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STRUCTURED PROPOSITIONS AND SENTENCE STRUCTURE*

ABSTRACT. It is argued that taken together, two widely held claims ((i) sentences express structured propositions whose structures are functions of the structures of sentences expressing them; and (ii) sentences have underlying structures that are the input to semantic interpretation) suggest a simple, plausible theory of propositional structure. According to this theory, the structures of propositions are the same as the structures of the syntactic inputs to semantics they are expressed by. The theory is defended against a variety of objections.

KEY WORDS: direct reference, propositions, structural propositions, syntax.

There are two claims, each of which has many defenders and is widely accepted, that taken together naturally lead to a certain view about the nature of propositions. My purpose here is not to defend these claims, which have been ably defended by others, but rather to investigate the view about the nature of propositions that they suggest.

The first of these claims is itself a claim about the nature of propositions. It is the claim that propositions are structured entities, where the structure of the proposition expressed by a sentence is (partly or wholly) a function of the syntactic structure of the sentence.[1] Let us call this claim *A1*. According to A1, sentences with different syntactic structures, even if they are necessarily logically equivalent, may express distinct propositions. Thus those who endorse A1 are able to avoid the difficulties with views that identify the propositions expressed by necessarily logically equivalent sentences (such as the view that propositions are sets of possible worlds).

The second claim is explicit in theories of syntax such as current formulations of Chomsky's Extended Standard Theory.[2] Such theories posit a level of *syntactic* representation known as *LF*, whose representations of sentences are distinct from the surface structures of these sentences and are the syntactic inputs to the rules of semantic interpretation.[3] This approach is adopted at least in practice by virtually all of those doing formal semantics for natural languages: semantic clauses are defined over syntactic entities with considerably more structure, by way of explicit representation of quantifier scope, etc., than surface structures of natural language sentences.[4] For the sake of definiteness and for the purposes of the present paper, we must adopt some view about the syntactic rep-

Journal of Philosophical Logic **25**: 495–521, 1996.

resentations that are the input to semantics (henceforth *SI*'s), assumed to be distinct from surface structures.[5]

I shall assume that SI's more or less resemble the formulae of the following formal language. First, we have the one place predicate symbols 'linguist', 'philosopher', and 'happy'. Next we have the two place predicate symbols 'loves' and 'hates'. The variables are $x, y, z, x_1, \ldots$, and the names are 'Mary', and 'Brad'. Finally we have the determiners 'every', 'some' (singular), and 'the'. The syntax is as follows:

1. If δ is a determiner, α is a variable and Σ is a formula containing free occurrences of α $[\delta\alpha\Sigma]$ is a quantifier phrase, (α is called *the variable of the quantifier phrase*).
2. If Π is a 1-place predicate and α is a name or variable, $[[\alpha]\Pi]$ is a formula.
3. If Θ is a 2-place predicate and α, β are names or variables, then $[[\alpha]\Theta[\beta]]$ is a formula.
4. If Ω is a quantifier phrase and Σ is a formula, then $[\Omega\Sigma]$ is a formula.
5. If Ψ and Φ are formulas, so are $\sim\Phi$ and $[\Phi\&\Psi]$.

So, for example, here are some English sentences and their associated SI's:[6]

1a. Brad is happy.
1b. [[Brad] happy]
2a. Every linguist is happy.
2b. [[every x [[x] linguist]] [[x] happy]]
3a. Every linguist hates some philosopher.
3b. [[every x [[x] linguist]] [[some y [[y] philosopher]] [[x] hates [y]]]]
3c. [[some y [[y] philosopher]] [[every x [[x] linguist]] [[x] hates [y]]]]

I should make clear which features of the formalism I take to reflect features of the real SI's they are standing in for.[7] First, the brackets in the formalism are intended to correspond to the fact that the internal structure of the sentence, including the internal structure any phrase occurring in it, are represented at this level of syntactic representation. For example the outermost brackets in 1b–3c correspond to the grammatical category of sentence and the brackets inside correspond to the constituent structure of the sentence; the outermost brackets in the expression '[every x[[x] linguist]]' correspond to the grammatical category of noun phrase, with the internal brackets giving the internal structure of the noun phrase, and so on. Second, that quantifier scope relations are represented in the formalism reflects my assumption that these scope relations are represented at the level of SI's. Thus 3a is assigned both 3b and 3c in virtue of the fact that it has a quantifier scope ambiguity. Third, and related to the previous point, though names and quantifier phrases

(sometimes) appear in the same places in English sentences (e.g. in subject position in 1a and 2a), they appear in somewhat different positions in our formulae, (in 2b a variable appears in the place a name appears in 1b). This is because I assume that in moving from sentences such as 1a and 2a to their SI's, names and quantified NP's are treated differently and that quantified NP's end up having scope and in some sense binding variables (as in 2b and 3b, 3c).

As I have mentioned, in current formulations of Chomsky's Extended Standard Theory the syntactic representations of LF are the analogues of our SI's. Such theories endorse the claim that the syntactic representations at the level of LF possess the three features that I have assumed SI's possess.[8] Earlier I noted that virtually all practitioners of formal semantics define their semantics over syntactic entities that are more structured than natural language sentences. More to the present point, virtually all structured proposition theorists who formulate explicit semantics define their semantic theories over syntactic entities that possess properties identical to or similar to those I am attributing to SI's. Thus the assumption I make about SI's are consistent with *both* current thinking in syntax *and* the practice, if not the views, of structured proposition theorists. The claim that SI's are distinct from surface structures and have the three features just discussed we shall call *A2*.

Putting A1 and A2 together, the outline of a semantical theory emerges. First there is a recursive assignment of propositions to sentences. Next, there is a recursive definition of truth for propositions. Our concern will be primarily with the assignment of propositions to sentences. According to A2, SI's are the input to semantics and hence it is they, and not sentences, that are directly assigned propositions. Thus talk in A1 of the structure of the proposition expressed by a sentence being a function of the *sentence's structure* is to be understood as meaning that the structure of a proposition expressed by a sentence is a function of the *structure of the sentence's SI*. Further, to say that an SI has structure is to say that its constituents, lexical items, stand in a certain complex relation R, which is represented in our formalism by embedded brackets, (and where the embedding of the brackets represents the complexity of the relation). It is the fact that the lexical items stand in the complex relation R that gives the SI its structure. Similarly, to say that a proposition is structured is to say that its constituents stand in some complex relation which provides the structure of the proposition. Again, this complex relation is generally represented in the literature by means of embedded brackets. To summarize, A1 and A2 together require that a sentence be associated with an SI (or more than one if the sentence is "structurally ambiguous") that

consists of lexical items standing in a certain complex relation; and that this SI be mapped to a proposition that consists of propositional constituents (presumably contributed by the lexical items of the SI) standing in some complex relation, where the structure of the proposition is (at least partly) a function of the structure of the SI.

A certain view of propositional structure now suggests itself. Given a sentence S, whose SI is constituted by lexical items standing in some complex relation R, the proposition expressed by S consists of the semantic values of those lexical items standing in *the very relation R* (in the way in which the lexical items themselves stand in R in the SI). If we call the complex relation R obtaining between the lexical items in an SI associated with a sentence S *the sentential relation of S* and call the relation obtaining between the constituents of the proposition Q that S expresses *the propositional relation of Q*, the view is that the sentential relation of S *is* the propositional relation of Q. Thus the recursive assignment of propositions to SI's merely "substitutes" a semantic value for each lexical item in the SI, leaving the sentential relation untouched, with the result being the proposition expressed by the SI. This view is naturally suggested by A1 and A2 because it is the most straightforward account according to which the structure of a proposition is a function of the structure of the SI expressing it: the proposition and SI are structured by the *same relation*; hence they have the *same structure*; and thus, trivially, the structure of the proposition is a function of the structure of the SI. Let us call this account *T1*.

We can illustrate T1 by giving rules that map our SI's to the propositions expressed by the sentences with those SI's. I shall suppose that the simple expressions occurring in SI's possess semantic values (sv's) as follows. The sv of a name is its bearer; the sv of a variables is that variable; the sv of a 1-place predicate is a property; the sv of a n-place predicate is an n-place relation; the sv of a determiner (e.g. 'every') is a function from sets to sets of sets (e.g. the sv of 'every' maps a set A to the set of sets B such that A is a subset of B); the sv of an n-adic truth-functional sentential connective is an n-place function from truth values to truth values. I wish to stress that these assumptions about the sv's of various expressions are *not* part of T1. I make them only so that I can state and illustrate T1 with some precision.

In what follows let δ be a determiner; Σ, Ψ, Φ, be formulas; Π, Θ be 1 and 2 place predicates, respectively; α, β be names or variables; and ξ be a variable. For any simple expression ε, let ε^* be its sv.

1. The propositional frame expressed by $[[\alpha]\Pi]$ is $[[\alpha^*]\Pi^*]$.
2. The propositional frame expressed by $[[\alpha]\Theta[\beta]]$ is $[[\alpha^*]\Theta^*[\beta^*]]$.

3. The propositional frame expressed by $[[\delta\xi\Sigma]\Psi]$ is $[[\delta^*\xi\Sigma']\Psi']$, where Σ', Ψ' are the propositional frames expressed by Σ, Ψ, respectively.
4. The propositional frames expressed by $\sim\Sigma$ and $[\Sigma\&\Psi]$ are $\sim^*\Sigma'$ and $[\Sigma'\&^*\Psi']$, respectively, with Σ', Ψ' as above.

We call these *propositional frames* because they include things such as: [[x] happy*]. *Propositions* are propositional frames containing no free variables. As promised, our semantic rules merely "replace" a lexical item in an SI with its semantic value. The proposition consists of these semantic values standing in the same relation that the lexical items in the SI stood in. The Appendix contains a definition of truth for propositions.

It is important to be clear that T1 is a theory of *propositional structure* and not by itself a theory of *propositions*. For as was mentioned above, T1 does not include the claim that words have the sorts of sv's we have assumed them to have. And to have a theory of propositions, one must combine T1 with an account of the sv's of words. Thus T1 is consistent with a range of theories of propositions resulting from different choices concerning the sv's of words (e.g. different choices concerning the sv's of names, etc.).

Despite the fact that A1 and A2 both are well supported and very naturally lead to T1, on reflection T1 seems subject to numerous difficulties that suggest another theory of propositional structure may be preferable.

Objection 1: T1 individuates propositions very finely.[9] 'Laura is happy and Al is sad' and 'Al is sad and Laura is happy' express different propositions on this view; similarly for '1 = 2' and '2 = 1'. One might object that T1 individuates propositions too finely.[10] I suspect that the idea behind the objection is that the behavior of non-truth-functional unary sentence forming operators, such as 'John believes that'; 'Laura deduced that'; 'Necessarily'; 'It ought to be the case that'; 'It is a truth of logic that', etc., tell us how finely propositions are to be individuated. It might be thought that for any such operator 'O', English sentence 'p' and circumstance e, whether 'Op' is true or false in e depends only on the facts in e and what proposition 'p' expresses, (and not on, e.g. the character, in Kaplan's sense, of any expression in 'p').[11] Let us call any operator of this sort a *propositional operator*. I think that many and perhaps even all unary non-truth-functional sentence forming operators are propositional. For any propositional operator 'O', if 'Op' and 'Oq' have different truth values in some circumstance, 'p' and 'q' must express different propositions. But one might go further and hold that two sentences 'p' and 'q' express distinct propositions if *and only if* for some propositional operator 'O', 'Op' and 'Oq' differ in truth value in some circumstance. Let us call this principle *P*.[12] P, I believe, is the principle

underlying the objection that T1 cuts propositions too finely. For it might be claimed that T1 entails that for some sentences 'p' and 'q' and all propositional operators 'O', 'Op' and 'Oq' have the same truth value in all circumstances and yet 'p' and 'q' express distinct propositions. This claim runs afoul of P.

Objection 2: It also might be claimed that T1 individuates propositions too finely *across* languages. Consider the following three claims, in order of increasing logical strength, concerning the expressibility of propositions in different languages:

(A) At least some proposition(s) can be expressed in different natural languages.
(B) At least some proposition(s) can be expressed in any natural language.
(C) All propositions that can be expressed in one natural language can be expressed in any other.[13]

For it to be true on T1 that a proposition Q is expressible in different natural languages L and L′, they must contain sentences S_L and $S_{L'}$ whose SI's are structurally identical (and of course both must be structurally identical to Q); and the semantic values of the lexical items occurring in the same places in the SI's associated with S_L and $S_{L'}$ must be identical (and, of course, these must be identical to the constituents of Q occurring at the same places in Q). Hence, for (A) to be true given T1, the languages in question must contain sentences with structurally identical SI's. Thus, it might be said, even the relatively modest (A) entails a substantial empirical claim about the SI's of the languages in question. (B) would require all languages to have sentences with structurally identical SI's; and (C) essentially requires languages to be structurally identical at the level of their SI's. Thus (B) and (C) entail successively stronger, and, it might be claimed, increasingly implausible empirical claims about the SI's of natural languages. Surely, one might claim, it is a strike against T1 that the truth of (A), (B) and (C) require (increasingly) substantial empirical claims regarding SI's of natural languages.

Objection 3: T1 contradicts the traditional view that propositions exist independently of conscious creatures and are eternal. This might be argued as follows:

1. Before the existence of conscious creatures, sentences of natural languages didn't exist.
2. If a sentences S doesn't exist, then the SI associated with S doesn't exist.

3. If the SI associated with S doesn't exist, then the sentential relation of S doesn't exist.
4. If the sentential relation of S doesn't exist, then the propositional relation of the proposition expressed by S (= the sentential relation of S on T1) doesn't exist.
5. If the propositional relation of a proposition doesn't exist, the proposition doesn't exist.

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6. Thus, before the existence of conscious creatures, propositions expressed by sentences of natural languages didn't exist.

Objection 4: In some cases an expression with a certain syntactic complexity contributes something to a proposition that is structurally more or less complex than it is. In such a case, the proposition and sentence expressing it have different structures, and so must be structured by distinct relations. We consider three cases of this sort:

(i) Consider an idiom like 'kicked the bucket'. One might argue that 4 has the SI 4a:

4. Ken kicked the bucket.

4a. [[Ken] [kicked [the [bucket]]]].[14]

By contrast, the proposition expressed by 4 on the idiomatic reading of 'kicked the bucket', it might be claimed, has the following structure

4b. ⟨⟨Ken⟩⟨being dead⟩⟩.

But then the structure of the proposition expressed by 4 (4b) is different from the structure of the SI associated with 4 (4a). Of course the reason for this is that the verb phrase 'kicked the bucket' appears to have a more complex structure than the constituent it contributes to the proposition.

(ii) Complex 'that' phrases (e.g. 'that man drinking a martini') also might be thought to provide a case in which an expression with a certain degree of syntactic structural complexity contributes a propositional constituent with less structural complexity. On Kaplan's [1977] account of 'that' phrases, such phrases are directly referential and so contribute individuals to the propositions expressed by sentences containing them. But then a sentence (and SI) containing a complex 'that' phrase ('That man drinking a martini is a professor') will have structural complexity due to the internal structure of the 'that' phrase that is not present in the proposition expressed in virtue of the 'that' phrase contributing simply an individual to the proposition. Thus, it might be claimed, the structure of the proposition and the structure of the SI are different.

(iii) Turning to the other sort of case in which one might claim that there is a discrepancy between the syntactic structure of an expression and the structure of its contribution to propositions, let us consider a case in which it might be argued that the structure of an expression's propositional contribution is more complex than the syntactic structure of the expression itself. Consider Nathan Salmon's [1989] view of belief:

> I take the belief relation to be, in effect, the existential generalization of a ternary relation, BEL, among believers, propositions and some third type of entity. To believe a proposition p is to adopt an appropriate favorable attitude toward p when taking p in some relevant way. It is to agree to p, or to assent mentally to p or to approve of p, or some such thing, when taking p a certain way.[15]

Moreover, 'believes' contributes to propositions expressed by sentences it occurs in the existential generalization of the BEL relation described above.[16] Thus Salmon [1986] writes: " 'A believes that p' may be analyzed as (Ex)[A grasps p by means of x & BEL(A, p, x)]."[17] Let us suppose that Salmon is right, both about the relation of belief and the analysis of 'A believes that p'. One might then make the following objection to T1. To say that 'A believes that p' *may be analyzed* as above is to say that the sentence expresses a proposition of the form: (Ex)[A grasps p by means of x & BEL(A, p, x)], (as far as I can tell, this is *not* Salmon's view – see note 30). However much of the structure of this proposition, (due to the existential quantification, the BEL relation, etc.), is contributed by the *syntactically unstructured* lexical constituent of the sentence 'believes'. It is implausible to suppose that the rules associating an SI with a surface structure will introduce structural complexity into the SI not present at the level of surface structure by "decomposing" or "analyzing" lexical items such as 'believes'. Thus (again, supposing the correctness of Salmon's view of belief for the sake of argument), the SI associated with 'A believes that p' will have a much simpler structure than the proposition it expresses, contrary to T1.

The objections to T1 we have been considering suggest that, despite its naturalness and initial plausibility (given A1 and A2), another theory of propositional structure might be preferable to T1. Any view of propositional structure different from T1 must hold that sentential relations and propositional relations are (at least sometimes) distinct.[18] Of course there are many versions of such a theory that differ in terms of the structures of the propositions they associate with particular sentences (or SI's). However, any version according to which the structure of an SI is (at least sometimes) different from the structure of the proposition it expresses (in particular, according to which SI's with different syntactic structures may express propositions with the same structure – and

hence may sometimes express the same proposition) is able to avoid the objections we have raised against T1.[19] Let us call any view of this sort *T2*.[20]

The difficulties we have raised for T1 seem to provide a strong motivation for the adoption of T2. However, as we will now show, we can provide responses on behalf of T1 to the objections we have raised against it.

Objection 1 held that T1 is inconsistent with P. Before explaining why there is reason to doubt P, I want to note that the propositional operators of English appear to cut quite finely, and so it is not clear that T1 is inconsistent with P. It is not easy to find two sentences that T1 claims express distinct propositions and are such that when embedded relative to any English propositional operator, the resulting complex sentences have the same truth values in all circumstances.[21] As Cresswell [1985] and Richard [1990] have noted, even 'A and B' and 'B and A' seem to result in sentences that can take different truth values in some circumstance when embedded relative to 'John deduced that', which seems to be a propositional operator. So even if we accept P, it won't be a simple matter to show that T1 contradicts it.

In any case, as I suggested above, there are reasons for thinking that P is false. Suppose that it turns out that (e.g.) '1 = 2' and '2 = 1', when embedded relative to any propositional operator, result in sentences that have the same truth values in all circumstances. P says that they express the same proposition. But there are reasons for holding that they don't. Assume that '=' expresses a relation and that '1' and '2' are names of objects. Now we know that for other words that express relations and those very same names, switching the order of the names results in a different proposition expressed. '2 > 1' and '1 > 2' express different propositions. It is quite reasonable to suppose that the propositions expressed by '2 > 1' and '1 > 2' have the same constituents (e.g. two objects and a relation) and differ in the way in which these constituents are put together. Thus '2 > 1' and '1 > 2' suggest that in a sentence consisting of two names flanking a relation sign, the different possible orders of the names encodes some difference in the way in which the entities named and the relation expressed combine to form a proposition. And this gives us reason to think that '1 = 2' and '2 = 1' express different propositions in virtue of having *their* constituents differently combined. The "fact", if it is one, that '1 = 2' and '2 = 1' when combined with any propositional operator yield complex sentences that never diverge in truth value is due to special properties of the relation involved (e.g. symmetry).

Similar considerations suggest that 'A and B' and 'B and A' express different propositions. Clearly 'A if B' and 'B if A' express different propositions. But these two sentences express propositions which contain the same constituents (two propositions and a truth function). Hence it seems that they differ in the order in which the constituents occur. But then we have reason to believe that 'A and B' and 'B and A' express distinct propositions that differ in terms of the order in which the constituents occur.

Hence we ought to amend P as follows: two sentences 'p' and 'q' express different propositions if and only if for some propositional operator 'O', 'Op' and 'Oq' differ in truth value in some circumstance or for some 'r' and 't' that are syntactically similar in the same way to 'p' and 'q' (respectively), 'Or' and 'Ot' differ in truth value in some circumstance, (I don't make the notion of *syntactic similarity in the same way* precise; the idea is that 'r' and 't' result from performing the same substitutions in 'p' and 'q', (respectively)).

With P thus weakened, it is not at all clear that it conflicts with T1. Recall that it isn't even clear whether P conflicts with T1. However, it seems to me that we ought not to believe even the weakened version of P. For consider the set of propositional operators 'O', (again, this *might* be the set of all English/natural language non-truth-functional operators). I believe that the propositions expressed by sentences containing such operators consist of a proposition (expressed by the embedded sentence) and a property of propositions expressed by the operator. This "complex proposition" is true iff the constituent proposition possesses the property in question. From this perspective, the claim that two sentences express the same proposition if the results of embedding them with regard to all propositional operators have the same truth values in all circumstances (and similarly for all syntactically similar pairs), essentially amounts to the claim that propositions which possess all properties of propositions expressed by English (or natural language) propositional operators in common (and similarly for all syntactically similar pairs) are identical. ... (recall the restriction mentioned in Note 12 – this means that we are not including properties such as the property of *being identical with the proposition that p*). But why believe this? First, even if two propositions possessed *all* properties in common, the claim that they therefore must be identical is controversial. But more importantly, there is no reason to believe that every property of propositions is expressed by some English (or natural language) propositional operator. Indeed, this is very likely to be false. So even if sentences (and all syntactically similar pairs) behave identically with regard to all propositional operators of English,

this shows only that they (and the similar pairs) express propositions that possess a lot of properties in common. And that is not enough to show that they are identical. To summarize, then, I can find no convincing reason for thinking that T1 individuates propositions too finely.

In responding to objection 2, we first need to recognize that (A) differs from both (B) and (C) in its pretheoretical plausibility. An important part of the philosophical motivation for propositions is the intuition that the same piece of information can be encoded by means of different sentences, whether in different languages or in the same language. Hence some might take (A) to be a sort of constraint on any theory of propositions. To take a clear case, it would be desirable for a theory of propositions to yield the result that 'Schnee ist weiss' and 'Snow is white' express the same proposition. Any theory which doesn't yield this result will have a lot of explaining to do, (though I for one don't think this by itself should sink a theory). It is true that on T1 it is an empirical question whether this pair of sentences express the same proposition and, more generally, whether (A) is true. However, it is overwhelmingly likely that the pair do express the same proposition on T1, and thus that (A) is true. For it is overwhelming likely that the two sentences have structurally identical SI's. Assuming that the lexical items in the two sentences have the same semantic values, which again seems very likely, they express the same proposition on T1. Indeed, the "clear cases" of two sentences of different languages expressing the same proposition, such as the above pair, which lend support to (A), also lend support to T1. For it seems to me that *clear cases* of sentences of different languages expressing the same proposition are cases in which the sentences have the same surface structure and contain lexical items with the same semantic values. If T1 is correct, it explains why these seem to be such clear cases. For identity of surface structure at least suggests structural identity of SI's. And this combined with sameness of semantic value for the lexical items suffices for the sentences to express the same proposition on T1.

(B), and particularly (C), contrast strikingly with (A) in terms of their pretheoretical plausibility. Neither enjoys support from the intuition motivating the positing of propositions (i.e. that different sentences *sometimes* encode the same piece of information), as (A) did. The more one thinks about (B) and (C), the more one tends to think that the proper *pre*theoretical attitude to take toward (B) and (C) is agnosticism.

Some might disagree, holding that the following (alleged) facts about translation support (B) and (C) respectively.

(B′) Some sentence of some language can be translated into any other language.

(C′) Any sentence of any language can be translated into any other language.

However, (B′) and (C′) support (B) and (C) only given the further premise that translation is a matter of pairing sentences of distinct languages that express the same proposition. This raises two questions: what is the evidence for (B′) and (C′)? and How plausible is the additional premise? Taking the latter first, translation may sometimes take the form of pairing sentences that express the same proposition, as in 'Schnee ist weiss'/'Snow is white'-type cases. However it does not always take this form. Think of the actual translations people perform – say a friend translating what a shopkeeper is saying in a market in Costa Rica. It is obvious that the translation could be perfectly fine for the purposes at hand without the propositions in the translation matching those expressed by the original utterances. Of course the degree of precision required in some cases is much higher. But an extremely high degree of precision need not, and I suspect usually doesn't, take the form of pairing sentences that express the same proposition. In international political, legal and business negotiations, where a high degree of precision is required, an utterance of a single sentence will very often be translated by several sentences of the other language. Is it really credible to think that one among these (or all of them taken together?!) expresses the same proposition as the original utterance? One might insist that these are only translations in some loose sense and that in the strict sense of the term it is required that the paired sentences express the same proposition. Very well. I won't argue over a word, (though I would say that most of what we call 'translation' is only translation in this "loose" sense). However, with 'translation' understood in this strict sense, so that our additional premise is true by definition, let us return to the first of our questions: what pretheoretical evidence is there for (B′) and (C′)? Whatever pretheoretical plausibility (B′) and (C′) enjoyed was a result of homey observations such as that in going from one language to another people manage to "get across" what they need to for the purposes at hand. But of course this will often be translation in the loose sense. It just is not at all obvious, when 'translation' is understood in the strict sense proposed, whether (B′) and (C′) are true or not. In short, whatever pretheoretical plausibility (B′) and (C′) enjoy results from understanding 'translation' in such a way that the additional premise required for (B′) and (C′) to support (B) and (C) is very likely to be false; and when the additional premise is taken to be true, it is simply not at all clear whether (B′) and (C′) are true.

Finally, let me stress that T1 does not rule out (B) or (C). Indeed, current thinking in syntax is leaning more and more toward the claim

that all languages are alike (or very much alike) at the level of SI's. I believe it is fair to say that most syntacticians within the Chomskyan tradition hold this view. If all languages are alike at the level of SI's, then the truth of (B) becomes quite likely and (C) becomes at least an interesting speculation. It is a virtue of T1 that it makes clear the conditions under which (B) and (C) would be true and suggests how to go about determining whether they are or not. This puts (B) and (C), or their denials, in what I suggested at the outset is their proper place: as outcomes of theorizing about propositions and the empirical study of languages.

Turning to objection 3, premise 3 is clearly false. From the fact that an SI associated with a sentence doesn't exist, it does not follow that the relation obtaining between the lexical items in the SI doesn't exist. This would be to say that if some complex entity consisting of two objects, a and b, standing in the relation R (aRb) doesn't exist, then the relation R doesn't exist. All that follows from aRb not existing is that a doesn't stand in R to b. But of course this is compatible with the relation R existing. Similarly, from the fact that S and its associated SI don't exist, it doesn't follow that the sentential relation of S doesn't exist.[22]

Recall that objection 4 had three cases. (i) hinged on claiming that the verb phrase 'kicked the bucket' has a more complex structure (as represented in 4a) than the constituent it contributes to the proposition expressed by 4 (on the idiomatic reading of 4). The claim that the verb phrase has this structure amounts to the claim that it consists of a verb ('kicked') combined with a noun phrase ('the bucket'), where the latter itself has internal structure due to its being a determiner ('the') combined with a noun ('bucket').

While 'kicked the bucket' is a verb phrase on the idiomatic reading of 4, it is doubtful that it has internal structure resulting from the combination of a verb and a complex noun phrase. In particular, I think it is doubtful that 'the bucket' is a noun phrase on the idiomatic reading of 4. For consider two traditional tests used in syntax to determine whether a given string of words is a syntactic constituent of a sentence, and if so, to which syntactic category it belongs. First, we are able to conjoin a phrase of a given syntactical category with another phrase of the same category:

5a. John reads comic books and rides skateboards.

5b. Mary hates a boy in her class and the neighbor down the street.

Thus 5a provides evidence that 'reads comic books' and 'rides skateboards' are of the same grammatical category (verb phrase); and 5b provides evidence that 'a boy in her class' and 'the neighbor down the street' are of the same grammatical category (noun phrase). Let us call this the *coordination test*. Second, a phrase of a given syntactical category may serve as the antecedent of the appropriate type of *proform*. Thus 6a provides evidence that 'a dog' is a noun phrase since 'it'/'one' are pro*nouns*; and 6b provides evidence that 'likes waterskiing' is a verb phrase since 'does too' is a pro*verb*:

6a. Rebecca owns a dog and Mary owns it/one too.

6b. Bill likes waterskiing and Mary does too.

Let us call this the *proform test*. Consider the result of applying our two tests to 'the bucket' in 4 on its idiomatic reading:

*4c. Ken kicked the bucket and a dog.[23]

*4d. Ken kicked the bucket and Kelly kicked it/one too.

4c and d are both infelicitous on the idiomatic readings of 'kicked the bucket'. So on this reading, 'the bucket' cannot be conjoined with other noun phrases nor serve as the antecedent of a pronoun. This suggests that 'the bucket' is not a noun phrase at all on the reading in question. By contrast, the coordination and proform tests both support the claim that 'kicked the bucket' taken as a whole is a verb phrase:

4e. Ken drove home and kicked the bucket.

4f. Ken kicked the bucket and Kelly did too.

That in 'kicked the bucket' (on the idiomatic reading), 'the bucket' does not behave like a noun phrase but the entire phrase behaves like a verb phrase suggests that it is a verb phrase that, despite appearances, has no internal syntactic structure. On this view, 'kicked the bucket' when used literally has an internal structure due to its being constructed out of a verb and a complex noun phrase; however, in its idiomatic use it has no internal syntactic structure. Note that there is nothing odd about assigning two different structures to a single phrase. The phrase 'slowly shook and cursed' has two different structures distinguished by whether 'slowly' modifies both verbs or only the first. The only difference in the present case is that the phrase is assigned two different structures, only one of which assigns it internal structure.

If, as I am suggesting, the verb phrase 'kicked the bucket' has no internal structure on its idiomatic reading, then on that reading 4 has as its SI

4a. [[Ken] [kicked the bucket]].

The structure of 4g is identical to that of the proposition expressed by 4 on its idiomatic reading (4b) and thus such sentences do not constitute counterexamples to T1.

Turning to (ii), we begin our response by noting why complex 'that' phrases have been thought to be directly referential. First, suppose that someone utters 'That man drinking a martini is a professor' in a context in which there is obviously exactly one man, Michael, drinking a martini. Presumably some proposition, say Q, has been expressed. Thus we may now ask about Q's truth value in other possible circumstances. Most have a strong intuition that whether Q is true or false in another possible circumstance depends on whether *Michael*, drinking a martini or not, is a professor in that circumstance. The view that complex 'that' phrases are directly referential explains this intuition: the 'that' phrase contributes only Michael to Q. Thus, when we evaluate Q in other circumstances, its truth value depends on whether Michael is a professor, and not on whether Michael is drinking a martini or whether someone else in that circumstance who is drinking a martini is a professor.

Other evidence that suggests that complex 'that' phrases are directly referential includes their behavior when embedded relative to modal and temporal operators. Again imagine the following sentences uttered in a context in which Michael is obviously the only man drinking a martini:

7a. It is possible that that man drinking a martini should have been a bum.

7b. In five years that man drinking a martini will be famous

Most have the intuition that 7a and 7b are true just in case Michael might have been a bum and will be famous in five years, respectively. On the view that complex 'that' phrases are directly referential, this is explained by saying that the embedded sentences in 7a,b (in the context described) express propositions containing Michael as a constituent. But then when the modal and temporal operators in 7a,b in effect tell us to evaluate those propositions at other worlds and times, it is always *Michael's* properties at those worlds and times that are relevant to truth and falsity.

There is an account of complex 'that' phrases according to which such phrases are not directly referential and contribute to propositions complex constituents whose internal structures mirror those of the 'that' phrases

expressing them, *and* that can explain the data that is thought to show that such phrases are directly referential. On this account, 'that' behaves semantically as do other determiners such as 'every', 'some' and 'the'. The view of the semantics of determiners that I am presupposing holds that determiners in effect express relations between properties or sets.[24] Thus 'every' expresses the relation that obtains between properties A and B iff every instance of A is an instance of B; 'some' expresses the relation that obtains between properties iff they have a common instance, etc. The only difference between 'that' and other determiners is that which relation between properties 'that' expresses varies with the context of utterance.[25] Relative to a context of utterance c, 'that' expresses the relation that obtains between the properties A and B iff the unique instance of A *in c* is an instance of B. In c, 'that' expresses something like the relation between any properties A and B of A's *unique instance in c being an instance of* B.[26] This means that sentences containing complex 'that' phrases such as 'That man standing by the gas station is a robber' express different propositions in different contexts of utterance in virtue of that contributing different relations between properties to the propositions. Notice what happens when we take the proposition expressed in context c by such a sentence and evaluate it in various possible circumstances. Whether the proposition is true or false in any possible circumstance e will depend on the properties in e of the thing uniquely instantiating some property *in c*. For in c, 'That man standing by the gas station is a robber' expresses a proposition to the effect that the unique instance of the property *being a man standing by the gas station* in c is an instance of the property *being a robber*.[27] This proposition will be true in a circumstance of evaluation e iff the unique instance of the property *being a man standing by the gas station* in c possesses the property of *being a robber* in e.[28] Thus the present account delivers the result that a sentence such as 'That man drinking a martini is a professor', when uttered in a context in which Michael is obviously the unique individual drinking a martini, expresses a proposition whose truth or falsity in other possible circumstances depends only on whether Michael is a professor in those circumstances. Thus this result cannot be used to defend the claim that complex 'that' phrases are directly referential.

The present account of complex 'that' phrases is in accord with the intuitions about 7a,b mentioned above. If 7a is uttered in a context c in which Michael is obviously the unique man drinking a martini, then 7a will be true in a circumstance of evaluation e iff the proposition expressed in c by 'That man drinking a martini is a bum' is true in some possible

(relative to e) circumstance e′. This will be so iff Michael is a bum in e′. Similar remarks apply to 7b.

To repeat, then, there is an account of the semantics of 'that' phrases according to which their structures mirror the structures of their contributions to propositions and which explains data that has been thought to show that such phrases are directly referential. However, because the question of the proper semantics for complex 'that' phrases is extremely difficult and multifaceted, I cannot claim to have shown that the account just sketched is the proper one.[29] On the other hand, I hope to have convinced the reader that it is far from obvious that complex 'that' phrases are directly referential and that the alternative account I have sketched is plausible and promising.

Finally, let us consider (iii). This objection neglects an important distinction that is often ignored in discussions of philosophical "analyses" of sentences and other expressions. We must distinguish between claims about the structures of *propositions* and claims about the structures of entities that are the *constituents of propositions*. Suppose for a moment that those who think ordinary names are directly referential are correct and thus that sentences such as 'Michael Jordan is tall' express propositions with individuals, in this case Michael, as constituents. Michael Jordan has a certain internal structure. But surely no one would be tempted to say that Michael's internal structure is part of the structures of propositions containing him. For this reason, we say that the propositions expressed by 'Michael Jordan is tall' and 'Cindy Crawford is tall' have the same structure in spite of the fact that there are differences in the internal structures of Cindy and Michael. Somehow philosophers have more trouble keeping this distinction straight when they consider other sorts of constituents of propositions and their internal structures. Some properties and relations are complex and so have internal structures of a sort. For example, the Fregean reference relation is complex and has an internal structure: for a name n and an individual i to stand in the Fregean reference relation is for there to be a sense s such that n expresses s and s determines i. Thus we might say that the Fregean reference relation is the existential generalization (on the sense argument place) of the conjunction of the relation of *expressing* (between linguistic expressions and senses) and the relation of *determining* (between senses and referents). In saying this we are making a claim about the internal structure and constituency of the relation.

To return to Salmon's view and our objection, he has made a claim about the internal structure and constituency of the *belief* relation: viz. that it is the existential generalization of a three place relation BEL.

But that claim has nothing to do with the structures of propositions that contain the *belief* relation as a constituent, any more than claims about Michael Jordan's internal structure have something to do with the structures of propositions containing him. Consider the following two sentences:

8a. Don loves Julie.

8b. Don admires Julie.

Now assume, what is probably true, that the relations that are the semantic values of 'loves' and 'admires' are complex (in the way that the Fregean *reference* relation is and the way *belief* is on Salmon's analysis) and that they have different constituents and internal structures. Nonetheless, the *propositions* expressed by 8a and 8b have the same *structure*; both have the structure:

8c. $\langle\langle \text{Don}\rangle\langle\langle \text{R}\rangle\langle \text{Julie}\rangle\rangle\rangle$.

If Salmon is correct, the belief relation is complex and has a certain internal structure. This would mean that a simple lexical item can have a complex relation as its semantic value. This is no doubt correct. But we should not read 'may be analyzed as' in "'A believes that p' may be analyzed as (Ex)[A grasps p by means of x & BEL(A, P, x)]" as 'expresses a proposition of the form', as was suggested in presenting the objection. For if we observe the distinction between claims about propositional structure and claims about the internal structure of entities that are constituents of propositions, we see that even on Salmon's view 'A believes that p' expresses a proposition of the form: $\langle\langle \text{A}\rangle\langle\langle \text{R}\rangle\langle \text{p}\rangle\rangle\rangle$. Salmon has simply told us something about the internal structure and constituents of R.[30] Thus, there is no discrepancy between the structure of the proposition expressed by 'A believes that p' and its SI.

Recall that the primary motivation for T2 was that by adopting it we could avoid difficulties of the sort we raised for T1. Having provided responses to those objections within the framework of T1, we have shown that these difficulties can be avoided without abandoning T1 in favor of T2.[31] Thus it may now appear as though we have a standoff between T1 and T2: difficulties of the sort we raised can be avoided by adopting T2 or answered from within the framework of T1. In fact, however, T1 enjoys a number advantages over T2 that suggest that T1 is preferable.

First, T1 is more explanatorily economical than T2. Part of the motivation for thinking that propositions are structured is that if propositions are structured and a sentence's (SI's) structure in some way determines the structure of the proposition it expresses, then even sentences which

are necessarily logically equivalent but have different syntactic structures may express different propositions. Thus any view of structured propositions must provide an account of how sentence structure determines propositional structure. However, T1 will be able to provide a simpler account than T2. T2 must hold that sentence structure determines propositional structure because the rules mapping SI's to propositions not only interpret lexical items, but also map SI's with a certain sentential relation R to propositions with a propositional relation R′ distinct from R. But then just as there must be some relation (e.g. reference) between a lexical item and its sv to explain why that thing is the sv of that lexical item, (that is, why the semantic rules interpret the lexical item by means of that thing, as opposed to something else), so on T2 there must be some relation between the sentential and propositional relations R and R′, which explains why the semantic rules map SI's whose lexical items stand in R to propositions whose constituents stand in R′.[32] However now an explanation must be given of this relation between R and R′, just as an explanation must be given of the relation between a lexical item and its sv. What is the relation? How did R and R′ come to be related in this way? Providing these explanations promises to be *at least* as difficult as providing comparable explanations for the reference relation.

T1 claims that sentence structure determines propositional structure because the relation that imposes the structure on a sentence *is* the relation that imposes the structure on the proposition it expresses. In other words, the rules that map SI's to propositions only interpret lexical items; they leave sentential relations untouched. Because T1 identifies sentential relations and propositional relations, that is, identifies R and R′, and holds that the rules mapping SI's to propositions don't treat R/R′ at all, we need not posit, and provide an account of, a relation between R and R′ that explains why the semantic rules map SI's whose sentential relation is R to propositions whose propositional relation is R′. Thus the account of how sentence structure determines propositional structure is much simpler than that of T2.

Second, on T1 once the structures of the SI's of sentences are settled, so are the structures of propositions expressed by these sentences. By contrast, according to T2, even when the structures of SI's are determined, there remains the further question about the structures of propositions.

Third, and related to the previous point, on T1 competing claims about propositional structure amount to proposals concerning the structures of syntactic representations that are the input to semantics. On T2, however, competing claims about propositional structure concern the structure

of entities whose structures are distinct from the structures of the SI's underlying the sentences used to express them. It seems quite likely that proposals of the former sort will be easier to evaluate than proposals of the latter sort.

Fourth, T1 immediately yields the exact conditions under which two sentences express the same proposition. Two sentences express the same proposition if and only if their SI's have the same structure, and the lexical items occurring at the same places in the two SI's have the same semantic values. T2, by contrast, does not yield such conditions immediately. Because the structures of propositions may differ from the structures of sentences expressing them, there is no guarantee that sentences of quite different structures won't express the same propositions (or even that sentences with the same structures won't express propositions of different structures).

Fifth, anyone convinced by current thinking in syntax is committed to the view that the syntactic inputs to semantics have structures distinct from the surface structures of sentences. But the relations which impose this structure are the relations which provide the structure of propositions on T1. Thus, those who subscribe to current syntactical theory are ontologically committed to the relations that provide the structures of propositions on T1. However this is not the case for T2. Thus in this sense, T1 is metaphysically more conservative than T2.

Taken together, these considerations show that T1 is in certain respects more ontologically, methodologically and explanatorily economical than T2. Thus T1 is the view we ought to prefer.[33]

APPENDIX

Let f be a function that maps variables to individuals and individuals to themselves; ψ, ζ be individuals or variables; ξ be a variable; P be a property; R be a relation; and Ξ, Γ be propositional frames. Where Δ is a propositional frame, we define *the proposition expressed by* Δ *relative to* f, $\mathrm{Pr}(\Delta)_f$, as follows:

1. If $\Delta = [[\psi]\ \mathrm{P}]$, then $\mathrm{Pr}(\Delta)_f = [[f(\psi)]\ \mathrm{P}]$.
2. If $\Delta = [[\psi]\ \mathrm{R}\ [\zeta]]$, then $\mathrm{Pr}(\Delta)_f = [[f(\psi)]\ \mathrm{R}\ [f(\zeta)]]$.
3. If $\Delta = [\Xi\ \mathrm{AND}\ \Gamma]$, where AND is the truth function for conjunction, $\mathrm{Pr}(\Delta)_f = [\mathrm{Pr}(\Xi)_f\ \mathrm{AND}\ \mathrm{Pr}(\Gamma)_f]$, (similar clause for negation).
4. If $\Delta = [[\mathrm{EVERY}\ \xi\ \Xi]\ \Gamma]$, where EVERY is the function from a set S to the set of sets S′ such that S is a subset of S′ (i.e. EVERY is the sv of 'every'), then $\mathrm{Pr}(\Delta)_f = [[\mathrm{EVERY}\ \xi\ \mathrm{Pr}(\Xi)_{f-\xi}]\ \mathrm{Pr}(\Gamma)_{f-\xi}]$, where

$\Pr(\Omega)_{f-\xi}$, for Ω a propositional frame, is the result of replacing $f(\xi)$ by ξ in $\Pr(\Omega)_f$, (similar clauses for SOME, THE).

(Note that if Δ has no free variables (i.e. is a proposition), then $\Pr(\Delta)_f = \Delta$.) Let $o, o', o'', \ldots$ be individuals; P be a property; R be a relation; Ξ, Γ be propositional frames; X, Y be propositions; and ξ be a variable. If R is an n-place relation (where $n = 1$, R is a property), the *intention of R* is a function from circumstances to sets of n-tuples; and the *extension of R in c*, $\text{ext}_c(R)$, is the result of applying its intention to the circumstance c.[34]

1. A proposition of the form [[o] P] is true in c iff o belongs to $\text{ext}_c(P)$.
2. A proposition of the form [[o] R [o']] is true in c iff $\langle o, o' \rangle$ belongs to $\text{ext}_c(R)$.
3. A proposition of the form [[EVERY ξ Ξ] Γ] is true in c iff {o: for some f such that $f(\xi) = o$, $\Pr(\Gamma)_f$ is true in c} $\in$ EVERY({o': for some f' such that $f'(\xi) = o'$, $\Pr(\Xi)_{f'}$ is true in c}), (similar clauses for THE, SOME).
4. A proposition of the form [X AND Y] is true on c iff the value of AND when applied to the truth values of X and Y in c is true, (similar clause for negation).

NOTES

* I have benefitted from discussions with Michael Jubien, Michael Liston, Paul Teller, Howard Wettstein, Mark Wilson and especially David Copp. The comments of Mark Richard and an anonymous referee for *Journal of Philosophical Logic* on an earlier draft resulted in a much improved paper. Various circumstances resulted in this paper appearing after King [1995], though the latter was written later and amends the present view in several ways. See notes 9, 13, 15 and 33 of King [1995].

[1] Scott Soames [1987] defends this account of propositions. See Edelberg [1994] for a response to Soames.

[2] See Chomsky [1981].

[3] Such an approach is motivated by cases in which sentences have multiple meanings that are not a result of lexical ambiguity (e.g. quantifier scope ambiguities), cases in which pairs of sentences with similar surface structures differ semantically, and by the fact that positing a syntactic level like LF allows for the statements of important syntactic generalizations and constraints that do not hold at other levels of syntactic representation. See May [1985] for an extended defense of this approach.

[4] It might be claimed that this is just a matter of convenience, a way of simplifying the statement of semantic theory. That is why I address the point explicitly.

[5] I avoid the terms *LF* and *LF representation* in formulating my own views, because these are technical terms in a certain range of theories and I do not wish to endorse everything theorists have said by means of them.

[6] I indifferently call both the actual syntactic representations that are the inputs to semantics associated with English sentences and the formulae of our formal language

SI's, occasionally prefixing the word 'actual' or 'real' when I wish to make clear that I am not talking about formulae of the formal language. No confusion should result.

[7] In the formalism I employ, phrases such as 'every linguist' ('[every x [x linguist]]'), as opposed to 'every', are the expressions which combine with formulae to form quantified formulae. See Barwise and Cooper [1981] for a defense of the claim that quantifiers in English are whole noun phrases such as 'every linguist'.

[8] Such theories postulate three levels of syntactic representation: D-structure, S-structure and LF. At D-structure phrase structure representations are generated. In saying these are *phrase structure representations*, I mean that the internal structure of the sentence, including the internal structure and linguistic category of any phrase occurring in it, is represented. Transformations, which map phrase structure representations to phrase structure representations, map D-structure representations to S-structure representations. Thus S-structure representations are themselves phrase structure representations. Transformations then map S-structure representations to LF representations. Hence, LF representations are phrase structure representations. Thus my assumption that the internal structure of a sentence is represented at the level of SI's is endorsed within this syntactic framework. Further, within such a framework, one of the main differences between S-structure representations and the LF representations they are mapped to is that at LF quantifier phrases have been moved in such a way that their scope relations relative to each other and to other operators are explicitly represented; and they leave "traces" which function as variables bound by the displaced quantifier phrase. Names, by contrast, do not undergo such movement. Hence such a theory endorses my other assumptions, viz. that quantifier scope relations are represented at the level of syntactic representation that is the input to semantic interpretation, that names and quantifiers appear in different places at this level and that quantifiers bind variables.

[9] Here and elsewhere I talk as though T1 is a theory of propositions. I do this when *any* theory of propositions yielded by supplementing T1 with an account of sv's would have a certain feature.

[10] Mark Richard [1990] considers this objection to the view he defends. My discussion owes much to Richard's.

[11] Actually, for the purposes of the present discussion, I am supposing that 'p' (and later 'q') doesn't contain contextually sensitive expressions. Allowing 'p' and 'q' to contain, e.g. indexicals would require a slight complication in various formulations, including the statement below of the principle I call *P*.

[12] P is used in determining when two sentences express the same proposition. Thus the quantifier on the right side of P must range over only a restricted set of propositional operators. For example, it should not range over operators like "The proposition that ____ is identical to the proposition that $1 = 2$". For to decide whether a sentence formed from this operator is true, one must decide whether two sentences express the same proposition. Thus one would have to determine whether two sentences express the same proposition prior to applying P, and so P could play no role in that determination. We shall henceforth understand P as excluding such operators. Similarly, subsequent talk about all propositional operators should be understood as excluding them as well.

[13] Katz [1981] seems to endorse (C) when he says 'Each proposition [thought] is expressible by some sentence in every natural language'. (p. 226).

[14] Assuming that definite descriptions are quantifiers (which I believe) and thus get moved in the mapping from surface structure to SI, the structure of the SI for 4 would be somewhat different from 4a. This difference is not important here.

[15] p. 246.

[16] See clauses 20 and 22 in Salmon [1986] p. 145. Salmon's view is more complicated than I am making it out to be here. These subtleties are irrelevant to present concerns.

[17] p. 111.

[18] The two most prominent champions of structured propositions, Scott Soames and Nathan Salmon, apparently hold that the structures of propositions are (sometimes) distinct from the structures of sentences expressing them and so reject T1. Soames [1987] explicitly says that the structure of a proposition may differ from the structure of the sentence expressing it (see Note 35). And Soames and Salmon both provide treatments of quantified sentences according to which their structures are distinct from the structures of the propositions they express. Soames [1987] takes a sentence of the form $(Ex)\Phi$ to express (relative to an assignment of individuals to variables f) a proposition of the form ⟨SOME, g⟩ where SOME is the property of being a non-empty set and g is the function from individuals o' to propositions expressed by Φ relative to f' which differs from f at most in assigning o' to x, (in his formalism Soames only considers the *un*restricted quantifier (Ex)). But this means that if Φ has any significant internal structure, $(Ex)\Phi$ will have more structure than the proposition it expresses, in virtue of Φ possessing internal structure, and the function g not. Salmon's [1986] treatment is similar, except that instead of the function g he has a property determined by Φ. T1 requires that a sentence of the form $(Ex)\Phi$ (sticking with unrestricted quantification for the sake of comparison) expresses a proposition such that the constituent contributed by Φ has the same structure as Φ, and thus is structurally complex if Φ is. That is why clause 3 in my definition of the propositional frame expressed by a formula requires the constituent contributed by Ψ to be the propositional frame expressed by Ψ, and hence to be an entity whose structure is identical to Ψ's. My particular implementation is not important; what is important is that there be a way of treating quantification such that indefinitely complex quantified English sentences express propositions with the same structure as their underlying SI's.

[19] The requirement that SI's have *different structures* than do the propositions they express is a stronger requirement than that propositional relations and sentential relations are distinct. One could hold the latter and hold that propositional relations and sentential relations nonetheless impose the same structures on propositional constituents and lexical items, respectively, in the sense in which, e.g. the *greater than* relation among real numbers and the *later than* relation among times impose the same structure on real numbers and times respectively. This theory would be subject to most of the objections we have raised against T1 and thus would not be significantly preferable to T1.

[20] T2 is able to avoid objections 1 and 2, because it allows sentences with different syntactic structures (whether in the same or different languages) to express the same proposition. It avoids objection 3 by holding that premise 4 is false. And objections such as 4 can't arise because they apply only to theories according to which the structure of an SI is identical to the structure of the proposition it expresses.

[21] One of the difficulties with testing this claim is that it requires one to isolate the class of propositional operators and to know the SI's of all sentences.

[22] In fact, I believe the conclusion of the argument (6) to be true! However it does not follow from T1 alone. See King [1994] for discussion.

[23] Some would claim that 4c is infelicitous because it requires 'kicked' to simultaneously bear two different meanings: (i) the idiomatic meaning so that 4c expresses the claim that Ken died and (ii) the non-idiomatic meaning so that it expresses the claim that Ken kicked a dog. They might then appeal to the infelicity of examples such as 'John held his wife and an implausible view about Watergate.' to show that a verb cannot simultaneously bear two different meanings. However such an explanation presupposes

an incorrect account of the idiomatic meanings of phrases. The idiomatic meaning of 'kicked the bucket' does not arise from idiomatic meanings of its components 'kicked' and 'the bucket': 'kicked' by itself has no idiomatic meaning (or at least none that is relevant here). Thus 'kicked' cannot be required to have two meanings simultaneously in 4c, one of which is idiomatic, as the explanation claims. Rather, I think the problem with 4c is that on the idiomatic reading of 'kicked the bucket', 'kicked' by itself is not a verb; but it would have to be to take the second object 'a dog'. Note that 'kicked' cannot undergo coordination with other verbs on the idiomatic reading of 'kicked the bucket': *'Ken licked and kicked the bucket.' This is the flip side of the point I go on to make: that 'the bucket' is not a noun phrase on the idiomatic reading of 'kicked the bucket'.

[24] In formulating my semantics, I took determiners to express relations between sets. Here I switch to the view that they express relations between properties, because this provides a framework within which it is easy to explain the sort of contextual sensitivity I claim 'that' possesses.

[25] This is *one* way to treat the contextual sensitivity of 'that' on the type of account I imagine. There are a number of different ways to handle 'that', any of which would yield the result I desire. Further investigation would be required to choose among them.

[26] Some might deny that 'that' requires a *unique* instance of A in c. Though I believe this is required, a defense of this claim is beyond the scope of this paper.

[27] This doesn't mean that I think that the property *being a man standing by the gas station* is a constituent of the proposition. Rather, the phrase 'man standing by the gas station' contributes a structured entity to the proposition whose constituents are the property of *being a man*, the relation of *standing*, etc. As mentioned in Note 18, T1 requires an account of the semantics of determiners and quantification according to which phrases of the form 'DΦ', where 'D' is a determiner and 'Φ' is a complex phrase (e.g. 'some friend of Mary's from college') result in 'Φ' contributing a constituent to the proposition whose structure is identical to the syntactic structure of 'Φ'.

[28] Kaplan [1989] seems to have a similar account in mind when he considers a view according to which the proposition expressed by a sentence containing a 'that' term '...would not carry the individual itself into a possible world but rather would carry instructions to run back home and get the individual who there satisfies certain specifications' (p. 580).

[29] Among the many considerations that would need to be addressed in deciding whether 'that' phrases are best treated as directly referential or along the lines I have suggested, are the following. Do 'that' phrases exhibit bound variable uses? If so, this might be thought to be evidence for the present account, since other complex NP's whose semantics are thought to be similar to the semantics proposed here for 'that' do exhibit such uses (e.g. definite descriptions) and other directly referential expressions don't exhibit such uses. ('that' phrases appear to have such uses, as in 'Every analytic philosopher has encountered at least one English student who wondered whether what that analytic philosopher did constituted philosophy'.) May complex 'that' phrases contain pronouns that are bound by other quantifiers (as is the case with other complex NP's formed using determiners)? Again, I think so: 'Every swimmer loves swimming in that swimming pool in which he/she swims his/her fastest times'. Are there differences between 'that' when used alone and complex 'that' phrases (e.g. the former do not seem to have bound variable uses) and how will each theory account for any differences? Do complex 'that' phrases exhibit semantically significant scope interactions? To see how difficult it would be to definitively answer any one of these questions, consider the last. Complex phrases formed from determiners ('every man in Pasadena'), that is, quantifier

phrases, generally can take different scopes relative to each other and other operators. The present view claims that complex 'that' phrases are semantically like other quantifier phrases, (except possibly in being sensitive to context of utterance). This gives us *prima facie* reason to expect that complex 'that' phrases will be capable of various scopes relative to other quantifiers and operators. However, the semantics suggested for 'that' results in no truth conditional difference between wide and narrow scope readings of 'that' phrases relative to certain quantifiers (e.g. quantifiers formed using 'every' or 'some' – assuming those quantifiers don't bind any variables in the 'that' phrase) and modal, temporal and locational operators (for such an operator 'O', 'Op' is true relative to certain parameters (context, world, time, location) iff 'p' is true relative to "shifted" parameters (context, *other* worlds, times, locations) – the point is that it will make no difference whether the 'that' phrase is evaluated before or after the shifting induced by the operator occurs; it will still be evaluated in the original context). But if we suppose that belief operators are used to assert relations between individuals and propositions (and are not "parameter shifting" operators), and that wide and narrow scope relations between complex NP's formed using determiners and belief operators result in *de re* and *de dicto* readings of belief ascriptions (as structured propositions theorists usually do), then in virtue of allowing wide and narrow scopes of 'that' phrases relative to belief operators, the current account of the semantics of 'that' phrases predicts a *de re* and *de dicto* reading of the sentence 'Glenn believes that man leaning against a wall drinking a martini is a spy'. Many think that the sentence only has this *de re* reading (i.e. concerning a man who in the context of utterance uniquely is leaning against a wall drinking a martini, Glenn believes *he* is a spy), and so the prediction of an additional reading by the present account might be thought by some to undermine that account. One way to respond to this would to be to try to give a principled reason for thinking that complex 'that' phrases always take wide scope over attitudinal operators. However, I believe that though such readings are preferred, we can actually get the narrow scope readings predicted by the present account. For example, imagine that Glenn has been monitoring the conversations of a number of spies. As a result of overhearing various conservations, Glenn becomes convinced that a man who he has never met (or overheard) and who is a spy will be at a certain location at a certain time leaning against a wall drinking a martini (perhaps so that he will be recognized by other spies). Glenn decides to send Mary to the relevant location at the relevant time to determine the identity of this spy. Mary appears at the location with her friend Lisa, who knows little about the situation. A man appears at precisely the time Glenn mentioned and leans against a wall drinking a martini. Asked by Lisa why she is staring in a certain direction at that moment, Mary responds 'Glenn believes that man leaning against a wall drinking a martini is a spy'. It seems to me that intuitively this belief report is true, though it does not seem that Glenn is in a position to believe a singular proposition containing the man in question as a constituent. But then *both* the wide scope reading of the 'that' phrase relative to the belief operator which the present account allows *and* the reading according to which the 'that' phrase is directly referential are false. On the narrow scope reading of the 'that phrase predicted by the present account, the proposition Glenn is said to believe is that a thing which uniquely instantiates the property of *being a man leaning against a wall drinking a martini* in the context of utterance instantiates the property of *being a spy*. And this does seem to be something Glenn believes! Thus our account explains why belief ascriptions such as the one above seem true in situations where the subject of the ascription does not seem to believe a singular proposition. As I say, I give this as an

example of one among many sorts of subtle considerations which need to be addressed in deciding on the proper semantics for 'that' phrases.

[30] Salmon's own view of his proposal seems to agree with ours. See clauses 35 and 36 p. 146–147 in Salmon [1986]. These clauses say that 'A believes that p' expresses a proposition whose constituents are A, the proposition expressed by 'p' and the relation of believing. The proposition is just the concatenation of these three constituents.

[31] The responses given to objections 1–4 were intended not merely to address those difficulties, but to give the reader some idea of the kinds of strategies available on T1 to deal with other objections. This is particularly true in the case of objection 4. For many claims in the literature about the propositions expressed by classes of sentences and about the semantic contributions to propositions by other expressions will appear *prima facie* incompatible with the claim that propositional relations are identical to sentential relations (and thus that the structure of a proposition is identical to the structure of the SI expressing it). The responses to subcases (i)–(iii) of objection 4 provide three ways of handling such cases: 1) argue that the structure of the SI is different from what it appears to be (response to 4(i)); 2) provide an alternative account of the sentence/expression in question (4(ii)); 3) distinguish claims about the internal structure of propositional constituents from claims about the structures of propositions containing them (4(iii)).

[32] I assume here that the propositional relation is completely a function of the sentential relation in the sense that any sentence whose sentential relation is R gets mapped to a proposition whose propositional relation is R′. However the point I make here will go through if this assumption is dropped.

[33] On T1 a given sentential/propositional relation obtains between lexical items and *that very same relation* obtains between their semantic values. One might object that there is something mysterious or odd about this, given how different lexical items are from their semantic values. But in the first place, plenty of relations obtain between things of quite different kinds. People and numbers can both stand in the identity relation, for example. Further, it is not clear what sorts of things lexical items are, and so it is not clear that they belong to a different ontological category than do the constituents of propositions. It may turn out, for example, that a word (type) is a property.

[34] I follow Soames [1987] to some extent here.

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