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Source: *Noûs*, Vol. 32, Supplement: Philosophical Perspectives, 12, Language, Mind, and
Ontology (1998), pp. 141–166
Published by: Wiley
Stable URL: http://www.jstor.org/stable/2676144
Accessed: 19/11/2014 12:40

SEMANTICS FOR OPAQUE CONTEXTS[1]

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1. Introduction

In this paper, we outline an approach to giving extensional truth-theoretic semantics for what have traditionally been seen as opaque sentential contexts.[2] If the approach outlined here is correct, it resolves a longstanding complex of problems in metaphysics, the philosophy of mind and the philosophy of language.

We take as our starting point the requirement that any semantics for a natural language be compositional, that is, that it provide an interpretation of each of the infinity of sentences in it on the basis of a finite primitive vocabulary and a finite number of rules. At least since Frege,[3] it has been recognized that sentences such as (1),

(1) Galileo said that the earth moves,

present a *prima facie* difficulty for the project of providing a compositional semantics for natural languages. A compositional semantics for a fragment of English which does not include sentences of indirect discourse, psychological attitude sentences (henceforth 'attitude sentences'), modal sentences, sentences about entailments, and similar constructions can be given straightforwardly in the form of a first-order interpretive truth theory for the language.[4] The approach breaks down when we turn to sentences such as (1), whose truth value is not a function of the truth value of the embedded sentence 'the earth moves'. In general, one term can be substituted for another in 'that-clauses' *salva veritate* only if they are synonymous. Perhaps the most popular solution to the problem of providing a compositional semantics for natural languages aims to exploit this fact by treating that-clauses as referring to intensional entities–entities (at least as) as finely individuated as the meanings of sentences. We outline an approach to providing a compositional truth-theoretic semantics for opaque contexts which does not require quantifying over intensional entities of any kind, and meets standard objections to such accounts.

The account we present aims to meet the following desiderata on a semantic theory T for opaque contexts:

(D1) T can be formulated in a first-order extensional language;

(D2) T does not require quantification over intensional entities—i.e., meanings, propositions, properties, relations, or the like—in its treatment of opaque contexts;

(D3) T captures the entailment relations that hold in virtue of form between sentences in the language for which it is a theory;

(D4) T has a finite number of axioms.

We will not attempt to provide a complete account of how to carry out the program we propose, but rather illustrate the approach first with respect to indirect discourse, and then illustrate how it can be extended systematically to other opaque contexts.

The approach we adopt is inspired by, though also very different from, Donald Davidson's paratactic account in "On Saying That."[5] A central insight of Davidson's account of indirect discourse was that the content of what is said when someone utters a sentence such as (1) can be captured by representing that person as representing what he utters after 'that' as standing in a semantic relation to something uttered by the subject of the sentence. It is roughly this feature of the account which we will preserve. We reject, however, Davidson's analysis of sentences of indirect discourse as paratactic, and their assertion as involving a demonstrative reference to an utterance. The approach we adopt allows us to avoid all of the major objections advanced against Davidson's proposal, and can be extended systematically to other opaque contexts. To develop the approach, we will present it as a response to a number of difficulties which arise for the paratactic account.

In §2, we give a brief overview of the project of truth-theoretic semantics. In §3, we review the paratactic account and a range of difficulties that have been raised for it. In §4, we provide an alternative proposal that draws on a central insight of Davidson's but which rejects two central features of his account, and show how the proposal enables us to respond to the objections to the paratactic account. In §5, we sketch some proposals for extending the account to other opaque contexts, and conclude in §6.

2. Truth-theoretic semantics

A truth-theoretic semantics aims to provide a compositional meaning theory for a natural language L by exploiting the recursive machinery of an interpretive truth theory for L.[6] An interpretive truth theory for L employs metalanguage terms that interpret object language terms for which satisfaction conditions are given (making explicit context sensitivity). A theorem proved solely on the basis of the content of the axioms (henceforth a 'T-sentence') will then meet an analog

for natural languages of Tarski's convention T. Theorems will have the form (T), where 's' is replaced by a structural description of a sentence of L.

(T) $(S)(t)$(s is true as potentially spoken by[7] speaker S at time t in L iff p).

Relativization of the semantic predicates to speaker and time accommodates context sensitive features of natural languages. (Henceforth, this relativization will be indicated by subscripts on the semantic predicates, as in 'true$_{[S,t]}$', and universal quantifiers binding these variables will be suppressed.) A theorem is interpretive if 'is true$_{[S,t]}$ in L iff' may be replaced by 'means$_{[S,t]}$ in L that' *salva veritate*. For example, from ' "I am tired" is true$_{[S,t]}$ in English iff S is tired at t' we may infer ' "I am tired" means$_{[S,t]}$ in English that S is tired at t'. An interpretive truth theory thus puts us in a position to provide an interpretation for every sentence of the object language with no more ontological resources than are required for the theory of reference. A few cautions are in order. The project of a compositional semantics is not to analyze primitive expressions, but to reveal semantic structure (the predicate 'tired' above, e.g., receives no analysis). It thereby aims to capture the structure of a complex practical ability, the ability to speak and understand a language. It is no part of this task to represent that ability as constituted by propositional knowledge of the theory.

3. The paratactic account

The paratactic account treats (1) as having the form of (2).

(2) Galileo said that. The earth moves.

In the first sentence of (2), 'that' is treated as a demonstrative that when used in an utterance of (2) typically refers to the utterance of 'The earth moves'. The first sentence of (2) is represented as having the truth conditions in (3) (we ignore tense throughout for the sake of simplifying the presentation),[8]

(3) 'Galileo said that' is true$_{[S,t]}$ in English iff Galileo said ref('that', S, t),

where 'ref('that', S, t)', read as 'the reference of "that" as potentially spoken by S at t', instantiated to speaker and time yields the object then demonstrated by the speaker.[9] Davidson provides a paraphrase to make clear the intended interpretation of 'said', which is given in (4).

(4) 'Galileo said that' is true$_{[S,t]}$ in English iff there is an assertion u of Galileo's such that u samesays[10] with ref('that', S, t),

where 'samesays' holds between two utterances iff they are intertranslatable.[11] On this account, the apparent intensionality of the context following 'that' in (1)

disappears. The verb 'said' is treated as a two-place extensional relation holding between a speaker and an utterance. The difficulty of incorporating (1) into an extensional truth-theoretic semantics vanishes. As Davidson says (p. 106),

> ...sentences of indirect discourse...wear their logical form on their sleeves (except for one small point). They consist of an expression referring to a speaker, the two-place predicate 'said', and a demonstrative referring to an utterance. Period.

The device by which Davidson makes this advance, however, gives rise to a number of difficulties.[12]

One obvious difficulty for the paratactic account is that it represents what intuitively is one sentence as two (that is, it's *paratactic*).[13] Call this 'the syntax objection'. This objection turns out to be connected with a number of other difficulties which arise for the paratactic account. For example, a second connected difficulty is that on the paratactic account, one could understand an assertion of (1), and know that what Galileo said is true, but not be able to infer that the earth moves, since on the paratactic account the speaker does not assert 'the earth moves'.[14] Call this 'the understanding objection'. A third difficulty is that the paratactic account cannot be extended straightforwardly to other opaque contexts, and, in particular, to attitude sentences, such as (5),

(5) Galileo believed that the earth moves,

since (5) can be true even if Galileo never uttered a sentence that translates the speaker's utterance of 'the earth moves'.[15] It is natural here to suggest that we should quantify over propositions in order to extend the account to attitude sentences, as in (6),

(6) 'Galileo believed that' is $\text{true}_{[S,t]}$ in English iff there is a proposition P such that $\text{BEL}(\text{Galileo}, P)$ and P is expressed by $\text{ref}(\text{'that'}, S, t)$,

where '$\text{BEL}(\alpha, \beta)$' expresses a relation between a thinker and a proposition.[16] The need to appeal to propositions at this point, however, would undermine the aim of showing that a compositional semantics for natural languages need not appeal to intensional entities, and, once propositions are in the picture, one might as well simply take them to be the second relata of both the believes-relation and says-relation. Furthermore, since (6) represents 'believes' as holding between a speaker and an utterance, the proposal cannot give correctly the truth conditions for (7).

(7) Someone believes something that no one will ever say.

(7) at least could be true, but if the above analysis were correct, it would be necessarily false. Call this 'the extension objection'.[17] A fourth objection is that

the paratactic account cannot accommodate the intuitive validity of arguments such as 'Galileo said that the earth moves; Copernicus said that the earth moves; therefore, there is something which both Galileo and Copernicus said', since there is no formal or semantic guarantee that the demonstrative on each occasion of use refers to the same utterance—typically, on this account, it wouldn't.[18] Call this the 'validity objection'. A fifth objection is that the paratactic account cannot accommodate iterated indirect discourse sentences, such as (8),

(8) Davidson said that Galileo said that the earth moves,

since Davidson did not demonstrate the utterance that the second demonstrative above would demonstrate.[19] Call this 'the iteration objection'. A sixth difficulty is that Davidson's account apparently gives the wrong answer to questions such as 'How many things did Galileo say?' On Davidson's analysis, Galileo has apparently said as many things as there are utterances which his utterances samesay. Thus, each time someone says that Galileo said that the earth moves, if Davidson's analysis is correct, the number of things that Galileo has said increases. This has been one of the principal reasons urged to treat the second argument place in '*x* said *y*' as taking terms which refer to propositions. Call this 'the counting problem'.[20] A seventh difficulty is that the paratactic account cannot accommodate sentences such as (9),

(9) Everyone says that he is honest,

since one cannot quantify into a demonstrated utterance. A related objection is that the paratactic account cannot make sense of the ambiguity of the pronoun 'he' in (9), which can be treated either as a demonstrative pronoun or a pronoun of cross-reference bound by 'Everyone'.[21] Similarly, the paratactic account cannot explain scope ambiguities as in (10),

(10) Someone said that the book on the table, the one to your left, was his grandmother's,

where 'the book on the table' may take wide or narrow scope; in addition, the expression 'the one to your left' would usually be treated as having wide scope with respect to 'said that', but the paratactic account would not be able to make sense of this.[22] We subsume this family of difficulties under the heading 'the problem of quantifying-in'.[23] Finally, the paratactic account has difficulties in accommodating so-called mixed-cases of direct and indirect discourse, as in (11),

(11) Williams James said that religious leaders are "creatures of exalted emotional sensibility."

The difficulty is that the demonstrated utterance, since it contains an apparently mentioned expression, and does not express a proposition, will not samesay (translate) James's original speech act. Call this 'the problem of mixed-cases'.[24]

4. The dual use-mention sentential account

To respond to these difficulties, while retaining the extensional approach, one must reject the paratactic analysis and the treatment of 'that' as a demonstrative[25] used to refer to an utterance. We treat (1) as a single sentence syntactically, in which the complement *sentence* is both *used and mentioned*, in a sense to be explained below. We suggest that when someone asserts a sentence such as (1), the import is that Galileo performed a speech act (an assertion, in particular) with the same content as the sentence 'the earth moves', interpreted relative to the speaker and time of utterance.[26] With this in mind, we reformulate the samesays relation as a relation between a speech act, sentence, speaker, and time, to arrive at the following account of the truth conditions for a sentence such as (1):

(12) 'Galileo said that the earth moves' is $\text{true}_{[S,t]}$ in English iff an assertion[27] of Galileo's samesays 'the earth moves' understood in English[28] relative to S at t.

Generalizing (12), we arrive at (13) for sentences of the form 'α said that ϕ' (where α is a singular referring term):

(13) $\ulcorner\alpha$ said that $\phi\urcorner$ is $\text{true}_{[S,t]}$ in English iff an assertion of $\text{ref}(\alpha,S,t)$ samesays ϕ[29] understood in English relative to S at t.[30]

(Here we offer as above a paraphrase of the metalanguage verb; in the canonical version 'an assertion of $\text{ref}(\alpha,S,t)$ samesays ϕ' would be replaced by '$\text{ref}(\alpha,S,t)$ says ϕ'.[31])

Let us note first how this proposal avoids the syntax and understanding objections. We avoid the first by rejecting parataxis. We avoid the second by representing the complement sentence as *used* as well as mentioned, but *not* asserted.[32] A more familiar context in which this occurs is in sentences such as (14),

(14) "La terra si muove" in Italian means *the earth moves*.

In (14), we do not simply mention the sentence 'the earth moves' but use it; using it is necessary for (14) to succeed in conveying the meaning of 'La terra si muove' in Italian. But equally we do not assert that the earth moves in giving the meaning of 'La terra si muove'. We suggest that in that-clauses (and like contexts) we see a similar use of a sentence which is not also an assertion of it, that is, a use of a sentence in another sentence where the containing sentence's truth value is not a function of the extensional properties of the contained sentence but in which the contained sentence must be understood by the auditor in order for him to understand the containing sentence. That the sentence in a that-clause is used, in this sense, requires the auditor to understand it in order to understand fully the con-

taining sentence, and that a speaker understand it to properly assert it. Moreover, the complement sentence is used in the sense that it is interpreted relative to the speaker and utterance time. Thus, in reporting what someone says in uttering 'I have sinned', we use the third person pronoun or a proper name in the place of 'I'. On our account, someone who understands (1), and knows that what Galileo said is true, will be in a position to infer that the earth moves.

A natural objection to our proposal is that the T-sentence we give for 'Galileo said that the earth moves' will not enable someone who grasps it alone to understand the sentence for which it gives truth conditions. However, the relation between a truth theory and understanding the language for which it is a truth theory need not be so tight that each T-sentence must provide everything required for understanding the object language sentence. The T-sentence tells us what we need to know to determine, relative to a context, the truth of the sentence, in a way that relies only on the meanings of contained terms. In the case of a sentence in which some element is used but not asserted, and whose contribution to the truth conditions consists in a reference to it, we should not expect the T-sentence to provide all the resources needed for understanding. But this T-sentence together with the T-sentence for the sentence appearing in the complement clause will do so. This is enough for the theory to serve its purpose. As we remarked in note 6, there will need to be in any case an account of elements of meaning, broadly speaking, which are not captured by appeal to contributions to truth conditions. We should not overlook possibilities for understanding our capacity to speak and understand one another by a myopic concentration on truth conditions or so-called propositional content. Moreover, in instantiating (13) to terms in the meta-language referring to sentences in the object language, we can make use of the same devices the object language sentences use. Thus, we can instantiate the metalinguistic variable on the right side of the embedded biconditional in (13) to terms of the form ⌜that ϕ⌝. The instantiations then would give everything that is required to understand the object language sentence, though this still outstrips its truth conditions.

The extension objection is easily met once we have moved to treating the that-clause as involving a mention of the contained sentence. This is required if we are to respond to the difficulty presented by (7) above. We illustrate how to extend the account to attitude sentences (we discuss further extensions in §5) by showing how to do this for belief sentences, in (15).

(15) ⌜α believed that ϕ⌝ is true$_{[S,t]}$ in English iff ref(α, S, t) believes ϕ understood in English relative to S at t.[33]

(The predicate 'believes' used on the right of the quantified biconditional is a semi-technical term of the metalanguage, which unpacks the indexicality of the object language verb our proposal attributes to it; in the same way we need terms in the metalanguage for tensed verbs which have explicit argument places for

times absent in object language verbs. Also unlike the object language verb, we do not restrict the argument place occupied by φ on the right in (15) to taking terms of the form ⌜that φ⌝.) (15) solves the problem presented by (7),

(7) Someone believes something that no one will ever say,

because (15) does not treat 'believes' as a relation between an agent and an utterance.

The validity objection is met as soon as we move to treating sentences as the relata of the says-relation.

We turn now to the iteration objection. Consider again (8).

(8) Davidson said that Galileo said that the earth moves.

Since, on our account, sentences of indirect discourse refer to sentences, not utterances, no immediate difficulty arises about (8). The same sentence is referred to in the right-most that-clause as was referred to in Davidson's original utterance. However, a difficulty arises if we report in English what someone said in another language, for then the sentences referred to will be different. For example, if it is Davidson's assertion in Italian of 'Galileo ha detto che la terra si muove' that makes (8) true, then while the truth conditions for the complement sentence in (8) involve the English sentence 'the earth moves', those for the sentence Davidson uttered involve the Italian sentence 'la terra si muove'. The solution to this problem consists not in modifying the truth conditions for indirect discourse, but rather in providing a recursive account of the samesays relation that yields intuitively the right truth conditions for iterated indirect discourse sentences.[34] We will not provide a fully general account, but we will illustrate how to do this for iterated indirect discourse sentences of the form, '*x* said that *y* said that *z* said that...'. If the proposal works for this form of sentence, it is easily generalized.

It should be noted that the recursive account of the samesaying relation we offer is not a part of the truth theory. It is rather a partial explanation of a term appearing in the metalanguage which is used in an explication of the meaning of 'said' in the object language. The aim of spelling it out is to make clear that the relation being appealed to is coherent and will yield intuitively the right truth conditions for iterated indirect discourse sentences.

Intuitively, an utterance and sentence (restricting our attention to sentences of the above form) will samesay each other (in the sense we aim to capture) provided that either the utterance and sentence (interpreted relative to an appropriate speaker and time) are synonymous *or* the utterance and the sentence are about the same person and to the effect that that person said something, and *the sentences referred to by* the sentence and utterance *samesay one another* (interpreted relative to appropriate speakers and times). This gives a recursive account of samesaying that intuitively gets the right result. More formally, this condition

is captured by the recursive definition in (16), where 'SPKR(u)' is an abbreviation for 'the utterer of u' and 'TIME(u)' is an abbreviation for 'the time of u'.

(16) u samesays Ψ understood in L_0 relative to S_0 at t_0 iff$_{df}$
    (a) u is synonymous with Ψ understood in L_0 relative to S_0 at t_0, or
    (b) for some S_1, L, s_1, s_2,
        (i) u means that[35] S_1 says s_1 understood in L relative to SPKR(u) at TIME(u), and
        (ii) Ψ understood in L_0 relative to S_0 at t_0 means that S_1 says s_2 understood relative to S_0 at t_0, and
        (iii) s_1 understood in L relative to SPKR(u) at TIME(u) samesays s_2 understood in L_0 relative to S_0 at t_0.

Note that in clause (iii) we invoke a relation of samesaying as between sentences, relativized to speakers and times. Thus, we need a separate recursive account of this relation. This is given along the same lines in (17).[36]

(17) Φ understood in L_1 relative to S_1 at t_1 samesays Ψ understood in L_2 relative to S_2 at t_2 iff$_{df}$
    (a) Φ understood in L_1 relative to S_1 at t_1 is synonymous[37] with Ψ understood in L_2 relative to S_2 at t_2, or
    (b) for some S, s_1, s_2,
        (i) Φ understood in L_1 relative to S_1 at t_1 means that S says s_1 understood in L_1 relative to S_1 at t_1, and
        (ii) Ψ understood in L_2 relative to S_2 at t_2 means that S says s_2 understood in L_2 relative to S_2 at t_2, and
        (iii) s_1 understood in L_1 relative to S_1 at t_1 samesays s_2 in understood in L_2 relative to S_2 at t_2.

To illustrate, suppose (8) is made true by Davidson's having asserted the Italian sentence 'Galileo ha detto che la terra si muove'. According to our analysis and the above definition of 'samesays', (8) is true iff some assertion of Davidson's (in this case, that of 'Galileo ha detto che la terra si muove') satisfies clause (a) or (b) of (16) for 'Galileo said that the earth moves' interpreted relative to its utterer in (8). Clause (a) is not satisfied, because Davidson's assertion is not synonymous with 'Galileo said that the earth moves', given our analysis of indirect discourse. Is clause (b) satisfied? The answer is 'yes'. To see this more easily, let us suppress explicit relativization to speakers and times. Clause (b) is satisfied if there is some speaker S_1 and sentences s_1 and s_2, such that (i) 'Galileo said that the earth moves' means that S_1 says s_1, *and* (ii) 'Galileo ha detto che la terra si muove' means that S_1 says s_2, *and* (iii) s_1 samesays s_2. Now, according to our account, for some S_1, namely, Galileo, and some sentence s_1, namely 'the earth moves', 'Galileo said that the earth moves' does mean that S_1 says s_1; *mutatis mutandis* for 'Galileo ha detto che la terra si muove'. Furthermore, (iii) of (16)(b) is satisfied,

because that requires only that 'the earth moves' samesays 'la terra si muove', which it does, since these sentences satisfy (17)(a). Clearly, no matter how many iterations of 'said that' appear in a sentence of the above form, repeated applications of our two definitions of 'samesays' will eventually yield a correct decision.[38]

The quantifying-in objection appears to present an insuperable problem for the paratactic approach, since it would require quantifying into a demonstrated object, which does not make sense.[39] But the problem can be met by extending the approach employed above. Consider a sentence such as (18),

(18) There is something such that Galileo said that it moves.[40]

Intuitively, we want to say that this is true just in case an assertion of Galileo's samesays a *completion* of the sentence form 'x moves', i.e., a sentence in which 'x' is replaced by a singular referring term. However, we must provide a way of generalizing this requirement that allows for the possibility that there is no completion in English of the sentence form 'x moves' that samesays with any sentence that Galileo uttered. This can be accomplished by providing the satisfaction clause in the theory for open sentences of the form $\ulcorner\alpha$ said that $\psi x\urcorner$ as in (19), where 'ψx' represents any sentence with one free variable,

(19) for all sequences f, formulas ψx, speakers S, times t, $\ulcorner\alpha$ said that $\psi x\urcorner$ is satisfied in English by f as potentially spoken by S at t iff $\mathrm{ref}(\alpha, S, t)$ says ψ^* in L* understood relative to S at t),

where 'ψ^* in L*' is shorthand for

the result of replacing 'x' in ψ with a constant β in a language that extends English only by the addition of β, and in which β refers to $f('x')$.

This clause is then combined with the standard recursive clauses for quantifiers. Clearly, the approach can be generalized to formulas with any number of free variables. (The problem of scope ambiguity, subsumed under the heading of 'quantifying-in', is met by rejecting parataxis.)

In the case of the counting problem, the shift from utterances to sentences as the second relata of the says-relation guarantees that we do not increase the number of things which Galileo stands in the says-relation to by repeating (1) (*mutatis mutandis* for the believes-relation, and so on). It might still be thought that this is unsatisfactory, however, since different sentences may be synonymous. For example, since 'gorse', 'furze' and 'whin' are synonymous, so are 'Gorse grows on hills', 'Furze grows on hills' and 'Whin grows on hills'. Suppose John asserts 'Gorse grows on hills'. Are we not committed to saying that John said three things in virtue of having uttered 'Gorse grows on hills'?

One response that suggests itself is that our intuitions about the numbers of things someone has said are tracking the 'said' of direct discourse rather than

indirect discourse.[41] In the sense of direct discourse, John has said only one thing in asserting 'Gorse grows on hills'. Thus, it might be argued that although our analysis will have the result that more than one thing (more than one sentence) will satisfy 'John said that φ' relative to a speaker and time, it is not clear that intuitions about how many things John said are intuitions about how many things satisfy this open sentence rather than 'John said φ', where the 'said' is that of direct discourse.

However, this is not a satisfactory response. We don't always track the number of things someone has said simply by counting the number of distinct sentences he has uttered. For example, if John has said 'Gorse grows on hills' and later 'Furze grows on hills', we want to say that in one sense he has said two things, but that in another he has said only one. In addition, the counting problem arises for attitude sentences as well as sentences of indirect discourse. If John believes that gorse grows on hills, does he thereby believe three things or only one? Of course, the most natural answer is that he believes only one thing, despite there being at least three sentences in English that will express his belief.

But these intuitions can be accommodated without admitting that indirect discourse or belief involves a relation to a proposition, since we will get the same answers about the numbers of *things* said or believed (etc.) by construing the questions as about the number of nonsynonymous sentences someone has said or believed, that is, as construing the question as about things of a certain sort. Thus, we suggest that when someone asks 'How many *things* did John say?' he is to be interpreted as asking 'How many *nonsynonymous sentences* did John say?' Similarly, we would interpret a question about how many things John believes in virtue of believing that gorse grows on hills as a question about how many nonsynonymous sentences John believes in virtue of believing gorse grows on hills. *Prima facie*, there is no reason to insist that we count beliefs by counting strictly the number of distinct things the believes-relation relates one to as opposed to the number of things of a certain sort (nonsynonymous sentences).[42]

The last problem is that of mixed-cases, as in (11).

(11) Williams James said that religious leaders are "creatures of exalted emotional sensibility".[43]

The difficulty for the paratactic account is that in mixed-cases the demonstrated utterance will not samesay the utterance that is supposed to make it true. The present approach lends itself to a particularly elegant solution to this problem. Intuitively, in (11) we are reporting that James said that religious leaders are creatures of exalted emotional sensibility, and at the same time we are indicating that in his sentence the words 'creatures of exalted emotional sensibility' were employed in the grammatical role appropriate for the place in the complement sentence that is occupied by ' "creatures of exalted emotional sensibility" '. The account must also accommodate multiple instances of quoted material in the complement clause, as in (20),

(20) She said that she had "heard nonsense" compared with which that would be "as sensible as a dictionary".

Following our remarks about how intuitively to interpret sentences such as (11) and (20), we offer the following general analysis of sentences of indirect discourse which applies also to mixed-cases. First, we introduce two operators, 'QUO' and 'UNQ'. UNQ(ϕ) is the result of removing one "layer" of double-quotation marks from ϕ, and QUO(γ) is the result of adding double quotation-marks at both ends of the expression γ. Thus, UNQ(' "religious" leaders are "creatures of exalted emotional sensibility" ') = 'religious leaders are creatures of exalted emotional sensibility', and QUO('creatures of exalted emotional sensibility') = ' "creatures of exalted emotional sensibility" '. If there are no double quotation marks in ϕ, then UNQ(ϕ) = ϕ. Using this notation, we give the general account as in (21).

(21) For all sentences ϕ, names α, $\ulcorner \alpha$ said that $\phi \urcorner$ is true$_{[S, t]}$ in English iff
   (a) ref(α, S, t) says UNQ(ϕ) understood in English relative to S at t, and
   (b) if UNQ(ϕ) $\neq \phi$, then
       there is a sentence s such that ref(α, S, t) says UNQ(ϕ) in English relative to S at t using s and
       for all expressions γ, and formulas ψ, if ϕ = the result of replacing 'x' in ψ with QUO(γ), then
       γ has the same grammatical role in s as QUO(γ) has in ϕ.

(21) is a generalization of (13), which applies to all the cases to which (13) applies and to mixed-cases as well. (21a) ensures that (11) is interpreted as saying that James said that religious leaders are creatures of exalted emotional sensibility. (21b) ensures that (11) is interpreted as requiring that every expression in the sentence in the complement clause which is enclosed in (an outermost set of) double quotation marks was used in the sentence uttered by James in the same grammatical role as it has there.[44,45]

This completes exposition of the basic approach. Before sketching some extensions of the approach, it will be useful to show how it allows us to meet desiderata D1-D4.

Our approach is completely extensional, and so satisfies D1. The apparent opacity of the analyzed contexts is eliminated in the account of the truth conditions in favor of extensional relations between sentences, speakers, and times. Furthermore, this is accomplished, as is easily seen, without introducing into the range of the quantifiers of the theory any intensional entities, whether meanings, propositions, properties, or relations, thereby satisfying D2. With respect to D3, our approach preserves the intuitive validity in virtue of form of arguments which the paratactic account cannot accommodate. Finally, it is clear that this approach will enable us to formulate a semantic theory with a finite number of axioms, because it treats each verb such as 'says' or 'believes' which generates an opaque context as receiving a *base* clause in the theory, thereby satisfying D4.

5. Extensions

In this section, we sketch some suggestions for extending our approach to other apparently opaque contexts, specifically, (a) as-locutions, (b) contexts created by adverbs of action such as 'intentionally', (c) sentences about entailments, and (d) subjunctive conditionals. We do not take up modal contexts, which present certain complexities which would require a much fuller treatment than would be appropriate here. Even apart from modal contexts, there will be many contexts which we will not treat, but we believe the techniques used below can be readily extended to them. It should be kept in mind throughout this discussion that expressions in "non-extensional" contexts are to be treated as receiving a dual use-mention, though it is only as mentioned that the expressions contribute (in general) to the truth conditions of the sentences in which they appear.

(a) As-constructions. We have in mind here sentences such as (22),

(22) John thought of Margaret as a true leader.

Intuitively, (22) attributes to John a belief about Margaret, without, however, being committed to John's picking Margaret out in any particular way. Thus, we can think of (22) as saying for some completion s of 'x is a true leader' John believes s understood relative to the speaker and time. (23) gives the truth conditions.

(23) 'John thought of Margaret as a true leader' is true$_{[S,t]}$ in English iff John thought ψ^* in L* understood relative to S at t,

where 'ψ^* in L*' is an abbreviation for

the result of replacing 'x' in 'x is a true leader' with a singular noun phrase α in a language which extends English at most by the addition of α, and in which α denotes or refers to Margaret.

(b) Adverbs of action. To extend the account to adverbs of action, we adopt Davidson's analysis of action sentences as involving an implicit quantification over events.[46] Davidson suggests that a sentence such as (24),

(24) Michael rowed the boat

should be understood as in (25),

(25) 'Michael rowed the boat' is true$_{[S,t]}$ in English iff there is an event e such that e is a rowing by Michael and e is of the boat.

The advantage of this account of the truth conditions becomes apparent when we consider sentences which contain adverbs, as in (26).

(26) Michael rowed the boat ashore.

Given the account in (25), we can represent 'ashore' as simply a predicate which applies to the event of Michael's rowing the boat, as in (27).

(27) 'Michael rowed the boat ashore' is true$_{[S,t]}$ in English iff there is an event e such that e is a rowing by Michael, and e is of the boat, and e is ashore.

The situation is more complex when an adverb of action modifies the verb, because it introduces an apparently intensional context. Thus, in (28),

(28) Michael rowed the boat ashore intentionally,

we cannot in general substitute for 'rowed' or 'the boat' or 'ashore' coextensive terms and preserve truth value. Yet, at the same time, we can infer from (28) that Michael rowed the boat ashore, and so the expressions which appear in the intensional context created by 'intentionally' contribute their extensional properties to the truth conditions of the sentence. Intuitively, (28) differs from (26) by adding to what (26) says that what Michael did he did with the intention of rowing the boat ashore. Thus, we can treat (28) as requiring what the truth conditions of (26) require and in addition that Michael have an intention of a certain sort. Conjoining this with our account of attitude sentences we arrive at (29) to represent the truth conditions of (28):

(29) 'Michael rowed the boat ashore intentionally' is true$_{[S,t]}$ in English iff there is an event e such that e is a rowing by Michael, and e is of the boat, and e is ashore, and Michael produced e intending 'Michael rows the boat ashore' understood relative to S at t.

(As in the case of 'believes', we introduce a metalanguage verb with argument places for contextual parameters, and which can take grammatically quotation names in one of its argument places.)
(c) Entailment sentences. Consider (30):

(30) That Brutus stabbed Caesar entails that someone stabbed Caesar.

Our approach lends itself to a particularly straightforward treatment of entailment sentences:

(31) 'That Brutus stabbed Caesar entails that someone stabbed Caesar' is true$_{[S,t]}$ in English iff 'Brutus stabbed Caesar' understood relative to S at t strictly implies 'Someone stabbed Caesar' understood relative to S at t.

(d) Subjunctive conditionals. The treatment of entailment can in turn be used in a treatment of subjunctive conditionals. Of course, given our desire to give a semantics for English which eschews intensional entities, we will not wish to give an analysis of subjunctive conditionals by quantifying over possible worlds. In any case, this solves few of the problems associated with interpreting subjunctive conditionals, whose interpretation seems peculiarly dependent on context. Rather, we will take up the suggestion that subjunctive conditionals are enthymemic, that is, that in interpreting what someone says when asserting, e.g., (32),

(32) Were the Regents to convene, a bitter dispute would break out,

we aim to figure out from the context of utterance and what we suppose the speaker's intentions and beliefs are some additional premises (which may be picked out by description rather than explicitly available) which the speaker supposes are sufficient together with the antecedent of the conditional to entail the consequent. We will press into use the term 'pragmatically indicated' to express the relation between a speaker and a set of premises he intends together with the antecedent of a subjunctive conditional to entail the consequent. Then, employing our suggestion above about entailment, we arrive at the representation in (33) of the truth conditions for (32).

(33) 'Were the Regents to convene, a bitter dispute would break out' is true$_{[S,t]}$ in English iff the sentences pragmatically indicated by S at t together with IND('Were the Regents to convene') understood relative to S at t strictly imply IND('a bitter dispute would break out' understood relative to S at t.

'IND(ϕ)' is short for 'the indicative core of ϕ'. Thus, IND('Were the Regents to convene') = 'The Regents will convene' and IND('a bitter dispute would break out') = 'A bitter dispute will break out'. To complete the account, more work would need to be done on the notion of pragmatic indication. But this would be a part of pragmatics, rather than semantics proper.

These extensions cover only a few of the sorts of opaque context found in English and other natural languages. Yet, these treatments should be enough to indicate the fruitfulness of the approach, and to give hints about how to treat many other contexts. We feel confident that if the basic approach is successful, it will be extendable to other opaque contexts, and provide a unified account of opaque contexts in natural languages.

6. Conclusion

If the approach sketched here is correct, it shows that what has been historically one of the most powerful arguments for the admission into our ontology of such entities as propositions, properties, and relations, that they are needed if we

are to understand how we can say the sorts of things we can, can be circumvented. It provides a conservative solution to one of the most vexed problems in the philosophy of language, the problem of the semantics of opaque contexts, while at the same time respecting semantic innocence: words in opaque contexts mean what they ordinarily do. In the philosophy of mind it shows that there is no semantic obstacle to providing a naturalized account of psychological attitudes and speech acts, that is, that we are not forced on semantic grounds to suppose that what it is for people to have beliefs and desires, and speak to one another, requires thinking of them as related to intensional entities.

Notes

1. Versions of this paper have been read at the 4th Karlovy Vary Symposium, "Questions from Quine," September 1995, Czech Republic, the conference "Tarski and Davidson's Program in Semantics," October 1995, Kazimierz, Poland, the 1996 Eastern Division meetings of the American Philosophical Association, and to audiences at the University of Florida, Florida State University and the University of Miami. We would like to acknowledge the helpful comments and questions from these audiences, and to thank in particular Ray Elugardo, Risto Hilpinin, Ernie Lepore, Bill Lycan, Howard Pospesel, Sam Rickless, and Steve Reiber.
2. We use 'opaque context' for sentential contexts which fail the *traditional* tests for extensionality, that is, sentential contexts $\phi(x)$ which fail existential generalization on (non-directly) referring terms, or in which coreferential or coextensive terms, or sentences alike in truth value, cannot be intersubstituted *salva veritate*. Our approach will preserve these features of the contexts, though it treats indirect discourse verbs and attitude verbs as relational.
3. (Frege 1960).
4. The general approach we follow was introduced in (Davidson 1984b). See also (Davies 1981, chapters 1-3) and (Larson and Segal 1995, esp. chapter 2). We reject Larson and Segal's requirement of "strong compositionality".
5. (Davidson 1984c).
6. Not all aspects of meaning can be captured by truth conditions. One familiar case is the dimension of meaning which distinguishes 'but' from 'and'. Non-declarative sentences also require a different treatment, though an account can be given which still gives to a truth theory the central role in a compositional meaning theory (Ludwig 1997).
7. We relativize the truth predicate in this fashion rather than conditionalize on a speaker's utterance (Weinstein 1974). While the predicate needs explication, since its argument places are extensional it presents no difficulties for the theory, and it aids ease and clarity of presentation. See (Evans 1985) for discussion.
8. See (Lepore and Ludwig 1998) for a discussion of the interaction of tense in complement clauses with the tense of the main verb. The account represents tense as a quantificational device, and tensed verbs in complement clauses as having an implicit temporal argument place bound by the quantifier introduced by the main verb. Our account of quantifying into complement clauses extends straightforwardly to this treatment of tense.

9. The proper treatment of the reference clause for demonstratives presents difficulties on its own which we pass over here. See (Lepore and Ludwig, manuscript, appendix) for a discussion.

10. We press into use here 'samesaying' as the relation that holds between utterances on Davidson's account when someone correctly reports another's speech in indirect discourse. In "On Saying That," Davidson represents 'samesaying' as a relation between speakers (1984, p. 104). However, in "True to the Facts," Davidson also treats it as a relation between speech acts (1984, p. 52), and it will be useful in what follows to have in place a technical term which can be given a precise characterization. The approach is also adopted in (Lepore and Loewer 1989).

11. (Davidson 1984c, pp. 176-7).

12. We will not canvass all the objections to Davidson's proposal, but rather respond to the major families of complaints. We skip criticisms for which there are straightforward answers, or which will be avoided by our response to the problems listed here. For an example of the first sort: Some commentators (Burge 1986, section III; Lycan 1973) have taken Davidson's informal paraphrase to indicate that he thinks *oratio obliqua* involves a reference to the utterer. Footnote 14, added in *Inquires into Truth and Interpretation*, makes clear that this is a mistake. See also (Davidson 1984c, p. 177). For some examples of the second sort: It's been objected on phonetic grounds that the 'that' of indirect discourse is not a demonstrative but a complementizer (Segal and Speas 1986), and that in many other languages the complementizer bears no relation to the demonstrative (Schiffer 1987, p. 130). In addition, it is not plausible that other complementizers in English ('for', 'to', the gerundive ' 's...ing', and the use of 'whether' to introduce indirect questions) are demonstratives (Higginbotham 1986, p. 39), though a correct account of indirect discourse should generalize to sentences such as 'I wonder whether the tide has turned', and 'I intend to win the lottery'. These complementizers also present the difficulty that they often don't introduce a full sentence in the surface syntax. What type is the token utterance demonstrated in 'I asked for my hat politely enough' on the paratactic account? Apart from the problem that 'politely enough' modifies 'asked', yet would apparently be part of the demonstrated utterance, no expression is uttered with an appropriate content, since 'my hat', the complement, is not a sentence. And as (Hand 1991, p. 353) notes, Davidson's proposal precludes certain interactions between clauses, as in 'I didn't say that there was any beer in the refrigerator'. What is the content of an utterance of 'there was any beer in the refrigerator'? Our account meets these objections with the others by giving up parataxis and denying 'that' is a demonstrative in (1).

13. (Seymour 1994), (Hand 1991), (Burge 1986), (Higginbotham 1986).

14. (Seymour 1994), (Lepore and Loewer 1989), (Schiffer 1987, p. 135-7). The understanding objection is first raised against a version of the sententialist theory by (Church 1950).

15. (Schiffer 1987, p. 131) (Loar 1976, p. 148). See (Feldman 1977, p. 350) for a similar criticism of Scheffler's inscriptional account of belief semantics.

16. (McFetridge 1975), (Blackburn 1975), and (Rumfitt 1993) have suggested that to accommodate this and other difficulties we need to treat 'says' and 'believes' as relating speakers and believers to propositions. See also (Wallace 1972).

17. Davidson has his own proposal to make in response to this problem, in "Thought in Talk," (1984f, p. 167): "When I say, 'Jones believes that snow is white' I describe

Jones's state of mind directly: it is indeed the state of mind someone is in who could honestly assert 'Snow is white' if he spoke English." (The second of two suggestions Davidson makes, this one aims not to foreclose on the possibility of non-linguistic creatures having thoughts.) Putting this in the form required by the paratactic theory yields (i):

(i) 'Jones believes that' is true$_{[S,t]}$ in English iff an honest assertion of Jones's could samesay with the object potentially demonstrated by S at t.

(i) avoids quantifying over propositions, but since it still treats beliefs as a relation to an utterance, it cannot avoid the objection that it makes (7) necessarily false.

18. Note that it is not possible to treat the 'said' of the argument's conclusion as that of direct discourse, as one might be tempted to, because the conclusion would then be false if Galileo and Copernicus said (*oratio recta*) something that makes them same-say with 'the earth moves' in English (relative to a speaker and a time) in different languages. Intuitively the argument is valid independently of whether Galileo and Copernicus spoke the same language. A related objection is that even arguments such as 'Galileo said that the Earth moves; therefore, Galileo said that the Earth moves' will be invalid on the paratactic account. See (Platts 1979), (Burge 1986 section IV), (Schiffer 1987b pp. 134-135).

19. (Burge 1986 section II). Church (1950) raises a similar objection to Carnap's sentential analysis.

20. (McFetridge 1975).

21. (Schiffer 1987, pp. 129-30), (Higginbotham 1986. p. 39); (Feldman 1977, p. 351) makes this point against Scheffler's inscriptional account of belief sentences.

22. David Kaplan's example, 'John says that the lying S.O.B. who took my car is honest', provides a nice illustration of a sentence in which we would almost certainly give the description 'the lying S.O.B who took my car' wide scope.

23. It is clear also that parataxis leads to complications in handling molecular sentences containing sentences of indirect discourse and attitude sentences.

24. The problem of mixed-cases was brought to our attention by (Cappelan and Lepore 1997), who attempt to give an account of such cases by combining Davidson's treatment of quotation with his treatment of indirect discourse.

25. Hand (1993) contains an interesting discussion of the complementizer 'that' functioning pragmatically, though not semantically, demonstratively, and uses it to explain, *inter alia*, the distribution of that-omissions in discourse.

26. Relativization to speaker and time of utterance accommodates indexicals, demonstratives, tense, and other context sensitive expressions. This overcomes a traditional objection to sententialist treatments of indirect discourse and attitude sentences. That this solution has been overlooked has been due largely, we think, to philosophers failing to put their proposals in a framework which explicitly treats natural language sentences as true only relative to a speaker and a time.

27. Quantifying over speech acts, as Davidson does, rather than sentences, avoids difficulties that might otherwise arise in situations in which someone performs a speech act of a certain kind with a certain content although no appropriate sentence has been uttered, e.g., insinuating something that isn't said, or giving one word answers to questions. Perhaps the 'said' of indirect discourse always requires a sentence be ut-

tered, though this is not clear, but quantifying over speech acts allows us to smoothly generalize the account to other verbs of indirect discourse.

28. Will relativization to just the speaker yield the appropriate interpretation of the sentence? No, for a bilingual speaker may assert a sentence which belongs to both his languages but which is interpreted differently in each. Further relativization is required to the object language then or we must understand the relativization to the speaker and time in a way that appeals to the speaker's intentions. Including explicit relativization to the language is more straightforward, and will aid in developing the response to the quantifying-in problem.

     The relativization to a language may suggest that we must appeal to intensional entities after all to give a semantic theory. But 'in English' can be regarded as a predicate of a sentence formed from a description of an actual linguistic community, e.g., 'as interpreted relative to the actual Anglo-American linguistic community', where inclusion of 'actual' serves to make this a rigidly referring description.

29. Are ambiguous sentences, e.g., 'Visiting royalty can be boring', a difficulty for this approach? The approach we favor is to give the truth theory for a disambiguated version of the language, and let context help to determine to which of the disambiguated expressions the ambiguous expression as uttered should be mapped to interpret it by the theory. Since on our account, as we explain below, the sentence in the complement clause is used as well as mentioned, it will be used with a specific interpretation in mind. Thus, whatever treatment is given for ambiguity in general should apply in this case. (Davidson makes this objection to sententialist theories in (1984f, p. 165-6), attributing it to Church (1950) in his criticism of Carnap's analysis of belief statements.)

30. An objection we have heard to our proposal is that it entails that if Davidson said 'Galileo said that the earth moves', then necessarily Galileo said that the earth moves only if Davidson exists. This mistake arises from failing to distinguish between an unrelativized truth predicate which licenses the schema,

     'p' is true iff q; therefore, p iff q

and a truth predicate relativized to speaker and time, for which (S) is not a valid schema. If one fails to mark this distinction, it may appear that instantiating (10) to Davidson and a time allows one to disquote on the left. That this is a mistake is shown by, e.g., the following invalid inference: 'I am hungry' is true$_{[S,t]}$ in English iff S is hungry at t); therefore, I am hungry iff Galileo is hungry in 1632.

31. The account can be generalized by treating $\ulcorner$that $\phi\urcorner$ as a referring term with the following reference axiom: $(\phi)\mathrm{Ref}(\ulcorner$that $\phi\urcorner, S, t) = \phi$. This construction differs from quotation in that it carries with it the requirement that to properly assert a sentence containing it the speaker needs to understand the sentence following 'that', and in that there are certain places in sentences which it may occupy which quotation names cannot, such as the context following verbs of indirect discourse and attitude verbs. This provides a natural account of sentences of the form $\ulcorner$It is true that $\phi\urcorner$. Construing this as a transformation of 'That ϕ is true', the truth conditions become that ϕ is true. The dual use-mention of ϕ in $\ulcorner$that $\phi\urcorner$ explains it how differs from the use of a quotation name or other singular referring term in the same argument place. Interpreting 'is the case' as a variant of 'is true' allows $\ulcorner$It is not the case that $\phi\urcorner$ to be treated

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similarly. (Likewise for other complementizers, though for some the referent would be a transformation of the expression following the complementizer.)

32. The idea that some expressions in natural language receive a dual use and mention is familiar. There is Quine's famous example, 'Giorgione is so-called because of his size'. What is different in our suggestion is that to say the sentence is used comes simply to the requirement that for someone to properly assert or understand the containing sentence he must understand the complement sentence. The extensional properties of the complement sentence, however, do not enter into the truth conditions of the sentence.

We have found three antecedents to this idea, (Seymour 1992), (Higginbotham 1991, 1995), and (Burge 1978). These authors all use the expression 'used and mentioned', and clearly have in mind something similar, though there seem to be some differences in conception and motivation.

Seymour's sentential theory represents attitude sentences either as instances of a substitutionally quantified formula, or as a substitutionally quantified formula, as in (p. 184),

(ii) (Σp)[(believes(Galileo,'p')) & ('p' is translated as 'the earth moves')].

Seymour claims that so-represented 'Galileo believes that the earth moves' forces us to treat the substitution instances as receiving a dual use and mention: 'whenever a sentence occurs within quotes in a substitutional instance, it is as though it were simultaneously used and mentioned' (p. 194). We doubt this can be made good. Quotation marks, whether in a substitutionally quantified formula or not are still quotation marks. But it appears a similar idea is in play here, though motivated differently, and put to different uses. We can say in passing that Seymour's account does not handle all of the difficulties that ours does. For example, (ii) leaves no room for quantifying-in.

Burge and Higginbotham (who credits Burge) arrive at the idea that, as Higginbotham puts it, "the complement sentences are to be *understood as if their speakers said them*" (1991, p. 352). This cannot mean as if they had asserted them, so we take it that the idea is basically the same as the one we have in mind. Higginbotham also speaks of the "simultaneous use and mention of the complement clause" (p. 353). Burge introduces the idea in discussing the Church-Langford translation test (Church 1950), which Church deployed famously against Carnap's sententialist account of belief sentences. Burge argues that *direct* discourse is implicitly self-referential, in the sense that it involves the quoted sentence being understood relative to the speaker's language or its occasion of utterance; this self-referential element results in the quoted material often being translated. We can think of standard practices in translating novels in which there is direct discourse. (Against this is, Ceasar said, "Veni, vidi, vici".) On this basis, Burge suggests that a sententialist theory of indirect discourse could be defended against the translation test by suggesting that there is an element of self-reference in the complement sentence. Burge notes the potential this has to undermine standard arguments for propositions. Higginbotham's is a development of Burge's suggestion, where the second relatum is a phrase marker. There are some important structural similarities, though important differences as well, and we are unsure how Higginbotham would respond to some of the objections which motivate our account, since he does not address them directly. But we must resist a comparison of his account with ours, which would be too involved an undertaking.

33. As for 'says', we can provide a paraphrase to make clearer the intended interpretation of the metalanguage verb:

    'α believed that ϕ' is true$_{[S,t]}$ in English iff a belief of ref(α, S, t) is expressible by 'the earth moves' interpreted relative to S at t.

    As before, however, this should not be taken to be representing the logical form of the target sentence. Interestingly (Kenney 1963, p. 145), makes a similar suggestion as long ago as 1963, both for *oratio obliqua* and belief sentences. But Kenney does not relativize sentence interpretation to speaker and time, and does not suggest as we do that complement sentences receive a dual use-mention. These additions are crucial to responding to traditional objections to sententialist accounts. Also, we represent the paraphrase above as only a guide to understanding 'believes'. (McFetridge 1975), (LePore and Loewer 1989), and (Hornsby 1977) also appeal to beliefs states, as does (Schiffer 1987a, p. 124) in a version of the mimetic account incorrectly attributed to Davidson.

34. Davidson (1984d, pp. 177-8) and Burge (1986, p. 195) have observed that by denying that samesaying is the relation of strict synonymy, the objection can be blunted. In particular, there is some support for the thought that the translation relation will be adequate to the job without further refinement, since good translation does not always preserve reference. A sentence such as 'This sentence contains more than one word' would not be translated into a French sentence in which the subject term referred to the English sentence, but rather would preserve the relation between the demonstrative and the sentence in which it appears. (See also (Burge 1978).) However, without an account of the relation, it will remain unclear that the appeal to translation will meet the objection, or that any relation that will do the job.

    The above observation about translation helps on another front. A traditional objection to inscriptional or sentential theories of indirect discourse sentences or attitude sentences is that they fail the translation test (Church 1950). For strict inscriptional theories, which treat attitude sentences and sentences of indirect discourse as equivalent to sentences with quoted expressions, this is right. But we do not represent 'Galileo said that the earth moves' as involving the device of quotation, but something more like what occurs in 'This sentence is short'. That is, understanding the containing sentence requires understanding the complement sentence. Given this, we would expect the translation to preserve this feature of the relation between the complement sentence and the containing sentence. This requires translating the complement sentence.

35. It might be objected that using 'means that' is illegitimate because the project aims to show how to give semantic theories for natural languages without using such intensional constructions. First, for the purposes of the truth theory, 'samesays' can be treated as a unanalyzed relation. It is not part of the truth theory proper, as we have noted, but rather a term used to explain an expression used in the truth theory. We introduce here no intensional context for the purposes of our truth theory for the language. Second, importantly, the project does not aim to explain how a truth theory could be used as a meaning theory without using the concept of meaning. Clearly, the conditions of adequacy, viz., that the theory have among its theorems all T-theorems which meet a modified form of Convention T, presupposes our grasp of that concept. Third, 'means that' can itself be given an analysis along the lines suggested. So it clearly does not introduce any intensional entities.

36. If we had chosen to represent the content of 'said that' as involving quantification over sentences, then only the second of these definitions would be required. However, as we mentioned in note 27, quantification over utterances allows a simple generalization to other verbs of indirect discourse, not all of which require a sentence to perform the expressed speech act.

37. This is not strict synonymy, since it is relativized to speaker and time. Rather, it is the relation of sameness-of-content which is usually tracked by talking about two sentences relativized to a context expressing the same proposition. (This way of drawing attention to the appropriate relation is does not commit us to the existence of propositions; rather, it is a useful heuristic given the familiarity of putting it this way.) Thus, 'L' état, c'est moi' understood in French relative to Louis XIV in 1678 is synonymous with 'L' état, c'est Louis XIV' understood in French relative to Louis XIV in 1678.

38. As remarked above, in general embedded sentences need not all be of the form 'x said that y'. Other forms of sentence, however, can straightforwardly be incorporated into the above recursive account, since there are only a finite number of them. To accommodate embedded sentences of the form 'someone said that y', we can add the following disjunct:

> or
> (c) for some s_1, s_2,
> > (i) u means that someone says s_1 understood relative to SPKR(u) at TIME(u) and
> > (ii) Ψ understood relative to S_0 at t_0 means that someone says s_2 understood relative to understood relative to S_0 at t_0, and
> > (iii) s_1 understood relative to SPKR(u) at TIME(u) samesays s_2 in understood relative to S_0 at t_0.

In the same way, one can accommodate attitude sentences, and other sentences forms. Some additional complexity accrues when considering molecular sentences, but nothing that introduces any in principle difficulty.

39. Hornsby (1977) gives an analysis of 'saying of' that might suggest a way of trying to treat quantifying-in in the context of a paratactic theory. Hornsby suggests that (i) be treated as (ii).

> (i) Galileo said of the earth that it moves.
> (ii) An utterance of Galileo's is of the earth and samesays that. It moves.

In (ii), 'It moves' is treated as an open sentence, and the samesaying relation is to be understood (on one suggestion, which will do for our purposes) as holding between an utterance of an open sentence and an utterance u of Galileo's just in case "u is of an object and what it predicates of the object is the same in import as" the open sentence (p. 179). (A general strategy for accommodating apparent difficulties for the paratactic approach is to let the samesaying relation do more work: this strategy can be adopted for the treatment of iterated cases such as (8) and perhaps for mixed-cases such as (11).) It might be thought that this idea could be extended to cases such as (iii),

> (iii) Someone said that he lost his luggage.

But it is difficult to see how. First, this seems to be (on one reading) a case in which 'he' and 'his' function as variables bound by 'Someone', but this cannot be captured on a paratactic account. Second, (iii) is multiply ambiguous (depending on which pronouns are treated as bound or not by the quantifier, we get at least four different

readings) in a way which it is difficult to see how the paratactic account could explain. Third, a paratactic account would not be able to explain scope ambiguities as in (iv),

>   (iv) Someone said that the bag I left was his,

since 'the bag I left' on the paratactic account is not part of the sentence 'Someone said that', and so cannot take wide scope over it.

40. As this makes clear, we treat proper names as directly referring terms and, hence, as intersubstitutable in opaque contexts *salva veritate*. There are putative counterexamples to the intersubstitutability of proper names *salva veritate* in such contexts, but the intuitions in these cases can be explained as responses to standard conversational implicatures. A defense of this claim, against the background of a theory of singular thought, is provided in (Ludwig 1996).

41. Hornsby in (1977 note 1) makes this suggestion.

42. Most people would not put it this way when pressed, but they would hardly appeal to propositions either in the absence of some rather special training. The fact is that to be competent in speaking our languages we need not be very reflective about their semantics.

43. Since it is clear that the quotation marks in (11) have a semantics distinct from the use of quotation marks to form quotation names of expressions, we will indicate this (as we have been) by using double-quotation marks exclusively for mixed-cases. Direct quotation, in contrast, is unproblematic. Its semantic function is given by the following reference clause in the theory: $(\phi)(\text{ref}(\ulcorner'\phi'\urcorner, S, t) = \phi)$. This suggestion is made by Wallace (1975). It is surprising that Davidson does not follow it in his own treatment of quotation in (1984e). Given the ease with which a simple rule for direct quotation can be given in a standard truth theory, many of the treatments of quotation marks one finds in the literature (including Davidson's) fail to take seriously enough the idea that the meaning of an expression or linguistic device can be explicated by providing a rule in the form of an axiom in a truth theory specifying its semantic or referential function. No assimilation of quotation marks to other linguistic devices is needed in order to understand their function.

44. (21b) may not be general enough if we can use quotation marks when reporting what someone said in a language other than the one in which we are reporting it. Thus, one might say,

>   (i) Kant claimed that the principle of autonomy could be shown to be the sole principle of morality "by mere analysis of concepts of morality".

If so, then (21b) must be modified by substituting for the first appearance of 'γ' in the consequent, 'γ or *a translation of* γ *into the language of ref*(α,S,t)'. However, it is not clear that it will always make good sense given that good translations may often depart in important ways from the syntax of the original. It may be better to regard uses of sentences like (i), when it is clear to the speaker and audience that the subject was not speaking in their language, as involving the pretense that the subject's actual text is the translation. (A similar issue arises, not surprisingly, for direct discourse. Is 'Caesar said "I came, I saw, I conquered" ' true or false?)

45. Ray Elugardo has suggested that our account gives the wrong results for iterated mixed-cases. Thus, e.g., if someone says,

>   (i) Professor Elugardo said that Williams James said that religious leaders are "creatures of exalted emotional sensibility",

it may seem natural to interpret this as attributing to Elugardo an assertion with the content of (11) rather than that of

> (ii) Williams James said that religious leaders are creatures of exalted emotional sensibility,

as our account would claim. This is not clear though. First, if one wanted to distinguish systematically in writing by using a special sort of quotation marks between saying that Elugardo said something with the content of (11) and that he said something with the content of (ii), using, however, "creatures of exalted emotional sensibility" in a certain grammatical role, then one would need to invoke a recursive rule such as the one we give. If mixed-case quotation worked as suggested by Elugardo, there would be no way to report that Professor Elugardo had asserted (ii) using "creatures of exalted emotional sensibility" in doing so (at least, by invoking the device of mixed-case quotation). This argues for treating

> (iii) Professor Elugardo said that Williams James said that religious leaders are " "creatures of exalted emotional sensibility" ",

as the appropriate form for reporting that Elugardo said something with the content of (11), reserving (i) for reporting that he said something with the content of (ii) using the expression enclosed in quotation marks. Since it is doubtful that our conventions for using quotation marks in mixed-cases are often taxed to account for iterated mixed-cases, it may be best to think about our treatment of cases like (i) as involving a decision about how to extend the convention introduced originally with uniterated cases in mind. If this is right, then extending it in the way suggested in the text has in its favor it that it gives us greater expressive resources than if we interpreted iterated cases as suggested by Elugardo.

46. Since saying something is performing a speech act, the same account would apply as well to indirect discourse; in fact, one can see that the 'paraphrases' given in the text introduce just such a quantifier as is required on the event analysis. See (Lepore and Ludwig 1998) for a suggestion for an important modification of Davidson's proposal in the context of a general truth-theoretical treatment of tense and temporal adverbs. The modifications suggested will not affect the proposals here.

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