

# PROPOSITIONAL QUANTIFICATION AND THE PROSENTENTIAL THEORY OF TRUTH

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## **Abstract:**

In their paper 'A prosentential theory of truth'<sup>1</sup> Grover, Camp and Belnap propound a theory of truth which is essentially a modified version of Ramsey's redundancy theory of truth. In this paper I shall not seek to determine whether or not the prosentential theory is true; rather I shall attempt to show that its proponents' argument for its plausibility breaks down at certain crucial points, most notably when they discuss the matter of propositional quantification. In the first section of this paper I shall give a brief account of the prosentential theory of truth as expounded by Grover, Camp and Belnap; in the second section I shall lodge three main complaints against the theory so expounded.

## Article:

The account of the prosentential theory of truth that I shall give in this section will be confined to an exposition of those aspects of the theory which must bear the brunt of the criticism to be given in the second section. Grover, Camp and Belnap (henceforth to be referred to simply as 'the authors') start by giving a brief reconstruction of Ramsey's redundancy theory. They are careful to point out that what they present is a reconstruction of this theory, since Ramsey's own remarks concerning the theory are cryptic and require interpretation and elaboration. The main thesis of the redundancy theory is that we can say in English without the help of a truth-predicate anything we can say with it, and that therefore there is no reason to assume that truth is a property which attaches to certain entities (usually considered to be either propositions, statements or sentences) which might be called the 'bearers' of truth. The authors distinguish five main ways in which the predicate 'is true' may be seen to be dispensable. I shall mention only three of these ways. The first way is exemplified in the following case of 'disappearing'. The sentence

(1) That snow is white is true\*<sup>2</sup>

is equivalent, according to the redundancy theory, to

(1a) Snow is white\*,

The second way is exemplified in cases of 'repetition', such as

(2) John: Snow is white. Mary: That is true\*,

which may be rendered as, and is equivalent to,

(2a) John: Snow is white. Mary: Snow is white\*.

'Quantificational' cases exemplify the third way. For instance,

(3) Everything John says is true\*

may be rendered as

(3a)  $\forall p(\text{John says that } p \rightarrow p)^*$ ;

or again,

(4) Every proposition is either true or false\*

is equivalent to

(4a)  $\forall p(p \vee \sim p)^*$ .

The authors then go on to discuss six objections to the redundancy theory thus reconstructed. I shall mention just three of these. The first of these objections is, according to the authors, one to which the redundancy theory succumbs but one which does not apply to the prosentential theory. If we consider (2) and (2a) again, it may be argued that (2a) is not equivalent to (2) in that in (2) Mary's remark acknowledges that there is an antecedent (i.e., John's remark) whereas in (2a) no such acknowledgement is made. In (2), by using 'That is true', Mary avoids the charge of plagiarism; but in (2a) she is open to this charge. Thus, in this instance, the Ramsey translation fails pragmatically.

The second and third objections concern propositional quantification. First (the second objection), one might argue that English proper does not make use of propositional quantification in the manner that Ramsey does, and thus that Ramsey's proof that the truth-predicate is redundant in English is faulty (i.e., he only proves his case, if at all, for an ad hoc extension of English which makes use of propositional quantification). The authors do not attempt to answer this objection, but postpone consideration of it until after they have discussed the prosentential theory. Second (the third objection), it has been objected (notably by Heidelberger<sup>3</sup>) that such propositional quantification as that expressed in (3a) and (4a) is ungrammatical when introduced into English proper, since English requires that variables have predicates attached to them. The authors deny this, although they concede that it is (at first) 'natural' to think that this objection is sound. Consider (3) and (3a) again. It may seem that a 'literal' reading of (3a) would be

(3b) For each proposition, if John says that it, then it\*,

and obviously this cannot be a fair paraphrase of (3), since (3) is grammatical whereas (3b) is not. And so it seems that (3a) should be read

(3c) For each proposition, if John says that it is true, then it is true\*,

which, when paraphrased back into the English-cum-special-notation of Ramsey, would read (more perspicuously)

(3d)  $\forall p$  (John says that  $Tp \rightarrow Tp$ )\*.

Although the authors agree that (3b) is ungrammatical and further agree, as will be seen, that (3c) is the proper reading of (3a), they think that the analysis of (3c) by means of (3d) is 'essentially wrongheaded'. They claim that propositional quantification, where the propositional variables in sentences occupy sentential positions and not nominal positions, is perfectly respectable, not only formally, but semantically. They plan to show that this is true by means of a theory of 'prosentences', and it is this that lies at the heart of their theory of truth.

The key to the understanding of prosentences is the linguistic relation of anaphora. The authors give no rigorous account of this relation, but they do cite examples of its use. Consider the sentence

(5) Mary wanted to buy a car, but she could only afford a motorbike\*.

In this sentence, the pronoun 'she' is used anaphorically, in that it refers to an 'antecedent' (Mary). (Of course, pronouns can also be used non-anaphorically, but that is another matter.) The use of anaphora, such as that illustrated in

(5), rules out ambiguities by means of the 'cross-reference' of anaphor to antecedent.

It is often possible to substitute the antecedent for the anaphor and yet preserve the sense (barring ambiguity) and truth-value of the original. For instance, (5) could be paraphrased as

(5 a) Mary wanted to buy a car, but Mary could only afford a motor-bike\*.

and, barring ambiguity, (5a) is equivalent to (5). But it is not always possible to make such substitution. Consider

(6) John visited us. It was a surprise\*.

Here, 'It' cannot be substituted by its antecedent, for nonsense results. Nevertheless, 'It' may be substituted by an 'anaphoric substituent' of an appropriate sort, such as 'John's visit' or 'John's visiting us'. With quantificational uses of anaphors any 'direct' substitution is completely ruled out, although such an anaphor does 'pick up' (as the authors put it) what may be called a 'family' of substituents.

We should make special note of the fact that anaphors do not always occupy nominal positions. Other than anaphoric pronouns, there are anaphoric proverbs, anaphoric proadjectives, and anaphoric proadverbs. Such anaphors are all species of the genus 'proform'. The authors stipulate that a proform's species is determined according to the position it occupies in a sentence, and not according to its antecedent's grammatical status. Thus 'It' in (6) is a pronoun, not a prosentence, according to this way of viewing things. Are there any prosentences in English? That is, are there any anaphors which occupy sentential positions? The authors' answer is, of course, that there are, but that prosentences are perhaps not so conspicuous as, say, pronouns.

Before considering particular prosentences in English proper, the authors propose to consider an artificial prosentence 'thatt' which might be included in an extension of English. They believe that this will promote understanding with regard to the function of prosentences. Suppose 'thatt' is an atomic (one-word) prosentence that is generally available (i.e., it may be placed in arbitrary sentential positions). How could it be used in our extension of English? Two examples might be:

(2b) *John*: Snow is white. *Mary*: Thatt\*;

(4b) For every proposition, either thatt or not thatt\*.<sup>4</sup>

(4b) shows that 'thatt' can be used in quantificational contexts to express a generalization, without recourse to a truth-predicate. At this point it is worth recording what the authors say in this regard:

[W]e thereby solve the problem of reading Ramsey's propositional variables (without adding a truth predicate) not into English itself but at least into English + `thatt'.<sup>5</sup>

I shall return to this in the second section of this paper.

Two important points regarding 'than' should be noted, according to the authors. First, when, for example, Mary says 'Thatt' in (2b), she is 'repeating' what John said, but is not plagiarizing him, for her utterance acknowledges the presence of an antecedent. Second, English + 'thatt' is only grammatically, and is *not* conceptually, different from English (or so the authors claim).

At this stage the authors make their main point: 'that is true' and 'it is true' may be seen to function as molecular (i.e., more-than-one-word) prosentences in English, just as 'thatt' functions as an atomic prosentence in English + 'thatt'. This contention is supported by checking the function of 'that is true' and 'it is true' with that of prosentences in general. First, prosentences occupy sentential position; so do 'that is true' and 'it is true'. Second, prosentences are used anaphorically. The authors claim that 'that is true' in (2), for instance, may be seen quite reasonably to function thus. So too with 'it is true' in other contexts. This must also apply, of course, to quantificational cases. That it does so may be seen in the case of (3c). Third, prosentences are generic or fully general; that is, they 'take on' whatever sense their antecedent has. This is obviously so with 'that is true' and 'it is true'. Fourth, the notions of antecedent and anaphoric substituent are appropriate to prosentences. This is true also of 'that is true' and 'it is true' when used anaphorically.

But it is not sufficient for the authors' purpose to show that 'that is true' and 'it is true' may function as prosentences. The authors must show that these expressions always do function as prosentences; not only that, they must show that all uses of 'is true' and derivatives in English are analyzable in terms of 'that is true' and 'it is true'. To show this, the authors carve out a sublanguage English\* from English proper. The difference between English and English\* is that English\* does not contain the truth-predicate in any 'interesting' sense, but does contain the prosentences 'that is true' and 'it is true' together with such connectives (drawn from English proper) as 'it-is-true-that', 'it-is-false-that', 'it-might-be-true-that', etc. (put in hyphenated form to stress that the truth-predicate is not 'separable' when thus used).

The authors then seek to show that whatever can be said in English can be said (perhaps with a little syntactic tinkering) in English\*.

The authors probably cannot prove their case concerning the relation between English and English\*, for this might well require a consideration of an infinite number of particular uses of the predicate 'is true' in English. But they are content to render it plausible by considering typical instances of 'disappearing', 'quantification', and so on. Consider the English sentence

(7) It is true that snow is white, but it rarely looks white in Pittsburgh\*.

This may be rendered in English\* as

(7a) Snow is white . That is true, but it rarely looks white in Pittsburgh\*.

Or consider

(8) Everything John says is true\*;

this (as stated above) may be rendered

(3c) For each proposition, if John says that it is true, then it is true\*.

Or consider, as a final example, a 'modified' case such as

(8) That might be true\*;

this may be rendered (making use of the required connective) as

(8a) It-might-be-true-that that is true\*.

Informally, then, the authors claim to have demonstrated their case: as in English\*, in English the truth-predicate does not play a property-ascribing role.

One source of puzzlement is, of course, the connectives in English\*, for some of these contain the term 'true' and yet they are not prosentences. Can we be sure that the function of this term in such connectives really is 'uninteresting' and does not conceal a property-ascribing role? The authors think that we can be sure of this. For such connectives were introduced merely to show up the 'deep structure' of English\*. Often they could be omitted simply in favor of retaining some of the modified prosentences of English, such as 'that might be true', 'it was true', etc.. The authors admit that where the argument of the connective is a proper sentence in its own right, the connective is not totally redundant, since it carries some 'pragmatic punch' by way of anaphoric overtones. But they claim that it is semantically redundant, such that 'true' still plays no property-ascribing role. Finally, the authors do admit that there are even some semantically irredundant uses of such connectives, as in some cases of the forming of contradictories. They offer no solution to this problem (although they try to wriggle out of it by means of a puzzling parable 6); but they presumably do not feel that this one (present) difficulty should force them to abandon what appears to be a promising theory.

The authors then turn to some objections to the prosentential theory of truth (only the most pertinent of which I shall discuss). They consider first the objections that were originally made against Ramsey's redundancy theory. First, the problem with pragmatics that the redundancy theory faced is overcome by the prosentential theory: for a prosentence, being anaphoric, acknowledges the presence of an antecedent. Second: whereas Ramsey tries to show that 'true' is totally redundant, the authors have of course not tried to show this, but have only tried to show that a 'separable' truth-predicate is redundant in English. Furthermore, since English\* is a fragment of English, it cannot be argued that the authors have made use of an ad hoc extension of English to prove their case. Third: again, since English\* is a fragment of English, the charge that the use of propositional quantification is ungrammatical in English is vitiated, since it is grammatical in English\*.

The authors also consider the following objection. Assuming that one reason for undertaking to demonstrate the plausibility of the prosentential theory of truth is to undermine the plausibility of the contention that there exist propositions in the universe, it might be argued that in all the foregoing the authors have suffered from 'tunnel vision'. Consider, for instance, the statement

(9) That is surprising, but it is true\*.

Even if one argues that 'it is true' here is a prosentence, this cannot be claimed for 'That is surprising'; and since 'That' obviously refers to some entity to which, it is plausible to contend, 'it' would also seem to refer, why bother with the prosentential theory at all? The authors' response — one that I find difficult to evaluate — is that 'That' and 'it' in (9) do not refer to the same entities, even if 'it' is taken to refer. If 'it' is taken to refer it is presumably taken to refer to a proposition. But 'That' in 'That is surprising' refers to a fact or event or state of affairs. The authors believe that a proposition, were it to exist, would be a different sort of entity from a fact or

event or state of affairs. Perhaps this is so; I do not know. At any rate, I shall not seek to support or refute their contention.

The authors do recognize, however, that the existence of propositions is not only asserted for the sake of pinning the title '(prime) bearers of truth' on to certain entities. A second main reason for the assertion of their existence is that the phenomenon of belief and other psychological attitudes appears to necessitate their existence. The prosentential theory of truth of course has nothing to say in this respect. But the authors have. They suggest (it is no more than a suggestion) that, for example, 'You believe it' could itself be analyzed as a presentence prefixed by a non-truth-functional connective, i.e., as 'You-believe-that it is true'. If this is true, then the second main motivation for asserting the existence of propositions is undermined.

The authors also recognize that 'that' in 'that is true' (and 'it' in 'it is true') could quite plausibly be analyzed as an anaphoric pronoun. Thus the prosentential theory is not unique in being able to explain the anaphora that undoubtedly accompanies such statements as 'That is true'. In fact, the authors agree that they have not shown the prosentential theory of truth to be true, but merely to be consistent and plausible. But why, then, prefer it to a more conventional theory of truth (if there is such a thing) where 'that' in 'that is true' is taken to function pronominally? The authors claim that there are several advantages to their theory, that it affords considerable 'philosophical payoff'. But, so far as I can judge, the only real advantage to constructing a theory where 'true' 's role in English is taken to be, not wholly redundant, but logical rather than ascriptive is this: it undermines one of the arguments for the existence of propositions, namely that truth must be borne by some ontological entity. (There are, of course, arguments against the contention that entities other than propositions, such as sentences, are the prime bearers of truth.) Some philosophers may, of course, have no qualms about asserting the existence of propositions and thus fail to recognize this consequence of the theory as an advantage. But others may recognize it to be an advantage. I shall not discuss this issue. Rather, I shall now address myself to the question: Have the authors shown the prosentential theory of truth to be plausible? I shall argue that they have not shown this.

## II

In this section I shall not consider the question whether or not the authors have told the truth concerning the function of 'that is true' and 'it is true' in English. On the contrary, I shall leave this question entirely to one side and content myself with asking: Have the authors shown us any reason to believe that the prosentential theory of truth is true?

The account of the prosentential theory given in the first section of this paper leaves a lot of questions unanswered. This is partly due to the selectiveness of the account, partly due to the fact that the authors' own exposition of the theory is incomplete in many respects (as they are themselves aware). But in this section I shall inquire into only three main points, all of which the authors claim to have adequately, if not exhaustively, treated. These are: the role of 'thatt' in English + 'thatt'; the function of the connectives in English\*; and the plausibility of contending that English sanctions propositional quantification.

The authors introduce the atomic presentence 'thatt' on a temporary basis only, but they do so in order to render the contention that 'that is true' and 'it is true' are presentences more plausible. It is therefore necessary to determine just what the effect of the discussion of 'thatt' is in terms of bolstering the prosentential theory. My impression is that the introduction of 'thatt' is of no help at all. Certainly the grammar of 'thatt' seems to be perfectly straightforward (except in quantificational contexts — see below), and it is not implausible to assume that certain terms in English may function as presentences, though perhaps not as generally available presentences. (Indeed, the authors discuss certain uses of 'yes' and 'so' in this respect.) It is the authors' claim that English + 'thatt' is not conceptually different from English that I find puzzling. What evidence is there for this claim? The only way in which I can understand the use of 'thatt', as presented by the authors, is to interpret it as a paraphrase of 'that is true' or 'it is true'. But, then, I am not at all sure that 'thatt', when thus interpreted, does or can function as a presentence. It seems to me a circular enterprise on the part of the authors that they should seek to argue from the contention that 'thatt' can function as a presentence in English + 'thatt' to the

contention that 'that is true' and 'it is true' can function as prosentences in English. For, although 'thatt' seems syntactically innocuous as long as it remains uninterpreted, once it is interpreted it becomes a serious question whether or not it can function as a prosentence. Furthermore, since its obvious interpretation would seem to be in terms of 'that is true' or 'it is true', it would seem that the authors might just as well have argued from the contention that 'that is true' and 'it is true' can function as prosentences in English to the contention that 'thatt' can function as a prosentence in English + 'thatt'. But that, of course, would not have served their purpose. I argue that the manner in which they do in fact proceed also does not serve their purpose.

The second point that I wish to discuss concerns the role of the connectives 'it-is-true-that', 'it-is-false-that', 'it-might-be-true-that', etc., in English\*. Right off the bat, I consider it a grave admission on the authors' part that they do not know how to handle certain cases of contradictories without a semantically irredundant use of 'true'. They state outright:

[W]e think... that there are cases falling under the rubric 'modified disappearing' in which there is no way to eliminate 'true' without semantic loss.'

They admit that they believe that

there are in English sentences for which one cannot find an unambiguous contradictory without using a connective made from a predicate, such as 'It is not true that'.<sup>9</sup>

But if this is true, surely their project has failed; for English\* (and hence English) must then contain some 'interesting' uses of 'true', i.e., uses of 'true' which are not just involved in the prosentences 'that is true' or 'it is true' or in a 'harmless' use of 'true' in certain connectives.

But let us now turn to what I have just called the 'harmless' uses of 'true' in the connectives of English\*, i.e., to those uses of 'true' which the authors allege are semantically redundant (even if perhaps not pragmatically so). What are we to make of the claim that, for instance, 'it-might-be-true-that that is true' could just as well be rendered 'it might be true' without doing violence to the prosentential theory? If the claim is correct, this entails that such expressions as 'It might be true', 'that is false', 'it will be true', and so on, function simply as (modified) prosentences in English. But this means that there are really very many generally available prosentences in English, not just 'that is true' and 'it is true'; and to the person who never even suspected that there were such things as prosentences in the first place, this proliferation of prosentences may prove a little hard to swallow. Now, I have no argument to show that such expressions as 'it might be true', etc., cannot or do not function as prosentences in English; I wish merely to point out that the authors, in asserting the semantic redundancy of the special connectives of English\*, are committed to this view. Whereas one might be inclined to accept that 'that is true' and 'it is true' can function as prosentences, one might be less inclined to accept that such complex expressions as, say, 'perhaps it would have been true' can and do function as simple anaphors. But again I admit that this does not prove that they cannot or do not function thus.

The third and final point I wish to discuss in connection with the pro-sentential theory is to my mind the most important. For it seems to me that at the heart of the theory is the contention that propositional quantification is a perfectly respectable grammatical device in English — one, moreover, of which use is often made. It is this contention that needs above all to be evaluated. Once again, I do not wish to claim that the contention is false, for I have no argument to prove this. But I do wish to maintain that the authors have done nothing to prove it true.

Let us review the authors' arguments with respect to propositional quantification. We recall that Ramsey made use of propositional quantification in (3a) and (4a) above. (Carnap, incidentally, proposes a theory of truth similar to Ramsey's in this regard.) Heidelberger, among others, complained that statements such as (3a) and (4a) could not be rendered in English without the introduction of a truth-predicate (or some similar predicate),

such that (3a) is best phrased, in semiformal notation, as (3d) and (4a) is best phrased as (4c).<sup>10</sup> It is worth citing Heidelberger at this point:

It must be acknowledged that a number of quite respectable logical systems contain propositional variables without there being any predicates attached to them. Thus, for example, (in] Lewis and Langford's Symbolic Logic ... there appears the formula:  $(\exists p)(p)$ . But the existence of such formulae by themselves has no bearing upon the issue under discussion. For it may be that when such formulae are interpreted a predicate will be supplied which is not written into the formula itself. Such, in fact, is the case with the formula mentioned above. In interpreting his formula Lewis adds the predicate 'true', reading it: 'There exists at least one proposition  $p$  which is true'... There is of course nothing that requires the addition of 'true' rather than another predicate. But the point is that if we are to get an English sentence out of the formula we have to supply some predicate and that is what Ramsey and Carnap fail to do. Because their theory of truth precludes their adding any predicate whatever, they must leave us with formulae for which they have provided no sense.<sup>11</sup>

The complaint, then, concerns not whether or not a formal logical system can be set up which makes use of propositional quantification, for obviously such a system can be and has been set up. The complaint concerns, rather, whether or not such a system can be interpreted in English in such a manner so as not to force the introduction of a truth-predicate (or some similar predicate). Heidelberger claims that this cannot be done. The authors claim that this can be done, so long as it is recognized that English contains the pro-sentences 'that is true' and 'it is true' (and their modifications).

How do the authors attempt to prove their point? They do so in two stages: first, they try to show that 'thatt' may be properly quantified; from this they argue that 'that is true' and 'it is true' may be properly quantified. The whole issue in fact centers on the first stage: the contention that 'thatt' may be properly quantified.

What arguments do the authors adduce to support their contention that 'thatt' may be quantified? None. They merely assert that 'thatt' is open to quantification.<sup>12</sup> They seem to be content simply to give illustrations of its use in quantificational contexts, such as in (4b) above or in

(3e) For every proposition, if John says that thatt, then thatt\*.

But although the authors are perfectly free to stipulate that 'thatt' can function in quantificational contexts so long as it remains uninterpreted, they are not free to do so without argument where 'thatt' is interpreted. And what is the proper interpretation of 'thatt'? Again, it would seem that 'thatt' is best understood to mean 'that is true' or 'it is true'. So, again, the authors are running in a circle, and they are hardly in a position to claim (as recorded above) that they have 'solved the problem of reading Ramsey's propositional variables' even into English + 'thatt', if 'reading' is taken (as it seems it should be) to connote some measure of understanding on the part of the reader.

But the authors do mention that 'thatt' and propositional quantification in general are treated in an earlier paper by Grover, and it is to this that I now turn.<sup>13</sup> It is interesting to note that in this paper Grover admits that there are no faithful and perspicuous readings in English proper of such formulae as (3a) and (4a). But she claims that such sentences are easily paraphrased in an extension of English which is "sensible and philosophically innocuous". Grover takes special note of the problems that confront anyone who seeks to defend such a claim. Consider the sentence

(10)  $\forall r((\text{John believes that } r) \rightarrow (\text{Bill believes that } r))$ \*

This may indeed be read as

(10a) If John believes something then Bill does too\*,

or as

(10b) Bill believes everything that John believes\*.

But the point is, (10a) and (10b) do not follow the *form* of (10). Or again,

(11)  $\exists r(r \rightarrow \text{snow is white})^*$

may indeed be read as

(11a) There is something such that if it is true then snow is white\*, or as

(11b) Something implies that snow is white\*.

But (11a) introduces 'is true'; and in (11b) ' $\rightarrow$ ' is no longer read as a connective but as a predicate, so that 'Something' either becomes a name for a sentence or must probably be treated as a 'that'-clause. And Grover acknowledges:

In suggesting readings in English of quantified formulas it is essential to find something that does the job in English that the variable does in the formal language.<sup>14</sup>

This is *exactly* the point that needs to be stressed.

Grover then turns to prosentences, claiming that these can and do function in English exactly as propositional variables function in such statements as (3a), (4a), (10) and (11). Unfortunately, at this point she introduces the artificial prosentence 'thatt', rendering (10) as

(10c) For each proposition, if John believes that thatt, then Bill believes that thatt\*.

I have already argued that unless 'thatt' is interpreted in such a fashion that its analogue's function in English would clearly be seen to be that of a prosentence, this discussion of 'thatt' serves no useful purpose. This criticism applies equally to the discussions of 'thatt' in both papers, and I shall add nothing to it here, except to note that the extension of English to English + 'thatt' is hardly 'philosophically innocuous'.

Grover claims that the anaphoric role of prosentences in propositional quantification with propositional variables mirrors the anaphoric role of pronouns in what may be called 'individual' quantification with individual variables. For instance consider the sentence

(12)  $\exists x \forall y (x \text{ admires } y \ \& \ y \text{ knows } x)^*$ .

This may be read as

(12a) There is some individual such that for each individual the first admires the second and the second knows the first\*.

In (12a), Grover claims, 'the first' and 'the second' are pronouns which function anaphorically. This is quite correct. But we should note here what I take to be a crucial difference between statements like (12) and statements like (10), a difference which Grover neglects to discuss. It is this. (12) could also be read as

(12b) There is some individual  $x$  such that for each individual  $y$ ,  $x$  admires  $y$  and  $y$  knows  $x$ .

But no such parallel reading is possible for (10). In particular, (10) cannot be read as

(10d) For each proposition  $r$ , if John believes that  $r$ , then Bill believes that  $r$ ,

and this is so for the very reason that Heidelberger stresses: (10d) is ungrammatical (let alone the fact that it presupposes the existence of propositions, a presupposition that Grover obviously does not wish to make).<sup>15</sup>

But Grover, while agreeing that (10d) is ungrammatical, would insist that it is a mistaken reading of (10). It is (10c) (perhaps with 'thatt' replaced by 'it is true') that is correct, for only in (10c) is ' $r$ ' taken to be a bona fide propositional variable that occupies sentential position. But if this is the case, then certainly 'For each proposition' in (10c) cannot act as a universal quantifier in the normal sense, for it cannot range over anything, let alone propositions. Now Grover in her article and all three authors in theirs are quite willing to accept this consequence of propositional quantification. Indeed they stress this very point. But Grover maintains that, despite the grammatical and domain differences between propositional quantifiers on the one hand and individual quantifiers on the other, "propositional quantifiers do the job required of quantifiers"<sup>16</sup> in that they make general statements.

We have finally got down to brass tacks. It is now admitted that the function of quantifiers in propositional quantification is significantly different from their function in individual quantification. We know that individual quantification may function properly in English; but what proof do we have that propositional quantification may so function? The authors insist that propositional quantification may so function, basing their contention on examples of the use of the pro-sentence 'thatt' and of the alleged pro-sentences 'that is true' and 'it is true' and their modifications. But we have been through all that. Another tack that Grover takes is to present rules for the derivation of substitution instances from propositionally quantified statements.<sup>17</sup> For instance, we may derive

(13) John believes that snow is white

From

(14) For each proposition, John believes that thatt,

or (stressing the pro-sentential character of 'it is true') from (14a) For each proposition, John believes that it is true.

But this makes not a bit of difference. (13)'s grammaticality and sense together with any such rules for the derivation of substitution instances do *not* jointly entail that (14) is grammatical; nor do they jointly entail that (14a) is grammatical, given that 'it is true' there functions as a pro-sentence.

All of this being the case, I conclude that we have no reason to believe, given any of the authors' arguments, that propositional quantification is grammatical in English. Hence we have no reason to believe that the pro-sentential theory of truth is true, even if there were no problems with it other than that of propositional quantification. Now it is true that I have not shown the theory to be false, but that was not my aim. What I think I have shown is that the authors have failed to render their theory plausible. Indeed, it poses many problems which remain unsolved. Hence, provisionally at least, the theory is to be rejected.<sup>18</sup>

## NOTES

<sup>1</sup> Dorothy L. Grover, Joseph L. Camp, Jr. and Nuel D. Belnap, Jr.: 1975, 'A pro-sentential theory of truth', *Philosophical Studies* 27, pp. 73-125.

<sup>2</sup> An asterisk following a numbered statement will be used to indicate that that statement, or one very much like it, appears either in the authors' paper (*op. cit.*) or in Grover's paper (see Note 13 below).

<sup>3</sup> Herbert Heidelberger: 1968, 'The indispensability of truth', *American Philosophical Quarterly* 5, pp. 212-217.

<sup>4</sup> (4b) would be a reading of

(4a)  $\forall p(p \vee \sim p)^*$ ,

which is of course not to be confused with

(4c)  $\forall p(Tp \vee \sim Tp)$ .

<sup>5</sup> The authors, *op. cit.*, p. 89.

<sup>6</sup> *Ibid.*, pp. 98-99. The parable *verbatim* is this:

Pin the beginning there were prosentences, and the people in those days used them in a lazy way, even in a modified lazy way, and some amongst them in redundant connectives in a modified disappearing way when they wished to endow their speech with prosentential overtones. Soon it came to pass that they saw the utility of these conventions and transferred them to cases in which their use was not redundant; and so it is unto this very day.

<sup>7</sup> I am at a loss as to what to make of this story. It seems less than convincing. <sup>7</sup> *Ibid.*, pp. 108-124.

<sup>8</sup> *Ibid.*, p. 98.

<sup>9</sup> *Ibid.*, p. 98. I have no wish to disagree with this contention. It is unclear exactly what type of case the authors have in mind, but the following may be a fair example. Often, when it comes to forming the contradictory of a subjunctive conditional, negating the consequent is equivalent to prefixing the conditional with 'It is not true that'. Thus, it seems plausible to contend that the contradictory of

(A) If the match were struck, it would light

may be stated equally well either as

(A') It is not true that, if the match were struck, it would light

or as

(A'') If the match were struck, it would not light.

But this equivalence does not always hold. Specifically, it does not hold where there seems to be no 'significant' relation between antecedent and consequent. Thus, for example,

(B) If the match were struck, the weather would be fine

is indeed contradicted by

(B') It is not true that, if the match were struck, the weather would be fine,

but seems not to be contradicted by

(B'') If the match were struck, the weather would not be fine.

For it seems plausible to contend that, on almost any occasion on which either (B) or (B'') might be uttered, both statements would be false whereas (B') would be true. <sup>10</sup>

<sup>10</sup> See Note 4 above for a statement of (4c). <sup>11</sup>

<sup>11</sup> Heidelberger, *op. cit.*, p. 217.

<sup>12</sup> The authors, *op. cit.*, p. 89. <sup>13</sup>

<sup>13</sup> Dorothy L. Grover: 1972, 'Propositional quantifiers', *Journal of Philosophical Logic* 1, pp. 111-136.

<sup>14</sup> Grover, *op. cit.*, p. 116.

<sup>15</sup> To be accurate, there is of course a distinction to be made between Heidelberger's diagnosis of sentences such as (3a) and (4a) and my diagnosis of (10d). For in (3a) and (4a) we have a variable in isolation — and this is the target of Heidelberger's criticism — whereas in (10d) we have what may be called an 'incomplete predicate'. That is, 'John believes that' is not a predicate, but a fragment of a predicate, and is in need of completion.

<sup>16</sup> Grover, *op. cit.*, p. 128.

<sup>17</sup> *Ibid.*, p. 120.

<sup>18</sup> I wish to express my gratitude to Herbert Heidelberger for helpful comments on earlier drafts of this paper, especially with respect to clarification of the points made in Notes 9 and 15 above.