

Handout #1: Truth and Meaning

The Compositionality Requirement

... a satisfactory theory of meaning must give an account of how the meanings of sentences depend upon the meanings of words. ("Truth and Meaning (1967), p. 17)

When we can regard the meaning of each sentence as a function of a finite number of features of the sentence, we have an insight not only into what there is to be learned; we also understand how an infinite aptitude can be encompassed by finite accomplishments. ("Theories of Meaning and Learnable Languages (1966), p. 8)

I propose what seems to me clearly to be a necessary feature of a learnable language: it must be possible to give a constructive account of the meaning of the sentences in the language. Such an account I call a theory of meaning for the language, and I suggest that a theory of meaning that conflicts with this condition, whether put forward by philosopher, linguist, or psychologist, cannot be a theory of a natural language; and if it ignores this condition, it fails to deal with something central to the concept of a language. (Theories of Meaning and Learnable Languages (1966), p. 3)

[CM]

A compositional meaning theory for a language L is a formal theory that enables anyone who understands the language in which the theory is stated to understand the primitive expressions of L and the complex expressions of L on the basis of understanding the primitive ones.

Learnability Argument

- (1) Natural languages have an infinite number of nonsynonymous sentences.
- (2) We can (fixing our cognitive capacities and life spans) learn natural languages (since we have done so).
- (3) "... we do not at some point suddenly acquire an ability to intuit the meanings of sentences on no rule at all."
- (4) "... each new item of vocabulary, or new grammatical rule, takes some [minimum] finite time to be learned."
- (5) "... man is mortal."
- (6) Thus, natural languages have "a finite number of semantical primitives" [1-5].
- (7) Thus, it must be possible to account for how an infinite number of nonprimitive expressions in natural languages can be understood in terms of a finite vocabulary of semantical primitives [1, 6].

Finite Capacities Argument

- (1) Natural languages have an infinite number of nonsynonymous sentences.

- (2) We can speak and understand such languages.
- (3) Each semantically primitive item of vocabulary, or new grammatical rule, takes some minimum of our cognitive resources to possess.
- (4) Our cognitive resources are finite.
- (5) Thus, natural languages have “a finite number of semantical primitives” [1-4].
- (6) Thus, it must be possible to account for how an infinite number of nonprimitive expressions in natural languages can be understood in terms of a finite vocabulary of semantical primitives [1, 5].

The conclusion of the argument is not to be interpreted as the claim that one cannot learn a theory that is not finitely axiomatizable. While Davidson does propose a theory of meaning that is finitely axiomatizable, the learnability argument simply claims that understanding a language rests on understanding a finite number of semantic primitives. It is not a claim about theories and makes no general claims about what form of theories are learnable.

Relation to Knowledge of a Language

It is not appropriate to expect logical considerations to dictate the route or mechanism of language acquisition, but we are entitled to consider in advance of empirical study what we shall count as knowing a language, how we shall describe the skill or ability of a person who has learned to speak a language. (TMLL (1966), pp. 7-8).

Guided by an adequate theory, we see how the actions and dispositions of speakers induce on the sentences of the language a semantic structure. (TMLL (1966), p. 8)

The work of the theory is in relating the known truth conditions of each sentence to those aspects (‘words’) of the sentence that recur in other sentences, and can be assigned identical roles in other sentences. Empirical power in such a theory depends on success in recovering the structure of a very complicated ability—the ability to speak and understand a language. (TM (1967), p. 25)

Additional Constraint

An adequate meaning theory for a natural language L must not only

- (i) provide, in a sense to be determined, the meaning of every sentence of the language, but also
- (ii) recover, again, in a sense to be determined, the structure of our ability to speak and understand it.

As Dummett has put it, the aim is to provide “a theoretical representation of a practical ability” (1993, p. 36).

Not explicit knowledge of a truth theory

It need not part of this project, however, to represent the competence of speakers as a matter of their having propositional knowledge of a meaning theory. Rather, the meaning theory must respect in its structure the structure of the dispositions of speakers of the language to use semantically primitive expressions.

... it at once describes the linguistic abilities and practices of the speaker and gives the substance of what a knowledgeable interpreter knows which enables him to grasp the meaning of the speaker's utterances. This is not to say that either speaker or interpreter is aware of or has propositional knowledge of the contents of such a theory. (The Structure and Content of Truth (1990). pp. 311-12)

The Form of a Meaning Theory

We want a finitely axiomatizable theory that entails every instance of [M]

[M] s means in L that p

In which 's' is replaced by a structure description of an object language sentence (i.e., as constructed out of its semantically significant parts) and 'p' is replaced by a sentence in the metalanguage that translates s.

[1] 'Je'+ 'suis'+ 'fatigué' in French means I am tired.

[2] 'Ça'+ 'va'+ '?' in French means how are you?

We want a finitely axiomatizable theory that entails every instance of [MCS]

[MCS] For any S, t, s understood as if uttered by S at t means in L that p

's' is replaced by a structure description of an object language sentence. If 's' is not context sensitive, then replace 'p' as above. If 's' is context sensitive, then 'p' is replaced by an open sentence whose variables are bound by the initial quantifiers, and which is such that when instantiated to values it expresses what s means understood as if uttered by the assign speaker and time.

[3] For all speakers S, and times t, 'Je'+ 'suis'+ 'fatigué' as uttered by S at t in French means that S is tired at t.

Davidson's Objections to the Appeal to Meanings

F('Theatetus') = Theatetus

F('flies') = the property of flying

Theatetus flies = Theatetus, the property of flying

F(concatenating 'Theatetus' with 'flies') = instantiation.

Theatetus flies = Theatetus, instantiation, the property of flying

We have in effect treated these two expressions as of the same semantic type, so of course we don't get what we want. They are of distinct semantic types, and yield a third type when combined appropriately. We need a theory that shows that this is so and what the types are and how they function in the language. Just assigning entities to the expressions does not do this. And it does not help to assign different types of entities to different types expressions either, e.g., as Frege does, unsaturated entities to some of the expressions, because you can list those things as well.

The Lessons of a Simple Reference Theory

1. 'Isaac' refers in L to Isaac

'Abraham' refers in L to Abraham

For any singular term t in L, 'the father of'+t refers in L to the father of what t refers to in L.

This avoids just giving a list. It gives us the referent of each singular term. It uses a rule to do so. No entity, unsaturated or not, is assigned to 'the father of'.

...the task was to give the meaning of all expressions in a certain infinite set on the basis of the meaning of the parts; it was not in the bargain also to give the meanings of the atomic parts. On the other hand, it is now evident that a satisfactory theory of the meanings of complex expressions may not require entities as meanings of all the parts. It behooves us then to rephrase our demand on a satisfactory theory of meaning so as not to suggest that individual words must have meanings at all, in any sense that transcends the fact that they have a systematic effect on the meanings of the sentences in which they occur. (Truth and Meaning (1967), p. 18)

An Adequacy Condition

A theory should entail every sentence of the form 't refers to x,' where 't' is replaced by a structural description of a singular term and 'x' by that term itself.

Convention R:

An adequate theory entails every sentence of the form 't refers to x', where 't' is replaced by a structural description of a singular term and 'x' is replaced by a term in the meta-language that translates it.

Given this, from (1) we can infer (2).

(1) 'The father of'+ 'Isaac' refers in L to the father of Isaac.

(2) 'The father of'+ 'Isaac' means in L the father of Isaac.

Elaborating the Lessons

Theory S

'Marie' refers in L to Mary

'Jean' refers in L to John

For any singular term t in L, 'La mère de'+ t refers in L to the mother of what t refers to in L.

Rules of inference: From (3), any instance may be inferred; from any sentences of the form ' t refers in L to y ' and any sentence of the form $S(\text{what } t \text{ refers to in L})$, $S(y)$ may be inferred.

A canonical reference theorem of S is any theorem derived from (1)-(3) using (I) and (II) which is an instance of ' t refers to y ,' in which ' y ' is replaced by a meta-language referring term that does not include 'refers to'.

A theory that meets this condition satisfies Convention A:

In S, since in each base axiom the term used on the right of 'refers to' translates the one mentioned on the left, and since in (3) 'the mother of' in the meta-language translates 'La mère de' in L, in each canonical reference theorem the meta-language expression used on the right of 'refers to' translates the expression mentioned on the left.

That S satisfies Convention A suffices for it to satisfy Convention R. Given that S satisfies Convention A, the rule of inference (III) is valid: (III) From a canonical reference theorem of the form ' t refers in L to y ' infer ' t means in L y '. Call any theorem so derived a canonical meaning theorem.

What we need to know to specify the meaning of every expression in our infinite fragment of a language.

[KS]

1. the axioms of S, as stated in (1)-(3),
2. what each axiom of S states and that each states what it does,
3. in base axioms the term used on the right of 'refers in L to' translates the one mentioned on the left, and in (3) 'the mother of' in the meta-language translates 'La mère de' in L,
4. rules of inference (I) and (II),
5. what a canonical reference theorem is,
6. rule of inference (III).

This puts us in a position to know for any expression of L what it means in this sense: we are thereby in a position to know for an arbitrary singular term t of L its corresponding canonical meaning theorem.

Moreover, we can come to know this on the basis of being able to derive this canonical meaning theorem from axioms that we know give the referents of object language terms using expressions in the meta-language that translate them. Thus, we see how the meanings and referents of the contained

terms contribute to determining the meanings and referents of the complex expressions, given how they are combined in them.

We have here in microcosm the form of Davidson's proposal about how to use a truth theory in pursuit of a compositional meaning theory. We achieve the goal by a bit of indirection. We use a reference theory that meets certain conditions, knowledge of which puts us in a position to infer from its reference theorems corresponding theorems about the meanings of the object language expressions. So it will be with respect to the use of a truth theory in pursuit of a compositional meaning theory.

Further Critical Remarks about the Appeal to Meanings as Entities

Granting not every expression must be assigned an entity, let us try to extend the success of the reference theory to sentences by treating them as terms that refer to their meanings without treating predicates as referring to anything.

Ex. For any referring term t , t +'est rouge' refers to red(what t refers to).

The Slingshot Argument

- (1) "[L]ogically equivalent singular terms have the same reference."
- (2) "[A] singular term does not change its reference if a contained singular term is replaced by another with the same reference."
- (3) Sentences are singular terms and refer to their meanings.
- (4) Sentences 'S' and 'R' are alike in truth value.
- (5) 'R' is logically equivalent to ' $\{x:x=x \ \& \ R\} = \{x:x=x\}$ '.
- (6) Thus, 'R' and ' $\{x:x=x \ \& \ R\} = \{x:x=x\}$ ' have the same referent (1, 3, and 5).
- (7) ' $\{x:x=x \ \& \ R\}$ ' and ' $\{x:x=x \ \& \ S\}$ ' are co-referring singular terms (4).
- (8) ' $\{x:x=x \ \& \ R\} = \{x:x=x\}$ ' and ' $\{x:x=x \ \& \ S\} = \{x:x=x\}$ ' have the same referent (2, 7).
- (9) 'S' and ' $\{x:x=x \ \& \ S\} = \{x:x=x\}$ ' are logically equivalent.
- (10) 'S' and ' $\{x:x=x \ \& \ S\} = \{x:x=x\}$ ' have the same referent (1, 3, and 9).
- (11) Thus, 'R' and 'S' have the same referent (6, 8, 10).
- (12) Thus, 'R' and 'S' have the same meaning (3, 11).

Two singular terms are logically equivalent iff they have the same referent or denotation under all reinterpretations of their non-logical terms.

A hidden assumption:

If two sentences are logically equivalent, in the sense that they have the same truth value in every model, then if they are singular terms, they are logically equivalent singular terms.

The Deeper Problem

Suppose we had a theory that assigned entities to semantically primitive expressions and recursively generated assignments of structured complexes of them to sentences. Whatever they were, we could pick them out in a variety of ways. Hence, we could pick them out in ways that did not make transparent what object language terms or sentences meant. Hence, we could know the theory without it putting us in a position to understand the language for which it was a theory.

Let 'thrice-refused-the-crown(x)' be a function that takes an object x to the Latin meaning of the sentence got from concatenating the term that goes in the place of 'x' with 'coronam ter recusavit'.

[S] For any referring term t , the concatenation of t with 'coronam ter recusavit' means thrice-refused-the-crown(the referent of t).

[R] The referent of 'Caesar' is Caesar.

Hence:

'Caesar coronam ter recusavit' means thrice-refused-the-crown(Caesar).

But it is fortuitous that this illuminates meaning. Let 'F(x)' be a function that takes an object x to the meaning of the sentence got from concatenating the term goes in the place of 'x' with 'coronam ter recusavit'.

[S] For any referring term t , the concatenation of t with 'coronam ter recusavit' means F(the referent of t).

[R] The referent of 'Caesar' is Bob.

Hence:

'Caesar coronam ter recusavit' means F(Bob).

The same propositions are expressed; but we could understand this theory without understanding the language for which it is a theory. Hence what enabled us to understand the object language sentence before was not what the theory expressed but how it expressed it and a tacit assumption about the relation of that way of expressing it to the meaning of the object language expressions.

The Moral

Assigning entities to expressions (other than referring terms), if it plays a role in meeting the constraints of a compositional meaning theory, does so only relative to a way of picking out the meanings that codes for a metalanguage sentence that translates the object language sentence for which a meaning (construed as an entity) is given. Assigning meanings to expressions in the context of a theory that

assigns complexes of them systematically to complexes of expressions in the language is *not sufficient* to satisfy the requirements of a compositional meaning theory. If the same trick can be turned without assigning entities to every meaningful expression, then it is *not necessary* either.

Other Ideas for a Compositional Semantics

Appeal to a dictionary and recursive syntax is inadequate.

Rule: For any expression *e*, the result of placing *e* in quotation marks is a well-formed referring expression.

The name spelled with the first, twelfth, and sixth letters in that order refers to Alf

This gives us no insight into what enclosing that name in quotation marks refers to absent a semantical rule for quotation marks.

Appeal to substitutional quantification will not do the work required.

$(\Pi p)\varphi$ iff for all terms *t* in the substitution class for 'p', the sentence resulting from replacing all free occurrences of 'p' in φ with *t* is true.

$(\Pi p)(\Pi q)(\text{'p'+ 'and'+ 'q' means that p and q})$

Since the truth conditions are metalinguistic, we can understand this without understanding the contained expressions. This gives no insight into the semantical role of any expressions. This provides no means of showing for context sensitive languages how context determines occasion meaning.

Transition to the Proposal

What analogy [with our simple theory of reference] demands is a theory that has as consequences all sentences of the form '*s* means *m*' where '*s*' is replaced by a structural description of a sentence and '*m*' is replaced by a singular term that refers to the meaning of that sentence; a theory, moreover, that provides an effective method for arriving at the meaning of an arbitrary sentence structurally described...My objection to meanings in the theory of meaning is not that they are abstract or that their identity conditions are obscure, but that they have no demonstrated use. (Truth and Meaning (1967), pp. 20-1)

... having found no more help in meanings of sentences than in meanings of words, let us ask whether we can get rid of the troublesome singular terms supposed to replace '*m*' and to refer to meanings. In a way, nothing could be easier: just write '*s* means that *p*', and imagine '*p*' replaced by a sentence. Sentences, as we have seen, cannot name meanings, and sentences with 'that' prefixed are not names at all, unless we decide so. It looks as though we are in trouble on another count, however, for it is

reasonable to expect that in wrestling with the logic of the apparently non-extensional 'means that' we will encounter problems as hard as, or perhaps identical with, the problems our theory is out to solve. (Truth and Meaning (1967), p. 22)

Treating 'that p' as a singular term for a meaning of the embedded sentence would raise exactly the same problems as treating sentences as names for their meanings. Not treating it as a singular term prevents us from using quantificational logic to generate the right theorems; we would need a logic specifying substitution rules sensitive to the meanings of expressions, and so would perhaps have to resolve the problem a compositional meaning theory is meant to solve just in formulating a logic for the project.

The Proposal

The only way I know to deal with this difficulty is simple, and radical. Anxiety that we are enmeshed in the intensional springs from using the words 'means that' as filling between description of sentence and sentence, but it may be that the success of our venture depends not on the filling but on what it fills. The theory will have done its work if it provides, for every sentence s in the language under study, a matching sentence (to replace 'p') that, in some way yet to be made clear, 'gives the meaning' of s. (Truth and Meaning (1967), p. 23)

The design problem, then, is this: formulate a theory that has as consequences all sentences of the form 's --- p', where 's' is replaced by a structural description of sentence and 'p' by a metalanguage sentence that gives the meaning of that sentence; a theory, moreover, that provides an effective method for arriving at the meaning of an arbitrary sentence structurally described.

One obvious candidate for matching sentence is just s itself, if the object language is contained in the metalanguage. As a final bold step, let us try treating the position occupied by 'p' extensionally: to implement this, sweep away the obscure 'means that', provide the sentence that replaces 'p' with a proper sentential connective and supply the description that replaces 's' with its own predicate. The plausible result is

(T) s is T if and only if p

What we require of a theory of meaning for a language L is that without appeal to any (further) semantical notions it place enough restrictions on the predicate 'is T' to entail all sentences got from schema T when 's' is replaced by a structural description of a sentence of L and 'p' by that sentence. (Truth and Meaning (1967), p. 23)

... it is clear that the sentence to which the predicate 'is T' applies will be just the true sentences of L, for the condition we have placed on satisfactory theories of meaning is in essence Tarski's Convention T that tests the adequacy of a formal semantical definition of truth. (pp. 22-3)

Convention T.

A formally correct definition of the symbol "Tr", formulated in the metalanguage, will be called an adequate definition of truth if the deductive system of the metatheory proves the following:

- (a) all sentences which are obtained from the expression "Tr(x) if and only if p" by substituting for the symbol "x" a structural-descriptive name of any sentence of the language in question and for the symbol "p" the expression which forms the translation of this sentence into the metalanguage;
- (b) the sentence "for any x, if Tr(x) then x is a sentence of LCC" (Tarski 1983, pp. 187–8).

The problem, upon refinement, led to the view that an adequate theory of meaning must characterize a predicate meeting certain conditions. It was in the nature of a discovery that such a predicate would apply exactly to the true sentences. (Truth and Meaning (1967), p. 24)

Thus: prima facie, we can meet our goal by providing an axiomatic truth theory for the language that satisfies Convention T, or an analog for natural languages with context sensitive expressions.

Summary

1. Meanings, construed as entities, are no help in advancing the project of understanding how the meanings of sentences depend on the meanings of words.
2. The project of formulating an intensional logic for handling 's means that p', once we stop treating 'that p' as a referring term, looks to encounter "problems as hard as, or perhaps identical with, the problems our theory is out to solve" (p. 22).
3. But the end result looks to be to match a sentence s in our target language with a sentence 'p' in the meta-language the same in meaning; and this goal, upon reflection, may be pursued without getting "enmeshed in the intensional," for the matching may be achieved if we are able to provide a formally correct definition of a predicate "is T" that entails for every sentence of the form (T), where 'p' is replaced (to put it generally) by a sentence that translates s.
4. But this requires the definition meet Tarski's Convention T (if the language is non-context sensitive), and thus we discover a connection between our primary goal and the definition of a Tarski-style truth predicate for a language.
5. This is not to replace the original goal with another, or to eschew giving a compositional meaning theory in favor of giving a truth theory, but to discover a way of getting at what we wanted with a bit of indirection which turns out to be helpful.
6. It is not, moreover, to assign a new type of entity to sentences called a truth condition. There is no referring term on the right hand side of a T-sentence that refers to a "truth condition".

Next Steps

First, clarify how a truth theory meeting Convention T helps to provide a compositional meaning theory. Second, look at an interpretive issue that arises at this point in T&M about Davidson's aims, specifically whether his extensionalist proposal in T&M shows that he is in fact abandoning the traditional pursuit. Third, show how the clarification meets various objections that have been leveled against truth-theoretic semantics.

Clarifying the Role of a Truth Theory

A compositional meaning theory is a theory minimally knowledge of which suffices for understanding any potential utterance of a sentence in the object language. Given this, it is clear that the truth theory per se cannot be the meaning theory, because simply knowing what it states is not sufficient to know that it satisfies Convention T.

The reference theory we looked at earlier that we turned into a meaning theory is our guide. We need to know

1. the axioms of the theory;
2. what they mean,
3. a canonical proof procedure,
4. that the axioms meet a suitable analog of what we called Convention A, and
5. rule of inference from T-sentences to sentences stating the meanings of object language sentences.

<u>Reference</u>	<u>Truth</u>
t refers to x	s is true iff p
'x' translates t	'p' translates s
t means x	s means that p

[T]

- 1) 'Claudine' refers to Claudine
- 2) 'Robert' refers to Robert
- 3) For any name N, N+'dort' is true iff what N refers to is sleeping.
- 4) For any names N_1, N_2 , N_1 +'aime'+ N_2 is true iff what N_1 refers to loves what N_2 refers to.
- 5) For any sentence S, 'Ce n'est pas le cas que'+S is true iff it is not the case that S is true.
- 6) For any sentences S_1, S_2 , S_1 +'et'+ S_2 is true iff S_1 is true and S_2 is true.

To see how the meanings of the complexes depend on those of the parts and to interpret any sentence of the language we need to know about T the following:

- i. What the axioms are, as stated in (1)-(6),
- ii. What each axiom states and of each that it states what it does,
- iii. That in each reference axiom the name used on the right of 'refers to' translates the name mentioned on the left,
- iv. That in each predicate axiom the predicate used in the meta-language in giving truth conditions for the object language sentence translates the object language predicate,
- v. That in each recursive axiom the logical connective used in the meta-language to give the truth conditions for the object language sentence translates the logical connective in the object language.

Given (iii)-(v), it is clear that, provided an adequate logic, T has as theorems all sentences of the form,

(T) s is true iff p ,

where s is replaced by a structural description of an object language sentence and ' p ' is replaced by a meta-language sentence that translates s .

Canonical Proofs

We need a way of identifying just those theorems which draw only on the content of the axioms. We call any proof procedure which draws only the content of the axioms and whose last line is of form (T) and in which no semantic vocabulary of the meta-language remains (i.e., 'is true') a canonical proof procedure.

Universal Instantiation (UI): from a universally quantified sentence any instance may be inferred.

Substitution (S): from any sentences of the form ' t refers to y ' and any sentence of the form $S(\text{what } t \text{ refers to in } L)$, $S(y)$ may be inferred.

Replacement (R): for any sentences x , y , $S(x)$, $S(y)$ may be inferred from $x + \text{'iff'} + y$ and $S(x)$.

Transference (T): from any canonical theorem, ' s is true iff p ', ' s means that p ' may be inferred.

In addition to (i)-(v), we need to know:

- i. The rules of inference UI, S, R, and T
- vi. That any proof of a sentence of form ' s is true iff p ' without semantic vocabulary on the right hand side from the axioms on the basis of the rules UI, S, and R is a canonical proof, and, hence, the sentence is a canonical theorem.

This puts us in a position

- a) to infer for each sentence of the object language a meta-language sentence that explicitly states what the object language sentence means,
- b) on the basis of a proof that traces out, at each step, the contribution of each object language expression to fixing the truth conditions of the sentence to which it contributes,
- c) on the basis of reference or truth conditions given using a term the same in meaning with it.

We can thus see what the contribution is of each semantical primitive to the interpretive truth conditions of the sentences in which it occurs on the basis of what it means

Convention A and Convention T

Any theory for a language like this that satisfies conditions (iii)-(v) satisfies Convention A. Convention A requires that the axioms for primitive expressions meet an analog of Convention T, namely, that they provide reference and truth conditions (and satisfaction conditions when we move to a language with quantifiers) using terms in the meta-language that translate the object language terms for which they are used to give reference and truth (and satisfaction) conditions. Convention A is a condition on a truth theory that, relative to an adequate logic, ensures it satisfies Convention T. Call any truth theory that meets Convention A interpretive. Call an axiom that is part of a theory that meets Convention A an interpretive axiom. Call a canonical truth theorem a T-theorem and a T-theorem of an interpretive truth theory an interpretive T-theorem, or T-sentence, for short.

Convention A requires for our sample theory

- 1) 'Claudine' refers to Claudine
- 2) 'Robert' refers to Robert
- 3) For any name N, N+dort' is true iff what N refers to is sleeping.
- 4) For any names N1, N2, N1+'aime'+N2 is true iff what N1 refers to loves what N2 refers to.
- 5) For any sentence S, 'Ce n'est pas le cas que'+S is true iff it is not the case that S is true.
- 6) For any sentences S1, S2, S1+'et'+S2 is true iff S1 is true and S2 is true.
- 7) Convention A requires

that 'Claudine' and 'Robert' in the metalanguage translate the corresponding object language names, that 'is sleeping' translate 'dort', that 'loves' translates 'aime', that 'it is not the case that' translate 'Ce n'est pas le cas que', that 'and' translate 'et'.

Thus, if we know that a truth theory for L is an interpretive theory and we know certain other things about it, as listed above (there will be some adjustments for a context sensitive language), then what we know puts us in a position to interpret any utterance L on the basis of a proof of a theorem saying what it means that exhibits the contribution of each expression in it to fixing the conditions under which it is true on the basis of what it means. This may be said fairly to satisfy the requirements we have placed on an adequate compositional meaning theory for the language.