Are 'That'-Clauses Really Singular Terms?*

The received view in the philosophy of language and formal semantics is that 'that'-clauses in English are singular terms, and in particular, that the complementizer 'that' is a term-forming operator that turns meaningful sentences of the language into complex singular terms. (See, e.g., Vendler 1967; Cresswell 1973; Bealer 1979; Chierchia 1982; Barwise & Perry 1983; Anderson 1984; Salmon 1986; Soames 1987; Schiffer 1992; Asher 1993; Parsons 1993; for a recent dissenting view, see Recanati 2000.) And this is not just a matter of fashion; the view is extremely well supported.

In spite of this support, I will show that the received view is, if not outright mistaken, highly oversimplified and in need of refinement. My argument will be based on a consideration of various quite familiar 'that'-clause constructions in English which pose serious prima facie problems for the singular term theory.[1] Ultimately, however, I will argue that these types of constructions do not refute the received view. In particular, I show that it might be possible to preserve the singular term theory by utilizing a richer conception of grammatical structure than is commonly made explicit in the philosophy of language and formal semantics.[2] This conception of grammatical structure is anticipated in the work of Frege (1960 [1879]), Church (1940) and Bealer (1992) and has recently been elaborated by linguists working in the area of Construction Grammar (Fillmore, Kay, Michaelis & Kathol *Forthcoming*; Goldberg 1995).

* The author would like to thank the following people for helpful comments on previous versions of this paper: Kent Bach, Dan Blair, Chad Carmichael, Peter Hanks, Jeff King, Laura Michaelis, Michelle Montague, David Shier, and Sam Wheeler. A particular and substantive debt is owed to George Bealer.

[1] Similar problems for the singular term theory have been independently raised by Delia Graff (2000). See also Harman (2002), Wheeler (2002), and King (forthcoming).

[2] I use the term 'grammatical structure' generally to cover the whole range of syntactic, semantic and phonetic properties of linguistic items.

Before I begin, a few preliminary remarks are in order regarding terminology. I will adopt the convention of stipulatively calling the meanings of sentences ‘propositions’ (with the understanding that, if the *general* ontological category to which sentence meanings belong contains other entities–for example, entities that are not expressible by any sentence of English–then they too will be counted as propositions). Moreover, I will assume that if the singular term theory is correct, ‘that’-clauses denote propositions. This terminological choice leaves open just what type of entity propositions are: they could be abstract Platonic entities, mind-dependent mental constructs, or even the sentences themselves (or sentences in the language-of-thought). Which of these possibilities is correct is not an issue that we will need to settle. For the purposes of this paper, we need only make the very natural assumption that propositions so construed are 0-ary entities (whereas, properties are 1-ary; binary relations are 2-ary, etc.). This assumption should not be particularly controversial since it is an extremely natural corollary of the singular term theory and is almost universally accepted by advocates of the view.

1. Support for the Singular Term Theory

Widespread agreement over the singular term theory is hardly surprising, for a strong prima facie case for it can be made on a number of fronts. To begin with, it seems that, at least as a purely syntactic thesis, paradigmatic occurrences of ‘that’-clauses in propositional attitude reports must be parsed as

x believes that p

and not as

x believes that p

That is, the 'that'-clause must be treated as a syntactic constituent distinct from the main verb (see also Bealer 1982 and Parsons 1993). This is supported intuitively by the naturalness of sentences such as the following:

1a. x believes something very controversial, namely, that p.

This intuitive support is further bolstered by appeal to standard tests for syntactic constituency. Consider, for example, the behavior of so-called *wh*-questions such as (1b) below:

1b. Who does x believe?

In response to (1b), it would be entirely appropriate to say such things as 'John', 'the man in the park' or 'every evangelist', all of which are uncontroversial syntactic units. Moreover, it is never appropriate to respond with a syntactic string that is not a syntactic unit (e.g., * 'Man in park').[3] This suggests that our ability to give an expression α as an appropriate response to a *wh*-question is evidence that α constitutes a syntactic unit at some level of analysis. Given this, consider the following *wh*-question:

1c. What does x believe?

It is most natural, and plainly appropriate, to respond to such a question with a 'that'-clause (e.g., 'That Gore won Florida'). This strongly suggests that 'that'-clauses form syntactic units. Other tests for syntactic constituency are equally clear-cut. Indeed, as Parsons puts it, 'The contrary view that eschews that-clauses in favor of combining "that" with verbs and adjectives would involve complications in syntactic theory so far-reaching that they are not seriously contemplated in linguistics' (1993, 442).

These observations about syntactic constituency are significant. However, it is considerations concerning our intuitive judgments of logical validity in natural language that

[3] In linguistics, an asterisk placed at the beginning of syntactic string is conventionally used to indicate that the string is syntactically ill-formed or otherwise anomalous.

have been most influential in moving philosophers to the singular term theory (see Bealer 1982; Bealer & Mönnich 1989; Schiffer 1992). For example, the following argument is intuitively valid:

> Everything x knows, x believes
> x knows that p
> ———————
> Therefore, x believes that p.

Arguably, the best explanation for the validity of such arguments presupposes that 'that'-clauses are singular terms (Schiffer 1996; Bealer, 1998).[4]

Finally, the view that 'that'-clauses are singular terms is further supported by the intuitive appeal of the relational theory of the attitudes, which enjoys perhaps even greater support than the singular term theory itself (e.g., by language-of-thought theorists such as Fodor 1975, 1987).[5] On this view, propositional attitude verbs such as 'believes' express relations that hold between cognitive agents and intentional contents (i.e., the objects of the attitude). If the relational theory of the attitudes is correct, it would be extremely natural to understand 'that'-clauses as singular terms whose semantic value is the intentional content (i.e., the second argument) of the

[4] If the quantification expressed in the first premise of this argument is objectual, the view that 'that'-clauses are singular terms follows as a matter of course. And there are good reasons for thinking that quantification over 'that'-clauses in English is objectual. For example, consider the following English sentence:

> Not every proposition is expressible in English

or, equivalently,

> Some propositions are not expressible in English.

Arguably these sentences are true. If so, then quantification in English cannot be substitutional since, by hypothesis, there will be no true substitution instance that could instantiate the existential quantifier (because, ex hypothesi, there could be no such English sentence). In any case, given our earlier observation that 'that'-clauses are syntactic constituents, even if the quantification is substitutional in such arguments, the most natural classification of 'that'-clauses is still as singular terms–though perhaps vacuous ones.

[5] Though it is a frequently overlooked fact, the singular term theory is also supported by the relational theory of communication (e.g., 'x told y that p') and the relational theory of semantic meaning (e.g., 'S means that p'). Indeed, even if one were willing to give up the relational theory of the attitudes, it is difficult to imagine what a *nonrelational* theory of semantic meaning or communication might look like (see Moffett *Forthcoming* for an extended discussion).

expressed relation, and, consequently, to take the objects of the attitudes to be propositions as we have defined them.

These are important, perhaps even decisive, considerations in favor of the singular term treatment of ‘that’-clauses. However, as I will now argue, it is clear that the grammatical behavior of ‘that’-clauses in English is far more complex than the above discussion would suggest.

2. Problems for the Singular Term Theory

Example One: Oblique Complement Phrases. Let us return to the prototypical occurrence of a ‘that’-clause within a propositional attitude report, as in (2a).

2a. x believes that p

We argued above that the embedded clause in sentence (2a) should be taken as the grammatical object of the transitive verb ‘believes’. On this assumption, the complement phrase (hereafter, CP) plays precisely the same grammatical role as any run-of-the-mill nominal complement, such as y in the following:

2b. x loves y

But now consider a predicate such as ‘happy’ (as in, ‘x is happy’). Such predicates are almost universally assumed to express mental properties rather than mental relations (i.e., unary rather than binary entities). Given this, ‘happy’ should be an unproblematic intransitive predicate. But ‘happy’ (and virtually all other prima facie intransitive psychological predicates–e.g., ‘distraught’, ‘conscious’, ‘worried’, ‘embarrassed’, ‘moved’, and so on) quite readily accepts a clausal complement:

2c. x is happy that p

Our intuitive understanding of (2c) is that the 'that'-clause specifies the condition with respect to which x may be said to be happy; that is, the sentence tells us that x is happy regarding the fact that p.[6] In this respect, it is quite unlike (2a). In (2a) the 'that'-clause does not specify any condition with respect to which x may be said to believe but rather *what* x believes. Thus, in (2c) the clausal complement seems to function as some sort of oblique modifier that serves to indicate in what respect x is happy.

Our intuitive understanding of sentences (2a) and (2c), therefore, suggests that CPs (i.e., complement phrases) can have two very different grammatical functions, depending on the degree of the accompanying predicate. Moreover, it should be clear that this is no mere headache for the syntactician. The singular term theory implies that the 'that'-clause occurring in (2a) has as its semantic value a certain proposition (i.e., a 0-ary entity). In contrast, the 'that'-clause in (2c) seems to be in some sense modifying the VP 'is happy'. But it is extremely difficult to see how a 0-ary entity such as a proposition could modify anything–it simply fails to have the right "arity" to do such work (a unary entity, such as a property, would seem more apt from a semantic point of view). Thus, if 'that'-clauses do nothing more than denote propositions, as the singular term theory suggests, we seem to be at a loss to explain its semantic function in (2c).

Someone might respond that these observations reflect nothing deeper than a systematic ambiguity in the semantics of 'that'-clauses. But the problem is more difficult than that. For it is

[6] There is a tangential subtlety regarding the semantics of 'that'-clauses which arises here. Apparently, there are certain predicates (e.g., 'fear' and 'see') that accept 'that'-clause complements but which do not seem to be relations between individuals and *propositions* (e.g., * 'x fears the proposition that p' and * 'x saw the proposition that p'; see Bach 1997). Such predicates are more naturally analyzed as expressing relations between individuals and facts or, more generally, states of affairs. There are various ways of handling this subtlety consistent with the singular term theory. My own preference is to treat 'that'-clauses as univocally denoting propositions and to define the extensions of propositions in terms of states of affairs. Once this is done, one may handle these cases by defining a logical operation, descriptive predication, which allows us to predicate a property or relation not of the entity itself, but the elements in the extension of the entity (see Bealer 1993). Details of this proposal may be found in Moffett (2002a).

easy enough to produce cases in which a problematic pronoun occurring in one of these contexts is anaphorically dependent on a 'that'-clause occurring in the other. Thus:

2d. Joan is happy that she won a million dollars but her husband doesn't yet believe it.

In (2d), the reference of the pronominal 'it' depends somehow on the semantic value of the antecedent 'that'-clause. Such dependencies, however, might defy explanation unless we have a *uniform* semantic treatment of 'that'-clauses in their occurrence as both grammatical objects (as in 2a) or as oblique modifiers (as in 2c).[7] But this, as we have just noted, raises important prima facie problems for the singular term theory.

Example 2: Adjectival Complement Phrases. Another group of constructions that cause problems for the singular term theory involve nominalized psychological verbs. Consider, for example, (3a):

3a. The belief that p is widespread.

Unlike either (2a) or (2c), the 'that'-clause in (3a) seems to be functioning in much the same way as standard restrictive modifiers. That is, it behaves in a way that is similar to the behavior of the relative clause in (3b).

3b. The anxiety that was caused by the market downturn was widespread.

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[7] This point can be made quite general for the philosophically central cases of belief, meaning, and communication. Since the seminal work of Grice (1957) on meaning (if not before), philosophers have been well aware of the complex interconnections between communication, meaning, and belief. It seems clear that any adequate, comprehensive theory of linguistic behavior will make essential use of all of the associated kinds of reports (i.e., attitude reports, communication reports, and meaning reports). For instance, any adequate theory of linguistic behavior will surely include, or at least entail, truisms such as the following:

Whatever someone sincerely asserts, they believe.

Arguably this sentence has the following logical form:

5c. $(\forall p)(\forall x)(x \text{ sincerely asserts } p \rightarrow x \text{ believes } p)$

But clearly any instance of this general principle will require a uniform instantiation of the 'that'-clause complement in both its occurrence as a complement of 'believe' and in its occurrence as a complement of 'assert'. See Moffett (*Forthcoming*) for a sustained discussion.

Intuitively, the ‘that’-clause in (3a) helps to identify which belief is under consideration by specifying the content of that belief, just as the relative clause in (3b) identifies which anxiety is being discussed by specifying some individuating characteristic of it (namely, its having been caused by the market downturn).

Furthermore, just as in the case of oblique CPs (exemplified in 2c), it is unclear how the adjectival behavior of the CP in (3a) can be made consistent with the claim that ‘that’-clauses have 0-ary propositions as their semantic values. Moreover, as in the case oblique complement clauses, the claim that we can treat the two sorts of ‘that’-clauses differently (i.e., as somehow ambiguous) is countered by appeal to anaphora. For example:

> 3c. The belief that Bush won the presidency is widespread, though many people don’t want to admit it.

It can be seen that the pronominal ‘it’ in (3c) must take the CP as its antecedent (rather than the entire NP) by noting that the sentence ‘Many people don’t want to admit the belief that Bush won the presidency’ does not yield the correct interpretation of the second clause of (3c), whereas ‘Many people don’t want to admit that Bush won the presidency’ does.

Of course, one might try to explain the present example by arguing that the ‘that’-clause is not modifying the noun ‘belief’ but is rather an appositive singular term redundantly specifying the subject. On this view, the noun phrase ‘the belief’ and the CP ‘that Bush won the presidency’ are distinct terms denoting one and the same entity. The appositive treatment, thus, makes the occurrence of ‘that Bush won the presidency’ in (3a) similar to the occurrence of ‘the man currently living in the White House’ in (3d) below:

3d. George Bush, the man currently occupying the White House, is not really President.

However, the appositive treatment of ‘that’-clauses in constructions such as (3a) is not able to explain the fact that the CP alone cannot be the subject of such predicates. Thus:

3e. * That Bush won the presidency is widespread.

It seems likely that the unacceptability of (3e) results from the fact that the semantic value of ‘that Bush won the presidency’ is not the sort of thing that can be widespread (rather than, for instance, a mere syntactic restriction against clausal subjects). This is further supported by the failure of (3f), in which a name for a proposition is taken to be the subject.

3f. * The Continuum Hypothesis is widespread.

Since ‘The Continuum Hypothesis’ is undeniably an NP (see the discussion of 4d-4f below) and since (3a) shows that the predicate ‘is widespread’ can take NP subjects, the unacceptableness of (3f) must result from a semantic, not a syntactic, mismatch between the subject and the predicate.

Summary. In summary, our situation is this. The syntactic distribution of ‘that’-clauses, together with our intuitive understanding of what the associated sentences mean suggests that, in addition to serving as grammatical arguments, ‘that’-clauses can occur as non-argument modifiers. Further, this fact cannot be explained away as an instance of some sort of systematic ambiguity in the semantics of ‘that’-clauses. Taken together these two observations provide a powerful prima facie argument against the singular term theory, at least as traditionally conceived. For, on that theory, ‘that’-clauses are terms that do nothing more than denote certain 0-ary entities, namely, propositions. Accordingly, the singular term theory wrongly predicts that ‘that’-clauses cannot occur unambiguously as (oblique or adjectival) modifiers.

3. Responses

There are three responses to the above argument that are at least initially plausible. First, we might reject the claim that predicates like ‘happy’ are intransitive when they occur with ‘that’-clause complements. This proposal implies either that ‘happy’ (and most other prima facie unary mental predicates) has distinct transitive and intransitive entries in the lexicon or (more

likely) that there exists a lexical rule that converts intransitive mental predicates into transitive ones.

A second possibility is to reject the singular term theory, and in particular the claim that the complementizer ‘that’ functions as a term-forming operator. We might then try to construe ‘that’-clauses as semantically correlated with a logical operator that takes us from propositions to properties of mental properties. Given the demand for a uniform treatment of ‘that’-clauses, this solution implies that ‘believes’ (at least when it occurs with a clausal complement) is an intransitive predicate. Consequently, this option is committed to a denial of the relational theory of the attitudes (not to mention a relational account of communication and semantic meaning; see notes 3 and 4).

Finally, we could take these constructions as calling into question certain tacit assumptions concerning the underlying structure of the grammar itself. In particular, we could reject the implicit reliance on a minimalist view of syntactic constructions according to which they do nothing more than indicate function-application (or predication) relations and do not themselves contribute any substantive semantic information to the meaning of a sentence.

Each of these proposals is certainly coherent. The first two make in different ways the natural move of expanding or contracting the prima facie number of arguments associated with various predicates (at least when those predicates occur in the problematic family of examples). However, despite the fact that many people find one or the other of these two responses promising, they are themselves open to serious objections of their own. In this section I will lay out the most significant of those objections. With this discussion in mind, I will in the final section sketch a construction-based syntactic theory might be able to handle the problematic cases we have been discussing *without* abandoning the singular term theory.

As we have noted, solutions one and two achieve a uniform treatment of 'that'-clauses by either assimilating prima facie intransitive predicates to transitive ones–as in solution one–or, conversely, by assimilating prima facie transitive predicates to intransitive ones–as in solution two. These two ways of solving the problem, however, are problematic for there is an intuitive semantic difference between

4a. x is happy that p

and

4b. x believes that p.

In particular, the meaning of (4a) may be captured by saying that something (e.g., x's belief that p) is that with respect to which x may be said to be happy. In contrast, the meaning of (4b) cannot be captured in this way (*cf*., x's belief that p is that with respect to which x may be said to believe). But on either of the first two proposals it is unclear that this difference can be accounted for in a non-ad-hoc manner. For, as we have seen, 'that'-clause complements can occur with an open-ended list of prima facie unary mental predicates ('happy', 'worried', 'embarrassed', etc.). This means that we may well end up positing a distinct (though similar) solution for each of these problem cases and none of these solutions have independent motivation.[8]

An additional problem for solution two, associated with its commitment to a nonrelational analysis of belief, may be seen by considering a sentence such as (4c):

4c. That Bush is president is true.

[8] This charge does not hold against solution one if a lexical rule is posited which expands the argument structure of lexically intransitive mental predicates. Such a rule would provide a unified account of 'that'-clauses as they occur in the oblique modifier examples (e.g., 'x is happy that p'). However, there may be good reasons for rejecting this analysis. For instance, it is unclear why the predicate 'happy' retains the demand for the auxiliary 'is' given that its argument structure is expanded *prior to* the application of any syntactic rules. Similarly, it is unclear why it cannot be passivized (see below). Moreover, even if such objections can be met, it remains unclear how advocates of this view would approach the adjectival modifier examples (e.g., 'The belief that p is widespread').

(4c) is most naturally understood as involving the predication of the property of truth of the proposition that Bush is president. On solution two, however, this reading is unavailable. Instead, the ‘that’-clause in (4c) must be understood as a nominalized form of the complement clause ‘that Bush is president’, which is supposed to denote a property of mental properties. Consequently, on solution two, truth would not be a property of propositions but rather a property of a property of mental properties! The same thing goes for predicates that express modal properties (e.g., ‘is possible’, ‘is necessary’) and many other types of properties having no apparent connection to mental properties. Do we really want to say that necessity is in fact a property of a property of mental properties? Enough is enough.

Moreover, it is clear that in at least some of their occurrences prima facie transitive predicates such as ‘believes’ *do* express relations between believers and propositions (in our sense). For example:

4d. Joan believes the Continuum Hypothesis.

In (4d), ‘the Continuum Hypothesis’ is surely a singular term that denotes a certain proposition– namely, the proposition that there are no cardinalities strictly between the cardinality of the real numbers and the cardinality of the natural numbers. So the occurrence of ‘believes’ in (4d) is transitive and the sentence as a whole specifies which proposition it is that Joan believes. Moreover, it may well be that the following claim is true as well:

> 4e. Joan believes that the Continuum Hypothesis is that there are no cardinalities strictly between the cardinality of the real numbers and the cardinality of the natural numbers.

But given (4d) and (4e), surely Joan can make a correct, one-step inference that would make (4f) true:

> 4f. Joan believes that there are no cardinalities strictly between the cardinality of the real numbers and the cardinality of the natural numbers.

And this strongly suggests that in such circumstances the singular term account of 'that'-clauses is correct. If so, solution two fails to provide a uniform analysis of 'that'-clauses.

There are also further problems for solution one–the thesis that prima facie intransitive predicates are, in fact, transitive when they occur with 'that'-clause complements. To begin with, we have already noted the semantic differences between sentences containing prima facie intransitive verbs with clausal complements and those that contain transitive verbs. At the very least, advocates of solution one require a systematic explanation of how these differences arise in the lexical semantics of these two verb classes. And, however this is achieved, solution one appears to be committed to the claim the predicate 'happy' as it occurs in, for example, 'x is happy that p' expresses something *different* from what it normally expresses in sentences such as 'x is happy' and 'x is happy about y'.[9] This is intuitively suspect and makes it difficult to explain the acceptableness of sentences like (4g):

4g. x is happy about something, namely, that p.

In addition, the 'that'-complement in (4a) certainly doesn't seem to be the direct object of a transitive predicate. For instance, unlike typical transitive predicates, (4a) resists passivization:[10]

4h. *That p is happied.

Nor do such predicates accept run-of-the-mill names for propositions as complements:

4i. *x is happy the Continuum Hypothesis.

[9] This will be true unless 'x is happy' is taken to have an unexpressed argument place. However, since we have seen that 'that'-clauses can occur as a complement of virtually *any* prima facie intransitive mental predicate, positing unexpressed arguments places for such sentences would effectively amount to the denial of mental properties (as opposed to mental relations) altogether!

[10] Both Jeff King and Dan Blair (personal communication) have pointed out that (4a) does have a correlate that is similar to the passive, namely, 'That p made x happy'. However, 'x is happy that p' does not imply that x is happy, whereas 'That p made x happy' does. Since such implications would presumably be shared by a sentence and its passive (e.g., both 'x hit y' and 'y was hit by x' imply that x came into contact with y), this suggests that the latter sentence does not in significant respects resemble a passive form of the former.

Finally, and perhaps most decisively, it is not possible to quantify the purported second argument place in (4a) without relying on the preposition ‘about’ (e.g., ‘There is something x is happy *about’*). Thus, we get the following contrast between prima facie transitive predicates and prima facie intransitive predicates:

4j. There is something x believes.
k. *There is something x is happy.

The occurrence of the preposition ‘about’, however, is a prima facie indication of a non-argument constituent. This failure to allow such straightforward types of quantification strongly suggests that these prima facie intransitive predicates are indeed intransitive and that some other account must be given for their ability to take a clausal complement.

4. A Construction-Based Solution

Given the apparent failure of solutions one and two, we have reached a kind of crisis in the analysis of ‘that’-clauses. Not only does the singular term theory appear to be open to significant counterexamples, so do the most natural ways of adjusting our theory to handle these counterexamples. Given this crisis, it is worth taking a closer look at some of our more deep-rooted assumptions about the grammatical structure of language itself. In particular, it is worth taking a closer look at solution three: the rejection of a minimalist view of linguistic constructions in favor of a view on which, in addition to its lexical constituents, a linguistic construction itself can contribute substantive semantic information to the semantics of English sentences.

The key semantic insights behind construction-based linguistic theories may be motivated by way of the familiar observation that *a mere string of words does not have a determinate interpretation even if the words themselves do*. The reason for this is that a mere specification of a sequence of words plus an interpretation of the atomic constituents in the sequence does not tell

us how the semantic values of the atomic constituents are to relate to one another. This is familiar enough from examples such as the following:

5a. a R b.

Depending on how one chooses to structure the grammar of the language, (5a) could mean either (reading from left to right) that a is related to b by R or (reading from right to left) that b is related to a by R. What is needed, of course, is some specification of how the "form" of the sentence (in this case, e.g., the order of the words) contributes to the meaning of the sentence.

In most of the work done in model-theoretic semantics, this component of the interpretation "piggy-backs" on the formation rules for the sentences of the language. For instance, if we have a formation rule that tells us that we can concatenate any one place predicate P and any term t to produce a formula, P(t), we will have a corresponding semantic rule which tells us to interpret formulas of this form as predicating the property expressed by the predicate of the entity denoted by the term. We can capture this pairing of the formation rule and its interpretation concisely in the following notation:

$$P(t) \Rightarrow \text{pred}\langle \bar{P}, \bar{t} \rangle$$

(where P is a one-place predicate, t a term and $\bar{P}$ and $\bar{t}$ are the semantic values of P and t, respectively).[11]

For present purposes, the important point is that the interpretation of such syntactic sequences involves information (namely, what is to be predicated of what) that is *not* contained in the interpretation of the constituent expressions. While there is nothing wrong with the introduction of this additional information (for instance, it in no way jeopardizes semantic

[11] I adopt here a predication-based semantic theory. If one prefers, instead, to treat the semantic values of predicates as functions (e.g., Frege 1984 [1891], Church (1946) or, in a somewhat different vein, Montague 1973), the proposal could be easily reformulated and, in particular, we would replace the operation of prediction (pred) with functional application (apply).

compositionality) it is reasonable to expect one's philosophical semantics to be able to provide an explicit account of this type of phenomenon.

Following Frege, Church proposed that linguistic expressions such as P(t) involve an implicit interpretation of syntactic juxtaposition itself: '[J]uxtaposition, between parentheses, will denote application of a function to its argument' (1940, 59).[12] While this proposal is perhaps adequate in the case of simple formal languages, it is not general enough to accommodate the range of syntactic strings occurring in natural languages. For example, in languages such as Latin in which word order is relatively free and grammatical function is indicated morphologically, appeal to juxtaposition is all but worthless. And even in relatively simple English sentences in which one argument is juxtaposed to the left of the verb and one to the right, it seems that we need to know such additional information as the syntactic categories (e.g., noun, verb, etc.) of the constituent expressions.[13]

One natural way of generalizing Church's proposal in order to handle such complexities is to think, not in terms of the specific linear form of the sentence (which is what reliance on juxtaposition effectively amounts to), but instead in terms of its more abstract syntactic form. On this construal, we know what modes of semantic combination to apply to the semantic values of the constituents of the sentence because those modes of combination are semantically associated with the relevant type of abstract syntactic form.

This brings us to the heart of construction-based grammars: linguistic strings exhibit abstract syntactic forms and (at least some of) these forms are uniformly associated with particular modes of semantic combination. The primary task for a construction-based grammar

[12] This tradition is continued by a number of philosophers including Bealer (1979), Parsons (1980), Zalta (1988), and Aczel (1989).
[13] This may be seen by noting that the syntactic string 'John's dog barked' requires a different pattern of predication than the string 'John bit Joe'.

is to identify some finite set of these syntactic forms and their associated semantic interpretations.

Where construction grammars break most radically with the above Frege-Church picture of semantics is, not so much in the idea that the abstract form of a sentence may carry novel semantic information, but in the nature of the information so introduced. Because Frege, Church and others were thinking primarily in terms of a single, fixed syntactic form (e.g., spatially juxtaposed words) in a formal language, there was a natural tendency to restrict their attention to the introduction of a single bit of semantic information (e.g., functional application or predication). However, once attention is drawn to the more various and more complex syntactic forms found in natural languages, the door is opened to associating new sorts of semantic information with those more complex forms.[14] On this approach, whenever a general recognizable syntactic pattern is consistently associated with a particular semantic interpretation and that interpretation cannot be plausibly derived from previously postulated constructions plus the meanings of the atomic lexical items, we have reason to posit a distinct, new construction in the language.

My proposal is to apply this sort of approach to the problematic examples discussed in section 2 and to do so while retaining the singular term theory. On this approach, there is more to the meaning of sentences like (5b) and (5c) below than can be plausibly derived from the meanings of the constituent items from which these sentences are built plus traditional predication relations.

5b. x is happy that p.

[14] Indeed, the claim that natural languages exhibit a certain amount of variability in this respect should not really be that surprising. For, since natural languages have developed to expedite human communication efficiently, it is reasonable to assume that such languages will develop syntactic "shortcuts"–that is, abbreviated syntactic forms conventionally associated with an otherwise inexplicably rich semantics. Arguably, for example, this is the best way to understand ellipsis in natural languages (e.g., x went to the store and y to the bank).

c. The belief that p is widespread.

The proposal is that these sentences instantiate general syntactic forms that are conventionally associated with the relevant additional semantic information.

In the case of (5b), the relevant syntactic pattern may be roughly characterized in familiar phrase-structure terms as follows:

5d. NP + be Adj_{Ψ} + CP

where the subscript Ψ indicates that the VP involves a one-place "psychological" predicate.[15] As we have seen, the 'that'-clauses in such sentences are naturally interpreted as specifying the thing with respect to which (or regarding which) the subject may be said to have the relevant psychological property. For instance, we may capture the meaning of (5b) by saying that x is happy regarding the fact that p. The key relation here is the ternary relation of *regarding*.[16] The construction directs us to predicate this ternary relation of the semantic values of the NP, VP, and CP in that order. Schematically we have:

5e. NP + be Adj_{Ψ} + CP $\Rightarrow$ pred(regarding $\langle \overline{NP}, \overline{VP}, \overline{CP} \rangle$).[17]

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[15] I place 'psychological' in scare quotes here because some predicates which fit this pattern would not be traditionally characterized as psychological predicates (e.g., 'lucky'). As far as I have been able to determine, every predicate in this family exhibits what might be called belief/desire dependency–they presuppose an associated belief or desire when occurring with a 'that'-clause. For instance, x cannot be happy that p unless x *believes* that p. In a similar way, x cannot be lucky that p unless x desires (or at least rationally should desire) that p.

The subscript also serves to underscore the fact that the syntactic forms posited by a fully worked-out theory would be much more complex than the simplified forms proposed in the text. A more detailed treatment of this construction may be found in Moffett (2002b).

[16] This relation is key merely in the sense that its presence is unaccounted for by the prima facie lexical meanings of the constituent expressions of (5b) plus traditional modes of semantically combining those constituents. Capturing the intuitive meaning of sentences like (5b) in a perspicuous way, however, is a bit delicate. If the reader feels that a different relation (e.g., *concerning*, *with respect to*, or even "*about*") captures the meaning of the sentence more clearly, he or she may adjust the present proposal accordingly.

[17] Support for such a construction is provided by what might be called the *Jabberwocky* Test, in honor of Lewis Carroll's poem. Consider the following nonsense sentence: x was dreezy that he jiba waed. Consistent with our proposal, we can determine that 'dreezy' is a one-place psychological predicate and that x may possesses the psychological property expressed by it with respect to a certain fact.

(5e) provides an outline of the proposed construction involved in sentences such as (5b). The result is that the more complex interpretation of a sentence like 'x is happy that p' may be generated *without* any additional lexical complexity–the *regarding* relation (as well as predication) is introduced into the interpretation of the sentence by the construction itself. (Sentences such as (5c) have a different but equally straightforward treatment, thought I will omit it here.)

Significantly, this account of (5b) does not in any way abandon semantic compositionality. Semantic compositionality is the thesis that the meaning of a sentence is a function of the constituent expressions of the sentence plus their manner of combination (i.e., the form of the sentence). Even though the notion of syntactic form as been broadened, semantic compositionality is fully respected. Nor does the proposal jeopardize finite learnability (Davidson 1965). For, although the number of distinct constructions needed to characterize the class of grammatical sentences of the language will be large, it will be finite.

5. Conclusion

We began by noting that the singular term theory is extremely plausible and extremely well supported. However, despite this support, the theory appeared to be open to a number of significant objections. Specifically, 'that'-clauses seem to occur in a number of contexts that do not prima facie admit singular terms (e.g., 'x is happy that p', 'the belief that p is widespread', etc.). It turned out, moreover, that the range of contexts in which 'that'-clauses occur generates significant problems, not just for the singular term theory, but for its principle rivals as well. Given this, it seemed reasonable to reconsider the grammatical background assumptions that led to the impasse. In particular, we questioned the traditional assumption that linguistic constructions do nothing more than indicate function application (or predication) relations. We

found that by following the lead of construction-based grammars and rejecting this assumption we could generate the beginnings of a plausible analysis of the problematic examples without abandoning the singular term theory.

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