

attitudes and meanings are not reducible to facts about behavior. However, the supervenience thesis does not entail that there is any necessarily true biconditional linking claims about the mental with claims about behavior: there may be no end to the sorts of facts that could provide a supervenience base for any given mental fact. Whether the logical supervenience thesis is compatible with anomalous monism would require further investigation; the problem, on the face of it, is that if there are any necessarily true statements of the form, for any x , if x is P then x is M , where ‘is P ’ is a physical predicate and ‘is M ’ is a mental predicate, then if the physical predicate figures in a strict law there will be a corresponding strict psychophysical law.

Davidson credits Reichenbach with a similar suggestion in his *Elements of Symbolic Logic* (Reichenbach 1947, sect. 48), but arrived at the idea of introducing a quantifier over events to accommodate adverbial modification independently. Davidson has related in personal communication that when the idea occurred to him he couldn’t believe that it was new, and so read everything he could find on adverbial modification. Reichenbach was one of the few who tried to fit adverbs into ordinary logic, and he did introduce an existential quantifier. But his proposal differs significantly from Davidson’s – in quantifying over facts rather than events, and in not advocating the quantified sentence as revealing logical form, but rather as being logically equivalent to the adverbially modified sentence. The choice of facts as the domain of quantification also leads to difficulties that Davidson’s proposal avoids.

1

Truth and Meaning

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Donald Davidson’s work on the theory of meaning has been enormously influential since the publication of “Truth and Meaning” in 1967. His central proposal was that an understanding of what it is for “words to mean what they do” (Davidson 1984b, p. viii) can be pursued by way of constructing and confirming for a speaker an axiomatic truth theory, modeled on a Tarski-style axiomatic truth definition, for his language. In this chapter, we first discuss the background of Davidson’s famous suggestion, initially introduced in “Truth and Meaning.” We begin with his arguments for the importance of attending to the compositionality of natural languages in §1, then turn in §2 to his criticisms of traditional approaches to the theory of meaning. In §3, we discuss Davidson’s introduction of a truth theory as the vehicle for a compositional meaning theory; in §4, we explore some interpretive issues that arise about his intentions, specifically the question of whether Davidson intended to *replace* the traditional project (providing an account of meaning) with a more tractable one (providing an account of truth conditions), or whether he intended to pursue the traditional project by novel means. We argue that, though Davidson has been widely misunderstood, his intention is clearly the latter, and, specifically, that his goal has always been to give an account of what illuminating constraints a truth theory can meet that would suffice for it to be used to understand any potential utterance of an object language sentence. We discuss the difficulties arising from his initial suggestion, extensional adequacy, in §5, and then, in §6, the role of radical interpretation, which is discussed in greater detail in Chapter 3. In §7, we consider how the project of a compositional meaning theory may be pursued independently of the more ambitious project in which Davidson embeds it, discuss various problem areas, and consider some of Davidson’s contributions to natural language semantics. We conclude in §8.

1. LEARNABLE LANGUAGES AND THE COMPOSITIONALITY REQUIREMENT

In "Theories of Meaning and Learnable Languages" (Davidson 1984 [1966]), Davidson identified a requirement on any adequate theory of meaning for a natural language such as Chinese or English, namely, that it "must be possible to give a constructive account of the meaning of sentences in the language" (Davidson 1984 [1966], p. 3), and then argued that a number of then current theories of meaning failed to meet the requirement. What is it to give a constructive account of the meaning of sentences in a language? This presupposes that we understand some expressions – sentences, in particular – on the basis of other, less complex expressions and their mode of combination. A constructive account provides an account of the meaning of a sentence in terms of the meanings of its semantically noncomplex constituents and their modes of combination. A constructive account of what sentences in a language mean we will call a "compositional meaning theory"; a language that admits of a compositional meaning theory we will call "compositional."

What reason do we have to think that natural languages are compositional? Davidson offers a famous argument for this, known as the learnability argument (pp. 8–9). In a nutshell, the argument is that it is only if natural languages are compositional that we can understand how "an infinite aptitude [competence in speaking and understanding] can be encompassed by finite accomplishments" (p. 8). More fully: we are finite beings. We come into the world without language. We become, in a finite amount of time, fully competent speakers of languages that include an infinite number of nonsynonymous sentences. On the assumption that we cannot "intuit the meanings of sentences on no rule at all, and that each new item of vocabulary, or new grammatical rule, takes some finite time to be learned" (p. 9), we can conclude that there are a finite number of semantical primitives, and that we are put in a position to understand the rest of the expressions we are able to understand because their meanings are determinable from our mastery of the semantical primitives contained in them and rules governing how the meanings of complexes are determined by the meanings of the simples and their modes of combination.

Though not entirely uncontroversial (see, e.g., Schiffer 1987, esp. pp. 137–8), this observation, which accords with common sense, is largely accepted in work in semantics for natural languages. It had certainly been presupposed prior to Davidson's emphasizing its importance.¹ Davidson made salient, though, its importance and usefulness as a criterion of adequacy for analyses of logico-semantic form, and for understanding meaning

more generally. An example of an analysis that runs aground on this requirement is Israel Scheffler's analysis of indirect discourse (Scheffler 1954). Scheffler suggested that we analyze a sentence such as 'Tonkin said that snow is white' as 'Tonkin spoke a that-snow-is-white utterance'. The advantage of such an analysis is that it gives an account of what we mean by such sentences that does not commit us to treating 'that'-clauses as referring to propositions, while remaining sensitive to how we understand 'that snow is white' as used by the speaker. In the analysis, 'that-snow-is-white' is to be treated as a *simple unitary predicate* of utterances. It is not treated as further analyzable and, hence, is treated as a semantical primitive. However, as Davidson pointed out, applying this strategy to indirect discourse generally yields the immediate result that English (and other natural languages, presumably) has an infinite number of semantical primitives, since any sentence may feature in the complement of a report of indirect discourse, and there are an infinite number of nonsynonymous sentences in the language: each one, on this analysis, will have a corresponding primitive predicate of utterances. Thus, since this would make it unintelligible how we could learn English, we can conclude that, no matter what its other virtues, this analysis of the logical form of indirect discourse is mistaken.

2. DAVIDSON'S CRITICISMS OF TRADITIONAL APPROACHES

An adequate theory of meaning for a natural language must be compositional. A compositional meaning theory provides, in some as yet unarticulated sense, an "account" of the meaning of every sentence of the language. What form should a meaning theory take? In what sense should it give an account of the meaning of every sentence of the language?

A minimal constraint we should impose is that the theory enable someone who understands it to interpret any potential utterance of a sentence of the language. A natural first suggestion is that this could be accomplished if we had a theory that, from a finite base, enabled us to derive solely on formal considerations, for every sentence of the object language L , a theorem of the form (M) (where initially we will suppose, for simplicity, that we are dealing with a context insensitive language),

$$(M) \quad s \text{ means in } L \text{ that } p,$$

where ' s ' is replaced by a description of a sentence of the object language in terms of how it is composed out of its significant parts, and ' p ' is replaced by a sentence in the metalanguage (the language of the theory) that translates

the object language sentence described. If we know what a sentence of the form (M) expresses, then we know how to interpret the object language sentence it is about.

The question is how to do this, and whether it can be done in what may seem like the most straightforward way. Part of Davidson's motivation for proposing that a compositional meaning theory make use of the structure of an axiomatic truth theory was his pessimism about the prospects for any other way of accomplishing the goal. Traditional approaches to the theory of meaning, stretching back to Frege (Frege 1892; 1997b [1892]), have appealed to meanings – that is, to abstract entities – in trying to give a theory of meaning. Two terms are then said to be synonymous iff their meanings are identical. However, it is not clear how the appeal to meanings (or other such entities) helps.

Davidson observes that assigning a meaning to a subject term and a predicate in a sentence, such as 'Theaetetus flies', does not tell us anything about how their concatenation yields a new meaning (Davidson 1984 [1967], p. 17). If we are treating each term as referring to its meaning, then their concatenation seems simply to give us a list. Treating concatenation itself as significant just gives us one more meaning to combine. Treating, as Frege did, the referent of 'flies' as unsaturated or incomplete (Frege 1997 [1891]; 1997a [1892]), so that putting together (or indicating a relation between) Theaetetus and the referent of 'flies' yields (grasp of) a new kind of entity, "seems to label a difficulty rather than solve it" (p. 17).

Any constructive theory needs somehow to yield information about how the combination of terms contributes to meaning in a way that enables us to understand the complex expression if we understand the theory. It is not clear that associating entities with terms, or with their concatenation, could itself ever yield appropriate knowledge. What is missing is a rule attaching to the combination that yields in the theorizer's language a sentence understanding of which suffices (perhaps with some auxiliary knowledge) to understand the complex object language expression. In "Truth and Meaning," Davidson gives a simple example that does the job right in the theory of reference (p. 18). His example contains a number of general lessons, so it is worth reviewing. Consider a fragment of English, which we will call ' L ', consisting of the functor 'The father of x ' and some proper names, say, 'Jesse', 'Saul', 'David', and 'Goliath'. We can give outright the referents of the proper names: 'Jesse' refers in L to Jesse; 'Saul' refers in L to Saul, 'David' to David, 'Goliath' to Goliath. Here we use names in the metalanguage that refer to what the names in the object language refer to (helping ourselves to a metalanguage that embeds the object language). We allow

that any concatenation of 'The father of' with a proper name is also a referring term, and now the task is to give an account of the referents of the rest of the terms in L . Do we need to assign to 'The father of x ' some entity? No, a rule that we can state in our language suffices to give the referent in terms of the referents of the term that replaces ' x ' (' \sim ' is the symbol for concatenation):

For any referring term r , the referent in L of 'The father of $\sim r$ ' = the father of the referent in L of r .

The rule uses, of course, a term synonymous with the term in L that we are giving a rule for, but this is compatible with our goal, which was to provide, from a finite base, a theory understanding of which suffices to understand what the referent is of every referring term in L . To put this another way, our small theory meets the following constraint: it enables us to prove from a finite base every instance of the schema,

(R) t refers in L to x ,

where ' t ' is replaced by a name or structural description of a referring term of L , and ' x ' is replaced by a term that refers to what t does.

Notice that, in fact, the theory generates theorems of the form (R) in which the term that replaces ' x ' is *synonymous with* the term that is denoted by what replaces t . This is because we chose terms in our theory when assigning referents to simple expression in L that were the same in meaning as those expressions, and we chose a functor in the language of the theory that was the same in meaning as that used to form complex referring terms in L when giving a rule for assigning referents to such expressions. Knowing this, we can also infer from each theorem what the expression in L means, not just what it refers to – that is, we can infer from each instance of (R) a corresponding instance of the schema (M_R), as, for example, in (M').

(M_R) t means in L x

(M') 'The father of \sim David' means in L the father of David.

That this provides genuine information is made clear when we consider the general case in which the metalanguage is distinct from the object language.

This simple example shows that we can meet our goal of providing an account of the referents of every expression of L without assigning a meaning or other object to every expression of L . In particular, the contribution of the expression 'the father of', which we use to form complex expressions,

can be made clear without assigning any entity to it in particular, as opposed to the complex expressions that it helps to form. Furthermore, we can see that without some rule like (*R*), which actually tells us how to interpret our functor, we will not be able to understand what complex expressions in *L* refer to from a finite base. Putting these two points together, we can conclude, with respect to this simple example, that assigning entities to every expression of the language is neither necessary nor sufficient to achieve the aims of a theory of reference. Moreover, in light of the fact that this theory can be used for the purposes of a theory of understanding, we can see that the same point carries over to something approaching a theory of meaning for *L*. This tiny theory turns out to foreshadow the basic form of the suggestion for how to pursue a meaning theory by way of a truth theory, which we take up in the next section.

The success of this theory, however, might encourage one to think that it could be extended, on a neo-Fregean account, to sentences, treating them as terms referring to their meanings and treating predicates and quantifiers as functional terms. Davidson offers a famous argument to scotch this proposal, dubbed the slingshot (for slaying the Fregean giant) by Barwise and Perry in a critical discussion (Barwise 1981; Barwise and Perry 1981a; 1981b, 1983).² The argument attempts to show that the view that sentences refer to their meanings is untenable, because it leads to the conclusion, on plausible assumptions, that any two sentences that are alike in truth value refer to the same thing and, hence, are synonymous, which is manifestly false. The argument depends on two assumptions: (A) "logically equivalent singular terms have the same reference," and (B) "a singular term does not change its reference if a contained singular term is replaced by another with the same reference" (p. 19). Suppose that '*R*' and '*S*' stand in for sentences alike in truth value. Consider (1)–(4).

- (1) *R*
- (2) $\{x: x = x \ \& \ R\} = \{x: x = x\}$
- (3) $\{x: x = x \ \& \ S\} = \{x: x = x\}$
- (4) *S*

Given (A) and (B), Davidson argues that we can identify the referent of (1) with that of (2), the referent of (2) with that of (3), and the referent of (3) with that of (4), showing that all sentences alike in truth value corefer. (1) has the same referent as (2), by (A), because they are logically equivalent. (2) has the same referent as (3), by (B), because they differ only in that one referring term, ' $\{x: x = x \ \& \ R\}$ ', has been replaced by another, ' $\{x: x = x$

& *S*}', which corefers (both refer to the universal set if '*R*' and '*S*' are true, and to the empty set if each is false), in a containing singular term (namely, the whole of (2)). We infer that (3) and (4) have the same referent using (A) and the fact that they are logically equivalent.³

Is the argument successful? Assumption (B) is forced on anyone who takes predicates to be function terms, for replacing an argument term with another term that corefers supplies the same argument for the function, and so cannot change the value it yields. However, it has been objected that (B) has no application in the argument, on the grounds that the term ' $\{x: x = x \ \& \ R\}$ ' is a quantified noun phrase (a definite description: 'the set of all *x* such that $x = x$ and *R*') rather than a singular referring term (Hochberg 1975). If we did interpret it as a quantifier phrase, certainly a neo-Fregean would object to the substitution principle.

Even apart from this, it might be doubted whether assumption (A) would be acceptable to the argument's intended audience. Surely anyone who accepted that sentences refer to their meanings would allow logically equivalent sentences to differ in meaning, and so in reference. Yet, if we consider (A), it is not so easy to see how to deny it. (A) says that logically equivalent singular terms corefer. What are logically equivalent singular terms? The notion needs to be extended from its standard application to sentences. It is natural to say that two singular terms are logically equivalent iff they corefer on all reinterpretations of their nonlogical terms. Thus, for example, 'Woody Allen' and 'Allen Steward Konigsberg', though they corefer, are not logically equivalent singular terms, whereas 'The *x* such that $x =$ Woody Allen' and 'Woody Allen' are logically equivalent singular terms.⁴ If we so understand logical equivalence of singular terms, then (A) expresses a definition, and so is trivially true.

However, securing the truth of (A) in this way nonetheless undermines the argument. For it shows that an illicit assumption is made in the application of (A) to secure that the referents of (1) and (2) are the same. (1) and (2) are logically equivalent sentences – that is, they are alike in truth value on all reinterpretations of their nonlogical terms. But this notion of logical equivalence between sentences is not defined in the same way as the notion that applies to singular terms. We can't infer that sentences that are logically equivalent in the standard sense are thereby logically equivalent singular terms without begging the question. Thus, the argument is invalid without the addition of a question-begging assumption.

Despite the failure of the argument, there is not much to be said for treating sentences as referring to meanings. Grammatically, sentences are not referring terms. Assimilating them to referring terms could at best be

seen as a kind of technical maneuver adopted to achieve the happy end of matching object language sentences with metalanguage sentences that are used and which we know are the same in meaning as the object language sentences. This end, however, essential to a meaning theory, can be achieved without the superfluous introduction of meanings and the distortion of the semantical role of sentences, as we will see.³ If this is right, then, as Davidson says, "Paradoxically, the one thing meanings do not seem to do is oil the wheels of a theory of meaning" (p. 20).

3. A TRUTH THEORY AS THE VEHICLE OF A COMPOSITIONAL MEANING THEORY

The basic difficulty in formulating a compositional meaning theory that allows one to derive formally all true instances of (M) is that it requires one to be able to quantify into the sentence on the right-hand side of 'means'. For one must connect axioms that attach to the components of the sentence described on the left with expressions in the metalanguage that are used on the right systematically, so that we can use axioms for the object language expressions to yield a matching, used sentence alike in meaning. If the metalanguage sentence on the right is only mentioned, then one could know the theory without knowing what the object language sentences mean, only that they were alike in meaning with others. Yet this apparently forces us to treat expressions that are not *prima facie* referring expressions as referring expressions, and this seems, even if we can sidestep the slingshot, an obvious mistake.

Davidson's makes his famous proposal in the following passage, which we quote in full:

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 ' [in ' s means p '] that, in some way yet to be made clear, 'gives the meaning' of s . One obvious candidate for matching sentence is just s itself, if the object language is contained in the metalanguage; otherwise a translation of s 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. (p. 23)

The central idea in this passage is that the practical value of having a theory that generates theorems of the form (M) is to match, in a way that reveals compositional structure, a mentioned object language sentence with a metalanguage sentence in use that means the same. There are difficulties in implementing this idea when the predicate we are dealing with is 'means'. Thus, Davidson suggests that we retain the idea that we want to match a metalanguage sentence in use with a mentioned object language sentence that is the same in meaning, in a way that reveals compositional structure, but that we do this by defining a predicate of the object language sentences in a way that generates instances of (T) in which ' p ' is replaced by a sentence the same in meaning as the object language sentence.

Davidson notes that a recursive characterization of a predicate 'is T ' that meets this requirement (and is otherwise formally satisfactory) will have in its extension all and only the true sentences of the object language. The requirement that a formal characterization of the predicate 'is T ' in (T) entail all instances of (T) in which ' s ' is replaced by a structural description of an object language sentence, and ' p ' by a metalanguage sentence that translates it, is in fact Tarski's Convention T on an adequate formal definition of a truth predicate for a language. Thus, the suggestion that emerges is that a truth theory that meets Tarski's Convention T (and perhaps certain other constraints) provides us with all the information that we wanted out of a compositional meaning theory.

For illustration, we introduce informally a simple recursive axiomatic truth theory. We first consider a theory without quantifiers or context-sensitive elements (we will extend this theory to context-sensitive languages later, and we will sketch the treatment for a language with quantifiers in the appendix to this chapter). Our predicates are ' x was a Philistine' and ' x slew y '; our proper names are 'David' and 'Goliath'; our connectives are 'and' and 'not'. We use ' \wedge ' and ' \vee ' as grouping elements. We call our language ' L '. We suppose, excepting tense, that our terms mean what they do in English. Our theory is given in A1–A6. A1 and A2 give the referents for the proper names of L . A3 and A4 give the conditions under which sentences formed from predicates and referring terms in L are true. A5 and A6 give, recursively, the conditions under which sentences formed using the logical

can replace 'is true-in- L iff' with 'means in L that', *suba veritate*. Thus, knowing that the theory meets Convention T (excepting formalization), we can rewrite, (1), for example, as (3).

- (3) 'David slew Goliath' means in L that David slew Goliath.

And so on. A T -sentence will be said to be *interpretive*, and to give *interpretive* truth conditions for its object language sentence. The axioms of such a theory, which use terms synonymous with object language terms when giving truth conditions, will be said to be interpretive, and the theory that has such axioms will be an interpretive truth theory. Such a theory may seem trivial, because we use a metalanguage that is the same as the object language, but, as before, we can see from imagining a metalanguage that differs from the object language that we gain real information about the object language from such a theory and what we know about it. These observations show the sense in which the present suggestion is a generalization to a truth theory of the observations that we made about our simple reference theory in the previous section. The lessons carry over straightforwardly. A truth theory, about which we know enough, serves to put us in a position to interpret any sentence in the object language. Moreover, by examining the proof of a T -theorem (in the general case, we will designate those proofs that intuitively draw only on the content of the axioms *canonical proofs*, and the theorems they prove *canonical theorems*) we can see how the parts of an object language sentence contribute systematically to its interpretive truth conditions, and thus gain insight into its compositional structure as that relates to the conditions under which it is true in virtue of what its constituents mean. This is the sense in which a truth theory can serve as the vehicle of a compositional meaning theory.⁶

It is important to note that the information that suffices to understand the object language is not all stated by the truth theory itself. Some of it is provided by things that the theorist knows about the truth theory. In the illustration just given, it is crucial that we know that the axioms of the theory are interpretive in order to use it for interpretation. Thus, we should not say that the truth theory itself is a meaning theory. If we identify the meaning theory with what it is we know that suffices to understand each sentence of the object language, then the meaning theory would be given by a statement of what we know about the truth theory that enables us to use it for interpretation (see Ludwig 2002 for further discussion).

In the example we have given, we have considered a language whose sentences have the same meaning on each occasion of use. The form of the theory must be changed if we are to extend it to a language that contains

connectives are true in L .

- A1. Ref('David') = David
- A2. Ref('Goliath') = Goliath
- A3. For any referring term r , r^{ref} was a Philistine' is true-in- L iff ref(r) was a Philistine.
- A4. For any referring terms r_1, r_2 , $r_1 \wedge r_2$ is true-in- L iff ref(r_1) slew ref(r_2).
- A5. For any sentence s , 'it is not the case that s ' is true-in- L iff it is not the case that s is true-in- L .
- A6. For any sentences s_1, s_2 , ' $s_1 \wedge s_2$ ' is true-in- L iff (s_1 is true-in- L and s_2 is true-in- L).

Allowing, as rules of inference, substitution of coreferring singular terms (counting 'ref(a)' as a singular term), universal quantifier instantiation, and a replacement schema ($S(T)$ may be inferred from (i) $S(R)$ and (ii) R iff T), we can derive from A1–A6, for example, (1) and (2).

- (1) 'David' slew 'Goliath' is true-in- L iff David slew Goliath.
- (2) ' $s \wedge$ Goliath' was a Philistine' and ' s ' it is not the case that ' s David was a Philistine' is true-in- L iff Goliath was a Philistine and it is not the case that David was a Philistine.

And so on. Given the rules of inference that we've introduced, we can see that any T -form theorem (any T -theorem) will intuitively draw only on the content of the axioms. Clearly, we can derive a T -theorem for each object language sentence. Since we start out with axioms in this theory that use metalanguage terms that are synonymous with the object language terms for which they are used to give truth conditions, our T -theorems use metalanguage sentences that are synonymous with the object language sentences for which they are used to give truth conditions. We will call such T -theorems ' T -sentences'. Clearly, our theory meets the requirement that we wish to impose on an adequate definition: it entails all instances of the T -schema for the theory (T_1) in which ' s ' is replaced by a structural description of an object language sentence, and ' p ' is replaced by a sentence that translates it.

$$(T_1) \quad s \text{ is true-in-}L \text{ iff } p$$

We can note further, as Davidson himself does at one point (Davidson 1984 [1970], p. 60), that given that the theory meets this requirement, we

elements whose contribution to what sentences are used to mean varies from context of use to context of use. Thus, if we understand 'slew' now as in the past tense, as in English, an utterance of 'David slew Goliath' on the morning of David's battle with Goliath means (roughly) that prior to that morning David had slain Goliath. But an utterance of 'David slew Goliath' on the evening of that day means that prior to that evening David had slain Goliath. Thus, the utterance in the morning is false, while that in the evening is true.

There are two basic ways of accommodating context-sensitive sentences in a truth theory. The first is to move from a theory that predicates truth of sentences to one that predicates truth of utterances (Weinstein 1974). This would require conditionalizing on the use of a sentence in performing a speech act. Thus, we might have a *T*-sentence such as (4).

- (4) For any speech act u of assertion performed using 'David' ~ 'slew' ~ 'Goliath' in English, u is true iff for some time t earlier than u , slew(David, Goliath, t).

(We take 'slew(x, y, t)' to be a context-insensitive verb with an explicit argument place for time.) The second way of modifying a truth theory so as to extend it to a language containing context-sensitive elements (a context-sensitive language) is to add additional argument places to the truth predicate for contextual features relative to which are determined the contributions of context-sensitive elements in sentences. For present purposes, we will suppose that argument places for speaker and time will suffice. The form of a *T*-sentence then would be (5).

- (5) For any speaker S , and any time t , 'David' ~ 'slew' ~ 'Goliath' is true(S, t , English) iff for some time t' earlier than t , slew(David, Goliath, t').

We will read the predicate ' s is true(S, t, L)' as ' s understood as if spoken by S at t in L is true'.⁷ Corresponding to the context-relativized truth predicate we would have a context-relativized meaning predicate: ' s means(S, t, L) that', read as ' s understood as if spoken by S at t in L means that'. From the appropriate theorems of the theory we could "read off" meaning theorems, as before. The second of these approaches is easier to implement, so we will use it for purposes of illustration. But any workable theory on either approach could be reformulated in the framework of the other. Each of them takes as the basic truth bearer the speech act performed using a sentence. An axiom for a tensed predicate can be given as in (6) (see Lepore and Ludwig

2003 for further discussion of the semantics of tense from the standpoint of truth-theoretic semantics).

- (6) For any speaker S , any time t , and any proper names n_1, n_2 , n_1 ~ 'slew' ~ n_2 is true(S, t , English) iff for some time t' earlier than t , slew(ref(n_1), ref(n_2), t').⁸

In addition to context-sensitive features of predicates such as tense, there are also context-sensitive referring terms in natural languages, such as 'I', 'we', 'now', 'then', 'here', 'there', 'you', 'he', 'she', 'it', 'they', 'this', 'that', 'these', 'those', and so on. An indexical term such as 'I' may be assigned a rule for determining its referent, as in (7).

- (7) For any speaker S , and time t , the referent of 'I' as used by S at $t = S$.

Demonstrative terms, of which 'this' and 'that' are paradigms, introduce some special complications, because they admit of vacuous uses. One may intend to refer to something using a demonstrative but fail to do so – for example, when hallucinating something. To give a reference clause for a demonstrative, we must conditionalize on nonvacuous uses, as illustrated in (8).

- (8) For any speaker S , any time t , and any object x , if S demonstrates x using 'that' at t , the referent of 'that' as used by S at $t = x$.

(Some additional refinements are needed, which propagate through the truth theory, but these are too involved to discuss here: see the appendix to Lepore and Ludwig 2000.) This means that the truth theory will not issue in fully specified truth conditions for sentences containing demonstratives except relative to actual contexts of use.

It remains to say how to generalize our adequacy condition, that is, how to reformulate Convention *T* for a context-sensitive language. Convention *T* says that an adequate definition of a truth predicate for a (context-insensitive) language L must be formally correct and must entail all instances of the *T*-schema in which ' s ' is replaced by a structural description of a sentence of L and ' p ' is replaced by a translation of s . Davidson has never provided a precise characterization of the parallel to Convention *T* for a context-sensitive language. But we can provide one in a straightforward way by noting first that we can reformulate Convention *T* as follows.

An adequate truth theory for a context insensitive language L must be formally correct and entail for all sentences of the object language a theorem

of the form (T) , where ' s ' is replaced by a structural description of an object language sentence,

(T) s is true in L iff p ,

such that the result of replacing 'is true in L iff' with 'means in L that' yields a true sentence.

The two formulations are equivalent, because 'is true in L iff' can be replaced by 'means in L that' to yield a true sentence iff what replaces ' p ' translates s . We can generalize this to context-sensitive languages by replacing 'is true in L iff' and 'means in L that' with the corresponding context-relativized semantic predicates 'is true(S, t, L)' and 'means(S, t, L)'. For convenience, let us call this criterion of adequacy Convention D . We will want to impose a corresponding requirement on the axioms of the theory to ensure that our starting points are correct.

Again, the meaning theory itself may be considered to be a statement of the knowledge that we need to have about an appropriate truth theory in order to use it to interpret another speaker. The truth theory itself does not state everything we need to know. Davidson himself is explicit about this (see, e.g., Davidson 1984b [1973], p. 139; 1984 [1976], p. 172). Failure to notice this has led to a number of spurious criticisms and misunderstandings of truth theoretic semantics. See, in particular, the exchange in Foster 1976 and Davidson 1984 [1976], and more recent criticisms along the same lines in Richard 1992 and Soames 1989; 1992. See Ludwig 2002 for an explicit formulation of a meaning theory that exploits a truth theory, and for some comments on how this helps to disarm traditional objections to truth-theoretic semantics.

4. INTERPRETIVE ISSUES: REPLACEMENT OR NOVEL PURSUIT OF TRADITIONAL GOALS?

As we have presented it, the point of using a truth theory to pursue the goal of a compositional meaning theory is that, with no more resources than are required for the theory of reference, it enables us to exhibit the compositional structure of a sentence while providing a matching sentence in the language of the theory that, if we know the right things about the truth theory, we will know translates the object language sentence. This puts us in a position to interpret any potential utterance of a sentence of the object language. One thing we could know about the theory, as we've seen,

is that its axioms use appropriately expressions in the metalanguage that translate the object language expressions for which they are used to specify reference and truth conditions. Davidson does not appeal (in any direct way) to this as a constraint on a truth theory for it to "do duty" as a meaning theory. And that he does not – and what he does initially appeal to – has given rise to the view that when he introduces the suggestion that we should pursue a truth theory rather than a theory that assigns meanings to primitive expressions, he is advocating, not a way of working around the traditional bottlenecks, but a replacement of the traditional project. A clear example of this (once) widespread (but not eradicated) misunderstanding can be found in Stich 1976.

Davidson supplies some fuel for this particular flare-up of confusion in a number of passages. For example, he says this about his proposal in "Truth and Meaning":

[T]he definition works by giving necessary and sufficient conditions for the truth of every sentence, and to give truth conditions is a way of giving the meaning of a sentence. To know the semantic concept of truth for a language is to know what it is for a sentence – any sentence – to be true, and this amounts, in one good sense we can give to the phrase, to understanding the language.... Indeed, since a Tarski-type truth definition supplies all we have asked so far of a theory of meaning, it is clear that such a theory falls comfortably within what Quine terms 'the theory of reference' as distinguished from what he terms the 'theory of meaning'. So much to the good for what I call a theory of meaning, and so much, perhaps, against my so calling it. (p. 24)

A reader might be forgiven for thinking, especially in light of the reference to Quine, that the object of introducing a truth theory in place of a meaning theory is to pursue our work where there is light rather than darkness, and that the suggestion is that the theory of meaning, with its obscure entities and logical difficulties, is a kind of confused, proto-scientific theory, a folk science of language that must be relegated to the status of the evil demon theory of disease.

It should be clear, though, in the light of our development of the point of introducing a truth theory, that this is a significant misunderstanding. This is most clearly seen from the emphasis that Davidson gives to the importance of a truth definition's meeting Convention T , or our analogue for a context-sensitive language, Convention D . This would make no sense if Davidson's aim were to eschew talk of meaning altogether. Numerous passages in essays later than "Truth and Meaning" bear this out.⁹

Indeed, this example shows that even if the theory issues in theorems that are necessarily true (taking a language to be individuated by its syntax and semantics), it is not guaranteed to meet Convention *T*. Why expect that a theory for a context-sensitive language would fare any better?

Davidson's hope was apparently that the context-sensitive elements of the language would provide the needed additional refinement. "Sentences with demonstratives obviously yield a very sensitive test of the correctness of a theory of meaning, and constitute the most direct link between language and the recurrent macroscopic objects of human interest and attention" (Davidson 1984 [1967], p. 35). This is also indicated in a retrospective footnote to "Truth and Meaning" (Davidson 1984 [1967], note 10). For example, could a theory that had to deal with demonstratives issue in a theorem such as (S)?

(S) 'Snow is white' is true in English iff grass is green.

It would have to also yield correct theorems for 'That is snow', 'That is grass', 'That is white', and 'That is green'. If our axiom for the demonstrative is the one given in §3, then it looks as if a theory that yielded (S) would require (11) and (12) as axioms¹⁰ (suppressing quantification over 'S' and 't').

(11) 'x is white' is true(S, t, L) of something iff it is(t) green.

(12) 'x is snow' is true(S, t, L) of something iff it is(t) grass.

But then if someone demonstrates a bit of snow, σ , and calls it snow, the combination of our reference axiom and our predicate axioms will give the wrong result, namely, (13).

(13) 'That is snow' is true(S, t, L) iff σ is(t) grass.

Thus, it may appear that the presence of such elements as demonstratives in the language will provide enough additional resolving power to rule out spurious theories.

Reflection shows, however, that this is not enough. As was observed by a number of critics of this initial suggestion, if we replace any predicate axiom with another that uses a predicate in giving truth conditions that is extensionally equivalent to the original but nonsynonymous, we will have a truth theory that is extensionally adequate if the original was (Foster 1976; Loar 1976). But it cannot be that both of the theories are interpretive. In fact, the examples with which we started this section, (9) and (10), show this already. No test involving demonstratives will show either of those axioms

What has perhaps obscured this more than it ought to have is that in "Truth in Meaning" Davidson makes the suggestion – in cases where we are concerned with a truth theory for a natural language, which must accommodate the contributions of context-sensitive elements – that if a truth theory is extensionally adequate (that is, if it characterizes a predicate with all and only true sentences of the language in its extension), then its canonical theorems can be used to interpret object language sentences. The aim of this is to shed more light on the concept of meaning than could be expected from explaining constraints that the theory must meet in order to satisfy Convention *D* by appealing to, for example, the requirement that *axioms* use terms that *translate* object language terms. Thus, Davidson suggests:

What appears to the right of the biconditional in sentences of the form '*s* is true if and only if *p*' when such sentences are consequences of a theory of truth plays its role in determining the meaning of *s* not by pretending synonymy but by adding one more brush-stroke to the picture which, taken as a whole, tells what there is to know of the meaning of *s*; this stroke is added by virtue of the fact that the sentence that replaces '*p*' is true if and only if *s* is.

Since it is not perhaps immediately clear how this would suffice for meeting Convention *D*, it may seem natural to suppose that the aim is rather to urge that there is nothing more to the idea of meaning than could be gleaned from a merely extensionally adequate truth theory. In the next section, we explain why Davidson initially hoped that extensional adequacy would prove adequate, and why it is not. In the section following, we will consider the proposal that he subsequently introduces, namely, that the truth theory be confirmable from the standpoint of a radical interpreter.

5. THE EXTENSIONALITY CONSTRAINT

Davidson suggests in "Truth and Meaning" that a merely extensionally adequate truth theory for a natural language would suffice for interpretation. This amounts to the claim that a merely extensionally adequate truth theory for a natural language would, ipso facto, satisfy Convention *D*. For a context-insensitive language, this is obviously inadequate. For example, a truth theory that issued in (9) and (10) as canonical theorems would be extensionally adequate, but its theorems would not satisfy Convention *T*.

(9) '*A* is a triangle' is true-in-*L* iff *A* is a trilateral.

(10) '*A* is a trilateral' is true-in-*L* iff *A* is a triangle.

to be inadequate. Moreover, even in the case of predicates such as 'is snow' and 'is white', the test involving demonstratives works only if we pair them with axioms for demonstratives that are themselves interpretive. But if we are testing at the level of *T*-theorems for the adequacy and truth of the theory, then we cannot help ourselves to correct reference axioms. Thus, extensional adequacy fails to ensure that a truth theory satisfies Convention *T*, even for a natural language. This is something that became apparent quickly. But it is important to note, both in order to understand how Davidson's aim could have been misunderstood and in order to understand Davidson's next suggestion.

6. THE ROLE OF RADICAL INTERPRETATION

Davidson's initial suggestion, that a merely extensionally adequate truth theory for a language would *ipso facto* be interpretive, was incorrect. The aim of that suggestion was to identify constraints that a truth theory could meet that were not couched in terms of meaning, with the aim of shedding light indirectly on what was involved in understanding another speaker. If extensional adequacy is not enough, the question arises what additional (illuminating) constraints must be placed on a truth theory for a natural language for it to be interpretive.

Davidson returned to this question in "Radical Interpretation" (Davidson 1984b [1973]), which he characterized in "Reply to Foster" (Davidson 1984 [1976], p. 171) as an attempt to say better what the relation is between a truth theory and a meaning theory.¹¹ The project of radical interpretation is treated in some detail in Chapter 3. In this section, our aim is just to explain how it is related to the project of using a truth theory in pursuit of a meaning theory for a speaker's language.

At the beginning of "Radical Interpretation," Davidson poses two questions: (1) What is it that we could know that would enable us to interpret other speakers?¹² (2) How could we come to know it? The second question is to be answered on the basis of evidence that includes knowledge of a speaker's actual and potential behavior (his behavioral dispositions), but which excludes knowledge of the meaning of any of his terms and any detailed knowledge of his propositional attitudes. This is what defines the position of the radical interpreter, and so the project of radical interpretation. The goal of a theoretical description of the procedures of radical interpretation is to shed light on the concepts we use in interpreting other speakers – concepts of meaning, truth, reference, rationality,

of the propositional attitudes, action, preference, and so on – by relating the theoretical structure that contains them to evidence for their application that is described independently of their use (Davidson 1984b [1973], p. 137).

Our present concern is specifically with question (1). For Davidson's suggestion is that what we could know that would enable us to interpret another speaker is a truth theory for his language, and that it met certain constraints. In "Truth and Meaning," the suggestion was that the appropriate constraint was that the theory be simply extensionally adequate (at the level of *T*-theorems). What is substituted for this constraint in "Radical Interpretation"? The suggestion is the following:

[T]he totality of *T*-sentences¹³ should (in the sense described above) optimally fit evidence about sentences held true by native speakers. The present idea is that what Tarski assumed outright for each *T*-sentence can be indirectly elicited by a holistic constraint. If that constraint is adequate, each *T*-sentence will in fact yield an acceptable interpretation. (p. 139)

For a theory to optimally fit evidence "in the sense described above" is for it to be confirmable using the procedures Davidson outlines for the radical interpreter. Thus, Davidson's constraint appears to be that the truth theory have been confirmed by the procedures of the radical interpreter. This is supposed to impose a stricter requirement on the theory than simply that it be true, because, for example, if the theory is confirmed empirically, and is about, ultimately – as Davidson holds – an individual speaker's idiolect, then its theorems must be lawlike (see in particular the retrospective note 11 in Davidson 1984b [1973]; Davidson 1984 [1976], p. 174; and Davidson 1999f, p. 688).

It is not clear that this added constraint is adequate. There is, first of all, some difficulty in taking this constraint to be one that could serve as an answer to question (1). For if it does, that a theory is confirmed or optimally fits evidence becomes the thing that we want the radical interpreter to confirm; but that is clearly not the intent. But put this aside. What property does a theory that is confirmed by a radical interpreter have that guarantees that it meets Convention *T*? One property that we know it will have is being projectible and lawlike. Davidson sometimes seems to suggest that this is what he has in mind. But this is not, by itself, adequate. The example given at the beginning of §5 shows this. What we need, then, is some reason to think that any theory of truth that optimally fits evidence in the form of a speaker's behavior will *ipso facto* be interpretive. If we had an *a priori* guarantee that speakers were interpretable from the standpoint of a

radical interpreter, this would provide the grounding required. Davidson does offer some arguments for this, though discussion of them is beyond the scope of this chapter (Davidson 1984 [1976]; 1989; 1990d; 2001a [1982]; 2001 [1983]; 2001b [1988]; 2001 [1989]; 2001b [1991]; 2001 [1992]; 2001 [1999]). See Chapter 3 for further discussion, as well as Lepore and Ludwig forthcoming; Ludwig 1992; 1994; 1996.

7. WORK IN TRUTH-THEORETIC SEMANTICS

It is important to note that the project of pursuing compositional semantics by way of a truth theory (truth-theoretic semantics) can proceed independently of this more ambitious project in which Davidson embeds it. We have stated a constraint on a truth theory that suffices for it to serve in pursuit of a compositional meaning theory. That is basically that its axioms meet a suitable analogue of Convention *D*. Thus, proposals for the semantic form of natural language constructions can be cast in the form of proposals for axioms in an interpretive truth theory for the language. The theory can then be tested against intuitions about entailment relations based on formal considerations, and about its systematic implications for constructions in which the relevant words and constructions appear.

It is worth noting in this connection that pursuit of a compositional meaning theory through the vehicle of a truth theory, as indicated in §3, is completely neutral on what the proper analysis of the concept of truth is, beyond the requirement that any coherent definition of a truth predicate that honors the core concept must meet Convention *T*, or Convention *D*, as the case may be. In particular, a deflationary account of the concept of truth is not a threat to truth-theoretic semantics. Truth-theoretic semantics uses the concept of truth in a formal structure. It makes no claim to reduce the concept of meaning to the concept of truth and other concepts. Worries about the deployment of the concept of truth could arise only in a context in which one was concerned to illuminate the concept of meaning by relating it to other, presumably independently grasped concepts, or concepts grasp of which is coordinate with that of meaning.

The program of truth-theoretic semantics, taken independently of Davidson's larger philosophical concerns, has been pursued extensively in philosophy and linguistics.¹⁴ In the remainder of this section, we identify some problem areas for the program of truth-theoretic semantics for natural languages, and indicate where work has been done on them, by Davidson and others. Among the outstanding problems that Davidson identified

were the treatment of context-sensitive terms, counterfactual or subjunctive conditionals, mass terms, adverbs, attributive adjectives and adverbs such as 'slow' and 'slowly', the problem of opaque contexts (for example, in indirect discourse sentences), quotation, and the problem of extending the program to those sentences of the language that, *prima facie*, are neither true nor false – namely, interrogatives, such as 'What time is it?' and imperatives, such as 'Put on your hat'. Davidson has contributed to work on a number of these problems. Some additional problem areas are restricted quantifiers (e.g., 'Most philosophers are not rich'), so-called branching and cumulative quantifiers (e.g., 'Most men and most women like each other' and 'Ten firms employed twenty engineers', which are alleged to have readings that cannot be captured with linear quantifiers), and the related problem of plurals in English, which are said to require second-order quantification.

In "The Logical Form of Action Sentences" (Davidson 1980b [1967]), Davidson made a very influential suggestion about how to understand adverbial modification of action verbs (a suggestion that generalizes to the treatment of adverbs generally). The suggestion is that we represent action sentences as having an implicit quantifier over events, and adverbial modification as contributing predicates of the event variable thus introduced. Thus, for example, the logical form of (14) is represented as (15).

(14) David slew Goliath with a sling.

(15) There is an event *e* such that *e* is slaying and *e* was by David and *e* was of Goliath and *e* was done with a sling.

This account of adverbial modification is now widely accepted in philosophy and linguistics (see, e.g., Schein 1993; 2002). This contribution, along with related issues connected with the metaphysics of events, is discussed further in Chapter 5.

Davidson's interesting but controversial solution to the problem of indirect discourse is given in "On Saying That" (Davidson 1984 [1968]). It has come to be called the paratactic account,¹⁵ and it has been extended to other contexts in which words cannot be freely intersubstituted solely on the basis of their referents, or extensions. The account, in brief, treats an utterance of what we would write in English as (16) as semantically functioning like the utterance of two sentences, the utterance of the first of which contains a demonstrative reference to the utterance of the second, as in (17).

(16) Galileo said that the Earth moves.

(17) Galileo said that. The Earth moves.

The first sentence is analyzed as on the event analysis of action sentences, and the verb 'said' is treated as relating two utterances: the relation holds between the utterances if and only if they are the same-in-content (or perhaps relevantly-similar-in-content). Introducing 'samesays' to express the relevant relation, the suggestion can be written as in (18).

- (18) There is an event e such that e was an utterance of Galileo's and e samesays with that. The Earth moves.

Among the difficulties that this account has been charged with is that it cannot accommodate quantification into the complement clause of an indirect discourse sentence, as in 'Everyone said that he hadn't seen it' (Fiffinbotham 1986), since it does not treat 'he hadn't seen it' as part of the sentence containing the quantifier 'Everyone', and that it yields the wrong answer to the question how many things Galileo said (for example), since it treats 'says' as relating Galileo not to a proposition, but to utterances that samesay his – of which there are many (McFetridge 1976). Discussion of this seminal proposal and additional references to the literature can be found in Lepore and Loewer 1989 and Ludwig and Ray 1998.

Davidson extended the paratactic approach to two other problems on our earlier list. The first is the problem of quotation. Quotation is a device for referring to expressions by way of a sample of the expression referred to. The difficulty with quotation is that it appears to be a productive device. We can quote any expression in order to refer to it. So there appear to be an infinity of "quotation names." Yet quotation names appear not to have an internal semantic structure. For the word that appears inside the quotation name, e.g., 'duck', in " 'duck' ", does not contribute its semantic properties to determining the referent of the term. In "Quotation" (Davidson 1984c [1979]), Davidson proposes a solution similar to the paratactic account of indirect discourse. The account holds that the semantic form of quotation involves a demonstrative description of an expression type that demonstrates a token of the type to be referred to. The contribution of the quotation marks in (19) is represented as in (20).

- (19) 'duck' is a four-letter word.
 (20) The expression of which this is a token is a four-letter word. duck

One criticism that has been leveled against the paratactic account of quotation is that there is nothing in it that constrains the demonstrative to refer to the word a token of which is displayed between the quotation marks. An alternative account that treats quotation names as simple referring terms,

syntactically productive but not semantically productive, was given by Wallace (1970), who suggested the following simple reference clause.¹⁶

- (21) For any expression E , the expression resulting from placing E in quotation marks refers to E .

One perhaps unsettling feature of this proposal is that the class of expressions in English consisting of quotation marks around expressions is infinite but not recursively specifiable (i.e., it cannot be constructed from a finite number of primitives and rules). The paratactic account of quotation has been elaborated and defended in Cappelen and Lepore 1997; 1999a; 1999b.

The final application of the paratactic strategy is to the problem of nondeclarative sentences. The difficulty for truth-theoretic semantics presented by nondeclaratives is that they do not, on the face of it, have truth conditions, so that the truth theory appears to be an inappropriate vehicle for specifying their meanings in a context. Davidson's response is to try to assimilate nondeclaratives to declaratives with the aid of a paratactic/demonstrative analysis of the nondeclarative mood markers. This idea is suggested by thinking about the explicit application of the paratactic account of indirect discourse to performative sentences, such as 'I hereby command that you put on your hat'. The basic idea can be illustrated by an imperative such as 'Put on your hat', which Davidson suggests we treat *semantically* as two utterances, one of a mood-setter (playing the role of 'I command that'), which says of something that it is an utterance with a certain (illocutionary) force, and the other as what the mood marker is directed toward. Davidson says, "If we were to represent in linear form the utterance of, say, the imperative sentence 'Put on your hat', it would come out as the utterance of a sentence like 'My next utterance is imperatival in force', followed by an utterance of 'You will put on your hat'" (Davidson 1984b [1979], p. 120). This is not quite right, because, as Davidson says, "it gets the syntax wrong" (p. 120). Davidson suggests that we give truth conditions for the mood-setter as follows: "The mood-setter of an utterance of 'Put on your hat' is true if and only if the utterance of the indicative core is imperatival in force" (p. 120). The indicative core is presumably 'You will put on your hat'. But the difficulty with this is that there is no utterance of 'You will put on your hat' when someone utters 'Put on your hat'. It is not clear how this difficulty is to be overcome in a way that is consonant with Davidson's intentions. One might suggest that it be put (roughly) this way: the mood-setter of an utterance of 'Put on your hat' is true iff in uttering 'Put on your hat' the speaker directs that his auditor put on his hat. But

this does not represent 'Put on your hat' semantically as two utterances, and this turns out to be important for Davidson's explanation of why utterances of imperatives are intuitively judged not to have truth values. His explanation is that an utterance of an imperative is semantically not a single sentence but two, and that we would not judge the complex utterance of 'You are tired', 'You are old', for example, as true or false. There are other difficulties with this approach as well. It is not clear that we have the intuition that in uttering 'Put on your hat' we are saying two things that are truth valued. The account would also need to be extended, in some as yet unexplained way, to accommodate interrogatives whose "indicative cores" are open sentences, such as 'What time is it?' The account also has difficulty handling conditional imperatives and interrogatives, such as 'If you see her, say hello'. No simple directive is issued in uttering this conditional sentence, but Davidson's account would require the mood-setter to cover either the whole conditional or the consequent only, and in either case, the idea that a *conditional* requirement has been issued will be lost.

This does not show, however, that the truth-theoretic approach to semantics cannot be extended to cover nondeclaratives. Some recent work on nondeclaratives in the truth-theoretic framework shows how to generalize the approach to a fulfillment theory of sentences that assigns distinctive kinds of fulfillment conditions to declaratives, imperatives, and interrogatives (Ludwig 1997). Imperatives and interrogatives are treated as having compliance conditions, and declaratives as having truth conditions. The compliance conditions of imperatives and interrogatives, while not truth conditions, are nonetheless recursively characterized ultimately in terms of a truth theory for the language. We provide a quick sketch for 'Put on your hat'.

'Put on your hat' is fulfilled(S, t, L) iff $\text{ref}(S, t, \text{'you'})$ makes it the case that 'You will put on your hat' with the intention of fulfilling the speech act performed in uttering 'Put on your hat'.

There are additional complications for interrogatives. The approach can be extended to handle quantification across mood-setters, as in 'Invest every penny you earn' (for every x such that x is a penny you earn, invest x).

In closing this section, we briefly give some pointers to recent literature treating some of the other problem areas we have mentioned. (This is by no means intended to be exhaustive.) For recent work on tense and demonstratives, see Higginbotham 1995; Lepore and Ludwig 2000; 2003. For recent work on mass terms, see Koslicki 1999. We show in the

appendix to this chapter how to handle restricted quantifiers in the truth-theoretic framework. See Schein 1993 for important work on the semantics of plurals and so-called branching and cumulative quantifiers in natural languages.¹⁷

8. CONCLUSION

Davidson's work in the theory of meaning has had great influence on contemporary philosophy of language and on natural language semantics. His central proposal was that the task of understanding "what it is for words to mean what they do" can be fruitfully approached by considering how we can confirm a truth theory for a speaker on the basis of evidence that does not initially presuppose any knowledge of the speaker's meanings or the detailed contents of his propositional attitudes. There are two aspects of this proposal, which are separable. The first is the suggestion that a truth theory can serve in pursuit of a compositional meaning theory for a language essentially by providing the recursion needed to generate a used metalanguage sentence, to match with each object language sentence, which translates the object language sentence. This suggestion has launched a program in natural language semantics that takes the interpretive truth theory as its basic vehicle. In pursuing this project for languages that we know, we can make use of our knowledge of the language in formulating axioms. The second feature of the proposal is that, having a vehicle for a compositional meaning theory, we can gain further insight into the concepts of the theory and related concepts by relating them systematically to "neutral" evidence for their application.

APPENDIX: EXTENSION TO LANGUAGES WITH QUANTIFIERS

We sketch briefly in this appendix an extension of the truth theory presented in §3 to a language with quantifiers. Quantifiers require us to introduce variables in argument places of predicates that can be bound by them, as in

(Some x)(some y)(x slew y).

The standard practice is to introduce sequences of objects or functions from variables to objects as "satisfiers" of open sentences in which argument places are occupied by variables, and to define truth in terms of satisfaction

by all sequences or functions. A predicate satisfaction clause would go as follows:

For all functions f , variables v , u , f satisfies-in- L $v \hat{=} u$ iff $f(v)$ slew $f(u)$.

This mimics our clause for proper names. Indeed, we can think of each function as an extension of the reference function for the language to the variables treated as names. Intuitively, 'satisfies' is the inverse of 'is true of'. The recursive clauses for connectives are treated in the same way as those for truth, as in

For all functions f , for any sentences s , r , f satisfies-in- L ' $(\sim s)$ ' and ' $\sim r \wedge y$ ' iff (f satisfies-in- L s and f satisfies-in- L r).

Clauses for quantifiers look at variants of a given function (or sequence) with respect to the variable bound by the quantifier. For 'Some x ' and 'Every x ', we have:

For all functions f , for all formulas F , variables v , f satisfies-in- L '(some x) $\hat{=} F$ iff some v -variant f' of f is such that f' satisfies-in- L F .

For all functions f , for all formulas F , variables v , f satisfies-in- L '(Every x) $\hat{=} F$ iff every v -variant f' of f is such that f' satisfies-in- L F .

We define ' f' ' is a v -variant of f ', as ' f' ' differs from f at most in what it assigns to v '. As for other sorts of expressions, we use in the metalanguage quantifiers the same in meaning as the object language quantifiers they are used to give satisfaction conditions for. These clauses are easily extended to restricted quantifiers, such as '(Every x : x is a man)' (corresponding in English to 'Every man'):

For all functions f , for all formulas F , variables v , f satisfies-in- L '(Every x : x is G) $\hat{=} F$ iff every v -variant f' of f which satisfies ' x is G ' is such that f' satisfies-in- L F .

If one function satisfies a formula, every function will. For a closed sentence, we define truth as satisfaction by all functions.

For any sentence s , s is true iff for all functions f , f satisfies s .

The truth and satisfaction predicates can then be relativized to contextual parameters for context-sensitive languages.

Notes

1. Frege, for example, clearly presupposes it in his account of meaning, and discusses the importance of this in the context of recognizing the meaning of novel sentences, in particular, in a letter to Jourdain in January 1914 (Beaney 1997, pp. 319–20).
2. Davidson attributes the argument to Frege, and versions of it can be found in Church 1943; 1956 and Gödel 1966. See Neale 1995; Neale and Dever 1997; and Oppy 1997 for recent discussions.
3. Davidson has used versions of this argument against fact-based ontologies in "True to the Facts" (Davidson 1984 [1969], p. 42) and "The Logical Form of Action Sentences" (Davidson 1980b [1967], pp. 117–18), and against treating sentences as referring to events in Davidson 1980 [1969], p. 169.
4. That is, treating the definite article, 'the', and ' $\hat{=}$ ' as logical terms, but not the proper name, it is clear that the denotation of the definite description varies with the assignment to the name.
5. Space prevents a full discussion of other methods of achieving the end that might be scouted, including, e.g., appeal to substitutional quantification. For further discussion, see Lepore and Ludwig forthcoming, Chapter 3; Lepore and Ludwig n.d.; Ludwig 2002.
6. Church (1951, p. 102) seems to make essentially the same observation about Tarski's truth definitions, as Wallace (1978, p. 54) notes.
7. In this we go beyond anything Davidson has said. Davidson's only sketch of the form of a context relativized T -sentence that we are aware of can be found in "Truth and Meaning" (Davidson 1984 [1967], p. 34). This way of explaining how to understand the relativized truth predicate is intended to avoid the difficulties canvassed by Evans (1985, pp. 359–60).
8. Note that this requires a metalanguage that has for each tensed verb in the object language a corresponding untensed verb in the metalanguage, with an explicit argument place for time intervals. Thus, for a language such as English that does not have such verbs, the truth theory cannot be given in English, but must be given in a language which at least extends English by the introduction of these additional untensed predicates.
9. In "Belief and the Basis of Meaning" (Davidson 1984a [1974]), Davidson says: "A theory of truth will yield interpretations only if its T -sentences state truth conditions in terms that may be treated as 'giving the meaning' of object language sentences. Our problem is to find constraints on a theory strong enough to guarantee that it can be used for interpretation" (p. 150). See also Davidson 1984 [1976], pp. 173, 175; and Davidson 1984b [1977], p. 224.
10. Note that these axioms are themselves false. So Davidson's idea must have been not that a true theory could issue in (S), but that testing at the level of T -theorems would ensure that the axioms of the theory were true.
11. Even in "Truth and Meaning" (Davidson 1984 [1967], p. 27), Davidson regarded a theory of truth of the sort he was concerned with as an empirical theory, and argued that we gain insight into the terms of the theory by reflecting on how

it would be confirmed from the standpoint of Quine's radical translator (Quine 1960, Chapter 2). What he did not do there was to explicate the constraints a truth theory was to meet in order to serve as a meaning theory by appeal to empirical confirmation.

12. It is important to note the counterfactual element in this question. Davidson has never claimed that our competence in our languages is constituted by propositional knowledge of an explicit compositional meaning theory or truth theory for the language. The theory rather aims to "capture" in its structure the structure of a complex practical ability, the ability to speak and understand.
13. Here Davidson uses '*T*-sentence' in the sense in which we have used '*T*-theorem'.
14. See, e.g., Larson and Segal 1995, which aims to integrate the Davidsonian approach with standard syntactic descriptions of English grammar, though it also departs in some ways from Davidson's program in assigning semantic "values" to expressions besides grammatically referring terms. An important earlier syntopic work is Davies 1981. Of interest also are Davidson and Harman 1972; 1975; Evans and McDowell 1976; Lepore 1986; Lepore and McLaughlin 1985; Platts 1980; 1997.
15. Parataxis is the placing of propositions or clauses one after another, without indicating by connecting words the relations (of coordination or subordination) between them.
16. Unfortunately, Davidson himself does not explicitly address Wallace's suggestion, though he must have been familiar with it at the time of writing "Quotation."
17. The semantic paradoxes in natural languages have also been thought to be a difficulty for truth-theoretic semantics (see Chihara 1976). The *T*-sentence for a Liar sentence (*L*), '*L* is not true', is "'*L* is not true' is true iff *L* is not true', which by substitution (*L* = '*L* is not true') generates a contradiction, '*L* is true iff *L* is not true'. Thus, a truth theory for a natural language that respects Convention *T* (or *D*) is not true. A similar problem arises for vague predicates (such as 'is bald') that introduce truth value gaps in the language when applied to "borderline" cases, for a *T*-sentence for an object language sentence must use a vague predicate in the metalanguage. So the truth theory inherits the truth value gaps of the object language. Davidson addresses this briefly in "Truth and Meaning" (Davidson 1984 [1967], pp. 28–9), though his remarks are cryptic. About the paradoxes, one can point out that excising the semantic terms from a language would still allow us to give a semantics for most of its vocabulary. About both the semantic paradoxes and vagueness, one can remark that for the truth theory to discharge its job of informing us about the compositional structure of natural language sentences and informing us about what sentences in the object language mean, it is enough that we understand it, can prove canonical theorems for each object language sentence on the basis of interpretive axioms, and can trace through those proofs the systematic contribution, in virtue of meaning, of each of the component expressions of a sentence to its truth conditions. The purposes of understanding are served if we can do this: it is not further required that we endorse as true every sentence of the theory. One way to see this is to

notice that once we make the transition from *T*-sentences to *M*-sentences, we can treat the *M*-sentences as true even if the corresponding *T*-sentences are not. In effect, what we know about a truth theory that enables us to use it for understanding another speaker does not require that we know that the theory is in fact true. (See Lepore and Ludwig forthcoming, Chapter 10; and Ludwig 2002 for a fuller discussion of this issue.)