented Mentalese

English Begriffsschrift

Japanese Mohawk

...

Languages: systems that associate signals with interpretations

I-languages E-languages

Meanings: interpretations systematically associated with the perceptible signals of a natural human language

Theories of Meaning/Understanding (for natural human languages with perceptible signals):

theories of how the relevant signals are systematically associated with their interpretations

a Theory of Truth for Language L:

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, are stable states of a “language faculty” that operates in accordance with constraints that reflect innately determined aspects of human biology (CH)

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

Overview, short: not-(3), and (2); so not-(1)

GrammaticalForm ——— LogicalForm

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

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 $\Sigma$ in context $C$ is determined by the meaning of $\Sigma$ 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 $a$

$\llbracket\llbracket L \rrbracket(\llbracket a \rrbracket)(\llbracket p \rrbracket) = \top\rrbracket$

Pat likes me $L(p, s)$ true relative to $K$ iff

$p$ bears relation $L$ to the speaker of $K$

$\llbracket\llbracket L \rrbracket^K(\llbracket s \rrbracket^K)(\llbracket p \rrbracket^K) = \top\rrbracket$

$\llbracket s \rrbracket^K = K$-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 \( L(p, \delta_1) \) true relative to $K$ iff $p$ bears relation $L$ to $K1$
I like it \( L(s, \delta_1) \) true relative to $K$ iff $K$-speaker bears relation $L$ to $K1$
This trumps that \( T(\delta_1, \delta_2) \) true relative to $K$ iff $K1$ bears relation $T$ to $K2$
Pat liked Al \( L^*(p, a) \) true relative to $K$ iff $\exists i[L(p, a, i) \& \text{Before}(i, K\text{-time})]$

\( L(x, y, i) \) $x$ bears $L$ to $y$ 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 $x = \text{the day before the day of } K$-time

a Kontext $<\text{speaker, place, time, ..., entity-1, entity-2, ..., entity-z}>
<table>
<thead>
<tr>
<th>potential denotations</th>
<th>potential denotations</th>
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</thead>
<tbody>
<tr>
<td>for any indexicals used</td>
<td>for any demonstratives used</td>
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Al is bald $Ba$ true relative to $K$ iff $a$ is $K$-bald: $a$ 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: ???

$<\text{speaker, place, time, ..., bald-value, country-value, shape-value, ..., entity-1, entity-2, ..., entity-z}>$

contexts 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 $\Sigma$ in conversational situation $C$, there is a Begriffsschrift sentence $\beta$ and a kontext $K$ corresponding to $C$, such that...

\[
\begin{align*}
\text{if } u \text{ is true} & \iff \beta \text{ is true relative to } K \\
\text{if } \Sigma \text{ is true relative to } C & \iff \beta \text{ is true relative to } K
\end{align*}
\]

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

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.

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 persuaded Bill, that he should leave

(2b) #John persuaded Bill, that he should leave
(3) Bill intended to leave
(4) John expected to leave

(4a) John expected that he would 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) Solicitors 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: 'that-guy has the best smile
(9b) for which person x: 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 said Chris should wash him

(12) Pat said Chris should wash himself

(13) Pat wants to feed Chris and wash him

(14) Pat wants to feed Chris and wash himself

(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 was 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

(17a) 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

(18a) \( \exists x [\text{Millionaire}(x) \& \text{From}(x, \text{Texas})] \)

(18b) \( \exists e [\text{PastCall}(e) \& \text{From}(e, \text{Texas})] \)

(18c) \( \exists x [\text{CalledTheMillionaire}(x) \& \text{From}(x, \text{Texas})] \)

(18b) \( \exists e [\text{PastCallingOfTheMillionaire}(e) \& \text{From}(e, \text{Texas})] \)

(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

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?