What do we want from a semantic theory? A plausible answer is that we want it to tell us what sentences say. More precisely, we want it to tell us what sentences say relative to various contexts of utterance. This leads to the view that the meaning of a sentence is a function from contexts of utterance to what is said by the sentence in those contexts. Call this the propositional attitude conception of semantics.

Another semantic picture that has enjoyed considerable popularity is the truth-conditional conception. According to it, the job of a semantic theory is to tell us what the truth conditions of sentences are. On this view, the meaning of a sentence can be thought of as a function from contexts of utterance to truth conditions of the sentence as used in those contexts.

Suppose now that we put the propositional attitude and the truth-conditional conceptions together. If we do this, it is virtually irresistible to conclude that what is said by a sentence in a context consists in its truth conditions relative to the context. But what are truth conditions?

One natural idea, embraced by the ruling semantic paradigm, is that the truth conditions of a sentence, relative to a context, are the metaphysically possible worlds in which the sentence, as used in the context, is true. Such truth conditions can be specified by a recursive characterization of
truth relative to a context and a world. This characterization implicitly associates with each sentence a function representing its meaning. The value of the function at any context as argument is the set of metaphysically possible worlds in which the sentence, as used in the context, is true. It is this that is identified with what is said by the sentence in the context, when the propositional attitude conception of semantics is combined with this version of the truth-conditional conception.

This identification is, of course, highly problematic. The first difficulty one notices is that if $S$ and $S'$ are necessarily equivalent relative to a context, then they are characterized as saying the same thing, relative to the context. However, it is highly counterintuitive to hold that all necessary truths say the same thing, that the conjunction of a sentence with any necessary consequence of it says the same thing as the sentence itself, and so on.

A plausible pragmatic principle extends this difficulty to the propositional attitudes of speakers.

1. A sincere, reflective, competent speaker who assertively utters $S$ in a context $C$ says (or asserts), perhaps among other things, what $S$ says in $C$.

This principle reflects an incipient relational analysis of the attitude of saying, or asserting—an analysis that sees it as a relation between speakers and things which serve as the semantic contents of sentences. Once this analysis is accepted, it is a short step to view propositional attitude reports in accord with (2) and (3).

2. An individual $i$ satisfies $\langle x \text{ says (asserts) that } S \rangle$ relative to a context $C$ iff $i$ stands in a certain relation $R$ to the semantic content of $S$ in $C$.

3. An individual $i$ satisfies $\langle x \text{ v's that } S \rangle$ (where $v = \text{‘believes’, ‘knows’, ‘proves’, ‘expects’, etc.}$) relative to a context $C$ iff $i$ stands in a certain relation $R'$ to the semantic content of $S$ in $C$.

But now our difficulties are surely unmanageable. Let us characteriz distribution over conjunction and closure under necessary consequence a follows:

**Distribution over Conjunction**

If an individual $i$ satisfies $\langle x \text{ v's that } P\&Q \rangle$ relative to $C$, then $i$ satisfies $\langle x \text{ v's that } P \rangle$ and $\langle x \text{ v's that } Q \rangle$ relative to $C$. (For example, anyone who asserts that $P\&Q$ asserts that $P$ and asserts that $Q$.)

**Closure under Necessary Consequence**

If an individual $i$ satisfies $\langle x \text{ v's that } P \rangle$ relative to $C$, and if every possible world in which $P$ is true relative to $C$ is a possible world in which
Q is true relative to C, then i satisfies \( x \) v’s that Q relative to C. (For example, anyone who asserts that P asserts everything that necessarily follows from P.)

The second main difficulty with our combined truth-conditional and propositional attitude conception of semantics is that it equates distribution of a propositional attitude verb over conjunction with closure of the attitude under necessary consequence. For if Q is a necessary consequence of P, then the set of metaphysically possible worlds in which \( P & Q \) is true is the same as the set of worlds in which P is true. Given the identification of truth conditions with semantic content, this means that their semantic contents are the same. But then, a relational semantics of propositional attitude reports together with distribution over conjunction will yield closure under necessary consequence.

The problem is that for many propositional attitude verbs distribution over conjunction is a fact whereas closure under necessary consequence is not. My four year old son Greg has said many things, and whenever he says that P&Q he says that P and he says that Q. However, there are lots of necessary consequences of things he has said that he has left unasserted, for example that 2 to the ninth = 512, that first order logic is complete but undecidable, and that stones are made up of molecules.

A third difficulty with our semantic conception takes this problem one step further. The same considerations that lead to the view that beliefs and assertions are closed under necessary consequence lead to the view that no one has ever believed or asserted anything that couldn’t have been true (in any metaphysically possible world). Since every Q is a necessary consequence of an impossible P, anyone who believes or asserts what P expresses believes or asserts everything. And surely, no one ever has, or could have, done that.

The semantic assumptions that lead to these difficulties can be summarized as follows:

A1a. The semantic content of a sentence (relative to a context) is the collection of circumstances supporting its truth (as used in the context).

A1b. The collection of circumstances supporting the truth of a sentence (as it is used in a context) = the set of metaphysically possible worlds in which it is true (relative to the context).

A2. Propositional attitude sentences report relations to the semantic contents of their complements—i.e., an individual i satisfies \( x \) v’s that \( S \) (relative to a context C) iff i bears R to the semantic content of \( S \) (relative to C).

Since these assumptions lead to unacceptable results, one or more of them must be rejected.

The crucial assumptions are A1 and A2, which, in turn, are direct descendants of the two conceptions of semantics mentioned earlier. A1 (a and b) represent the truth-conditional conception, with metaphysically possible worlds taken as truth conditions. A2 represents the propositional attitude conception, with the relational analysis of ‘say’, and ‘assert’ extended to propositional attitude reports generally. The need to give up one or the other of these assumptions makes it necessary to rethink the fundamental issues underlying these semantic conceptions.

I will focus on the truth-conditional conception. Much of the support it has enjoyed comes from the familiarity of the possible worlds machinery plus the fact that the semantic content of a sentence (relative to a context) should determine the possible worlds in which it is true. However, there is a big difference between admitting that semantic content determines such truth conditions and claiming that it should be identified with them. What we need is some conception of semantics in which the content of a sentence determines, but is not determined by, the metaphysically possible worlds in which it is true.

There are two main ways in which such a conception might be developed. One way is to retain the basic assumption, A1a, of the truth-conditional conception, while rejecting the characterization of truth conditions, or truth-supporting circumstances, as metaphysically possible worlds. The idea is to try and find some more finely grained circumstances that will distinguish among sentences true in the same worlds. The second way in which an appropriate semantic account might be developed is to give up A1a, thereby abandoning the fundamental tenet of the truth-conditional conception. In its place, one might substitute a conception of semantic contents as complex objects that encode much of the structure of the sentences that express them, and that determine sets of truth-supporting circumstances, without being identified with them.

In what follows, I will argue for the second approach. The heart of my argument involves the interaction of propositional attitudes with the phenomenon of direct reference. Let us say that a singular term is directly referential if its semantic content relative to a context (and assignment of values to variables) is its referent relative to the context (and assignment). Variables are the paradigm examples of such terms. In recent years, a number of arguments have been given for treating names and
indexicals as directly referential as well. Later, I will show how this view can be defended against certain objections based on the behavior of such terms in propositional attitude ascriptions. To begin with, however, I wish to note the destructive consequences it has when added as a fourth assumption to A1–A3.

A4. Names, indexicals, and variables are directly referential.

This expanded set of assumptions has a number of clearly unacceptable consequences. Suppose, for example, that Mary assertively utters (4a) while pointing at me. On the assumptions we are considering, she cannot correctly be reported to believe, or to have said, that I am David Kaplan.¹

(4) a. He is David Kaplan. (Said pointing at Scott.)

b. Mary says (believes) that he (Scott) is David Kaplan.

The reason for this is that the semantic content of the complement sentence, relative to the context, is taken to be the set of metaphysically possible worlds in which two distinct objects are absolutely identical with one another—that is, the empty set. But then the third difficulty noted above—the impossibility of saying or believing the impossible—comes into play, ruling out the possibility that Mary said or believed what she seemed to say and believe. The same problem arises in a variety of cases, including those in (5).

(5) a. John says (believes) that Ruth Marcus is Ruth Barcan’s sister.

b. Martin says (believes) that this table is made up of atomic particles with properties P, Q, and R. (Where it is later discovered that nothing made of such particles could be a table.)

The significance of these difficulties is not that they mar an otherwise unproblematic account of the attitudes. As we have seen, the conjunction of A1–A3 is problematic in its own right. Nevertheless, the difficulties arising from the addition of A4 are special.

I will argue that these difficulties are intractable for theories that identify semantic contents of sentences with sets of truth-supporting circumstances. Although many of the problems encountered in standard, truth-theoretic accounts of the attitudes can be avoided by substituting fine-grained circumstances for metaphysically possible worlds, those posed by names and indexicals cannot. Not only do these problems resist such treatment, they remain even when assumptions A2, A3, and A4 are weakened substantially.

¹I assume here, and in what follows, that the semantic content of the complement sentence in a propositional attitude ascription is compositionally determined from the semantic contents of its parts.
In effect, directly referential singular terms can be used to show that semantic contents of sentences (relative to contexts) cannot be sets of truth-supporting circumstances, no matter how fine-grained.

The reason for this is that such terms require the introduction of structure into semantic contents. After establishing this, I will consider two different ways in which such structure might be constructed—one based on a modified version of the truth-theoretic approach, the other based on the introduction of structured, Russellian propositions. Although considerations involving directly referential singular terms are insufficient to decide between these alternatives, I shall argue that additional factors favor the Russellian approach. Thus, the end result is an argument for an expanded conception of semantics that includes Russellian propositions as semantic contents of sentences, over and above standard, truth-theoretic intensions and extensions.

2.

Let us begin with the strategy of substituting fine-grained truth-supporting circumstances for metaphysically possible worlds. These circumstances can be thought of as arising from the relaxation of certain constraints that hold for such worlds. Taking a cue from Carnap’s notion of a state description, we can describe these constraints in terms of their role in constructing a semantics for a language L.

Let D be the set of individuals L is used to talk about, and B be the set of properties expressed by simple predicates of L plus their complements.$^2$ Let us say that a C-description is a set each of whose members consists of an n-place property plus an n-tuple of objects drawn from D (for variable n). A C-description X is complete iff it contains a complete assignment of objects to properties—i.e., iff for every n-place property P in B, and every o1, ..., on in D, either [P,o1, ..., on] is a member of X or [−P],o1, ..., on is a member of X, where [−P] is the complement of P. A C-description X is consistent iff no two of its members are negations of one another—i.e., iff for every n-place property P in B, [P, o1, ..., on] is a member of X only if [−P],o1, ..., on is not a member of X. A C-description is metaphysically possible only if it is metaphysically possible for the objects mentioned in the description to (jointly) instantiate the properties they are paired with in the description.

$^2$ For example, the properties of being human and of not being human are complements of one another. I will assume that every property has a (unique) complement and that P is the complement of Q iff Q is the complement of P.
For present purposes, truth-supporting circumstances might either be identified with C-descriptions, or be taken to correspond to them. The classifications “complete,” “consistent,” and “metaphysically possible” can then be applied to circumstances.

Metaphysically possible worlds are truth-supporting circumstances that are metaphysically possible, complete, and consistent. Suppose the first of these constraints is relaxed, while we retain the second and third. This allows truth-supporting circumstances corresponding to every consistent and complete C-description. Thus, we allow metaphysically impossible circumstances in which Ruth Marcus is Ruth Barcan’s sister, 2 to the ninth is not 512, and I am identical with David Kaplan (‘=’ being treated as a simple, nonlogical predicate in the object language). In effect, we substitute what might be called “logically possible” worlds or circumstances for “metaphysically possible” worlds or circumstances.

However, the structure of the semantic theory remains the same as before. It continues to be a recursive characterization of truth relative to a context and circumstance, with the recursive clauses retaining their standard specifications. The semantic content of a sentence relative to a context is identified with the set of circumstances in which it is true. But since these circumstances are more finely grained than metaphysically possible worlds, we no longer have the results that metaphysically equivalent sentences have the same semantic content, that distribution of a propositional attitude verb over conjunction requires closure of the attitude under metaphysically necessary consequence, or that no one can believe or assert the metaphysically impossible. In this way, substitution of A1b′ for A1b might be seen as alleviating the original difficulties with A1–A4.

**A1b′.** The collection of circumstances supporting the truth of a sentence (relative to a context) = the set of logically possible worlds in which it is true (relative to the context).

It does, of course, remain true on this view that logically equivalent sentences have the same semantic content, that distribution of a propositional attitude verb over conjunction requires closure of the attitude under logical consequence, and that no one can believe or assert the logically impossible. However, with another weakening of the constraints even these results can be avoided.

Suppose we give up the requirement that truth-supporting circumstances be complete. Instead we allow circumstances to correspond to (and, in effect, be exhausted by) any consistent C-description. Such circumstances are more like “logically possible facts” than “logically possible worlds.” For example, one such circumstance may consist entirely of my being human.
The introduction of partial circumstances has import for certain logical constructions, most notably negation. In order to make semantic use of partiality, one must distinguish between it not being the case that in C an individual o has the basic property P, and it being the case that in C, o has the property of not being P. The latter is a truth-supporting circumstance for the negation of the atomic sentence that predicates P of o; the former is not. Full-fledged negation, applied to sentences of arbitrary complexity, as well as related constructions like material implication, raise complications that we need not go into. However, other constructions are straightforward. For example, the recursive clauses governing conjunction, disjunction, and existential generalization are exactly those used in standard, truth-theoretic accounts.

The semantic content of a sentence relative to a context is, as usual, the set of circumstances supporting its truth, as used in the context. However, since circumstances are partial, the semantic contents of logically equivalent sentences are no longer identified. For example, the content of (6a) is not the same as the content of (6b), because the former includes “facts” that are, so to speak, silent about radioactivity.

(6) a. Plymouth Rock is in Massachusetts.
    b. Plymouth Rock is in Massachusetts & (Plymouth Rock is radioactive v Plymouth Rock isn’t radioactive).

This is significant, since, it might be argued, a person lacking the concept of radioactivity might believe that which is expressed by (6a) without believing that which is expressed by (6b). Certainly, it would seem that someone could assert the former without asserting the latter. One way of accounting for this within the framework of A1–A4 is to substitute A1b′′ for A1b’’.

A1b’’. The collection of circumstances supporting the truth of a sentence (relative to a context) = the set of logically possible facts that would make it true (as used in the context).

This strategy is followed by Jon Barwise and John Perry in their book *Situations and Attitudes* (1983). However, they take it one step further, allowing truth-supporting circumstances to be inconsistent, as well as incomplete and metaphysically impossible. If one ignores complications involving time, tense, and spatiotemporal location, one can take their “abstract situations” to be arbitrary C-descriptions.³ Allowing these circumstances to be inconsistent, and substituting A1s for A1b’’, makes it possible to correctly

³The idea of thinking of abstract situations as resulting from relaxing constraints on Carnapian state descriptions was suggested to me by David Kaplan.
characterize certain agents as believing and asserting contradictions—e.g., as believing and asserting that London is pretty and London is not pretty.

A1s. The collection of circumstances supporting the truth of a sentence (relative to a context) = the set of abstract situations which would make it true (as used in the context).

Logically complex constructions are characterized along familiar truth-theoretic lines. For example, we have:

(7) a. The semantic content of a conjunction (relative to a context) is the intersection of the semantic contents of the conjuncts (relative to the context).
   b. The semantic content of a disjunction (relative to a context) is the union of the semantic contents of the disjuncts (relative to the context).
   c. The semantic content of an existential generalization, \( \forall x: Fx \), (relative to a context) is the set of circumstances \( E \) such that for some object \( o \) in \( E \), \( o \) “is F” in, or relative to, \( E \) (and the context).
   d. The semantic content of \( \exists x: Gx \) (relative to a context) is the set of circumstances \( E \) such that for some object \( o \) in \( E \), \( o \) “is G” and “is F” in, or relative to, \( E \) (and the context).
   e. The semantic content of \( \forall x: Gx \) (relative to a context) is the set of circumstances \( E \) such that for exactly one object \( o \) in \( E \), \( o \) “is G” in, or relative to, \( E \) (and the context); and, moreover, \( o \) “is F” in, or relative to, \( E \) (and the context).

The invariance of these principles across different choices of truth-supporting circumstances reflects the fact that no matter what one’s conception of circumstances, the circumstances that make a conjunction true are those that make the conjuncts true; the circumstances that make a disjunction true are those that make either disjunct true; and so on. Indeed we may take the principles in (7) to be partially constitutive of the view that the semantic content of a sentence consists in the circumstances that support its truth. As such, they may be regarded as corollaries of assumption A1a.

There is, then, a whole range of possible theories within the standard, truth-conditional framework that adopt the same basic approach to the problems posed by various kinds of propositional attitudes. The central

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4Thus, the content of an existential generalization is a superset of the contents of instances from which it follows. It should be noted that no formal treatment of existential quantification is provided in Barwise and Perry (1983). Nevertheless, (7c) accords well with the leading ideas of that work. (7a), (7b), (7d), and (7e) are explicitly endorsed.
idea is to relax the constraints on truth-supporting circumstances. This results in more finely grained semantic contents being attached, in the first instance, to atomic sentences. Logically complex constructions are given the usual recursive treatment, resulting in semantic contents for complex sentences along the lines of (7).

This approach can be seen as an attempt to save the truth-conditional conception of semantic content, while countenancing direct reference and continuing to take semantic contents of sentences to be objects of propositional attitudes. Although not without plausibility, it is, I believe, fundamentally flawed. Its chief virtue is its recognition that if assumptions A2, A3, and A4, plus an elementary principle of compositionality,5 are to be retained, then semantic contents must be more fine-grained than sets of metaphysically possible worlds. Its chief error is its failure to recognize that if these assumptions are retained, then no conception of truth-supporting circumstances validating (7) can do the job, no matter how fine-grained.

A number of different arguments can be used to show this. For example, consider (8).

(8)  a. The ancients believed (asserted) that ‘Hesperus’ referred to Hesperus and ‘Phosphorus’ referred to Phosphorus.
   b. The ancients believed (asserted) that ‘Hesperus’ referred to Hesperus and ‘Phosphorus’ referred to Hesperus. (From A2, A4, and compositionality in the complement)
   c. The ancients believed (asserted) that ‘Hesperus’ referred to Hesperus and ‘Phosphorus’ referred to Hesperus and for some x, ‘Hesperus’ referred to x and ‘Phosphorus’ referred to x. (From A1a, and A2)
   d. The ancients believed (asserted) that for some x, ‘Hesperus’ referred to x and ‘Phosphorus’ referred to x. (Where the quantifier is inside the scope of the propositional attitude verb.) (From A3)

The compositional principle I will appeal to may be understood as applying to sentences free of quotation and opacity-producing operators.

If S and S’ are nonintensional sentences with the same grammatical structure, which differ only in the substitution of constituents with the same semantic contents (w.r.t. their respective contexts and assignments of values to variables), then the semantic contents of S and S’ will be the same (w.r.t. those contexts and assignments).

This principle is presupposed in standard versions of truth-conditional semantics, and is itself a corollary of assumption A1a.
Since (8d) is tantamount to the claim that the ancients believed and asserted that the terms ‘Hesperus’ and ‘Phosphorus’ were coreferential, it is false. Since (8a) can be regarded as true, at least one of the principles used in going from (a) to (d) must be rejected.

The first thing to note is that these principles do not include A1b, A1s, or any other specific characterization of truth-supporting circumstances. The only use made of truth-supporting circumstances was the appeal to (7a) and (7c) in the move from (b) to (c) in the argument. Since these principles are corollaries of A1a, acceptance of the other assumptions in the argument requires rejection of the claim that the semantic content of a sentence (relative to a context) is the set of circumstances supporting its truth (as used in the context).

The same point can be made using definite descriptions instead of existential quantification. For example consider (9).

\[(9)\]

- a. y believes (asserts) that Hesperus = the x:Fx and Phosphorus = the x:Gx.
- b. y believes (asserts) that Hesperus = the x:Fx and Hesperus = the x:Gx. (From A2, A4, and compositionality in the complement)
- c. y believes (asserts) that Hesperus = the x:Fx and Hesperus = the x:Gx and the x:Fx = the x:Gx. (From A1 and A2)
- d. y believes (asserts) that the x:Fx = the x:Gx. (Where the descriptions are used attributively and are within the scope of the propositional attitude verb.) (From A3)

The move from (b) to (c) is justified if every circumstance supporting the truth of the complement of (b) supports the truth of the complement of (c). One gets this if circumstances are metaphysically possible worlds, since any world in which o is identical with o′ and o″ is a world in which o′ and o″ are identical.

However, there is no need to rest the case on special assumptions about circumstances, or identity. By recasting the example one can make use of the semantics (7e) for definite descriptions to construct an argument that applies to all the theories in section 2. One simply starts with (9a′) instead of (9a).

\[(9a′)\]

- y believes (asserts) that Hesperus = the x:Fx and Phosphorus = the x:Gx and the x:Fx = the x:Fx and Hesperus = the x such that Hesperus = x.

It follows from (7a) that a circumstance E will support the truth of the complement of (9a′) iff it supports the truth of each of its conjuncts. It follows from (7e) that E will support the truth of the final conjunct iff
there is exactly one object o such that Hesperus = o in E. Since Hesperus is Phosphorus, this means that o must be both the unique F-er in E and the unique G-er in E. The third conjunct requires that o = o in E. This guarantees that E will be a member of the semantic content of the complement of (9d). Thus, A2, A3, A4, and a principle of compositionality, allow one to derive (9d) from (9a'), no matter how finely grained one takes truth-supporting circumstances to be.\(^6\) Since (9d) may be false even when (9a') is true, acceptance of A2, A3, A4, and the compositionality principle requires rejection of A1a.

A more startling illustration of this conclusion can be constructed using the examples in (10).

\[(10)\]
\[\begin{array}{l}
\text{a. Mark Twain} = \text{Herman Melville and Samuel Clemens} = \\
\quad \text{Stephen Crane.}
\end{array}\]
\[\begin{array}{l}
\text{b. Mark Twain} = \text{the x such that Mark Twain} = x.
\end{array}\]

(a) is an embarrassment to standard treatments of the attitudes (encompassing A2–A4) in which truth-supporting circumstances are taken to be metaphysically possible worlds. Since its semantic content in such systems is the empty set, everything is a semantic consequence of it. Thus, that which it expresses cannot be believed or asserted.

One of the virtues of systems that relax constraints on truth-supporting circumstances is that they avoid this embarrassment. In such systems the semantic content of (10a) is a nonempty set of circumstances in which three distinct individuals are identified. Although such circumstances are metaphysically impossible, they are regarded as semantically legitimate, and hence are available for the construction of semantic contents. Thus, it is perfectly possible, in a system like that of Barwise and Perry (1983), for a person to believe or assert that which is expressed by (10a).

Belief or assertion of that which is expressed by (10b) is unproblematic on any account. However, now consider their conjunction, (10c).

\[(10c)\] Mark Twain = Herman Melville and Samuel Clemens = Stephen Crane and Mark Twain = the x such that Mark Twain = x.

In order for a circumstance E to be a member of the semantic content of this sentence, E must be a member of the semantic content of each conjunct. In order for E to be a member of the semantic content of the first two conjuncts, it must be the case that in E Mark Twain is identified with two distinct individuals. But now E cannot be a member of the semantic content of the third conjunct, since, by (7e), that conjunct requires that Mark Twain be identified with only one object. The semantic content of

\(^6\) So long as they validate (7a) and (7e). This continues to hold when any two-place relation replaces identity.
(10c) is, therefore, the empty set. Thus, the problems posed by (10a) for theories embracing the original A1–A4 are reproduced by (10c) for theories that substitute finer-grained truth-supporting circumstances for metaphysically possible worlds.\(^7\)

Although this example is particularly graphic, the basic difficulty is extremely general. It is repeated in (11), where (b) is derived from (a) using the semantics, (7d), for indefinite descriptions, and in (12), where a similar derivation uses material implication.\(^8\)

\[
\begin{align*}
(11) & \quad \text{a. } x \text{ believes (asserts) that Mark Twain wrote the greatest American novel and Samuel Clemens was an ignorant illiterate.} \\
& \quad \text{b. } x \text{ believes (asserts) that an ignorant illiterate wrote the greatest American novel. (Where the indefinite description is attributive and inside the scope of the propositional attitude verb.)}
\end{align*}
\]

\[
\begin{align*}
(12) & \quad \text{a. } x \text{ believes (asserts) that Mark Twain is } F \text{ and if Samuel Clemens is } F \text{ then } S. \text{ (Where } F \text{ is any predicate and } S \text{ is any sentence.)} \\
& \quad \text{b. } x \text{ believes (asserts) that } S.
\end{align*}
\]

The difficulty common to all these cases is, I suggest, not due to special assumptions about particular constructions (existential quantification, definite descriptions, indefinite descriptions, conjunction, material implication, etc.). Rather, the general assumptions A1a, A2, A3, and A4 (plus compositionality in the complements of propositional attitude verbs) are

\[7\] One might, of course, try to avoid this result by tampering with the semantics of definite descriptions. For example, one might try substituting the unlovely (7e’) for (7e).

\[
\begin{align*}
(7e’) & \quad \text{The semantic content of } \lceil F[\text{x: Gx}] \rceil \text{ (relative to a context) is the set of circumstances } E \text{ such that there is at least one object } o \text{ in } E \text{ which is both an F-er and a G-er in } E; \text{ and moreover, for any other object } o’, \text{ if } o’ \text{ is a G-er in } E, \text{ then } o = o’ \text{ and } o’ = o \text{ in } E, \text{ and, more generally, } o \text{ and } o’ \text{ have exactly the same properties (and stand in the same relations to the same objects) in } E.
\end{align*}
\]

One drawback of this from the point of view of a system like that of Barwise and Perry (1983) is that it gives up the view that definite descriptions determine partial functions from circumstances to objects that uniquely satisfy the descriptions in those circumstances. Since this feature of definite descriptions is used extensively in Barwise and Perry (1983), it is not clear that Barwise and Perry would be willing to replace (7e) with (7e’). In any case, such a move would do nothing to remove the problem posed by (9a’).

\[8\] The derivation in (12) depends on the assumption that if E supports the truth of P and also supports the truth of \(\lceil P \rightarrow Q \rceil\), then E supports the truth of Q. This will hold if truth-supporting circumstances are logically possible worlds and E supports the truth of a material conditional whenever it supports the truth of the consequent or fails to support the truth of the antecedent. When circumstances are allowed to be partial and inconsistent, the situation is no longer straightforward. For example, the system in Barwise and Perry (1983) provides no treatment of conditionals, and so is not subject to the argument based on (12).
jointly incompatible with facts about propositional attitudes and propositional attitude ascriptions. In short, we have established (13).

(13) If direct reference is legitimate and (some) propositional attitude verbs have a relational semantics (A4 plus A2), then (assuming compositionality and distribution over conjunction) the semantic contents of sentences relative to contexts cannot be sets of truth-supporting circumstances (that validate (7)).

This way of putting the matter is, of course, not neutral, since it suggests that the assumption to be rejected is A1a. This suggestion can be supported by showing that the remaining assumptions are both stronger than needed to refute A1a and more plausible than they might initially appear.

4.

First consider A4. The arguments in section 3 all involve proper names. Thus, one response to them might be to give up the claim that names are directly referential, thereby blocking substitution of coreferential names in propositional attitude ascriptions. It is important to note that this response is insufficient, since, in each case, the problem can be re-created using other terms.

For example, so long as direct reference is retained for demonstratives, A1a, A2, A3, and compositionality will allow one to derive the false (14b) from the potentially true (14a).

(14) a. The ancients believed (asserted) that their such-and-such utterance referred to this (pointing in the morning to Venus) and (speaking very slowly) their so-and-so utterance referred to that (pointing in the evening to Venus).
   b. The ancients believed (asserted) that for some x, their such-and-such utterance referred to x and their so-and-so utterance referred to x.

The same point can be made using variables in place of names and indexicals.

(15) a. There is a planet x which is seen in the morning sky and a planet y which is seen in the evening sky and the ancients believed that x was seen in the morning sky and y was seen in the evening sky.
   \( \exists x: (Px \& Mx) \) \( \exists y: (Py \& Ey) \) (a believed that (Mx \& Ey))
   b. The planet seen in the morning sky is the planet seen in the evening sky.
   the x:(Px\&Mx)=the y:(Py\&Ey)
(15a) is true iff there is an assignment f which assigns a planet seen in the morning sky to ‘x’ and a planet seen in the evening sky to ‘y’ such that the open belief sentence is true with respect to f. From (15b) it follows that the referents of ‘x’ and ‘y’ with respect to f are identical. But now A1–A4 can be applied as before to derive the false (15c–d) from the true (15a–b).

(15)  

c. There is a planet x and a planet y such that the ancients believed the following: that x was seen in the morning sky and y was seen in the evening sky and there was something which was (both) seen in the morning sky and seen in the evening sky. (\(\exists x:Px\) \(\exists y:Py\) (a believed that ((Mx&Ey) \& \(\exists z(Mz&Ez)))).  
d. The ancients believed that there was something which was (both) seen in the morning sky and seen in the evening sky. a believed that \(\exists z(Mz&Ez)\).

Thus, if direct reference is the source of the difficulty, it must be banned entirely—for names, indexicals, and variables. But this is implausible; the arguments for it are too strong, and there are too many cases (where the words of the speaker differ systematically from those of the agent of the attitude) in which it is instrumental in capturing clear semantic intuitions.

There is, however, another way in which one might try to block the problematic arguments. Each of them relies on assumptions—A2, compositionality, and some version of direct reference—that jointly legitimate the substitution of coreferential terms in propositional attitude ascriptions. It might be thought that such substitution is the source of the problem. As against this, it is worth noting that the difficulty can be re-created without appealing to substitutivity, or the assumptions that give rise to it.

Instead of relying on semantic analyses of propositional attitude statements one can invoke principles underlying our practice of reporting propositional attitudes and ascribing them to individuals. Why, for example, do we ascribe to the ancients the belief and assertion that Hesperus

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9 Here, A1–A4 must be understood as relativizing semantic content and associated truth conditions to both contexts and assignments of values to variables.

A1a. The semantic content of a sentence (relative to a context C and assignment f) is the collection of circumstances supporting its truth (as used in C with respect to f).
A2. An individual i satisfies \(\{x: v's\text{ that } S\} \) (relative to C and f) iff i bears R to the semantic content of S (relative to C and f).
A3. For many propositional attitude verbs (including ‘say’, ‘assert’, and ‘believe’) if i satisfies \(\{x: v's\text{ that } P\&Q\} \) (relative to C and f), then i satisfies \(\{x: v's\text{ that } P\} \) and \(\{x: v's\text{ that } Q\} \) (relative to C and f).
was visible in the evening, while being reluctant (at least initially) to ascribe to them the belief and assertion that Phosphorus was visible in the evening? Probably because they assertively uttered sentences whose English translation is ‘Hesperus is visible in the evening’, but refused to assertively utter (and indeed dissented from) sentences whose English translation is ‘Phosphorus is visible in the evening’. These examples suggest (if we focus on indexical-free sentences, and ignore complications involving time and tense) the following principles of propositional attitude ascription.

\[(16)\]

a. If a competent speaker x of a language L sincerely and reflectively assents to (or assertively utters) an indexical-free sentence s of L, and if p is a proper English translation of s, then x satisfies \[\[y \text{ believes that } p\]\]. (Note that this covers the case in which L = English and s = p.)

b. If a sincere, reflective, and competent speaker x of a language L assertively utters an indexical-free sentence s of L, and if p is a proper English translation of s, then x satisfies \[\[y \text{ says (asserts) that } p\]\].

These principles are, of course, modeled after Kripke’s principles of (weak) disquotation and translation. With them we can derive the conclusion that Kripke’s bilingual speaker Pierre believes and asserts both that London is pretty and that London is not pretty. The former follows from his sincere and reflective utterance of ‘Londres est jolie’, plus (16) and an elementary truth of translation. The latter follows from his equally sincere and reflective utterance of ‘London is not pretty’, plus either (16) alone, or (16) in conjunction with homophonic translation.

It seems to me that these ascriptions to Pierre are correct. It is, of course, striking that Pierre’s beliefs and assertions should be contradictory without his having made any mistake in logic or reasoning. However, this just shows that in certain cases one may be in no position to determine the consistency of one’s statements and beliefs.

The point is particularly obvious in the case of what is said or asserted. Imagine Pierre on the telephone talking to a friend in Paris. During the course of the conversation he assertively utters ‘Londres est jolie’. After hanging up the phone he says ‘London is not pretty’ to a visitor who asks his opinion of the city he lives in. What has Pierre said? Clearly, he has said both that London is pretty (to his friend) and that London is not pretty (to the visitor).

Now consider a slight extension of the example. Suppose that there are a number of Frenchmen in London in the same linguistic and epistemic

\[10\] Kripke (1979).
situation as Pierre. When together, they converse with one another in French—standard French plus one addition. Since they are unaware that ‘Londres’ names the city they live in, they use the name ‘London’ for that purpose. One day Pierre assertively utters ‘Londres est jolie et London n’est pas jolie’. I, an English speaker, am asked to report what he said. Since Pierre is competent in his own dialect, I can appeal to (16). Since his dialect is one in which both ‘London’ and ‘Londres’ are properly translated into English as ‘London’, I can report that he said (asserted) that London is pretty and London isn’t pretty. To avoid puzzling my audience, I will, of course, say more than this. However, the initial report is surely correct. In certain cases two words in one language do have the same translation into a second language (e.g., ‘Peking’ and ‘Bejing’ in English); and assertive utterances by normal, competent speakers can be reported in indirect discourse of the second language.11

This fact can be used to reconstruct the arguments of section 3 without appealing to direct reference, compositionality, or substitutivity at all. In the case at hand, we have used (16b) plus a truth of translation to establish (17).

(17) Pierre said (asserted) that London is pretty and London is not pretty.

To derive (18),

(18) Pierre said (asserted) that London is pretty and London is not pretty and for some x, x is pretty and x is not pretty,

we need only appeal to corollaries (7a) and (7c) of A1a, plus the following weakened version of A2.

A2’. An individual i satisfies \[x v’s \text{ that } S^1 \text{ (relative to a context } C)\]
iff i bears a certain relation R* to the pair consisting of the content of S (relative to C) and the character of S (i.e., the function from contexts to contents that represents the meaning of S).12

(19) follows from (18) by A3.

(19) Pierre said (asserted) that for some x, x is pretty and x is not pretty.

11See Kripke (1979, 268 and n. 42) for relevant discussion.

12A2’ is a consequence of A2, but not vice versa. If A2 is true, then R* in A2’ can be taken to be a relation that an individual bears to a content-character pair, <y,z>, iff i bears the relation R of A2 to the content y. However, A2’ might be true even if substitution of complement sentences with the same content sometimes failed to preserve truth-value, in which case A2 would be false.
But (19) is false—Pierre didn’t assert the proposition that something is both pretty and not pretty. Thus, we have another reductio of A1a, this time from a considerably weakened set of premises. Similar reductios can be constructed corresponding to each of the arguments in section 3.13

However, the premises are still stronger than they need to be. Although A3 is useful in deriving obviously false conclusions, it is not strictly necessary. (8c), (8c’), (9c), (9c’), (15c), and (18) are all false, and can be derived without A3.14

(8c’) The ancients believed (asserted) that ‘Hesperus’ referred to Hesperus and ‘Phosphorus’ referred to Phosphorus and for some x, ‘Hesperus’ referred to x and ‘Phosphorus’ referred to x.

(9c’) y believes (asserts) that Hesperus = the x:Fx and Phosphorus = the x:Gx and the x:Fx = the x:Gx.

Even A2, and its weakened counterpart A2’, may give a misleading impression of strength. As presently formulated, they ignore one possible type of semantic information—to wit, information fixing the referent of a name as a matter of linguistic convention. I suspect that arabic numerals are names that carry such information.15 Some might hold that ‘Hesperus’ and ‘Phosphorus’ are too.16 If they are, then the weakened principle, A2*, will block substitution of one for the other in propositional attitude ascriptions.17

A2*. An individual i satisfies [x v’s that S] (relative to a context C) iff i bears a certain relation R** to the triple consisting of the content of S (relative to C), the character of S, and an n-tuple of properties [P1, . . . , Pn], where Pi fixes, as a matter of linguistic convention, the referent of the ith name in S.

However, such a move will not block the reductio of A1a. First, not all proper names have conventionally associated reference-fixing properties. Second, as Kripke has shown, variants of the Pierre case can be constructed in which the names ‘London’ and ‘Londres’ are associated with the same properties (provided they are not “purely qualitative”).18 Finally, substitu-

13 The basis for these reductios is partially prefigured in Kripke (1979, 257–58, 262).
14 In the case of (10), one can use (7e) to derive [x believes that S&P] from [x believes that S], where S is (10c) and P is any sentence at all. See, however, the qualification in note 7.
15 See Richard (1986).
16 See Kripke (1979, n. 43) for relevant discussion.
17 I am indebted to Joseph Almog for suggesting that I reconstruct my argument using this sort of weakening of A2.
18 Kripke (1979, 260–63). If the properties are not required to pick out a unique referent (e.g., if the property of being a famous Roman is the one associated with both ‘Cicero’ and ‘Tully’), then problematic substitution will go through even when the property is “purely qualitative.” See Kripke (1979, n. 9).
tation of one term for another is not always required for refutations of A1a. Suppose, for example, that ‘Hesperus’ and ‘Phosphorus’ share the same object as content and the same constant function from contexts to that object as character, but differ in reference-fixing properties. Although A2* will then block the derivation of (8b) and (8c) from (8a), it will still allow the derivation of (8c'). (The same goes for (15).)

Results like these suggest that the reductio of A1a cannot be blocked by any plausible weakening of the subsidiary premises used in the original argument. It is true that those premises jointly give rise to some surprising, and initially counterintuitive, results involving substitution in propositional attitude ascriptions. However, the reductio can be re-created (in a variety of ways) even when those results are avoided, or minimized.

A final illustration of this point is provided by the following 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 doesn’t realize that he has pointed twice to the same individual, Y, who has overheard the remarks, can correctly say, “McX said both that I am a professor in the department and that I am a graduate student in the department.”

Developing the example further, we can have McX conjoin his remarks:

(20) 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.

There is another respect in which A2 and its weakened counterparts may give a misleading impression of strength. They may suggest that the arguments against A1a rely crucially on assumptions about the semantics of sentences of the form \(\left[ x \text{ v's that } S \right] \). In fact, such sentences are dispensable.

There are two leading ideas behind the various versions of A2. The first is that propositional attitudes like saying, asserting, and believing are relations to things that are said, asserted, and believed. The second is that these things are said, or semantically expressed, by sentences. If these ideas are correct, then the arguments against A1a can be reconstructed—either directly, in terms of what sentences say, or indirectly, using (1) and, if desired, A3’ to derive conclusions about what speakers say.

A3’. If x says (or asserts) that which is said (expressed) by a conjunction in a context C, then x says (or asserts) that which is said (expressed) by each conjunct in C.

Using these principles, one can derive the incorrect conclusion that x has said (or asserted) that which is expressed by \(\left[ R(\text{Hesperus, Phosphorus}) \right] \) or \(\left[ R(\text{Londres, London}) \right] \).
On the basis of McX’s remark, Y says:

(21) McX said that I am a professor in the department and I am a graduate student in the department.

Y’s assertion is unexceptionable. Unlike some other examples we have considered, this one does not require the creation of an unusual situation; it does not involve attributing conflicting statements (or beliefs) to an otherwise rational agent; nor does it raise the suspicion that adherence to otherwise plausible principles forces us to accept a counterintuitive result. Whatever semantic analysis of propositional attitude ascriptions turns out to be correct, Y’s report is one that we want, pretheoretically, to come out true.

This is not the case with (22) (where the quantifier is understood as being inside the scope of the propositional attitude verb).

(22) a. Professor McX said (asserted) this: that there is at least one x such that x is a professor in the department and x is a graduate student in the department and I am a professor in the department and I am a graduate student in the department.

b. Professor McX said (asserted) that there is at least one x such that x is a professor in the department and x is a graduate student in the department.

These reports are clearly not true.20

If this is correct, then the problem for A1a is obvious. Corollaries (7a) and (7c) of that principle characterize the complements of (21) and (22a) as having the same content (with respect to the context). But then there will be no semantic value (content, character, or reference-fixing properties) differentiating them. As a result, virtually any relational semantics of assertion-ascriptions (e.g., A2, A2’, A2*) will assign (21) and (22a) the same truth-value. A3 will then extend this error to (22b). Since these results are unacceptable, while relational treatments of assertion and other attitudes remain plausible, A1a should be rejected.

5.

We have just seen that the impossibility result of section 3 can be reproduced using A1a together with sets of auxiliary premises considerably weaker than the original A2, A3, A4, and compositionality. This

20 The same point could be made using other logical constructions—for example, indefinite descriptions—in place of existential quantification in the complement sentence.
constitutes an important reason for taking that result to be a reductio of the assumption that semantic contents of sentences are sets of truth-supporting circumstances. Another reason is that the supplementary assumptions of the original argument are themselves highly justified.

This can be seen by looking at what many regard as the most questionable consequence of those assumptions, namely (23).

(23) If $i$ satisfies $\left[x \text{ v's that } S^1\right]$ relative to a context $C$ (and assignment $f$), and if $t$ and $t'$ are names, indexicals, or free variables having the same referent relative to $C$ (and $f$), then $i$ satisfies $\left[x \text{ v's that } S^1\right]$ relative to $C$ (and $f$), where $S'$ arises from $S$ by substituting one or more occurrences of $t'$ for occurrences of $t$.21

Many seem to think that counterexamples to this principle are easy to come by. In the case of belief ascriptions, they tend to be examples in which a competent speaker asents to $S$ and $\left[I \text{ believe that } S\right]$, while dissenting from $S'$ and $\left[I \text{ believe that } S'\right]$, even though the latter arise from the former by substitution of names or indexicals with the same referent. Such cases tell against (23) only if assent and dissent are reliable guides to what is, and what is not, believed. However, dissent is not reliable in this way.22

A recent example of Mark Richard’s makes this point quite nicely.

Consider A—a man stipulated to be intelligent, rational, a competent speaker of English, etc.—who both sees a woman, across the street, in a phone booth, and is speaking to a woman through the phone. He does not realize that the woman to whom he is speaking—B, to give her a name—is the woman he sees. He perceives her to be in some danger—a run-away steamroller, say, is bearing down upon her phone booth. A waves at the woman; he says nothing into the phone.

21 And where $S$ is free of quotation and related constructions.
22 The other main type of putative counterexample to (23) involves cases in which a competent speaker asents to (translations of) $\left[n \text{ is } F\right]$ and $\left[m \text{ is not } F\right]$ in a context in which $n$ and $m$ are coreferential names or indexicals. With (16a) plus translation one gets the result that the agent satisfies $\left[x \text{ believes that } n \text{ is } F\right]$ and $\left[x \text{ believes that } m \text{ is not } F\right]$. Substitutivity then results in the ascription of contradictory beliefs, which is sometimes thought to be objectionable in light of the fact that the agent may have made no logical mistakes.

However, Kripke’s example of puzzling Pierre shows that this is not a compelling criticism of (23). As we have seen, ascriptions of contradictory statements and beliefs can be derived from (16) plus translation, without any appeal to substitutivity. Moreover, the inconsistency is genuine. Kripke’s Pierre really does say and believe both that London is pretty and that London is not pretty. But then, if the statements and beliefs of even the best reasoner can be inconsistent without his being in a position to recognize it, the mere fact that the substitutivity principle can sometimes be used to arrive at ascriptions of such inconsistency does nothing to discredit it.
If A stopped and quizzed himself concerning what he believes, he might well sincerely utter

[3] I believe that she is in danger.

but not

[4] I believe that you are in danger.


. . . But [this] view . . . is, I believe, demonstrably false. In order to simplify the statement of the argument which shows that the truth of [4] follows from the truth of [3], allow me to assume that A is the unique man watching B. Then we may argue as follows:

Suppose that [3] is true, relative to A’s context. Then B can truly say that the man watching her—A, of course—believes that she is in danger. Thus, if B were to utter

[5] The man watching me believes that I’m in danger.

(even through the telephone) she’d speak truly. But if B’s utterance of [5] through the telephone, heard by A, would be true, then A would speak truly, were he to utter, through the phone

[6] The man watching you believes that you are in danger.

Thus, [6] is true, taken relative to A’s context.

But, of course,

[7] I am the man watching you.

is true relative to A’s context. [Which is not, of course, to say that A would accept it. My addition.] But [4] is deducible from [6] and [7]. Hence, [4] is true, relative to A’s context.23

In this example, Richard is concerned with substitution of coreferential indexicals. However, the argument seems to generalize. Suppose, for example, that [A believes that Ruth Barcan is F] is true relative to a context. [A believes that I am F] should then be true relative to a corresponding context in which Ruth Barcan (i.e., Ruth Marcus) is the agent (where F is free of first-person pronouns). Suppose, in fact, that Ruth utters the sentence in a conversation with someone who knows her as “Ruth Marcus.” It would seem that this person can truly report [A believes that she (pointing at Ruth) is F], or even [A believes that Ruth Marcus is F]. Thus, substitution of one coreferential name or indexical

for another preserves truth-value. Since there seems to be nothing special about this example, we have a general argument for (23). 24

Why, then, does substitution so often provoke resistance? The answer, I think, has to do, at least in part, with the conversational purposes served by propositional attitude ascriptions. For example, suppose that Mary’s

\[ \text{(i)} \quad x \text{ believes that } S(t, t) \]
\[ \text{(ii)} \quad x \text{ believes that } S(t, t') \]

Both this conclusion and the semantic system that leads him to it are, in my opinion, incorrect. Nevertheless, there is an important truth underlying Richard's observations. This truth (first suggested to me by Nathan Salmon) is brought out by (iii).

\[ \text{(iii) a. } x \text{ believes that } t \text{ is not identical with } t'. \]
\[ \text{ b. } x \text{ believes that } t \text{ is not identical with } t. \]
\[ \text{ c. } x \text{ believes that } t \text{ is not identical with itself.} \]
\[ \text{ d. } x \text{ believes that } t \text{ is non-self-identical.} \]

It seems evident that (a) can be true when (d) is not. The reason for this is that believing the latter involves attributing the property of non-self-identity to an object, whereas believing the former does not. In light of this, one must block either the move from (a) to (b), or the move from (b) to (c) and (d).

Richard selects the first of these. According to him,

\[ \text{(iv) } x \text{ believes that } S \]

is true only if the agent believes the proposition (semantic content) expressed by S (relative to the context and assignment). Moreover, the complements of (a) and (b) express the same proposition. Nevertheless, Richard holds that (a) can be true when (b) is false. The reason for this is that on his semantics a belief ascription of the form (iv) not only reports what proposition is believed, but also places constraints on the sentence acceptance of which is responsible for the agent’s belief. In the case of (b), the agent must hold the belief in virtue of accepting a sentence containing occurrences of directly referential terms with the same character. (If the account were extended to names it would be more natural to require two occurrences of the same term.) In the case of (a), this is allowed, but not required.

One problem with this account is that it is too restricted. Whatever may be the case regarding ascriptions of the form (iv), some belief ascriptions express straightforward relations to propositions.

\[ \text{(v) a. } x \text{ believes the proposition expressed at the bottom of page 437.} \]
\[ \text{ b. The proposition expressed at the bottom of page 437 is the proposition that } P. \]
\[ \text{ c. Therefore, } x \text{ believes the proposition that } P. \]

Given the admission that [t is not identical with t'] and [t is not identical with t] express the same proposition, one can use examples of the form (v) to reinstate the very problems that the nonrelational semantics of (iv) was designed to avoid.

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24 Richard himself doesn’t go this far. For one thing, his semantics for belief ascriptions is silent about sentences containing proper names. More important, however, is a weakening of (23) involving complement sentences containing two or more occurrences of indexicals and/or free variables. Let t and t’ be two such terms which have the same content relative to a context C and assignment f. According to Richard, if (i) is true relative to C, f, and a circumstance E, then (ii) must be true relative to C,f, and E, but not vice versa.
neighbor, Samuel Clemens, is in the habit of soliciting her opinion of his manuscripts before sending them off to the publisher. Mary thinks they are wonderful, and regards Mr. Clemens (whom she knows only under that name) as a great writer. The question is, does she think that Mark Twain is a great writer?

First consider a conversation the purpose of which is to determine Mary’s opinion of various authors. The conversational participants, who use the name ‘Mark Twain’ to refer to the author, want to know Mary’s opinion of him. I, knowing Mary’s situation, report “Mary thinks that Mark Twain is a great writer.” My remark seems perfectly acceptable.

However, now consider a different conversation. Mary, who is a student, has just taken a written examination; and her teacher is explaining why she failed to get a perfect score. The teacher says, “Mary did a good job, but she didn’t know that Mark Twain is a writer.” In the context of this conversation, the teacher’s remark also seems acceptable.

But how can it be? Surely it is not the case that Mary thinks that Mark Twain is a great writer, while not knowing that Mark Twain is a writer at all. To straighten this out, we need to distinguish between the proposition semantically expressed by a sentence relative to a context, and the information conveyed by an utterance of the sentence in a conversation. In the second conversation, the proposition semantically expressed by the propositional attitude ascription is false, even though the primary information conveyed by the utterance is true—namely, that Mary didn’t know that ‘Mark Twain is a writer’ is true; and hence was not able to answer exam questions of the sort, “What is Mark Twain’s profession?” The teacher’s utterance seems acceptable because the main information it conveys is correct.

This example brings out an important point about the relationship between propositional and sentential attitudes. Attitudes like asserting and

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It seems to me that a better approach is to take all belief ascriptions (with the possible exception of belief de se) to express relations to propositions (semantic contents), but to distinguish the proposition expressed by the complements of (iiiia) and (iiib) from the proposition expressed by the complements of (iiic) and (iid). In this way, one can block the move from (b) to (c), while preserving (23). An account of this kind is presented in section 6 below.

I am grateful to Mark Richard and Nathan Salmon for discussions of the issues in this note.

25 It might be thought that a theory that took names to be disguised descriptions (associated with them by the speaker) could render the remarks in the two conversations true by appealing to a difference in scope. But this won’t work. If the description associated by the teacher with the name ‘Mark Twain’ is something like ‘the author of The Adventures of Tom Sawyer and Huckleberry Finn’, then the teacher’s remark will be false no matter what the scope of the description.
believing are relations between individuals and propositions. However, often these attitudes arise in connection with attitudes toward sentences—e.g., uttering and accepting. Although propositional attitude ascriptions report relations to particular propositions, they often suggest corresponding relations to certain sentences. For example, a competent speaker of English typically (though not always) knows that ‘Mark Twain is a writer’ is true iff he knows that Mark Twain is a writer. Thus, it is natural that the teacher’s remark should carry the metalinguistic suggestion.

It is also natural that in many cases these suggestions should be important to the conversation. As John Perry has emphasized, sentential attitudes are often more significant for explaining action than propositional attitudes are. Think again of Richard’s telephone example. Suppose that a third party asks the question “Why doesn’t A tell B that she is in danger?” (We assume that A knows his conversational partner under the name ‘B’ and accepts ‘You are B’ in the context.) It is tempting to try to explain A’s behavior by saying, “A doesn’t know that B is in danger.” But this, as we have seen, is false. A better explanation is that A doesn’t accept the sentence ‘B is in danger’. The reason we are tempted by the propositional attitude ascription is that normally we would expect A to accept the sentence iff he thought that B was in danger. However, in this case the usual correlation between sentential and propositional attitudes breaks down. As a result, the explanation suggested by the propositional attitude ascription is correct, even though the ascription itself is false.

The general thesis, then, is that the substitutivity principle (23) is correct; and that resistance to it is based on a failure to properly distinguish the semantic information expressed by a sentence relative to a context from the information conveyed by an utterance of it in a given conversation. If this is correct, then the main objection to assumptions A2, A4, and compositionality is eliminated, and the case against A1a is strengthened.

6.

What becomes of the difficulties in section 3 once this assumption is given up? Taking the argument in (8) as a representative example, we see that the move from (8b) to (8c), and ultimately to (8d), is no longer warranted.

27 This thesis has recently been championed by several philosophers, most notably Nathan Salmon (1986). Although I developed the arguments given above independently, I have profited from Salmon’s work on the topic.
In order to defend this as the proper response to the difficulty, I must explain how one might believe (or assert) an instance of an existential generalization, without believing (or asserting) the generalization itself. Let us focus in particular on the notion of belief. Then, what must be explained is how an individual might satisfy an open sentence \[ x \text{ believes that } R(t,t), \] for directly referential \( t \), without satisfying \[ x \text{ believes that } R(t,t) \text{ and for some } y, R(y,y), \] or \[ x \text{ believes that for some } y, R(y,y). \]

It should be noted that the answer is not that the agent may never have gotten around to drawing the relevant conclusion. For the problematic derivation in (8) would proceed from true premises to a false conclusion even if the agents were perfect logicians. Thus, there must be some deeper explanation of how a person might fail to believe the existential generalization of something he already believes.

There are two different aspects of such an explanation. The first is a metaphysical characterization of the nature of belief, specifying the facts in virtue of which belief ascriptions are true. The second is a specification of the objects of belief needed in a semantic theory. I will say a word about each.

Regarding the former, we may think of beliefs as arising from certain kinds of mental states, together with their causal relations to objects in the environment.\(^2\) On this picture, a belief report, \[ x \text{ believes that } S, \] characterizes the agent as being in a mental state whose information content is identical with the semantic content of \( S \) in the context of the report. For example, an agent who is in a mental state appropriate for believing that a particular object is \( F \) will be correctly reported to believe that Phosphorus is \( F \) just in case the relevant part of his belief state is causally anchored to Phosphorus. Since Phosphorus is Hesperus, the agent will thereby believe that Hesperus is \( F \).

If we restrict our attention to cases in which the agent is a competent speaker of a language, we can make this account less abstract by letting dispositions to assent to sentences play the role of mental states. We then assume something like (24).

\[ \text{(24) If } i \text{ is a sincere, reflective, and competent speaker, then } i \text{ satisfies } x \text{ believes that } S \text{ relative to a context } C \text{ (and assignment } f) \iff i \text{ is disposed to assent to some sentence } S' \text{ whose semantic} \]

\(^2\)See Barwise and Perry (1983) for an articulation of this view.
content in the context of assent = the semantic content of \( S \) relative to \( C \) (and \( f \)).²⁹

Let us suppose that the agent accepts \( [R (\text{Hesperus, Phosphorus})] \) while rejecting \( [R(\text{Hesperus, Hesperus})] \) and \( [\text{For some } x \ R(x,x)] \). An impeccable logician, the agent would accept the latter if he accepted any of its instances, \( [R(a,a)] \). However, he rejects all of these. Since the semantic content of one of the sentences he accepts is identical with the semantic content of \( [R(\text{Hesperus, Hesperus})] \), he believes that Hesperus bears \( R \) to Hesperus even though he would not express his belief this way. Since the semantic content of \( [\text{For some } x \ R(x,x)] \) is not identical with the content of any sentence he is disposed to accept, he does not

²⁹ Although this principle is a useful heuristic, it should not be regarded as an analysis of belief. Its most obvious limitation is that it does not apply to believers who are not language users. Even when applied to language users it must be restricted to cases in which the agent, \( i \), the sentence \( S' \), and its semantic content (in the context of assent) stand in a certain (as yet not fully analyzed) recognition relation. I have in mind examples like ‘Newminister 1’ in which a proper name is introduced by a reference-fixing description ‘the first Tory Prime Minister of Britain elected in the 21st century’. (The example parallels the ‘Newman 1’ example discussed in Donnellan (1979).) In such a case, the sentence ‘Newminister 1 will be conservative’ may express a singular proposition involving a certain individual. However, assent to the sentence by a competent speaker is not sufficient for belief in that proposition. Intuitively, the manner in which the sentence presents the proposition to the agent is too indirect for assent to indicate belief.

It should be noted that the cases discussed in the text (‘Hesperus’/‘Phosphorus’, ‘London’/‘Londres’, etc.) are not like this. In these cases, the agents are acquainted with the referents, they associate names with them, and they grasp the propositions expressed by sentences containing the names. What they do not do is recognize that the same referents are associated with different names, and that the same propositions are expressed by different sentences. But that is not required in order for assent to the sentences to indicate belief in the propositions they express.

Similar points can be made about assertion (except that here the principles involving assent come closer to providing an actual analysis).

(i) An individual \( i \) satisfies \( [x \ says (asserts) that S] \) relative to a context \( C \) (assignment \( f \)) and circumstance \( E \) if there is a sentence \( S' \) and context \( C' \) corresponding to \( E \) with \( i \) as agent, such that \( i \) assertively utters \( S' \) in \( C' \), and the content of \( S' \) in \( C' = \) the content of \( S \) in \( C \) (relative to \( f \)).

(ii) An individual \( i \) satisfies \( [x \ says (asserts) that S] \) relative to a context \( C \) (assignment \( f \)) and circumstance \( E \) iff there are sentences \( S' \) and \( S'' \), and a context \( C' \) corresponding to \( E \) with \( i \) as agent, such that \( i \) assertively utters \( S' \) in \( C' \), \( S'' \) is readily inferable from \( S' \), and the content of \( S'' \) in \( C' = \) the content of \( S \) in \( C \) (relative to \( f \)).

If one takes (ii) to be a reasonable approximation of the notion of assertion, one can use it in place of (24) to construct arguments and explanations involving assertions corresponding to those in the text involving beliefs. (Note that (ii) allows contents not expressed by the sentence uttered to be asserted when, but only when, the conversational participants “can’t miss them.”)
believe that something bears R to itself. Thus, there is a principled way of blocking the move from (8b) to (8d).

What we need now is a conception of semantic content capable of incorporating this point. Given that the move from (8c) to (8d) is unproblematic, we need a conception that blocks the move from (8b) to (8c) by assigning different semantic contents to the complement sentences in these examples. This requires the introduction of structure into contents.

First consider simple sentences.

\[(25)\]
\[
a. \ R(\text{Hesperus, Phosphorus}) \\
b. \ R(\text{Hesperus, Hesperus}) \\
c. \ R(\text{Hesperus, itself})
\]

Regimenting a bit, we can think of the semantic contents of these examples as being identical with that of certain canonical representations.

\[(26)\]
\[
a. \ R(h,p) \\
b. \ R(h,h) \\
c. \ [\lambda x \ R(x,x)] h
\]

Where o is the referent of ‘Hesperus’ and ‘Phosphorus’ the content of (a) and (b) is, in effect, \(<<o,o>>\), the two-place property R; the content of (c) is \(<<o>>\), the one-place property of bearing R to oneself.\(^{30}\)

Accepting (a) leads to a belief whose object is the first of these semantic contents; accepting (c) leads to a belief whose object is the second such content. Accepting (b) typically leads to a belief in both. The reason for this has to do with the transparent linguistic relationship between (b) and (c). A competent speaker who accepts one will normally be disposed to accept the other, thereby acquiring both beliefs.\(^{31}\)

Thus, a speaker who satisfies (27a) will standardly satisfy both (27b) and (27c).

\[(27)\]
\[
a. \ x \text{ accepts ‘R(Hesperus, Hesperus)’} \\
b. \ x \text{ believes that } R(\text{Hesperus, Hesperus}). \\
c. \ x \text{ believes that } R(\text{Hesperus, itself}).
\]

However, not everyone who satisfies (27b) satisfies (27c). Whether or not the latter is satisfied will depend on the manner in which the agent believes that Hesperus bears R to Hesperus. If he believes it in virtue of accepting a sentence of the form ‘R(a,a)’ then he can be expected to believe

---

\(^{30}\)The idea for this lambda-treatment of (25c) was suggested to me by Nathan Salmon.

\(^{31}\)Except in situations like Kripke’s Paderewski example, in which the agent misconstrues two tokens of the same name (referring to the same individual) for tokens of different (but phonologically identical) names of different individuals (Kripke 1979, 265–66). In such cases an agent might accept (b) without accepting (c), or believing what it expresses.
that Hesperus bears R to itself. However, if he believes it in virtue of ac-
cepting a sentence of the form ‘R(a,b)’, then (27c) may not be satisfied.
The same point holds for (27d).

(27d) x believes that for some y, R(y,y).

A sincere, reflective, competent speaker who accepts \[ R(a,a) \] will typi-
cally be disposed to accept \[ \text{For some y } R(y,y) \], and thereby believe that
which it expresses. However, someone who accepts \[ R(\text{Hesperus, Phos-
phorus}) \] may satisfy (27b) without satisfying (27d).

In order to reflect this in a semantic theory we must extend our account
of structured semantic contents from atomic sentences to compound sen-
tences of arbitrary complexity. This raises the question of how much
structure is needed. Where S is an atomic sentence consisting of an n-place
predicate plus n occurrences of directly referential terms, its structured se-
matic content consists of the content of the predicate plus the content of
each term occurrence. There are two ways of thinking of this—as a com-
plex made up of the semantic contents of all occurrences of its semanti-
cally significant parts, or as a complex made up of the contents of all oc-
currences of its directly referential terms, plus the content of whatever else
is left over. In the case of atomic sentences, these characterizations come
to the same thing. However, they generalize in different ways. The first
leads to a conception of the semantic contents of sentences as structured
Russellian propositions, the second to a conception of contents as par-
tially structured intensions.

For simplicity let us consider the semantic contents of sentences in a
first order language with lambda abstraction, a belief predicate, and a
stock of semantically simple singular terms, all of which are directly ref-
erential. On the Russellian account, the semantic content of a (free) vari-
able v relative to an assignment f of individuals to variables is f(v), and
the semantic content of a closed (directly referential) term, relative to a
context, is its referent relative to the context. The semantic contents of
n-place predicates are n-place properties and relations. The contents of
‘&’ and ‘-’ are functions, CONJ and NEG, from truth-values to truth-
values.\(^{32}\)

Variable-binding operations, like lambda abstraction and existential
quantification, can be treated in a number of ways. One of the simplest,
semantically, involves the use of propositional functions in place of complex properties as propositional constituents corresponding to certain compound expressions. On this approach, the semantic content of \( [\lambda x \text{Rx}, x] \) is the function \( g \) from individuals \( o \) to propositions that attribute the property expressed by \( R \) to the pair \( <o, o> \). \([\exists x \text{Rx}, x]\) can then be thought of as “saying” that \( g \) assigns a true proposition to at least one object.

(28) uses these ideas to assign Russellian propositions to sentences.

(28) a. The proposition expressed by an atomic formula \([\text{Pt}_1, \ldots, \text{t}_n] \) relative to a context \( C \) and assignment \( f \) is \(<<o_1, \ldots, o_n>, P*>\>, where \( P*> \) is the property expressed by \( P \), and \( o_i \) is the content of \( t_i \) relative to \( C \) and \( f \).

b. The proposition expressed by a formula \([\lambda v S] t \) relative to \( C \) and \( f \) is \(<<o>, G>\>, where \( o \) is the content of \( t \) relative to \( C \) and \( f \), and \( g \) is the function from individuals \( o' \) to propositions expressed by \( S \) relative to \( C \) and an assignment \( f' \) that differs from \( f \) at most in assigning \( o' \) as the value of \( v \).

c. The propositions expressed by \([\neg S] \) and \([S \& R] \) relative to \( C \) and \( f \) are \(<\text{Neg}, \text{Prop} \ S> \) and \(<\text{Conj}, <\text{Prop} \ S, \text{Prop} \ R>> \) respectively, where \( \text{Prop} \ S \) and \( \text{Prop} \ R \) are the propositions expressed by \( S \) and \( R \) relative to \( C \) and \( f \), and \( \text{Neg} \) and \( \text{Conj} \) are the truth functions for negation and conjunction.

d. The proposition expressed by \([\exists v \ S] \) relative to \( C \) and \( f \) is \(<\text{SOME}, g>\), where \( \text{SOME} \) is the property of being a non-empty set, and \( g \) is as in (b).

e. The proposition expressed by \([t \text{ believes that } S] \) relative to \( C \) and \( f \) is \(<<o, \text{Prop} \ S>, B>\), where \( B \) is the belief relation, \( o \) is the content of \( t \) relative to \( C \) and \( f \), and \( \text{Prop} \ S \) is the proposition expressed by \( S \) relative to \( C \) and \( f \).

f. The proposition expressed by a sentence (with no free variables) relative to a context \( C \) is the proposition it expresses relative to \( C \) and every assignment \( f \).

In stating clause (d), I have departed slightly from Russellian ideas in favor of a suggestion by Nathan Salmon. A purely Russellian approach would treat \( \text{SOME} \) as the property of being a propositional function that is “sometimes true.” However, since the existential quantifier is an extensional operator, it seems more natural that it should express a property of the extension of its operand (rather than a property of the propositional constituent expressed by the operand, as in the case of ‘believe’). On this

33 I am indebted to David Kaplan for this Russellian suggestion.
formulation, \(<\text{SOME}, g>\) is true relative to a circumstance \(E\) iff the set of objects in \(E\) that \(g\) maps onto propositions true in \(E\) is nonempty.

This discussion of truth conditions brings up an important point. Propositional contents do not replace truth-supporting circumstances in a semantic theory; rather, they supplement them with a new kind of semantic value. On this view, the meaning of an expression is a function from contexts to propositional constituents. The meaning of a sentence is a compositional function from contexts to structured propositions. Intensions (and extensions) of expressions relative to contexts (and circumstances) derive from intensions (and extensions) of propositions and propositional constituents. These, in turn, can be gotten from a recursive characterization of truth with respect to a circumstance, for propositions.

For this purpose, we let the intension of an \(n\)-place property be a function from circumstances to sets of \(n\)-tuples of individuals (that instantiate the property in the circumstance); we let the intension of an individual be a constant function from circumstances to that individual; and we let the intension of a one-place propositional function \(g\) be a function from circumstances \(E\) to sets of individuals in \(E\) that \(g\) assigns propositions true in \(E\). Extension is related to intension in the normal way, with the extension of a proposition relative to a circumstance being its truth-value in the circumstance, and its intension being the set of circumstances in which it is true (or, equivalently, the characteristic function of that set). Truth relative to a circumstance is defined as follows:

\[
(29) \quad \begin{align*}
\text{a.} & \quad \text{A proposition } \langle \langle o_1, \ldots, o_n \rangle, P^\ast \rangle \text{ is true relative to a circumstance } E \text{ iff the extension of } P^\ast \text{ in } E \text{ contains } \langle o_1, \ldots, o_n \rangle. \\
\text{b.} & \quad \text{A proposition } \langle \langle o \rangle, g \rangle \text{ is true relative to } E \text{ (where } g \text{ is a one-place propositional function) iff } o \text{ is a member of the extension of } g \text{ in } E \text{ (i.e., iff } g(o) \text{ is true in } E). \\
\text{c.} & \quad \text{A proposition } \langle \text{Neg}, \text{Prop S} \rangle \text{ is true relative to } E \text{ iff the value of } \text{Neg at the extension of } \text{Prop S in } E \text{ is truth (i.e., iff } \text{Prop S is not true in } E). \text{ A proposition } \langle \text{Conj}, \langle \text{Prop S, Prop R} \rangle \rangle \text{ is true relative to } E \text{ iff the value of } \text{Conj at the pair consisting of the extension of } \text{Prop S in } E \text{ and the extension of } \text{Prop R in } E \text{ is truth (i.e., iff } \text{Prop S and Prop R are true in } E). \\
\text{d.} & \quad \text{A proposition } \langle \text{SOME}, g \rangle \text{ is true relative to } E \text{ (where } g \text{ is as in (b)) iff the extension of } g \text{ in } E \text{ is nonempty (i.e., iff } g(o) \text{ is true relative to } E \text{ for some } o \text{ in } E). \\
\text{e.} & \quad \text{A proposition } \langle \langle o, \text{Prop S}, B \rangle \rangle \text{ is true relative to } E \text{ iff } \langle o, \text{Prop S} \rangle \text{ is a member of the extension of } B \text{ in } E \text{ (i.e., iff } o \text{ believes Prop S in } E). 
\end{align*}
\]
According to this theory, the propositions expressed by the comple-
ments of (8b) and (8c) are (8b*) and (8c*).

(8) b*. <CONJ, <<‘Hesperus’, Hesperus>, the reference relation>,
<<‘Phosphorus’, Hesperus>, the reference relation>>
c*. <CONJ, <(8b*), <SOME, g>>> (Where g is the function
which assigns to any object o the proposition about o corre-
responding to the proposition 8b* about Hesperus.)

Although the circumstances supporting the truth of these propositions are
the same, the propositions themselves are different. Thus, we no longer
have the result that anyone who believes the proposition expressed by the
complement of (8b) thereby believes the proposition expressed by the com-
plement of (8c). The argument in (8) is, therefore, blocked and the prob-
lematic conclusion avoided. Similar results hold for the other arguments in
section 3.

However, this is not the only way these results can be achieved. One of
the striking features of Russellian propositions is that they encode a good
deal of the syntactic structure of the sentences that express them. Sen-
tences that are negations, conjunctions, or quantifications express propo-
sitions which are themselves negative, conjunctive, or quantificational in
structure.34 Although this systematic assignment of structure to semantic
contents is appealing, it goes beyond what is required by the interaction
of propositional attitudes and directly referential singular terms exhib-
ited in section 3.

In each of the problematic arguments, the agent accepts, or assertively
utters, a sentence of the form (30a), but fails to accept, or assertively utter,
a corresponding sentence of the form (30b) (which is true in the same cir-
cumstances as (30a)).

(30) a. S(t, t′)
b. S(t, t′) & R

In each case, the agent would accept, or assertively utter, (30b) if he
knew that the directly referential terms t and t′ had the same content
(and he continued to accept (30a)). However, he doesn’t know that they
have the same content. In order to focus on the special difficulties created
by this sort of ignorance let us suppose, for the sake of argument, that
the agent is otherwise semantically omniscient. Thus, he knows, for any
two expressions not containing directly referential terms, whether or not
they have the same intension.

34 It is, of course, possible for sentences of one form to express propositions of another
form, as happens in some cases of stipulative definition.
In particular, he knows this about (31a) and (31b).

(31) a. \(\lambda v, v' [S(v, v')]\)

b. \(\lambda v, v' [S(v, v') \& R]\)

If he thought that these expressions had the same intension, then his attitude toward (30a) and (30b) would be the same—he would either accept them both or reject them both. Since, in fact, he accepts one and rejects the other, it follows that (31a) and (31b) have different intensions.

This means that whenever an argument of the sort presented in section 3 can be constructed, its problematic conclusion can be blocked by taking the semantic content of a sentence to be a complex consisting of intensions of all occurrences of its directly referential singular terms, plus an intension determined by the remainder of the sentence. The idea can be carried out using a standard style definition of truth with respect to a context and circumstance. Such a definition allows one to associate both a standard intension and a partially structured intension with every object language sentence. Standard intensions of sentences can be taken to be sets of truth-supporting circumstances. Partially structured intensions are complexes made up in part of the intensions of directly referential terms. If a sentence contains no such terms, then its partially structured intension is identified with its standard intension.

We can make this more precise as follows: Let us call an occurrence of a singular term in a sentence \(S\) a **structurally sensitive occurrence** iff it is a free occurrence of a variable in \(S\) or it is an occurrence of a (constant) directly referential term.\(^35\) Let \([\lambda v_1, \ldots, v_n S']\) arise from \(S\) by prefixing \([\lambda v_1, \ldots, v_n S']\) and replacing each structure-sensitive occurrence of a singular term in \(S\) with a variable new to \(S\), distinct variables for distinct occurrences, \(v_i\) replacing the \(i\)th such occurrence. The extension of \([\lambda v_1, \ldots, v_n S']\) relative to an assignment \(f\), context \(C\), and circumstance \(E\), is taken to be the function from \(n\)-tuples \(o_1, \ldots, o_n\) to truth-values of \(S'\) relative to \(f', C,\) and \(E\), where \(f'\) is just like \(f\) except (at most) for assigning \(o_i\), as the value of \(v_i\), for each \(i\). Standard intension is determined from extensions in the normal way. For any (open or closed) sentence \(S\), the **partially structured intension** of \(S\) relative to an assignment \(f\) and context \(C\), is \(<<[t_1], \ldots, [t_n]>, [\lambda v_1, \ldots, v_n S']>\), where \([t_i]\) is the intension of the \(i\)th structure-sensitive occurrence of a singular term in \(S\), relative to \(f\) and \(C\), and \([\lambda v_1, \ldots, v_n S']\) is the intension of \([\lambda v_1, \ldots, v_n S']\), relative to \(f\) and \(C\). (Closed sentences have the same partially structured intensions—relative to a context—relative to all assignments.) An individual \(i\) satisfies

\(^{35}\)I retain here the simplifying assumption that all directly referential terms in the object language are semantically simple.
an open sentence \( \{ x \text{ believes that } S \} \), relative to \( f \), \( C \), and \( E \), iff in \( E \), \( i \) bears the belief relation to the partially structured intension expressed by \( S \) relative to \( f \) and \( C \).\(^{36}\)

Conceptually, this approach lies somewhere between the Russellian theory and the familiar truth-supporting circumstance conception. Like the Russellian theory, it takes propositions to be structured complexes which are both the semantic contents of sentences and the objects of propositional attitudes.\(^{37}\) However, unlike the Russellian theory, the constituents of these “propositions” are intensions extractable from a conventional truth definition. Moreover, the resulting “propositions” are only partially structured.

For example, the partially structured contents of the complements of (8b) and (8c) are:

\[
\begin{align*}
(8) & \quad b#. \quad \langle{\text{’Hesperus’}, \text{Hesperus}, ‘Phosphorus’, \text{Hesperus}}, R’\rangle \\
& \quad \text{(Where } R’ \text{ is the intension corresponding to the four-place relation of } x’\text{’s referring to } y \text{ and } z’\text{’s referring to } v.)^{38} \\
& \quad c#. \quad \langle{\text{’Hesperus’}, \text{Hesperus}, ‘Phosphorus’, \text{Hesperus}}, R”\rangle \\
& \quad \text{(Where } R” \text{ is the intension corresponding to the four-place relation of } x’\text{’s referring to } y \text{ and } z’\text{’s referring to } v \text{ and there being a common referent of } x \text{ and } z.)
\end{align*}
\]

Since \( R’ \) is not identical with \( R” \), these contents are different. The move from (8b) to (8c) is, therefore, blocked and the problematic conclusion, (8d), is avoided. Corresponding results hold for other arguments of this type, including those in section 3.

This approach represents a theoretically minimum response to the difficulties in section 3. As such it allows us to establish a minimum positive result about the relationship between direct reference and propositional attitudes, corresponding to the impossibility result, (13).

(32) If direct reference is legitimate and (some) propositional attitude verbs have a relational semantics (A4 plus A2), then (assuming compositionality and distribution over conjunction) the semantic content of a sentence, relative to a context and

\(^{36}\) This account has two precursors. The first is the introduction of structured meanings (characters) in Richard (1983). The second is a somewhat different use of structured intension suggested by David Kaplan (personal correspondence) in response to Richard. The account in the text is designed as an improvement on those treatments intended to capture certain insights that motivated them.

\(^{37}\) One could have versions of these theories in which semantic contents were not objects of the attitudes, but only by foregoing the strong motivation the attitudes provide for these theories.

\(^{38}\) Strictly speaking, the intensions of directly referential terms in (8b) and (8c) should be constant functions from circumstances to objects, rather than objects themselves. However this does not affect the issues at hand.
 assignment of values to variables, must encode at least as much structure as is determined by occurrences of its directly referential singular terms (including free variables).³⁹

Both structured Russellian propositions and partially structured intensions satisfy this requirement.

7.

How then might we decide between these two conceptions of semantic content? Considerations involving the interaction of propositional attitudes and directly referential singular terms will, I believe, take us no further. However, other considerations will.

The first of these involves related expressions which allow the construction of arguments corresponding to those in section 3. For example, if K and K’ are natural kind terms with the same semantic content, the potentially false (12b′) can be derived from the potentially true (12a′) by an argument paralleling the original (12).

\[ (12) \quad a'. x \text{ believes (asserts) that the } G \text{ is a } K \text{ and if the } G \text{ is a } K', \text{ then } S. \text{ (where } S \text{ is any sentence and } [\text{the } G] \text{ is any description)} \]

\[ b'. x \text{ believes (asserts) that } S. \]

Both this argument and the original (12) are blocked by requiring the semantic content of a sentence to encode at least as much structure as is determined by occurrences of its directly referential singular terms, plus its natural kind terms.

This conclusion can be extended to include every kind of expression that is relevantly similar to directly referential singular terms and natural kind terms. The relevant feature, I suggest, is one that involves linguistic competence—in the sense that linguistic competence is important for determining what is said or believed by a speaker from what is assertively uttered or accepted by the speaker. If it is possible for a competent speaker to fail to recognize cases in which expressions of type T have the same semantic content, then it will be possible to use these expressions to construct arguments of the kind given in section 3. Blocking these arguments requires ensuring that the structure encoded in semantic contents includes that determined by occurrences of expressions of type T.

³⁹The significance of this result is enhanced by the defense, in section 5, of the consequence (23) of A2, A4, and compositionality. However, it should be noted that analogous results involving the encoding of structure in objects of the attitudes can be established using the weakenings in section 4.
This line of reasoning leads to the encoding of more and more structure into semantic contents. However, it might be thought that at least some expressions—including logical constructions plus certain predicates—remain immune from such considerations.40 If $S$ is a sentence containing only such expressions, then its semantic content, on the partially structured intension approach, will just be a standard intension. If $S$ contains only such expressions plus directly referential singular terms, then its semantic content, on this approach, will be a partially structured intension in the original sense. But this is still problematic.

The difficulties posed by propositional attitude ascriptions for truth-conditional approaches to semantics are not limited to cases arising from directly referential singular terms and their ilk. For example, if truth-supporting circumstances are metaphysically possible worlds, then the partially structured intension approach will assign the same semantic contents to the (a) and (b) sentences in the following examples:

\[
\begin{align*}
(33) & \ a. \ \text{First order logic is complete.} \\
& \ b. \ \text{First order logic is undecidable.}
\end{align*}
\]
\[
\begin{align*}
(34) & \ a. \ \text{First order logic is decidable.} \\
& \ b. \ \text{First order logic is decidable and } S. \ (\text{For unrelated } S)
\end{align*}
\]

However, in both cases, many have believed or asserted that which is expressed by (a) without believing or asserting that which is expressed by (b).

Switching to a conception in which truth-supporting circumstances are logically possible worlds only shifts attention to a more restricted, but similarly problematic, class of cases. Like Frege of the *Grundgesetze*, many of us have had the misfortune of satisfying $\llbracket x \text{ asserts (believes) that } I \rrbracket$, for a some logically impossible $I$, without thereby satisfying $\llbracket x \text{ asserts (believes) that } I \& S \rrbracket$, or $\llbracket x \text{ asserts (believes) that } S \rrbracket$, for unrelated $S$.

The problem is, I believe, inherent, in the truth-conditional approach, and, hence, cannot be solved by weakening constraints on truth-supporting circumstances still further. For example, consider a system like that of Barwise and Perry (1983), in which truth-supporting circumstances may be metaphysically impossible, incomplete, and inconsistent in the sense defined in section 2. In such a system, logically equivalent sentences are often assigned different semantic contents, which may be the objects of different propositional attitudes. As with all such approaches, however, the system incorporates principles like (7a–e), which can be gotten from standard, recursive treatments of logical constructions. Inevitably, sentences involving multiple constructions of this kind require psychologically nontrivial computations to determine their “semantic contents.” Thus, one can always

40 I leave it open whether there are such expressions.
find psychologically nonequivalent sentences which are true in the same circumstances, and, hence, are assigned the same content.

One simple example of this kind, is given in (35).

\[(35)\]
\[
\begin{align*}
& a. C\{\text{x: Ax}\} \& D\{\text{x: Cx}\} \& C\{\text{x: Bx}\} \\
& b. A\{\text{x: Bx} \vee \text{Cx}\} \& B\{\text{x: Dx} \& \text{Cx}\} \& D\{\text{x: Ax} \vee \text{Cx}\} \\
& c. B\{\text{x: Ax}\} \& C\{\text{x: Bx}\} \& D\{\text{x: Cx}\}
\end{align*}
\]

Although these sentences are assigned the same semantic content by corollaries (7a, b, e) of Ala, it takes a modest amount of calculation to determine this. Not all agents of propositional attitudes are adept at such calculations. Thus, it is possible to find agents who are willing to accept, or assertively utter, one of these sentences at a certain time, but not the others. Such agents believe, or assert, that which is expressed by the sentence they accept, or assertively utter. However, it is counterintuitive to suppose that they must thereby believe, or assert, what the other sentences express. The Russellian conception of propositions allows one to respect this intuition; the truth-supporting circumstance approach does not.

A related point involves the relationship between propositional attitudes and conjunction. Surely, anyone who believes that (35a), or believes that (35c), believes that (36).41

\[(36)\] C\{\text{x: Bx}\]

However, this does not seem to be so with (35b). The reason for this difference is that in one case the move is from a belief in a conjunction to a belief in a conjunct, whereas in the other case it is not. Although many logical operations do not preserve belief, it would seem that simplification of conjunction does.

In fact, I think this observation about conjunction and belief is correct. However, it has far-reaching theoretical significance that belies its widespread acceptance. Let us suppose that what are believed are semantic contents of sentences. On the truth-supporting circumstance approach, these contents never have conjunctive structure. At best, they are partially structured intensions, which reflect the structure determined by occurrences of directly referential terms (and related expressions), but obliterate other logical structure. Thus, on this approach, there is no more reason to think that anyone who believes that (35a) (or (35c)) believes that (36) than there is to think that anyone who believes that (35b) does.

Proponents of the truth-supporting circumstance approach can, of course, countenance the move from belief in that which is expressed by a conjunction to belief in that which is expressed by the conjuncts. Indeed,

\[41\] Here, I am using ‘(35a)’, ‘(35c)’, and ‘(36)’ not as names, but as abbreviations for the sentences they normally name.
they standardly do. However, the price to be paid is that of countenancing the move from $x$ believes that $S$ to $x$ believes that $S'$ whenever the set of circumstances supporting the truth of $S$ is included in the set of circumstances supporting the truth of $S'$. But this just substitutes the generation of unwanted inferences for the failure to capture one that is desired. In short, the truth-supporting circumstance approach doesn’t provide the right options.\footnote{An analogous argument can be constructed regarding assertion.}

The Russellian approach offers a welcome contrast. Given the intuition that whenever an individual satisfies $x$ believes that $A \& B$ he also satisfies $x$ believes that $A$ and $x$ believes that $B$, the Russellian approach supplies a plausible explanation. Since objects of belief reflect the logical structure of sentences used to report those beliefs, whenever a belief is correctly reported using a conjunction the agent will believe a conjunctive proposition which includes the propositions expressed by the conjuncts as constituents. Since these constituent propositions are, so to speak, before his mind, no computation is required in order for him to arrive at beliefs in the conjuncts.

We can think of this somewhat less metaphorically as follows: To believe a conjunctive proposition, $<$CONJ, $<$P, Q$>$>, is to be in a belief state whose constituents correspond to its three main components. In the case of CONJ, this correspondence is, presumably, functional. A belief state constituent C represents CONJ only if an individual who is in a “conjunctive belief state” $S$, in which C relates constituent belief states $S_1$ and $S_2$, is also in—or disposed to be in—$S_1$, and $S_2$. Thus, anyone who believes a conjunction believes both conjuncts.

The point to notice is that with propositions as semantic contents this result does not generalize in unwanted ways. Even though structured propositions determine truth-supporting circumstances, there is no reason to suppose that just because an agent bears the belief relation $B$ to a proposition $P$, he must also bear $B$ to $Q$ whenever the class of truth-supporting circumstances for $P$ is identical with, or a subclass of, the class of truth-supporting circumstances for $Q$.

There are, then, good reasons not only for rejecting a strict truth-supporting circumstance conception of semantics, but also for adopting a Russellian approach. The reasons I have stressed rest on commonplace intuitions and assumptions about propositional attitudes. There are, of course, those who regard the attitudes as ill-behaved and problematic, and would, therefore, not accept such intuitions and assumptions. In my opinion, such pessimism is unwarranted.

If I am right, a major reason why propositional attitudes have often seemed intractable is that the basic features of strict truth-theoretic...
semantics have been incompatible with elementary facts about them. The introduction of structured Russellian propositions, which determine, but are not determined by, sets of truth-supporting circumstances, has the potential to change that.

References


