Why Propositions Can't be Sets of Truth-Supporting Circumstances

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In my article, "Direct Reference, Propositional Attitudes, and Semantic Content,"[1] I argued that any semantic theory satisfying certain natural and well-motivated assumptions cannot identify the semantic contents of sentences (the propositions they express) with sets of circumstances in which the sentences are true – no matter how fine-grained the circumstances are taken to be. The argument takes the form of a *reductio* of the following set of assumptions:

A1. The semantic content of a sentence or formula (relative to a context and assignment of values to variables) is the collection of circumstances supporting its truth (relative to the context and assignment).

A2. Propositional attitude ascriptions report relations to the semantic contents of their complements – i.e. ⌈x v's that S⌉ is true with respect to a context C, assignment A (of values to variables) and a circumstance E of evaluation iff in E, the referent of 'x' with respect to A bears R to the semantic content of S relative to C and A. (When v is the verb 'believes', R is the relation of believing, when v is the verb 'says' or 'asserts', R is the relation of saying, or asserting, and so on for other attitude verbs.)

A3. Many attitude verbs, including 'say', 'assert', 'believe', 'know', and 'prove' distribute over conjunction. For these verbs, ⌈x v's that P & Q⌉ is true with respect to C, A, and E only if ⌈x v's that P⌉ and ⌈x v's that Q⌉ are too.

A4. Names, indexicals, and variables are directly referential – their semantic contents, relative to contexts and assignments, are their referents with respect to those contexts and assignments.

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[1] *Philosophical Topics*, vol. XV, 1987, 47-87. The argument is also given in Soames (1989), "Direct Reference and Propositional Attitudes," in J. Almog, J. Perry, and H. Wettstein (eds.) *Themes from Kaplan*, (New York: Oxford University Press).

Com.   If S_1 and S_2 are non-intensional sentences/formulas with the same grammatical structure,

which differ only in the substitution of constituents with the same semantic contents

(relative to their respective contexts and assignments), then the semantic contents of S_1

and S_2 will be the same (relative to those contexts and assignments).

The assumptions required by the argument are quite weak. A1 is true of all truth-

conditional approaches to semantics that (unlike the Davidsonian approach) identify certain

entities – the truth conditions of sentences/formulas – as their semantic contents (relative to

contexts and assignments). The entities -- which are sets of circumstances in which the

sentences/formulas are true -- can be conceptualized in any number of ways, along a continuum

running from very fine-grained (e.g. the abstract situations of Barwise and Perry) to very

course-grained (e.g. complete metaphysically possible world-states).[2] The only relevant

presupposition of A1 is that its truth requires the truth of the corollaries like A1a and A1b.

A1a.   A conjunction ⌈P & Q⌉ is true with respect to a context C, assignment A, and

circumstance E iff P and Q are both true with respect to C, A, and E. Thus, the

semantic content of a conjunction, relative to C and A, is the intersection of the

semantic contents of the conjuncts, relative to C and A.

A1b.   An existential generalization ⌈For some x: Fx⌉ is true with respect to a context C,

assignment A, and circumstance E iff there is some object o in E such that 'Fx' is true with

respect to an assignment A' that differs from A at most in assigning o as value of 'x'. The

semantic content of ⌈For some x: Fx⌉ relative to C and A is the set of circumstances E such

that for some object o in E, o satisfies 'Fx' with respect to C, A, and E.

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[2] Jon Barwise and John Perry (1983), *Situations and Attitudes*. (Cambridge: MIT Press).

The compositionality principle, Com, employed in the argument is also weak. All that is needed is a principle ensuring that substitution of expressions with the same semantic content in extensional sentences (that may occur as the complements of attitude ascriptions) preserves the semantic contents of those sentences. Thus, Com can afford to be silent about whether the semantic contents of sentences containing modal, propositional, or other intensional operators is similarly compositional.[3] Finally, although A4 asserts the direct reference of names, indexicals (relative to contexts), and variables (relative to assignments), either variables alone, or variables plus indexicals would be sufficient. However, since examples involving names are simple, and easy to understand, I use a principle of direct reference that is stronger than that which is strictly required.

The main illustrative example used in the *reductio* is R.

R1.   The ancients believed (asserted) that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus.

R2.   Since Hesperus is Phosphorus, this means (given A2, A4, and Com) that the ancients believed (asserted) that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus.

R3.   Thus, 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 R2, A1a, A1b and A2)

R4.   So, the ancients believed (asserted) that: for some x, "Hesperus' referred to x and 'Phosphorus' referred to x – i.e. they believed that the names were coreferential. (From R3 and A3)

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[3] In the argument, Com is understood as presupposing that ... α ...β ... and ... α ... α ... have the same grammatical structure. This assumption is defended in Soames (1987), "Substitutivity," in J. J. Thomson (ed.), *On Being and Saying: Essays for Richard Cartwright*. Cambridge: MIT Press.

The argument based on this example takes two pre-theoretic facts for granted – that (R1) is true, and that Hesperus is, indeed, Phosphorus. What the argument shows is that any semantic theory T incorporating A1-A4, plus Com, is incompatible with these facts – in the sense that their existence is sufficient to show that T is incorrect. It is concluded on independent grounds that A1 is the offending assumption, and hence that the semantic content of a sentence is not the set of circumstances supporting its truth. Instead, it is argued, the semantic content of a sentence S is a structured proposition the constituents of which are the semantic contents of the constituents of S.

An Objection

In his paper, "Propositions, Circumstances, and Objects," Walter Edelberg maintains that the argument fails because the *reductio* argument (R1-R4) is fallacious.[4] His own formulation of the critical points he proposes to establish is given in the following two passages.

> "I won't be arguing that Soames has rejected the wrong assumptions of the reductio, though one might worry about that. Instead I will be arguing that *no absurdity results from the general theoretical assumptions Soames cites...*" (2)

> "Intriguing as Soames's argument is, I think it rests on a mistake. For the argument is intended to defend the following claim.
>
> *The Reductio Claim*. Sentences (1) and (2) below will entail sentence (3) on any semantical theory countenancing [A1 – A4, plus Com].
>
> 1.   Hesperus is Phosphorus
> 2.   The ancients believed that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus

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[4] *Journal of Philosophical Logic* 23, 1994, 1-34.; reprinted as **"**among the ten best articles to appear in print in 1994," *The Philosophers' Annual*, XVII, 1996.

3.   The ancients believed that for some x, 'Hesperus' referred to x and 'Phosphorus' referred to x.

This claim is false." (6-7)

Edelberg's account of the allegedly mistaken defense of "the Reductio Claim" is as follows:

"Let's suppose that the seven assumptions [A1 – A4, plus Com and corollaries A1a and A1b] are true, and see how Soames tries to derive (3). From the Direct Reference principle [A4] and the truth of (1), it follows that 'Hesperus' and 'Phosphorus' have the same semantic content. So by Substitution [Com] it follows that (4) and (5) express the same proposition.

4.   'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus.

5.   'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus.

By the Circumstantialist Conception [A1]. Truth.$\exists$x, and Truth.& [A1b and A1a], it follows that (5) and (6) also express the same proposition.

6.   'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus and for some x, 'Hesperus' referred to x and 'Phosphorus' referred to x.

Since (4) and (5) express the same proposition, and so do (5) and (6), it follows that (4) and (6) express the same proposition. Given that (2) is true and that (4) and (6) express the same proposition, it follows by Truth.PA [A2] and Substitutivity [Com] that (7) is true.

7.   The ancients believed that ('Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus and for some x, 'Hesperus' referred to x and 'Phosphorus' referred to x).

From Distribution [A3] and the truth of (7), it then follows that (3) is true."

(4)

Edelberg believes that the above reasoning is faulty, and that the thesis he dubs *The Reductio Claim* is false. Unfortunately, in attempting to demonstrate this, he does not define what 'entails', as used in that claim, is supposed to mean. We can, however, reconstruct from his argument a sense of entailment that fits his conclusion. Think of a semantic theory for a language incorporating assumptions A1-A4, plus Com, as being divided into three parts:

(i)   A recursive characterization of truth in an arbitrary model M (conforming to the theory), relative to a context C, assignment A, and circumstance E.

(ii)   A definition of the semantic content of a formula F -- in M, relative to C and A -- as the set of circumstances E supporting the truth of F -- in M relative to C and A.

(iii)   A specification of an intended model M_I that provides a domain of objects and the interpretations of the non-logical vocabulary.

A standard notion of model-theoretic-entailment can then be defined for such a theory as follows:

Model-Theoretic Entailment
A set S of sentences *model theoretically entails* a sentence S* according to a theory T -- incorporating A1-A4, plus Com -- iff for every model M conforming to T, and every context C and circumstance E of M, if all the sentences in S are true in M with respect to C and E, then so is S*.

This definition fits what Edelberg observes – namely that in a model M that assigns a pair of directly referential names a and b *different* referents, there may be circumstances E such that (1') and (2') are *true* in M with respect to E, even though (3') is *false* in M with respect to E.[5]

1'.   a = b

2'.   c believes that (Fa and Gb)

3'.   c believes that (∃x) (Fx and Gx)

The important point to notice is that even though M assigns a and b *different* referents, o and o', the truth-supporting circumstances in M need not be metaphysically possible, and hence may include

< identity, <o, o'>> -- which predicates the identity relation of *different* objects. Any such truth-supporting circumstance E is such that (1') is true in M with respect to E. Suppose further that (2') is true in M with respect to E. If the semantic content of (4') in M were the same as that of (5') and (6'), then, since the belief predicate distributes over conjunction, it would follow that (3') was true in M with respect to E.

4'.   Fa & Gb

5'.   Fa & Ga

6'.   Fa & Ga & (∃x) (Fx and Gx)

However, since a and b have *different* referents in M, (4') may (and standardly will) have a semantic content in M *different* from that of (5') and (6'). Because of this, (3') may be false in M with respect to E, even though (1') and (2') are true in M with respect to E. Hence, (3') is *not* model theoretically entailed by (1') and (2'). In fact, according to the theory, (1') and (2') do not model theoretically entail (8). [6]

8.   c believes that Fa and Ga.

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[5] Since the semantic contents of names don't vary with contexts, relativization to context is here suppressed.

Edelberg's Error

This argument, using the above definition of model-theoretic entailment, succeeds in establishing the falsity of what Edelberg dubs "the Reductio Claim" – the claim that sentences (1) and (2) model-theoretically entail (3) (for any T incorporating A1-A4, plus Com). However, the argument does *not* establish the incorrectness of the original *reductio* -- since the *reductio* did *not* attempt to establish that claim. What the original *reductio* demonstrated was that no semantic theory T incorporating A1 – A4, plus Com, can be correct because: (i) being correct requires assigning 'Hesperus' and 'Phosphorus' the same referent (Venus), and (ii) incorporating A1-A4, plus Comp, forces T to wrongly characterize the false R4 -- *The ancients believed (asserted) that: for some x, "Hesperus' referred to x and 'Phosphorus' referred to x* -- as a consequence of the true R1 -- *The ancients believed (asserted) that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus.*

In order to appreciate the distinction, one must remember that a semantic theory of the truth-supporting-circumstance variety is *not* just a characterization of truth with respect to a context and circumstance of an arbitrary model. Nor is it that plus definitions of (a) model-theoretic entailment and (b) the semantic content of a sentence (relative to a context) in a model. In addition, an intended model M_I must be specified to interpret the non-logical vocabulary.

Given an intended model M_I, we can define a notion of *truth-conditional consequence* (over and above model-theoretical entailment) according to the theory as follows:

> Truth-Conditional Consequence
> Let T be a theory incorporating A1-A4, plus Com, with intended model M_I. The
> content of a sentence (or formula) S*, relative to a context C of M_I and assignment A of

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[6] This is a summary of the argument Edelberg gives on pages 8 and 9.

values to variables, is a *truth-conditional consequence* of the content(s) of a set S of

sentences (or formulas), relative to C and A, iff for every circumstance E of M_I, if all

members of S are true in M_I with respect to C, A and E, then so is S*.

Equivalently put, the content of S* (relative to C and A) is a truth-conditional consequence (in

M_I) of the content of S (relative to C and A) iff the set of circumstances common to each truth-

conditional content expressed by a member of S in M_I (relative to C and A) is a subset of the

truth-conditional content (set of circumstances) expressed by S* in M_I (relative to C and A).

In effect, truth-conditional consequences of the content of S are what necessary consequences

of the content expressed by S become when truth-supporting circumstances are not required to

be metaphysically possible world-states.

The point to emphasize here is that *truth-conditional consequence* and *model-theoretic*

consequence (the converse of model-theoretic entailment), are very different notions (despite

their similar-sounding names). Whereas the former is a relation between the *semantic contents* of

sentences relative to contexts (and assignments, if the sentences contain free occurrences of

variables), the later is a relation between *sentences* themselves. Since the semantic content of a

sentence, relative to a context, is what the sentence "says" or "expresses," relative to the context,

truth-conditional consequence is a notion from semantics, in the sense of a fully-fledged theory of

meaning that assigns interpretations to all meaningful expressions of the language. Since *model-*

theoretic consequence is a relation between sentences in which the interpretations of the

nonlogical vocabulary are allowed to vary from model structure to model structure, it is a

semantic notion only in the sense in which it is a semantic characterization of a logical concept

(as opposed, say, to a proof-theoretic characterization). These two senses of 'semantics' –

theory of meaning vs. truth-based theory of logical consequence – are very different.

To take just one point of contrast, consider (9a) and (9b), where a and be are names, indexicals, or variables that are coreferential (relative to a context and assignment).

9a.   a = b

 b.   a = a

Whereas a theory of meaning incorporating A4 will characterize the semantic contents of these sentences as *truth-conditional* consequences of one another, a theory of logical consequence will deny that (9a) is a *model-theoretic* consequence of (9b). There is, of course, no conflict here – since the characterizations are noncompeting. However, it is crucial that one not conflate them, which, in essence, Edelberg does. Although his remarks are largely on-target when taken as comments on (nonstandard) theories of logical consequence in which the truth of a sentence in a model is relativized to truth-supporting circumstances that are allowed to be partial and/or metaphysically impossible, they miss the mark when taken as comments on theories of meaning in which semantic contents of sentences are constructed out of such circumstances. This error, though of fundamental importance, is not uncommon. Correcting it not only reinstates my *reductio* of a certain class of theories of meaning, but also helps to clear up widespread confusion about the relationship between semantic theories of meaning and semantic theories of logical consequence.

Conclusion

What the original *reductio* established was the reductio-claim RC1.

RC1. Let T be a semantic theory incorporating A1-A4, plus Com, with intended model M_I.
According to T, for all singular terms (names, indexicals, variables) a and b, and any
context C of M_I and assignment A, if a and b refer to the same thing with respect to C and
A, then the semantic content of (3') -- ⌈c believes that (∃x) (Fx and Gx)⌉ --relative to C

and A is a truth-conditional consequence of the semantic content of (2') -- ⌈c believes

that (Fa and Gb)⌉ -- relative to C and A.

If one further assumes – as one must – that a semantic theory incorporating A1-A4, plus Com,

assigns semantic contents to sentences relative to all *actual* contexts – i.e. contexts of utterance

that incorporate circumstances of evaluation that actually obtain (and hence are metaphysically

possible) -- then the *reductio* can be seen as establishing RC2 as well.

RC2.   Let T be a semantic theory incorporating A1-A4, plus Com, with intended model

M_I. According to T, for all singular terms (names, indexicals, variables) a and b, if

(1') -- ⌈a = b⌉ -- is true in M_I with respect to any *actual* context C, assignment A,

and circumstance E_C of C, then the semantic content of (3') -- ⌈c believes that (∃x)

(Fx and Gx)⌉ -- relative to C and A is a truth-conditional consequence of the

semantic content of (2') -- ⌈c believes that (Fa and Gb)⌉ -- relative to C and A.

These results, which are true, must *not* be confused with RC3, which is false (if T allows

circumstances of evaluation which are metaphysically impossible).

RC3.   Let T be a semantic theory incorporating A1-A4, plus Com, with intended model

M_I. For all names and indexicals a and b, {(1'), (2')} model-theoretically entails (3').

RC1 is enough to establish the incorrectness of semantic theories incorporating A1-A4,

plus Com. For example, when a and b are names we don't need to consider contexts and

assignments. If the names are in fact coreferential, then any semantic theory that makes them

(rigid, directly referential) terms that refer to different objects is incorrect. But if a theory

incorporating A1-A4, plus Com, assigns them the same referent, then it must falsely

characterize the semantic content of (3') as a truth conditional consequence of the semantic

content of (2'). Either way the theory fails. Hence the *reductio* stands.