

logic exercises. You may also wish to explain how most logic exercises are intended to be solved under the assumption of independence of all relevant situations and thus allow further use of material conditionals. Then again, you may not. If you should happen to have a student ask you how your recommended symbolization practice bears on the project of getting a computer to understand English, smile and say "A very good question. That's a long and complicated story."

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In his 1962 article "Propositions," Richard Cartwright identified propositions with what is said or asserted by assertive utterances of sentences. He distinguished the proposition asserted by an utterance from various things with which it might be confused, including the sentence uttered, its meaning, the act of uttering it, and the sentence token produced. In distinguishing the proposition asserted from the meaning of the sentence used to assert it, Cartwright relied heavily on observations about indexical and context-sensitive sentences.

For example, he pointed out that the meaning of sentence (1) or (2) in what follows cannot be the proposition it is used to assert, for the simple reason that there is no such single proposition.¹

- (1) It is raining.
- (2) Botvinnik uses it.

Rather, he noted, the meanings of these sentences allow distinct utterances of them to express different propositions. Although Cartwright did not attempt to provide a systematic characterization of the propositions expressed by these sentences in different contexts of utterance, he did note the importance of contextually determined reference for this task. Thus, in speaking of (1), he says that the fact about its meaning that allows different utterances of it to express different propositions is that one who utters it "speaks correctly only if he refers to the weather at the time of his utterance and in his (more or less) immediate vicinity" (Cartwright 1962, p. 93).

In recent years a conception of semantics has grown up under the influence of David Kaplan and others that preserves Cartwright's central observations.² According to this conception the meaning of a sentence is a function from contexts of utterance to propositions expressed in those contexts. Sentences containing indexicals and other context-sensitive elements express different propositions in different contexts. Propositions determine functions from circumstances of evaluation to truth values.

These functions give the truth conditions of propositions. The truth conditions of a sentence, as used in a particular context, are the truth conditions of the proposition it expresses in that context.

These points are illustrated by

- (3) I am American.

This sentence, as used in a context C , is true with respect to an arbitrary circumstance of evaluation E if and only if the referent of "I" in C is in the extension of "American" in E . Since the referent of "I" in a context is just the designated agent (speaker) in the context, this means that (3) is true with respect to C and E if and only if the agent (speaker) in C is an American in E . Thus an utterance of (3) by Reagan expresses a proposition that is true in a circumstance E if and only if Reagan is an American in E (whether or not he ever speaks in E).

Undoubtedly Reagan thinks of himself as the fortieth president of the United States. This may even be his favorite, most privileged description of himself. Still, the proposition expressed by his utterance of (3) is not the proposition that the fortieth president of the United States is American. Since there are circumstances in which the latter proposition is true but the former proposition is not, they cannot be identical. This result, together with an elementary principle of compositionality, establishes that the contribution made by "I" to the proposition expressed by (3) in the context is not the sense of the description "the fortieth president of the United States."

This reasoning can be extended to all descriptions that denote someone other than Reagan, with respect to some circumstance of evaluation. If, following David Kaplan and Nathan Salmon, we account for the truth conditions of examples such as

- (4) In the future I will be dead, but my policies will live on

by taking Reagan's (present) utterance of "I" to denote him, even in circumstances in which he does not exist, we can extend the result to descriptions such as "the x : $x = \text{Reagan}$ " and "the x : actually x is the fortieth president of the United States" (which denote Reagan in all circumstances in which he exists but denote nothing in circumstances in which he does not).⁴ These points are not, of course, restricted to "I" but apply to proper names and other indexicals that designate contingently existing objects. Finally, as David Kaplan (1977), Saul Kripke (1980), and John Perry (1977) have emphasized, the semantic mechanism determining reference with respect to a circumstance for a name or indexical (as used in a context) is not the satisfaction in the circumstance of an associated description. In short, names and indexicals are *non-descriptivist* as well as rigid.

A singular term is rigid if and only if it refers to the same object in all

circumstances with respect to a fixed context of utterance. It is descriptivally if and only if its referent with respect to an arbitrary circumstance E (and fixed context C) is, by definition, the unique satisfier of a condition S_x with respect to E (and C). There are, of course, rigid descriptions, for example, "the even prime." However, even if a description is rigid and so picks out the same object in every circumstance, its referent is determined in each circumstance by means of satisfaction of an associated condition. By contrast, the referent of a name or indexical is determined just once, in the context. In presenting a semantics, one standardly does define the referent of such a term t with respect to a context C and arbitrary circumstance E . However, given the referent of t in C , there is no further process one invokes to determine reference at alternative circumstances. Rather, one simply stipulates that the referent of t with respect to C and an arbitrary circumstance E is its referent in C .

What bearing does this difference in reference determination have on these about the propositional contents of names and indexicals (relative to contexts) and the propositions expressed by sentences containing them? It is easy to proceed incautiously here. Given that propositional content determines reference and that reference of names and indexicals is not determined descriptively, one is tempted to conclude both that the content of a name or indexical (relative to a context) is never the same as the content of a description and that the proposition expressed by " $S(x)$ " (in a context) is never the same as the proposition expressed by " $S(d)$ ", where d is a description and d is a name or indexical. However, these inferences are fallacious.

The reason they are is that we have not yet said enough about what propositions and propositional contents are. We have taken propositions to be objects of the attitudes of saying and asserting, as well as bearers of truth values in circumstances of evaluation. Suppose, however, that one were to add that circumstances of evaluation are possible worlds and that the proposition expressed by a sentence (in a context C) is the set of worlds in which it is true (as used in C).⁵ On this conception the propositional content of a singular term (relative to C) is the function from worlds W to referents of the term with respect to W (and C). Thus "2" and "the even prime" are assigned the same 'propositional content', and the following (a) and (b) sentences are assigned the same 'proposition'—even though the (b) sentences arise from the (a) sentences by substituting a singular term with one propositional content for a singular term with a different content.⁶

- (5a) Reagan is American.
 (5b) The actual fortieth president of the United States is American.
 (6a) Three squared is less than 10.
 (6b) Five is less than 10.

So, for example, the proposition expressed by "Reagan is American" is not the same as the proposition expressed by "The actual fortieth president of the United States is American".

In attempting to distinguish these propositions, one cannot simply stipulate that they are different because they are complexes constructed out of different component parts (the propositional contents of constituent expressions). Although such a view of propositions is, I think, correct, it cannot be established by semantic fiat. Rather, one must appeal to pre-theoretic facts that support it over and against alternative conceptions. This appeal cannot, of course, be restricted to facts about the truth values of propositions in different circumstances of evaluation, for the (a) and (b) propositions do not differ in this respect. What we need are some common-place observations about propositional attitudes. It is possible to say, assert, or express (believe, consider, or prove) one of the (a) propositions without saying, asserting, or expressing (believing, considering, or proving) the corresponding (b) proposition. Thus the propositions are different.

By appealing to observations of this kind, one can make a plausible case for two negative theses: First, the propositional content of a name or indexical (relative to a context) is never the same as that of a description; second, the proposition expressed by a sentence containing such a term is never the same as the proposition expressed by a sentence that results from substituting a description for the name or indexical. However, these negative conclusions, together with the claim that names and indexicals are rigid, do not add up to a positive specification of their propositional contents (relative to contexts) or of the propositions expressed by sentences containing them.

We may take it that the propositional contents of terms (relative to contexts) determine their referents with respect to circumstances of evaluation (in the sense that two terms with the same content must agree in reference in all circumstances). Still, our conclusions about names and indexicals are compatible with a variety of hypotheses about their contents.

For all that has been said so far, the content of such a term (relative to a context) could be its referent; it could be a pair consisting of its referent plus a descriptive condition associated with it by the speaker; it could be a triple consisting of this pair plus the character or linguistic meaning of the term; it could be a quadruple containing all this plus the term itself; or it could be any number of other things.

At issue are the conditions under which substitution of one name or indexical for another in a simple sentence preserves the proposition it expresses. The idea behind the more baroque alternatives is to restrict such substitution by encoding into propositions many of the linguistic and contextual peculiarities of utterances expressing them. This idea is not entirely without foundation in our pretheoretic linguistic practice. For example, when we report in indirect discourse what proposition someone has asserted or expressed, we typically try to keep as close to the person's own

words as is feasible, relative to the conversational purposes and standards of accuracy prevailing in the reporting discourse.

However, there are definite limits to this presumption of linguistic fidelity. If someone speaking German utters a sentence containing the name "Deutschland," we can typically report in English the proposition he expressed using the name "Germany." Thus sentences containing different names may express the same proposition. Similarly, two people who utter

(7) Reagan is persistent

may assert the same thing even if they have contrasting views of Reagan and associate radically different descriptive content with his name. Thus utterances of a sentence by speakers who associate different descriptive content with one of its names may express the same proposition.

Finally, utterances of the sentences in (8) may express the same proposition in their respective contexts, provided that the indexicals they contain refer to the same individual in those contexts:

(8a) I am persistent.

(8b) You are persistent.

(8c) He is persistent.

Thus utterances of sentences with different meanings (characters) may express the same proposition. This should not be surprising, since one of the primary functions of indexicals is to allow the expression of the same proposition from different points of view.

In all these cases observations about propositional attitudes (saying, asserting, expressing) are used to identify or distinguish various propositions. These observations provide substantial support for two well-known semantic theses⁽⁶⁾

Thesis 1 On a rigidly designated term

Names and indexicals are directly referential; that is, the propositional content of such a term, relative to a context, is its referent in the context.

Thesis 2

Simple sentences containing directly referential terms express singular propositions (relative to contexts), that is, propositions containing individuals as constituents.

II

What consequences do these theses have for the substitutivity of coreferential names and indexicals? By themselves they have none. However, in conjunction with other plausible principles—some of which were

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instrumental in establishing them—they have consequences that are profound and wide ranging.

The most obvious of these have to do with simple sentences, free of nonextensional operators. A plausible principle governing such sentences is that substitution of expressions with the same propositional content preserves the proposition expressed.

Random Compositionality

Let S be a simple, extensional sentence containing one or more occurrences of an expression e . Let S' arise from S by substituting an occurrence of e' for any (single) occurrence of e in S . If the propositional content of e in context C is identical with the propositional content of e' in context C , then the proposition expressed by S in C is identical with the proposition expressed by S' in C .

The conjunction of this principle with the thesis that names and indexicals are directly referential entails that substitution of coreferential names or indexicals for one another in a simple, extensional sentence preserves the proposition expressed.

This conclusion has a number of consequences, some welcome and some not. Among the former is the intuitively correct result that the sentences in (7) and (8) express the same proposition in contexts in which their names and indexicals are coreferential. Among the latter is the problematic result that the sentence pairs in (9) and (10) also do.

- (9a) I am Scott Soames.
 (9b) Scott Soames is Scott Soames.
 (10a) Tully shaved Cicero.
 (10b) Cicero shaved Cicero.

It is important to be clear about what is and what is not problematic about this result. The result does not entail that utterances of the sentences in each example convey the same information. In the case of sentence (9a), its meaning guarantees that it is true in the context of utterance if and only if the speaker of the utterance is Scott Soames. Since this is not so for (9b), competent hearers can be expected to find utterances of (9a) informative in a way that utterances of (9b) are not—even if they express the same (trivial) proposition.

The case of (10) is a little more complicated but still analogous. The proposition expressed by sentence (10b) (and, by hypothesis, (10a)) is nontrivial. Thus utterances of both sentences are informative. However, the (total) information conveyed by an utterance of one may differ from that conveyed by an utterance of the other. For example, suppose that x associates one set of descriptive criteria, D , with the name "Tully" and another

set, D' , with the name "Cicero." It is not important whether D and D' represent information about the referent that is complete or incomplete, accurate or inaccurate. We may suppose that these descriptive criteria are not *semantically* associated with the names at all. Still, if x takes an utterance of (10a) to be true, he will be in a position to conclude that D shaved D' is true and hence to acquire a belief in the proposition it expresses. Since this belief would not arise from an utterance of (10b), the utterances convey different information. Similarly, if x takes an utterance of (10b) to be true, he will be in a position to conclude that someone was a self-shaver. Since this belief would not arise from an utterance of (10a),* the two do not convey the same information—even if they do express the same proposition.

Therefore, what is problematic about the conclusion that the (a) and (b) sentences in (9) and (10) express the same propositions (in their respective contexts) is not a matter of differences in the informativeness of utterances of these sentences. What is problematic about the result arises from the assumption that propositions are the objects of attitudes such as saying, asserting, and expressing (denying, believing, and considering). The conjunction of this assumption with the direct reference thesis and random compositionality entails that it is impossible to assert (deny, etc.) the proposition expressed by one of the sentences in the pair without asserting (denying, etc.) the proposition expressed (in the relevant context) by the other. This is counterintuitive. Ordinarily we are inclined to think that one can deny that I am Scott Soames without denying that Scott Soames is Scott Soames or assert that Cicero shaved Cicero without asserting that Tully did.

So far the only substitutivity results explicitly considered have involved simple, extensional sentences. However, these results have natural correlates involving complex, nonextensional examples. There is, of course, no reason why substitution of expressions with the same propositional content should always preserve truth value, let alone the proposition expressed. It is easy to specify quotation, or quotationlike, operators that block such substitution. However, substitutivity in sentences containing familiar modal or propositional attitude constructions seems well-nigh irresistible.

In the case of the attitudes the argument leading to this result may be summarized as follows:

Truth-Preserving Substitution in Attitude Constructions

- A. Propositions are objects of the attitudes saying, asserting, and expressing (denying, believing, considering, etc.); that is, these attitudes are relations to propositions.
 B. The verbs "assert," "deny," "believe," etc. are two-place predicates

relating individuals and propositions. An individual i satisfies ' x ' asserts (denies, etc.) NP' in a context C if and only if i asserts (denies, etc.) the proposition denoted by NP in C .

C. An individual i satisfies ' x asserts (denies, etc.) the proposition that S^1 in a context C if and only if i asserts (denies, etc.) the denotation of the proposition that S^1 in C , that is, the proposition expressed by S in C .

D. An individual i satisfies ' x asserts (denies, etc.) that S^1 in C if and only if i asserts (denies, etc.) the proposition expressed by S in C .

E. It follows that, if S is a sentence for which random compositionality holds, if S' arises from S by substituting an expression e' for an occurrence of an expression e in S , and if the propositional content of e in a context C is identical with the propositional content of e' in C , then i satisfies ' x asserts (denies, etc.) that S^1 in C if and only if i satisfies ' x asserts (denies, etc.) that S'^1 in C .

F. When Thesis 1, about direct reference, is added, it follows that substitution of coreferential names and indexicals in attitude constructions preserves truth value.

Some of the consequences of F are counterintuitive. However, they are not easily avoided. In particular, direct reference theorists cannot divorce themselves from these consequences by professing agnosticism regarding the supplementary assumptions A through D, used to derive F.¹⁰ It is true that the direct reference thesis does not itself make any claims about attitudes or attitude sentences. However, it is also true that without assumptions about the attitudes the thesis could not have been given its original motivation. To refuse to endorse these assumptions is to jeopardize crucial arguments for the thesis.

But this only makes the problem more acute, for to endorse the assumptions, together with direct reference, is to be committed to some notably counterintuitive conclusions. Thus direct reference theorists seem to be left in an uncomfortable position. The very assumptions that made the direct reference thesis initially compelling lead to substitutivity results that seem to undermine it.

III

Nevertheless, the correct response to these results is not, I think, to give up direct reference. One reason it is not is that essentially the same problems arise in cases in which there is little doubt that the expressions undergoing substitution do have the same content, for example, cases

involving garden variety synonyms.¹¹ Let us assume, for the sake of argument, the following:

(11) "Doctor" and "physician," as well as "fortnight" and "period of fourteen days," are synonymous and hence have the same propositional contents.

The combination of this plus random compositionality yields the conclusion that the (a) and (b) sentences of (12) and (13) express the same proposition.

(12a) Doctors are doctors.
(12b) Physicians are doctors.

(13a) The meeting lasted a period of fourteen days if and only if it lasted a period of fourteen days.

(13b) The meeting lasted a period of fourteen days if and only if it lasted a fortnight.

Many, I think, would find these results counterintuitive—on the grounds that ordinarily we think it possible to assert (deny, believe, etc.) one of the propositions in the pair without asserting (denying, believing, etc.) the other.

Following Benson Mates (1950), we can give the problem a further twist. Consider examples (14a) and (14b):

(14a) Whoever believes (asserts, etc.) that the meeting lasted less than a period of fourteen days believes (asserts, etc.) that the meeting lasted less than a period of fourteen days.

(14b) Whoever believes (asserts, etc.) that the meeting lasted less than a period of fourteen days believes (asserts, etc.) that the meeting lasted less than a fortnight.

Sentence (14a) is clearly true. The combination of (11), assumptions A through D, and random compositionality yields the result that (14b) is also true. However, the two examples seem to differ markedly in status. It is hard to imagine anyone doubting proposition (14a); but it seems easy to imagine someone doubting proposition (14b). Thus, if doubt is an attitude toward a proposition, it would seem the (a) and (b) sentences must express different propositions. But how can they, for they differ only in the substitution of one synonym for another?

The force of the question derives from a plausible extension of random compositionality to sentences containing attitude verbs. The conjunction of this extension with (11) entails that sentences (14a) and (14b) express the same proposition. We also get the conclusion that the examples in (15) have the same truth value.

¹⁰ See, for example, Mates (1950), p. 100.

¹¹ See, for example, Mates (1950), p. 100.

- (15a) Nobody doubts that (14a).
 (15b) Nobody doubts that (14b).¹²

But these results are counterintuitive.

There are two points to notice about this problem. First, the way to deal with it is not to deny (11). From denials of this sort we would quickly reach the conclusion that no two expressions can have the same content, a conclusion that would wreak havoc with our intuitions about meaning in general and attitude reports in particular. Second, the problem confronting us here is analogous to the one in section II involving direct reference—so much so that it seems advisable to look for a single solution to both. If there is such a solution, it will not turn on denying that the expressions undergoing substitution have the same content.

IV

In 1954 Alonzo Church and Hilary Putnam offered different, but potentially generalizable, solutions to the Mates puzzle. According to Church, (14a) and (14b) express the same proposition, and (15a) and (15b) have the same truth value. The argument for this rested on elementary claims about translation. First, if *S*' is a proper German translation of a sentence *S* of English, then *S* and *S*' have the same truth values in their respective languages. Second, since "fortnight" has no single-word German translation, its translation is the same as that of "period of fourteen days." Because of this, sentences (15a) and (15b) have the same German translation and hence the same truth value.

According to Church, what makes this result initially counterintuitive is that it is confused with other, metalinguistic, claims that are false. For example, the claim that the sentences in (15) have the same truth value may be confused with the claim that those in (16) or (17) do:

- (16a) Nobody doubts that whoever satisfies (in English) the sentential matrix "x believes that the meeting lasted less than a period of fourteen days" satisfies (in English) the sentential matrix "x believes that the meeting lasted less than a period of fourteen days."
 (16b) Nobody doubts that whoever satisfies (in English) the sentential matrix "x believes that the meeting lasted less than a period of fourteen days" satisfies (in English) the sentential matrix "x believes that the meeting lasted less than a fortnight."
 (17a) Nobody doubts that whoever sincerely assents (in English) to "the meeting lasted less than a period of fourteen days" sincerely

assents (in English) to "the meeting lasted less than a period of fourteen days."

- (17b) Nobody doubts that whoever sincerely assents (in English) to "the meeting lasted less than a period of fourteen days" sincerely assents (in English) to "the meeting lasted less than a fortnight."

The (a) and (b) sentences in these examples do have different truth values. Thus, if one does not properly distinguish them from their counterparts in (15), one will be led to conclude, incorrectly, that (15a) and (15b) also differ in truth value.

Unlike Church, Putnam did not take the intuition that (15a) and (15b) have different truth values to be based on linguistic confusion; rather, he regarded it as accurate. According to Putnam, (14a) and (14b) have different contents, and (15a) and (15b) have different truth values. Similarly, he held that sentences such as (12a) and (12b) differ in content and that propositional attitude ascriptions in which one of them is substituted for the other may differ in truth value. These conclusions conflict with the combination of claim (11), which Putnam accepted, plus random compositionality, and assumptions A through D about the attitudes. For largely historical reasons, these latter assumptions were not under consideration in Putnam's discussion. However, the discussion can be recast in a way that takes them for granted without affecting the essential dispute over sentences (12) through (15).¹³ When this is done, the point at issue becomes random compositionality. In effect, what Putnam noticed was that there might be a good reason to reject this principle.

Random compositionality gains much of its plausibility from the observation that the content of a sentence (in a context) is determined by the contents of its constituent parts (in the context). However, this observation is incomplete. For example, sentences (18a) and (18b) are made up of parts with the same semantic content:

- (18a) John loves Mary.
 (18b) Mary loves John.

However, the sentences have different contents because those parts are put together in different ways. We might express this by saying that the content of a sentence is determined by the contents of its parts plus the way the parts are structured.

It should follow that sentences with the same structure and semantically equivalent parts have the same content. But what counts as sameness of structure? Do the following (a) and (b) sentences have the same or different structures?

- (19a) Rab.
- (19b) Raa.
- (20a) All F's are G's.
- (20b) All F's are F's.

The answer depends on one's notion of structure. In one sense the pairs have the same structures—in each case they would be assigned the same constituent structure tree by a standard syntax. In another sense, however, they do not. Thus, when doing logic, we say that the sentences have different *logical structures* in virtue of the fact that the (b) sentences contain two occurrences of the same constituent, whereas the (a) sentences contain one occurrence each of different constituents.

Suppose now that this notion of structure is used to determine the content of a sentence from its structure plus the contents of its parts. Under this analysis the (a) and (b) sentences in (19) and (20) may have different contents, even if the contents of their constituents, "a" and "b," "F" and "G," are the same. According to Putnam, random compositionality fails because substitution in these cases changes structure and, thereby, content. The same may be said for the sentence pairs (12) through (15).

V

We need not at this point try to evaluate the relative merits of the Church and Putnam proposals. However, one initial advantage of Putnam's approach is worth noting. Ordinary speakers do, I think, have pre-theoretic intuitions that the examples in (15) may have different truth values and that those in (12) through (14) may represent different beliefs. Putnam's proposal respects these intuitions in a way that Church's does not.

The semantic intuitions of ordinary competent speakers are not, of course, infallible. Thus Putnam's advantage on this score is not in itself a refutation of Church's position. However, the intuitions of such speakers are, in general, the best evidence we have in semantics and so cannot be taken lightly. If there is a way of respecting them in this case that does not run into trouble elsewhere, then it should be preferred.

Another desirable feature of Putnam's suggestion is the way it generalizes. The results involving belief sentences are easily extended to other attitude ascriptions (saying, asserting, expressing, etc.). Putnam's approach also applies to cases involving substitution of directly referential singular terms.

If names and indexicals are directly referential, then the content of "Cicero" is the same as the content of "Tully," and the content of "I" is the

Propositional
 (Putnam's)
 of propositions
 to S.F.F. deBonn

same as the content of "Scott Soames" in a context in which I am the agent (speaker). However, substitution of one for the other in (9) and (10) changes logical structure and so, on the Putnam account, changes the proposition expressed. Thus one can preserve the intuition that it is possible to deny that I am Scott Soames without denying that Scott Soames is that Tully did. By contrast, substitution of coreferential names and indexicals in (7) and (8) preserves both logical structure and proposition expressed. In this way one retains the positive results about substitutivity that helped motivate the direct reference thesis while avoiding some of the most notorious substitution problems that seemed to undermine it.

This application to direct reference was not, of course, envisioned in 1954.¹⁴ In recent years, however, the idea behind Putnam's proposal has been rediscovered and used in connection with direct reference theory by Mark Richard (1983; forthcoming) and by David Kaplan (1985). The details of their respective proposals differ in several respects that need not concern us here.¹⁵ What is important is whether the apparent difficulties for the direct reference thesis posed by problematic substitutions can be overcome using Putnam's basic idea.

In investigating this question, I adopt assumptions A through D about the attitudes given in section II plus versions of Theses 1 and 2 that extend the direct reference analysis to variables.

Thesis 1*

Names, indexicals, and variables are *directly referential*—the propositional content of such a term, relative to a context C and assignment *f* of objects as referents to variables, is its referent relative to C and *f*.

Thesis 2*

Sentences containing names and indexicals, as well as formulas containing free occurrences of variables, express *singular propositions* relative to contexts and assignments.¹⁶

I further assume that propositions are complexes that reflect the structure of the sentences that express them. In the case of simple sentences the propositions are made up of properties corresponding to predicates and individuals corresponding to directly referential terms. In more complex cases operators such as "and," "or," and "not," definite and indefinite descriptions, and quantifiers contribute higher-order elements to structurally complex propositions whose constituents are (or encode) the semantic contents of the constituents of sentences that express them.¹⁷

Finally, we need a way of representing in propositions the kinds of distinctions in the logical structures of sentences that are crucial to

Putnam's proposal. For example, we must distinguish the propositions expressed by the (a) and (b) sentences in (21) and (22), where *t* and *t'* are distinct directly referential terms that refer to the same thing:

- (21a) *Rt, t'*
- (21b) *Rt, t*
- (22a) *Rt ∧ Gt'*
- (22b) *Rt ∧ Gt*

The propositions expressed by the (a) sentences can be represented as follows:¹⁶

- (21a') $\langle \langle \sigma, \sigma \rangle, R^* \rangle$
- (22a') $\langle \text{Conj}, \langle \langle \langle \sigma \rangle, F^* \rangle, \langle \langle \sigma \rangle, G^* \rangle \rangle \rangle$

To get the propositions expressed by the (b) sentences, we need to add something that reflects the repeated occurrences of the same term in these examples. There are, of course, many ways to do this. For the sake of vividness let us think of the (b) propositions as arising from the (a) propositions by adding 'wires' connecting the different occurrences of σ in the propositions:¹⁷

- (21b') $\langle \langle \langle \sigma, \sigma \rangle, R^* \rangle$
- (22b') $\langle \text{Conj}, \langle \langle \langle \langle \sigma \rangle, F^* \rangle, \langle \langle \sigma \rangle, G^* \rangle \rangle \rangle$

Multiple occurrences of the same predicates, or other constants, can be similarly represented.

The question at issue, then, is this: Does propositional encoding of repeated occurrences of the same expression successfully resolve the puzzles involving substitution of expressions with the same content? In particular, does it resolve puzzles involving substitution of names, indexicals, and variables with the same referent? I argue that it does not.

The first point to notice is that the extra-structure idea fails to block some of the most problematic substitutions. For example, since the structure of sentence (23a) is the same as that of (23b), the propositions they express are identified, and the ascriptions (24a) and (24b) are treated as equivalent:

- (23a) Superman is stronger than Clark Kent.
- (23b) Clark Kent is stronger than Superman.
- (24a) Lois Lane said (believed, etc.) that Superman is stronger than Clark Kent.

- (24b) Lois Lane said (believed, etc.) that Clark Kent is stronger than Superman.

But these results are no less counterintuitive than those the extra-structure idea is designed to block. In general, interchanging *t* and *t'* in (21a) and (22a) is as problematic as substituting one of these terms for the other. If would seem, therefore, that the cases ought to be treated similarly. Making the attitudes sensitive to extra structure does not do this.

A similar point holds for examples involving conjunction:

- (25a) The ancients said (believed, etc.) that Phosphorus was visible only in the morning and Hesperus was visible only in the evening.
- (25b) The ancients said (believed, etc.) that Phosphorus was visible only in the morning and Phosphorus was visible only in the evening.

We may take it that (25a) is true and that the introduction of extra structure into propositions blocks the inference to (25b). However, nothing blocks the move from (25a) to

- (25c) The ancients said (believed, etc.) that Phosphorus was visible only in the morning and the ancients said (believed, etc.) that Hesperus was visible only in the evening.
- and from there to

- (25d) The ancients said (believed, etc.) that Phosphorus was visible only in the morning and the ancients said (believed, etc.) that Phosphorus was visible only in the evening
- and

- (25e) The ancients said (believed, etc.) that Phosphorus was visible only in the morning and that Phosphorus was visible only in the evening.²¹

If the goal is to preserve pretheoretic intuition, there is little to be gained by holding that (25b) is false whereas (25d) and (25e) are true. But this is what the extra-structure approach is committed to. In general, when substitution in a conjunction within the scope of an attitude verb is blocked, substitution in the separate conjuncts is allowed, counterintuitive or not. Another problem similar to this illustrates the overreliance of the extra-structure approach on accidental matters of syntax. We assume that the semantic content of the directly referential proper name "Phosphorus" is not the same as that of the description "the *x*: *x* = Phosphorus." The former is just the planet Venus, whereas the latter is a complex consisting

¹⁶ Some with logical form (different words for the same predicates)

¹⁷

of an operation corresponding to the definite article plus that property of being identical with Venus. Nevertheless, a competent speaker who sincerely assents to sentence (26a) typically will assent to (26b):

- (26a) Hesperus is distinct from Phosphorus.
 (26b) Hesperus is distinct from the x : $x = \text{Phosphorus}$.

Suppose now that we introduce a new syntactically simple term, "Vesperus," which we stipulate to have the same semantic content as the description.²² Next we substitute "Vesperus" for the description in

- (27a) A says (believes, etc.) that Hesperus is distinct from the x :
 $x = \text{Phosphorus}$

to get

- (27b) A says (believes, etc.) that Hesperus is distinct from Vesperus.

Having derived (27b), we can now substitute "Phosphorus" for "Hesperus" without changing structure to get

- (27c) A says (believes, etc.) that Phosphorus is distinct from Vesperus.

But this is problematic. Although (27c) comes out true on the extra-structure proposal, intuitively it seems to be on a par with

- (27d) A says (believes, etc.) that Phosphorus is distinct from the x :
 $x = \text{Phosphorus}$

which the proposal is designed to block.

So far I have argued that the extra-structure proposal does not carve semantic reality at the joints. For every problematic substitution that it blocks, there are others, intuitively no different, that it allows. Although this does not show that the proposal is false, it does suggest that there is less to be said for it than might first have been imagined.²³

In addition to this, there is another, more powerful criticism to be made. The proposal was motivated by the idea that the examples in (28) may differ in truth value even when expressions e and e' have the same semantic content:

- (28a) A says (believes, etc.) that ... e ...
 (28b) A says (believes, etc.) that ... e' ...

The proposal implements this idea by introducing a mechanism that makes such sameness of content an insufficient basis for deriving one from the other. However, it does not preclude the possibility that other factors might bring it about that (28a) and (28b) have the same truth value. Of course, if such factors could always be found, then the proposal would lose

its motivation. Given the background assumptions in section V together with some pretheoretic attitude ascriptions, we can show that this is the case.

Consider again the familiar example of Hesperus and Phosphorus. By encoding extra structure into propositions, one can distinguish the proposition expressed by (29a) from the propositions expressed by (29b) and (29c):

- (29a) Phosphorus is Phosphorus.
 (29b) That (pointing in the morning at Venus) is Phosphorus.
 (29c) Hesperus is Phosphorus.

Note, however, that the proposition expressed by (29b) is still identified with the one expressed by (29c).²⁴

We may assume that the ancients sincerely and reflectively assented to (translations of) (29a) and dissented from (translations of) (29c). Surely, however, they also produced sincere, reflective utterances of the sort illustrated by (29b). Moreover, the following attitude ascription seems clearly correct:

- (30) The ancients said (believed, etc.) that that (pointing in the morning at Venus) was Phosphorus.

But then, even the extra-structure proposal predicts that ascriptions (31a) and (31b) are true:

- (31a) The ancients said (believed, etc.) that Hesperus was Phosphorus.
 (31b) The ancients said (believed, etc.) that that (pointing in the morning at Venus) was Hesperus.

The point is a general one. Let e and e' be expressions with the same content. Suppose that (28a) is true and that (28b) appears, pretheoretically, to be false. Typically one can find or introduce another expression e'' with the same content as e , such that

- (28b'') A says (believes, etc.) that ... e'' ...

is unproblematically true (because, for example, the agent realizes that e and e'' have the same content). But given the truth of (28b''), the extra-structure proposal is committed to the truth of (28b). Thus, no real progress has been made on examples such as this. [Although the proposal makes the move from (28a) to (28b) depend on more than content alone, the ease with which intermediaries of the sort (28b'') can be produced robs the proposal of its intended significance.²⁵]

A similar moral can be drawn from ascriptions involving quantifying-in. Let us suppose that Lois Lane sees Clark Kent shaving in his office at the

Daily Planet and on the basis of this sincerely and assertively utters "Clark Kent shaves Clark Kent." Surely, there is someone—Clark Kent—of whom Lois Lane says and believes that he shaves Clark Kent. Thus both sentences (32a) and (32b) are true:

- (32a) Lois Lane says (believes) that Clark Kent shaves Clark Kent.
- (32b) $\exists x [x = \text{Clark Kent} \wedge \text{Lois Lane says (believes) that } x \text{ shaves Clark Kent}]$.

According to the extra-structure proposal, (32a) ascribes to Lois the property of standing in a relation to a 'wired proposition', the structure of which incorporates the double occurrence of the name in the complement clause. However, (32b) does not. Instead, it requires that Lois stand in the appropriate attitude relation to the proposition expressed by "x shaves Clark Kent" under an assignment of Clark Kent as value of "x." Since "x," "Clark Kent," and "Superman" are different terms with the same content (with respect to the assignment of Clark Kent to "x"), it follows that this proposition is the same as that expressed by "Superman shaves Clark Kent." Thus the truth of (32b) guarantees the truth of

- (32c) Lois Lane says (believes) that Superman shaves Clark Kent.

As before, the problem is general. According to the extra-structure approach, (33a) can be true when (33c) is false only when (33b) is also false:

- (33a) A says (believes, etc.) . . . f . . . t . . .
- (33b) $\exists x [x = f \wedge A \text{ says (believes, etc.) . . . } x \text{ . . . } t \text{ . . .}]$
- (33c) A says (believes, etc.) . . . f' . . . t . . .

However, in a great many cases in which (33a) is true, it seems obvious that (33b) is also. Thus proponents of extra structure face a dilemma. If they grant the truth of (33b), they must countenance ascriptions that their theory was designed to avoid. However, if they reject (33b), they miss an obvious truth.²⁵

Similar reasoning applies to the inference from (33c) to (33a). Although the extra-structure proposal does not license it simply on the basis of identical content on the part of f and f', arguments appealing to pre-theoretic intuitions can often be found to sanction it. For example, Professor McX, looking through the open back door of the faculty lounge, sees Y walking down the hall and says to a visitor, "He (pointing to Y) is a professor in the department." A few seconds later Y passes by the front door, and McX says, "He (pointing to Y again) is a graduate student in the department." Although McX does not realize that he has pointed twice to the same individual, Y, who has overheard the remarks, can correctly report, "McX said both that I am a professor in the department and that I

am a graduate student in the department." A third party may report, "There is someone such that McX said both that he is a professor in the department and that he is a graduate student in the department." Developing the example further, we can have McX conjoin his remarks:

- (34) Who is in the department? Let me see. He (pointing to Y as he passes the back door) is a professor in the department and (turning) he (pointing to Y as he passes the front door) is a graduate student in the department.

On the basis of this, the following ascriptions seem clearly true:

- (35a) McX says that he (pointing to Y as he passes the back door) is a professor in the department and he (pointing to Y as he passes the front door) is a graduate student in the department.
- (35b) McX says that I am a professor in the department and I am a graduate student in the department. [Uttered by Y]
- (35c) $\exists x [\text{McX says that } x \text{ is a professor in the department and } x \text{ is a graduate student in the department.}]$
- (35d) McX says that Y is a professor in the department and Y is a graduate student in the department [where "Y" is a proper name of Y].

Following Kaplan, I take (35a) to contain two different demonstratives: "he" plus the first demonstration and "he" plus the second demonstration. Thus it has the same form as (33c). Sentence (35b), on the other hand, has the form (33a). Since (35b) is clearly true, the extra-structure proposal is again faced with a dilemma. If it fails to countenance the move from (35a) to (35b), it misses an obvious truth. However, if it allows the move, it predicts that

- (35e) McX says that f' is a professor in the department and f* is a graduate student in the department

will be true for any directly referential term f* that refers to Y—and thereby countenances the ascriptions it was designed to falsify.²⁶

VII Scott's Explanation of the Problem

For all these reasons it seems to me that the extra-structure proposal fails. However, its failure is instructive. The examples involving indexicals and variables point to something important about attitude ascriptions. Typically, when we report someone's attitudes in indirect discourse, we are expected to keep as close to the words he or she used, or would use, as is feasible. However, this expectation of linguistic fidelity is not an absolute semantic requirement but a pragmatic desideratum that can be outweighed

by other factors. This is evident in reports of assertions or beliefs expressed in other languages. It is also evident in cases in which indexicals are used.

For example, when one talks about oneself, one is expected to do so in the first, rather than the third, person. This applies even when reporting someone else's beliefs or assertions about oneself. Thus, if I were to report Richard Cartwright's remark, "Scott Soames is one of my former students," in most contexts I would be expected to use sentence (36a) rather than (36b):

- (36a) Richard Cartwright said that I was one of his former students.
 (36b) Richard Cartwright said that Scott Soames was one of his former students.

Here, deviation from the exact words of the agent of the attitude is not only acceptable but preferred.

The McX and Y example given in section V1 exploits this fact. When Y reports McX's remark about him, he has little choice but to use occurrences of "I" in place of the demonstratives used by McX. However, the result of this substitution is striking. Although the sentence used by McX indicates that he took himself to be talking about two individuals,²⁷ Y's sentence indicates that the assertion concerns a single individual. In short, the logical structures and cognitive perspectives associated with the two sentences are different. Nevertheless, the second is a truthful report of the assertion made by the first. This shows that reports of propositions asserted are not semantically required to preserve the logical structures or cognitive perspectives of the sentences used to assert them.

This result is not limited to cases in which the sentence assertively uttered contains indexicals or in which the subject of the assertion actually reports it. Imagine The Ancient Babylonian looking up in the sky in the morning and uttering (37a) and looking up in the sky in the evening and uttering (37b):

- (37a) Phosphorus is a beautiful star visible only in the morning.
 (37b) Hesperus is a beautiful star visible only in the evening.

Although Venus cannot report these remarks, this does not stop us from semantically evaluating (38a) and (38b) as true in a context in which Venus is the designated agent:

- (38a) The Ancient Babylonian said that I was a beautiful star visible only in the morning.
 (38b) The Ancient Babylonian said that I was a beautiful star visible only in the evening.

If The Ancient Babylonian conjoined sentences (37a) and (37b), (38c) would be true in a context with Venus as agent:

- (38c) The Ancient Babylonian said that I was a beautiful star visible only in the morning and I was a beautiful star visible only in the evening.

What about (39) and (40)?

- (39a) The Ancient Babylonian said that Venus was a beautiful star visible only in the morning.
 (39b) The Ancient Babylonian said that Venus was a beautiful star visible only in the evening.
 (39c) The Ancient Babylonian said that Venus was a beautiful star visible only in the morning and Venus was a beautiful star visible only in the evening.
 (40a) The Ancient Babylonian said that Hesperus was a beautiful star visible only in the morning.
 (40b) The Ancient Babylonian said that Phosphorus was a beautiful star visible only in the evening.
 (40c) The Ancient Babylonian said that Hesperus was a beautiful star visible only in the morning and Phosphorus was a beautiful star visible only in the evening.

If names are directly referential, then these reports should be true. Why, then, do they seem objectionable?

The answer, I believe, lies in the pragmatic desideratum of being maximally faithful to the words of the agent. When reporting the assertions from the perspective of Venus, the ability to use the first person pronoun allows us to deviate from the agent's words; and the reports sound fine. When reporting from the perspective of a third party, we need some excuse for not using the agent's own words (or strict translations of them). In the case of (39) there may be one—the name "Venus" may be familiar to the speaker and to the speaker's audience, whereas the names "Hesperus" and "Phosphorus" may not be. In such a situation utterances of the sentences in (39) are not only true but pragmatically appropriate.

The examples in (40) seem much worse. Here, the reports contain the names used by the agent. However, the way they are used in the reports conflicts with the way they were used by the agent. Since it is hard to imagine any conversational justification for this, they are naturally heard as incorrect. And they are. However, the principle they violate—remain faithful to the words of the agent unless there is reason to deviate—is pragmatic. Thus, the reports may be true after all. (The same analysis applies to sentences (24) and (32).)

If this is right, then the intuitions motivating the extra-structure proposal conflate pragmatic inappropriateness with semantic incorrectness. However, there is more motivating the proposal than this—at least in its extension to direct reference theory. An important insight behind it is the observation that a sincere, reflective speaker who assertively uttered a sentence

(41b) Rt, t

would standardly assert (and believe) a proposition that someone who assertively uttered the sentence

(41a) Rt, t'

would not (where t and t' are different, but coreferential, directly referential terms). This observation is correct. However, it does not show that (41a) and (41b) express different propositions.

Someone who assertively utters a sentence standardly asserts the proposition semantically expressed by the sentence in the context. However, the speaker often asserts other propositions as well. For example, someone assertively uttering a conjunction asserts not only the conjunctive proposition but also the propositions expressed by the conjuncts. Similarly, someone who asserts that Hesperus is a planet visible in the evening (standardly) asserts that there is a planet visible in the evening.

Competent conversational participants who recognize the two occurrences of t in sentence (41b) to be occurrences of the same term can be expected to accept (41b) if and only if they accept

(41c) $\lambda xRx, x$ iff $\lambda x \neg x$

(that is, t self- R 's). Since conversational participants typically do recognize this, someone who sincerely and assertively utters (41b) can usually be taken to believe, and to have asserted, the proposition expressed by (41c). Moreover, the pragmatic requirement that the reporter be faithful to the words of the agent is responsible for the fact that utterances of

(42) A said (believes) that Rt, t

often give rise to the suggestion that

(43) A said (believes) that $\lambda xRx, x$

is true. All this combines to create the impression that the proposition expressed by (41b) is the same as the proposition expressed by (41c). However, this is an illusion.

Let us first distinguish (41a) from (41c). The former contains a two-place

predicate plus occurrences of a pair of terms. The latter contains a compound one-place predicate plus a single occurrence of a term. Corresponding to this difference in structure, the proposition expressed by (41a) attributes the relation R to a pair consisting of an object and itself; the proposition expressed by (41c) attributes the one-place relational property of bearing- R -to-onself to a single object. Not only are these propositions different, an individual may assert or believe one without asserting or believing the other. For example, one may assert or believe the proposition that Hesperus is not Phosphorus without asserting or believing the proposition that Hesperus is non-self-identical.

What about (41b)? Does it express the same proposition as (41a) or as (41c)? The extra-structure proposal, in effect, equates the proposition expressed by (41b) with the proposition expressed by (41c). I believe this to be a mistake.

First there is the matter of structure. Like (41a), (41b) consists of a two-place predicate plus a pair of occurrences of singular terms. Unlike (41c), (41b) does not contain a one-place predicate expressing the relational property of bearing- R -to-onself. These differences are significant if, as I have suggested, propositions encode the structure of the sentences that express them. According to this independently plausible conception, (41b) and (41c) express different propositions. If, as I have assumed, the propositions are Russellian, and thus contain the objects designated by occurrences of directly referential terms, then (41b) expresses the same proposition as (41a).

The lambda operator used in (41c) is, of course, not part of standard English. However, English does contain a number of devices that may be used to the same end, for example, reflexive pronouns, the formation of adjectives such as, "self-shaver" from two-place predicates, and the use of conjunctions to connect subsentential constituents. The first two of these are illustrated in (44):

- (44a) Reagan shaves himself, and Bush does too.
- (44b) Reagan is a self-shaver, and Bush is too.
- (44c) Reagan shaves Reagan, and Bush does too.

In each case the proposition expressed by the second conjunct is the same as that expressed by the first, save for the different contributions of the subjects of the two clauses. In (44a) and (44b) the proposition expressed by the second conjunct attributes to Bush the property of shaving oneself. In (44c) that proposition attributes to Bush the property of shaving Reagan. Since these properties are different, the propositions expressed by the respective conjuncts are different. Since these differences are inherited from the first conjuncts, the proposition expressed by the initial conjuncts in (44a) and (44b) differs from that expressed by the initial conjunct of (44c).

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What if there is a counterexample to the extra-structure proposal? ...

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(7)

Next there is the matter of the attitudes. If truth-preserving inferences from (45a) to (45b) are as common as I have indicated, then similar inferences from (45b) to (45c) must often be blocked—for it seems undeniable that (45a) may be true when (45c) is not:

- (45a) A says (believes, etc.) . . . f . . . f . . .
 (45b) A says (believes, etc.) . . . f . . . f . . .
 (45c) A says (believes, etc.) [λx . x . . . x . . .]f.

This is borne out by previous examples.

In the case of McX and Y, McX's utterance of (34) attributed to Y both the property of being a professor in the department and the property of being a graduate student in the department. Thus the ascriptions (35b) through (35d) are true. Similarly, The Ancient Babylonian's utterance of the conjunction of sentences (37a) and (37b) attributed to Venus the property of being a beautiful star visible only in the morning and the property of being a beautiful star visible only in the evening. Thus the ascriptions (38c) and (39c) are true. However, McX did not attribute the uninstantiated property of being a graduate-student-professor-in-the-department to anyone; and The Ancient Babylonian did not attribute the contradictory property of being a beautiful-star-visible-only-in-the-morning-and-only-in-the-evening to anything.

There ought to be a way of reflecting these facts in attitude ascriptions. And there is. The ascriptions that report joint attributions of properties (to Y and to Venus) are of the form (45b)—with occurrences of the same term in different (sentential) conjuncts. These are true. Ascriptions that report attributions of compound properties are represented by (45c). These are false.

The latter are most naturally expressed in English by combining a single occurrence of a directly referential term with a compound-substantial constituent, as in the following examples:

- (35*) McX said that Y was (both) a professor and a graduate student in the department—or, McX said that Y was a graduate student/professor in the department.
 (38*) The Ancient Babylonian said that I was a beautiful star visible in the morning and evening.²⁸ [Said by Venus]

There is, I think, a significant contrast between these ascriptions and those in (35), (38) and (39). Although the intuitions are delicate and subject to potential pragmatic interference, the ascriptions in (35), (38), and (39) seem, intuitively, to be true, whereas (35*) and (38*) do not. These intuitions support my critique of the extra-structure proposal and provide evidence for the accompanying alternative analysis.²⁹

IX

This analysis is, in effect, an extension of Church's treatment of the Mates puzzle to examples involving directly referential singular terms. Like Church, I hold that attitudes are relations to propositions, that ascriptions such as

- (46) A says (believes) that S

report relations to the proposition expressed by S (relative to contexts and assignments to variables) and that (random) substitution of expressions with the same (propositional) content in such constructions preserves both truth value and proposition expressed. I differ from Church in taking coreferential names, indexicals, and variables to have the same (propositional) content.

The decision to treat these terms as directly referential leads, in certain cases, to the derivation of problematic attitude ascriptions from unproblematic ones. However, this occurs even without direct reference, as is illustrated by the parallel between (47) and (48):

- (47a) A says (believes) that doctors are doctors.
 (47b) A says (believes) that physicians are doctors.
 (48a) A says (believes) that Phosphorus is Phosphorus.
 (48b) A says (believes) that Hesperus is Phosphorus.

Although the (a) sentences may appear to differ in truth value from the (b) sentences, this appearance is due to pragmatic considerations, most notably, the requirement that the reporter be maximally faithful to the words of the agent unless there is reason to deviate. Since in cases like this there often is no such reason, utterances of these sentences will suggest to the hearer that the reporter has been maximally faithful to the agent's own words. In these particular examples this suggestion takes on added significance because of the triviality of the propositions semantically expressed by the complement clauses. Thus it is natural to regard utterances of (47b) and (48b) as incorrect when the suggestions are false. Such utterances are incorrect, but that does not mean that the propositions semantically expressed by these sentences are false.

One potential difference between Church's synonyms and my coreferential directly referential terms is worth noting. There is some plausibility in holding that anyone who understands both "doctor" and "physician" knows that they are synonymous.³⁰ If one does hold this, one may characterize anyone who rejects sentence (49) as someone who fails to understand one of its terms:

- (49) Physicians are doctors.

But, if one fails to understand a term, then one's dispositions to accept or reject sentences containing it will not be reliable indications of whether or not one believes the propositions they express. The same may be true of the relation between one's assertive utterances and one's assertions. Thus a person's dissent from sentence (49) or assertive utterance of its negation might well be taken as proof of linguistic confusion rather than as evidence for the truth of

(50a) *A* believed (asserted) that physicians are not doctors

and

(50b) *A* believed (asserted) that doctors are not doctors.

Indeed, there is some plausibility in holding that these examples cannot be true.

The situation is different with directly referential singular terms. There is no plausibility in holding that anyone who understands both "Hesperus" and "Phosphorus" knows that they refer to the same thing. Thus dissent from sentence (51), or assertive utterance of its negation, cannot be taken as showing linguistic confusion but rather must be seen as evidence for the truth of (52a) and (52b):

(51) Hesperus is Phosphorus.

(52a) *A* believed (asserted) that Hesperus is not Phosphorus.

(52b) *A* believed (asserted) that Hesperus is not Hesperus.

The counterintuitiveness of utterances of (52b) are, I maintain, due both to violations of the pragmatic principle of fidelity to the words of the agent and to confusion of (52b) with

(52c) *A* believed (asserted) that Hesperus is non-self-identical.

Despite this possible difference between (50) and (52), the contrast does not represent a general difference between Church-type cases and those involving directly referential terms. The point can be made using Church's example.

(14a) Whoever believes (asserts, etc.) that the meeting lasted less than a period of fourteen days believes (asserts, etc.) that the meeting lasted less than a period of fourteen days.

(14b) Whoever believes (asserts, etc.) that the meeting lasted less than a period of fourteen days believes (asserts, etc.) that the meeting lasted less than a fortnight.

(15a) Nobody doubts that (14a).

(15b) Nobody doubts that (14b).

According to Church—and me—the (a) sentences in these examples express the same propositions as the corresponding (b) sentences. However, not everyone who assents to (a) will assent to (b). We know this is true in the case of (15), since Putnam assented to (15a) while dissenting from (15b).³¹ Now Putnam is, and was, a sincere, reflective, competent speaker. Certainly, his different treatment of sentences (15a) and (15b) was not evidence that he misunderstood "fortnight" or "period of fourteen days." Nor was it evidence that he did not understand the words "doubt" and "believe"—or the sentences themselves. He may have had the wrong semantic theory about these examples—I think he did—but he understood them in the sense relevant to linguistic competence as well as anyone.

Because of this, his dissent from sentence (15b) and acceptance of its negation cannot be dismissed as unreliable indicators of his attitude toward the propositions they express. Had he assertively uttered both (15a) and the negation of (15b), he would have asserted both propositions. Furthermore, his assertions would have been accurate reflections of his beliefs. Because sentences (15a) and (15b) express the same proposition, this means that Putnam would have asserted and believed both a proposition and its negation—without having made any straightforward logical error. This is just the sort of thing that we find in cases involving direct reference.³²

If these conclusions are correct, then a widespread picture of our relationship to what we assert and believe is faulty. We are apt to think of this relationship as direct, unmediated, and fully transparent to introspection and observation. It is not. Propositions are contents of various intermediaries with which we are intimately related—sentences, belief states, and other modes of presentation. To assert or believe a proposition *P* is to stand in the right relation to an appropriate intermediary with *P* as content.³³ In cases involving language, our ordinary linguistic competence ensures that we have a reasonable pretheoretic grasp of when two people have said the same thing or expressed the same belief. However, since linguistic competence does not guarantee the possession of a correct semantic theory, theoretical investigation is capable of yielding some surprising conclusions about our beliefs and assertions.

In undertaking such an investigation, I believe it is crucial to take seriously the notion of a proposition as the information expressed by a sentence. In this respect Richard Cartwright's 1962 article, "Propositions," is a classic. At a time when many philosophers either dismissed or misidentified propositions, Cartwright clarified the strong intuitive case for countenancing them and exposed the misidentifications. With characteristic modesty he concluded the article by indicating that, although he had said what propositions are not, he had not said what they are. "To distinguish them from other things is not by itself to provide either means for their detection or rules for distinguishing one of them from another" (Cartwright 1962,

p. 103). There is today a resurgence of interest in propositions and no dearth of attempts to provide rules for distinguishing among them. It would be nice to think that these attempts will be as successful in this part of the task as Cartwright's paper was in its.

Notes

I would like to thank the Philosophy Department at the University of Washington for use of their facilities during the summer of 1986, when this paper was written. I would also like to thank Ali Akhtar Kazimi for his useful comments on the initial draft.

1. Following Cartwright, I have spoken of the proposition asserted by an utterance. This is a convenient simplification. Although an unambiguous sentence expresses a single proposition in a context, a speaker who utters it often asserts a number of propositions in addition to the one semantically expressed by the sentence uttered. (See section VIII.) Cartwright's point regarding sentences (1) and (2) is not this one but rather the more fundamental observation that these sentences express different propositions in different contexts.

2. See, in particular, Kaplan (1977), Salmon (1986a), and Soames (1987).

3. A description, 'the x : Fx ', refers with respect to a circumstance E (and context C) to the unique object in the domain of E that satisfies ' Fx ' with respect to E (and C). When ' Fx ' is 'actually Gx ', the description refers with respect to E (and C), if at all, to the unique object existing in E that satisfies ' Gx ' in the circumstance of the context C . See Salmon (1981), chapter 1, for a discussion of these issues plus arguments for the claim that names and indexicals are *non-descriptions* (Salmon's terminology).

4. For the sake of simplicity, I assume that a proposition is always either true or false with respect to a world.

5. I assume that only those who exist (at a given time) in a world are Americans (at that time) in the world.

6. The term "directly referential" has been used in the literature in two main ways: as it is in Thesis 1 and as a synonym for "non-descriptions". The two conceptions are different and should not be confused. I always use the term in the sense of Thesis 1.

7. In Soames (1985, 1987), Thesis 1 is used to show that propositions must encode much of the structure of the sentences that express them. A natural way of looking at this is to take propositions to be structured complexes whose constituents are the propositional contents of substantival expressions, relative to contexts.

8. Substitution of e' for multiple occurrences of e are handled by repeated applications of the principle. The terminology "random compositionality" is due to Kaplan (1985). Note that, if the content of e in C is the same as that of e' in C' , then the proposition expressed by S in C will be the same as that expressed by S' in C' , provided that S does not contain other expressions whose contents vary between C and C' .

9. Note that this holds even if x associates the same (incomplete) descriptive material—for example, "a famous Roman"—with both names, or associates no descriptive material at all with them. See section VIII, and note 12 of Soames (1985) for further discussion.

10. Some verbs, such as "believe," take NP arguments other than those denoting propositions, as in "John believes Mary." I put aside such uses for present purposes. Other verbs, such as "say" and "think," do not take full NP arguments at all. For these one moves directly from statement A to statement D.

10. This agnostic position seems to be taken by Almog (1985) and Wettstein (1986).
11. Other cases, noted in Church (1962), Kripke (1979), Salmon (1986), and Soames (1987), involve substitution of coreferential variables (with respect to an assignment) and substitution of a name for its translation ("London"/"Londres," "Peking"/"Beijing").

12. In these examples, "(14a)" and "(14b)" are abbreviations of the previous examples, rather than terms referring to them. The conclusion that (15a) and (15b) have the same truth value can be gotten either from an extension of random compositionality to sentences containing multiple embeddings of propositional attitude ascriptions or from assumptions A through D together with an extension of random compositionality to sentences with a single level of embedding.

13. Mates, Putnam, and Church were all responding to Carnap's proposal (1947) that S and S' are synonymous, and express the same belief, if, and only if, they are intersubstitutable isomorphically. Carnap proposed that an individual x satisfies ' S ' in English if and only if there is a language L and sentence S' such that S in English is intensionally isomorphic to S' in L , and x is disposed to assent to S' as a sentence of L . In the subsequent debate three objections were brought against this proposal.

Church (1950) argued that the analysis wrongly characterized the content of ordinary beliefs, such as the belief that the earth is round, as being about sentences. Instead of relating individuals to sentences, belief ascriptions should, Church thought, be analyzed as relating individuals to propositions. Church (1954) argued that, in any case, intensional isomorphism was too weak for Carnap's purposes because it allowed substitution of nonsynonymous constants with the same intension. Mates (1950) argued that, no matter how closely two simple sentences were related, one could always embed them in structures such as (15) in such a way that speakers would assent to one but not the other (and indeed would assent to one and the negation of the other).

Putnam's article (1954) was a defense of Carnap against Church (1950) and Mates (1950). Regarding Mates (1950), Putnam's proposal was that the definition of "intensionally isomorphic" should require S and S' to have the same *logical* structure in the sense discussed at the end of section IV (as well as being made up of constituents with the same intensions). In reconstructing Putnam's proposal, I follow Church in analyzing "believe" as relating individuals to structured propositions and Carnap in taking that relation to hold in virtue of a relation between the individual and a mode of representation that expresses the proposition. In this framework Putnam's proposal requires sentences expressing the same proposition to have the same logical structure.

14. However, Putnam did apply his analysis to certain sentences containing singular terms. For example, although he took ' S ' and ' V ' to be synonymous, he distinguished the contents of ' S ' as identical with ' S' ' and ' S ' as identical with ' V ' on the basis of the different logical structures of the two sentences.

15. Kaplan (1985) accepts assumptions A through D, restricts himself to ascriptions in which the only directly referential terms are names (no indexicals and no quantifying-in), and argues against random compositionality. Richard (1983) holds that beliefs are relations to propositions but maintains that a belief ascription ' x believes that S ' not only reports the proposition believed but also provides information about the sentence, or representation, or acceptance of which is responsible for the agent's belief. This is illustrated by the relationship between the following ascriptions (i) and (ii), in which the terms are variables or indexicals that refer to the same thing (relative to their respective contexts and assignments):

- (i) x believes that ... f ...
- (ii) x believes that ... f ...

Although the complements of ascriptions (i) and (ii) express the same proposition P , the ascriptions are assigned different truth conditions. In order for ascription (i) to be true, the agent must believe P in virtue of accepting a sentence containing occurrences of directly referential terms (indexicals) with the same character. The truth conditions assigned to ascription (ii) are the same except that the sentence accepted by the agent may contain either occurrences of directly referential terms with the same character or occurrences with different characters. Thus Richard (1983) characterizes the truth of ascription (i) as guaranteeing the truth of ascription (ii), but not vice versa.

The system in Richard (1983) does not cover cases involving names. (Since distinct names t and t' with the same referent have the same character, a simple extension of that system to include them would treat an agent's acceptance of ' $S(t, t')$ ' as equivalent to the acceptance of ' $S(t, t)$ '—which Richard does not want.) However, Richard (forthcoming) considers a modification of his 1983 system that accommodates names. On this account ascription (i) is true provided that the sentence accepted by the agent contains two occurrences of a single name; ascription (ii) is true provided that the accepted sentence contains occurrences of different names. Thus, in his forthcoming article neither (i) nor (ii) implies the other (where t and t' in (i) and (ii) are either names or variables).

The arguments given in the text bear in slightly different ways on all these proposals. For an argument directed specifically against Richard's claim that the truth of belief ascriptions requires more than a correct report of the proposition believed, see Soames (1987), note 24.

16. I use

(i) $\exists x$ A believes that Fx

to represent the English sentences

(ii) Someone is such that A believes that he is F

(iii) A believes of someone that he is F .

Note that in sentence (i) the occurrence of " x " in the complement does not contribute an object to the proposition expressed. However, the assumption that variables are directly referential plays a crucial role in evaluating its truth value. Sentence (i) is true if and only if there is an object a such that the following is true with respect to an assignment of a to " x ":

(iv) A believes that Fa .

Sentence (iv) is true with respect to such an assignment if and only if the referent of " A " believes the proposition expressed by ' Fx ' with respect to the assignment. These 1^* and 2^* characterize this as a singular proposition.

17. See Soames (1987) for details.

18. R^* is the relation expressed by the predicate in (21); F^* and G^* are properties expressed by the predicates in (22); and σ is the referent of the directly referential terms.

19. This picture is due to Kaplan (1985). Another way of encoding the syntax would be to assimilate sentences (21b) and (22b) to

(i) $\lambda x \lambda y, x \lambda y$

and

(ii) $\lambda x \lambda y \lambda z, Gx \lambda y$.

The predicates formed by lambda abstraction express one-place properties. If we choose to represent these as functions from objects to singular propositions, the propositions expressed would then be (iii) and (iv), where f maps an arbitrary object y onto $\langle \langle y, y \rangle, R^* \rangle$ and h maps y onto $\langle \text{Conj. } \langle \langle y \rangle, F^* \rangle, \langle \langle y \rangle, G^* \rangle \rangle$.

(iii) $\langle \langle y \rangle, f \rangle$.

(iv) $\langle \langle y \rangle, h \rangle$.

20. This point was made by David Lewis at the Princeton version of Kaplan (1985).

21. I assume that, if ' A said (believed, etc.) that P and Q ' is true, then so are ' A said (believed, etc.) that P ' and ' A said (believed, etc.) that Q '. However, the basic point of the argument could be reconstructed without assuming this. I also take (25e) to be equivalent to (25d).

22. The argument here parallels one given by Church (1954) against Carnap. Church says: Again by the Principle of Tolerance it is possible to introduce a predicate constant which shall be synonymous with a specified abstraction expression of the form $\lambda x \lambda y, x, y$ or to introduce an individual constant synonymous with a specified individual description of the form $\lambda x \lambda y, x, y$. And (unlike the case of synonymous primitive constants) it may be held that something like this actually occurs in formalized languages commonly constructed—namely those in which definitions are treated as introducing new notations into the object language, rather than as metatheoretic abbreviations. But whether or not the process is called definition, it is clear by the Principle of Tolerance that nothing prevents us from introducing (say) a predicate constant R as synonymous with the abstraction expression $\lambda x \lambda y, x, y$ and taking $R \equiv \lambda x \lambda y, x, y$ as an axiom. And if this is done, then R must be interchangeable with $\lambda x \lambda y, x, y$ in all contexts, including belief contexts, being synonymous with $\lambda x \lambda y, x, y$ by the very construction of the language—by definition, if we choose to call it that. (Church 1954, p. 67)

23. Richard (1983) deals with examples such as those in (25) by positing a dichotomy between (25b), on the one hand, and sentences (25d) and (25e), on the other. Sentence (25b) is said to be false, whereas sentences (25d) and (25e) are claimed to be true, but pragmatically inappropriate or misleading.

Kaplan rejects this dichotomy, hoping for a way to treat all three sentences as false. Although Kaplan (1985) did not contain an explicit semantic mechanism for doing this, he suggested that perhaps a semantics that relativized the truth conditions of attitude ascriptions to a discourse might solve the problem. Roughly put, the idea is that the truth of (25d) would require the existence of a pair of sentences, S and S' , accepted or assertively uttered by the agent, expressing the reported propositions, and anchored by a one-one ordering-preserving mapping from names in S and S' to names in the complements of the reports. It might even be thought that the interchange problem illustrated by (23) could be handled in this way. Suppose that the speaker associates descriptions D and D' with the names t and p . One might maintain that sentence (i) can be true only if it is true relative to the discourse (ii):

(i) x believes Rt, p .

(ii) x believes t is D, x believes p is D', x believes Rt, p .

If the agent associated D and D' with t and p , respectively, then this proposal could assign different truth values to (i) and (ii):

(iii) x believes Rt, p .

One problem with the attempt to relativize the semantics of belief ascriptions to discourses is that it seems to give up the independently motivated assumptions A through D analyzing "believe" as a two-place predicate of individuals and propositions. However, even if we put this aside, the proposal for treating the interchange problem gives the wrong results when the descriptive information associated with names by the speaker conflicts with that associated with the names by the agent. For example, if the speaker associates "the first star seen in the evening" with p and "the first star seen in the morning" with t and the agent

Proposition
 believed
 p, t, x, y, z
 R, G, F
 S, S'
 D, D'
 t, p, x, y, z
 R, G, F
 S, S'
 D, D'

(S, S')
 (D, D')

reverses those associations, the proposal will incorrectly characterize (i) as true and (ii) as false when the agent rejects the complement of (i) and accepts the complement of (ii).

The point here is that, when the names used by the agent appear in the belief report, they should be used as the agent used them. In my opinion this is a pragmatic rather than a semantic fact. In section VII I apply it uniformly to the sentences in (24) and (25).

24. Examples involving only names, or general terms, can easily be produced. Imagine speakers that have three names for Venus—"Hesperus" and "Venus," which are applied freely and interchangeably to Venus when seen in the evening, and "Phosphorus," which is applied to Venus when seen in the morning. These speakers readily assent to (translations of) "Venus is Hesperus" and dissent from "Hesperus is Phosphorus" and "Venus is Phosphorus." Nevertheless, the extra-structure proposal characterizes them as believing that Hesperus is Phosphorus and that Venus is Phosphorus.

A similar example using general terms can be constructed in a language in which "surgeon," "physician," and "doctor" are synonyms.

25. In Richard (1983) the truth of (33a) guarantees the truth of (33c); however, the move from (33c) to (33a) is blocked. This is unattractive. It does not help to be told that the ancients did not believe that Hesperus was not Hesperus, if it is granted that they did believe that Hesperus was not Phosphorus and that Phosphorus was Hesperus. The system in Richard (forthcoming) blocks the move from (33a) to (33c) at the cost of blocking the move to (33b)—which is also unattractive. Quantification is not treated by Kaplan (1985).

26. The system in Richard (1983) would use terms with different characters to represent the two demonstratives in (34) and (35a). An extension of the system treating assertion on the model of belief would incorrectly characterize sentence (35b) through (35d) as false. The same is true of Richard (forthcoming).

27. I take the different demonstrations to be parts of McC's sentence.

28. In order to facilitate the conjoining of subsentential constituents, I have simplified the example by eliminating occurrences of "only." This does not affect the main issue.

29. A thorough and illuminating investigation of the distinction between the simple sentences (41a) through (41c) as well as the ascriptions (42) and (43) is given in Salmon (1986b). These issues are also briefly discussed in Soames (1985), note 12.

30. I do not hold this myself. However, for purposes of the present argument, it is not necessary to challenge the view here.

31. In point of fact, Putnam's examples involved "Greeks" and "Hellenes" rather than "fortnight" and "period of fourteen days"; but this makes no difference.

32. The argument can be given at one less level of embedding if we grant, as I believe we should, that a fully competent speaker who understands sentences (14a) and (14b) may sincerely and reflectively assent both to the former and to the negation of the latter. In my view such a speaker asserts and believes the proposition expressed by the negation of (14b). Moreover, he has made no straightforward logical error even though this proposition is also expressed by the negation of a logical truth, namely (14a).

This view apparently conflicts with that of Church, who concludes (1954) by saying that Mates does not really doubt the proposition expressed by (14b)—no matter what he himself may say. If to doubt P is to consider P and take up a skeptical attitude toward it (such as believing its negation), then I think that Church's conclusion is false. However, on this conception of the attitude of doubting, doubting P does not involve not believing P. Although Mates did doubt the proposition expressed by sentence (14b), he also believed it—by virtue of his attitude toward (14a).

33. This conception is developed in Salmon (1986a) and Soames (1987).

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Moore's Paradox, Sincerity Conditions, and Epistemic Qualification

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I

This is not a scholarly paper on Moore's paradox. Many of the points I make have been made by others (long ago in some cases), and I hope they will acquiesce in my putting them in the present context without further acknowledgment. I want to suggest in this paper that a Moore paradox of the statement type has to do with epistemic force rather than merely with sincerity conditions of illocutionary acts (if with them at all). Although something like a sufficient condition for an utterance to be odd in the Moore-paradoxical way will emerge, I do not try to say what conditions it is necessary to have to have a paradox of this type. The main reason for this is that the original paradigms primarily dealt with in connection with Moore's paradox have involved two forms of sentence that are (supposedly) suited for making statements, viz.

(A) p , but I don't believe that p

and

(B) Not- p , but I believe that p

although it is a feature of the account of Moore's paradox to be given here that the utterance of many other forms of sentence can involve what is apparently the same sort of oddity, that of sentences whose use is somehow impossible or ruled out although they do not involve self-contradiction.

In fact, I have no evidence, other than that of linguistic intuition and the plausibility of my descriptions of them, that the original paradigms of Moore's paradox and the other examples of odd utterances I deal with exhibit one and the same sort of oddity. But because it appears that a unified account of all of them can be given, I conduct my discussion under the assumption that just one kind of oddity is in question. (For further remarks on the larger picture, see section V.)

When statemental utterances are in question, the present account falls under the type of account of Moore's paradox sometimes called the