Reprinted from LANGUAGE
Vol. 47, No. 2, June, 1971
Printed in U.S.A.

IMPLICATIVE VERBS

LAURI KARTTUNEN
University of Texas

In addition to the so-called 'factive' verbs, which presuppose the truth of their complement sentence, a number of other interesting classes of verbs take sentential complements. 'Implicative' verbs, such as *manage*, also involve presuppositions, although in a different way. An asserted main sentence with one of these verbs as predicate commits the speaker to an implied proposition which consists of the complement sentence as augmented by the tense and other modifiers of the main sentence. Questioning a sentence with an implicative predicate amounts to questioning that implied proposition. According to the proposed analysis, an implicative main verb carries a presupposition of some necessary and sufficient condition which alone determines whether the event described in the complement took place. The main sentence can be looked upon as a statement about whether this decisive condition is fulfilled, and under what spatial and temporal circumstances. From an affirmative assertion, it can legitimately be inferred that the implied proposition is asserted to be true; from a negative assertion, that it is asserted to be false.*

0. INTRODUCTION. It is well known that verbs which take *that*-complements divide into two groups. Certain verbs, such as *know, realize, regret,* carry along the speaker's presupposition that the complement sentence represents a true proposition. This class is sometimes called 'factive' verbs.[1] Verbs in the other group, e.g. *believe, think, assume,* which are not accompanied by a similar presupposition, are called 'non-factive'. There are also verbs that are not inherently factive or non-factive, e.g. *report, announce, remember.* They can be used with or without presupposition of the truth of their complement sentence.

It is perhaps less well known that the factive/non-factive distinction is not limited to *that*-clauses. The infinitive complements of certain adjectives, such as *glad, proud, lucky,* are also presupposed to represent true propositions. Many other adjectives, e.g. *ready, eager, willing,* do not have this property. For example, the following sentences all presuppose that John saw his parents, but no presupposition remains if *glad* is replaced by *eager*:

(1) a. John was glad to see his parents.
b. John wasn't glad to see his parents.
c. Was John glad to see his parents?

* A shorter version of this paper was presented at the 1969 Winter meeting of the LSA in San Francisco. This work was supported by the NSF through USDP Grant GU-1598 to the University of Texas at Austin.

I am indebted to Emmon Bach and Fred W. Householder for their helpful comments on an earlier version of this paper, and to Kim Braithwaite, David Cohen, Frances Karttunen, Masatake Muraki, Stanley Peters, and Robert Wall for helping me to get the facts straight.

I have also benefited from the opportunity to discuss these matters at the Fourth La Jolla Conference on Linguistic Theory and the Structure of English.

[1] The term 'factive verb' is due to a pioneering study by Paul and Carol Kiparsky (1970). The notion of 'presupposition' is actually a far more complicated matter than suggested here; see Morgan 1969, and works cited by him, for further discussion.

The object of this paper is to demonstrate that there is another, equally important, semantic distinction among predicates (verbs, nouns, and adjectives) that take infinitive complements. For reasons that will soon become apparent, I suggest the terms 'implicative' and 'non-implicative' verbs.[2] I will first present facts that distinguish between the two groups, and then discuss the general principle that seems to underlie these data.[3] Below is a small sample of predicates of both implicative and non-implicative type.

(2) IMPLICATIVE: manage, remember, bother, get, dare, care, venture, condescend, happen, see fit, be careful, have the misfortune/sense, take the time/opportunity/trouble, take it upon oneself.
NON-IMPLICATIVE: agree, decide, want, hope, promise, plan, intend, try, be likely, be eager/ready, have in mind.

1. ASSERTIONS. Consider the following two sets of sentences:

(3) a. John managed to solve the problem.
b. John remembered to lock his door.
c. John saw fit to remain silent.

(4) a. John solved the problem.
b. John locked his door.
c. John remained silent.

It seems clear that anyone who asserts 3a thereby commits himself to the view that 4a is true. It would be inconsistent to assert 3a unless one also believed the proposition expressed by 4a. Note that, according to the standard transformational analysis, 4a is a manifestation of the sentence that is embedded as complement in the underlying structure of 3a. Thus 4a has the same source as the infinitive clause *to solve the problem* in 3a. Using the term 'complement' in a somewhat loose way, we may say that the assertion of 3a implies belief in the truth of its complement.[4] The same relationship also holds between 3b–4b and 3c–4c; in fact, any of the implicative verbs listed in 2 will produce similar pairs.

Consider now the following examples with non-implicative verbs:

(5) a. John hoped to solve the problem.
b. John had in mind to lock his door.
c. John decided to remain silent.

[2] I am indebted to Robert Wall for inventing the term 'implicative'.

[3] The distinction between implicative and non-implicative verbs is, of course, not limited to English. The same distinction shows up, for example, in Finnish. There also seems to be a close agreement with respect to the non-implicative verbs. If a verb is non-implicative in English, its closest equivalent in Finnish, perhaps without exception, is also a non-implicative verb. What seems more language-specific, however, is the inventory of implicative verbs. The following is a partial list of Finnish implicative verbs whose English equivalents do not seem to have this use: *tietää* 'know', *arvata* 'guess', *ymmärtää* 'understand', *keksiä* 'invent', *nähdä* 'see', *huomata* 'notice'. In addition, there are many implicative verbs in Finnish for which there are no good equivalents in English at all, e.g. *malttaa*, *joutua*, *suvaita*.

[4] I assume here that the complement of 3a is in the past tense. Whether this is really the case is not crucial. As it turns out later (in §6), the complement of an implicative sentence does not completely express the entailed proposition anyway. One could as well assume that the complement of 3a is unspecified with respect to tense.

In asserting 5a, one need not have any knowledge or belief concerning the truth of 4a. The same holds for pairs 5b–4b and 5c–4c. The difference between *manage* and *hope* shows up especially clearly below, where 6a is a contradiction, but 6b is not:[5]

(6) a. *John managed to solve the problem, but he didn't solve it.
b. John hoped to solve the problem, but he didn't solve it.

However, it is not yet clear that there is anything surprising in the above data. It has often been suggested that, in the underlying representation, the infinitive complement of a verb like *hope* contains the future tense or a modal, not the past tense as in 4a. Conceivably this is all that is needed to account for the difference between 3a and 5a. To make a proper comparison between *manage* and *hope*, we would have to pair 5a not with 4a, but with something like

(4) a′. John will solve the problem.

The same relationship that holds between 3a and its complement, 4a, should also hold between 5a and 4a′. But this prediction is false: 5a does not commit the speaker to any view whatever about the truth of 4a′. For that reason, 7 is no less consistent than 6b above:

(7) John hoped to solve the problem, but he will not solve it.

These data suggest that there is an implication between a main sentence, with a *manage*-type verb as predicate, and the proposition embedded in it as a complement. If the sentence as a whole is true, then the complement, taken by itself, must also be true. No such relationship exists if the main verb is *hope* or the like. In the following, implication or the lack of it is sometimes represented with the help of the $\rightarrow$ sign. For example, 3a $\rightarrow$ 4a and 5a $\nrightarrow$ 4a express the fact that 4a is implied by 3a, but not by 5a. In order to understand the kind of implicative relationship that holds between the sentences in 3 and the corresponding examples in 4, it is necessary to examine the effects of negation.

2. NEGATION. The above facts are not yet sufficient to distinguish between factive and implicative verbs. The observation that the truth of the affirmative main sentence implies the truth of the complement could be made equally well of sentences with a factive predicate. But once sentences with negation are considered, a striking difference between factive and implicative verbs appears. It is characteristic of factive verbs that negation in the main sentence does not affect

[5] There are some people for whom the verb *remember* can also be used, marginally, as a non-implicative verb. They do not regard the following statement as necessarily being a contradiction:

(a) I remembered to grade your paper, but I haven't done it yet.

People who accept (a)—and some don't—interpret *remember* here as meaning something like 'have in mind'. The reason for calling this sense marginal is that even those who accept (a) admit that it would be a bit dishonest to use a plain, unqualified statement, (b), if the speaker had not actually carried out what he claims to have remembered:

(b) I remembered to grade your paper.

In the absence of an explicit disclaimer, *remember* is understood as an implicative verb. The same is true of the verb *forget*, which will be discussed later in connection with negative implicatives.

the presupposition expressed in the complement. One example of this was given in 1b. Similarly, 8a and its negation 8b both share the same presupposition, 8c:

(8) a. John realized that he had no money.
b. John didn't realize that he had no money.
c. John had no money.

Consider what happens with implicative verbs. The next set of examples, 9, consists of the negations of the corresponding sentences in 3. Note also that every sentence in 10 negates the underlying complement of the corresponding example in 9:

(9) a. John didn't manage to solve the problem.
b. John didn't remember to lock his door.
c. John didn't see fit to remain silent.
(10) a. John didn't solve the problem.
b. John didn't lock his door.
c. John didn't remain silent.

Looking at the examples in 9 and 10, it appears that the negation of a sentence with an implicative predicate implies the negation of its complement. For example, if 9b is true, it is not possible for John to have locked his door; hence 10b must also be true. But in case of a non-implicative predicate, such as *hope*, adding negation to the main sentence has no effect at all with regard to the truth of the complement. It is easy to see that the examples in 5 and their corresponding negations in 11 are equally non-committal in this respect. There is no implication one way or the other:

(11) a. John didn't hope to solve the problem.
b. John didn't have in mind to lock his door.
c. John didn't decide to remain silent.

The following pair of examples is analogous to 6a and 6b. The first sentence is a contradiction, the second is not:

(12) a. *John didn't manage to solve the problem, but he solved it.
b. John didn't hope to solve the problem, but he solved it.

The fact that both 6a and 12a are contradictions leads to an interesting problem that helps to make clear what kind of implication is being discussed here. If some sentence in 3 is compared with its negation in 9, the two sentences are found to have opposite implications. For example,

(α) 3a $\rightarrow$ 4a and
(β) 9a $\rightarrow$ 10a.

Since 9a is the negation of 3a, and 10a is the negation of 4a, β can as well be written

(γ) $\sim$3a $\rightarrow$ $\sim$4a.

Assuming that the relation symbolized with $\rightarrow$ is ordinary logical implication, it follows from γ (by modus tollens) that

(δ) 4a $\rightarrow$ 3a.

Together, α and δ add up to the intuitively unacceptable conclusion that

(ϵ) 3a $\equiv$ 4a.

That is, (3a) *John managed to solve the problem* and (4a) *John solved the problem* would be logically equivalent, in spite of the difference in meaning between 'managed to solve' and 'solved'. The crucial property of the verb *manage* which makes the step from γ to δ seem plausible is that, although it may be odd—or even insulting—for the speaker to assert 3a when no difficulty was involved, this assertion intuitively counts as true if John in fact solved the problem. For that reason, the inference from γ to δ at first does not seem objectionable.

However, note that, while (9a) *John didn't manage to solve the problem* (i.e. $\sim$3a) implies (10a) *John didn't solve the problem* (i.e. $\sim$4a), it also suggests that John at least made some attempt to solve the problem. One has the feeling that, if he did not even try, 9a should not be regarded as true. Of course, it could not be taken as false either, since that would mean that John solved the problem. Under those circumstances, 9a would have to be rejected as an infelicitous utterance to which no truth value could be assigned. In other words, 9a presupposes that John made an attempt to solve the problem. The logical status of 10a clearly does not depend on any such assumption. For that reason, it is not in general true that 10a implies 9a; the entailment holds only if the presupposition underlying 9a is fulfilled. It follows from this that of the two initial lines, α and β, in the above argument, at least the second one does not represent a logical implication (entailment) in standard two-valued logic. The argument depends on the unstated premise that the presupposition associated with *manage* is fulfilled even if John did not solve the problem. Note that, if *manage* is replaced by *remember*, the inference corresponding to the step from γ to δ becomes clearly invalid. From the fact that (9b) *John didn't remember to lock his door* implies (10b) *John didn't lock his door*, it certainly does not follow that (4b) *John locked his door* implies (3b) *John remembered to lock his door*, which would have to be the case if the relationship between 9b and 10b were a logical implication. Therefore, we must follow Austin 1962 in using the term 'imply' in its ordinary weaker sense. 'p implies q' means only that asserting p commits the speaker to q. Asserting $\sim q$, on the other hand, need not commit the speaker to $\sim p$.

It is important to note that, without some unusual stress pattern, the negative assertions in 9 cannot be used to negate the presupposition associated with the main verb. For instance, it is not possible to interpret 9a as meaning something like 'John solved the problem without really trying.'

Another interesting fact about implicative verbs is the cancellation of double negation. In case there is negation in both the main clause and the complement, the implication is positive. For example, 13a implies 13b because it has negation in the main sentence, although the complement of 13a is the negation of 13b:

(13) a. John didn't remember not to lock his door.
b. John locked his door.
c. John remembered to lock his door.

Again, there is no corresponding phenomenon with non-implicative or factive verbs. It turns out that a sentence such as 13c, which contains no negation at all, as well as its double negative counterpart, 13a, both imply 13b. Of course, this does not mean that 13a and 13c are synonymous. There is a clear difference in

what John was supposed to remember; only what he is implied to have done is the same.

3. QUESTIONS AND COMMANDS. Consider the following questions:

(14) a. Did John manage to solve the problem?
b. Did John solve the problem?

An affirmative answer to 14a clearly commits the speaker to the view that John solved the problem; a negative answer denies that he did. That is, whatever answer one gives to 14a implies the same answer to 14b. What are the circumstances under which one would need to ask the former question? If one already knew the answer to 14b, there would be no reason to ask 14a. What one is really inquiring about in 14a is the answer to 14b. Questioning a sentence with an implicative predicate amounts to questioning the complement of that sentence.

Verbs in the non-implicative group are, again, different. An affirmative answer to 15a in no way binds the speaker to any view about whether John had solved or was going to solve the problem. One may know the answer to 15a without knowing the answer to 15b. In asking the former question, one is not simultaneously asking the latter:

(15) a. Did John hope to solve the problem?
b. Did John solve the problem?

Some of the implicative verbs can also be used in the imperative. Just as with questions, an order such as 16a or 16b, with an imperative in the main sentence, seems to be equivalent to the more straightforward command 16c, which consists only of the complement of the former sentences:

(16) a. Remember to lock your door!
b. Be careful to lock your door!
c. Lock your door!

4. MODALITY. The facts about modals follow the pattern of negatives and questions. It seems that, by saying 17a, b, or c, the speaker thereby commits himself to the view expressed by the corresponding sentence in 18, where the modal is associated directly with the complement:

(17) a. John ought to remember to lock his door.
b. John must take the time to study better.
c. John should get to be the chairman.
(18) a. John ought to lock his door.
b. John must study better.
c. John should be the chairman.

Also, it doesn't seem to make any difference here whether the modal is interpreted deontically or epistemically. Verbs in the non-implicative group, on the other hand, do not pass their modality on to the complement sentence. Saying 19a does not commit the speaker to 18a:

(19) a. John ought to be eager to lock his door.
b. John must promise to study better.
c. John should want to be the chairman.

5. TENSE. There is a curious restriction that the main sentence containing an implicative predicate and the complement sentence necessarily agree in tense. Since infinitives contain no overt tense markers, this cannot be observed directly. However, it can be demonstrated by the ungrammaticality of the following sentences:[6]

(20) a. *John remembered to lock his door tomorrow.
b. *John managed to solve the problem next week.
c. *John saw fit to arrive day after tomorrow.
(21) a. *John will remember to lock his door yesterday.
b. *John will manage to solve the problem last week.
c. *John will see fit to arrive day before yesterday.

These examples show that the complement of an implicative verb may not contain any time adverbial that conflicts with the tense in the main sentence. Assuming that time adverbials have to conform to the tense of the infinitive clause in its underlying form, it is clear that the complement must be in the same tense as the dominating sentence.

There are also certain restrictions on tense in sentences which have non-implicative predicates. For example, one cannot hope, decide, or want to do something at a time prior to one's hoping, deciding, or wanting. For that reason, all sentences like those in 21 are anomalous, even if the main predicate is a non-implicative verb. But the important point is that, in the case of non-implicative verbs, a past tense in the main clause does not exclude the possibility of having a future time adverbial in the complement. The following examples, all of which are grammatical, are identical to those in 20 except that the main predicate is a non-implicative verb:

(22) a. John agreed to lock his door tomorrow.
b. John hoped to solve the problem next week.
c. John wanted to arrive day after tomorrow.

6. ADVERBIALS. There is more involved than simple tense agreement between the main sentence containing an implicative predicate and the complement. Any time reference in the dominating sentence also, by implication, modifies the infinitive clause. For example, 23a doesn't just imply 23b, but rather 23c:

(23) a. Yesterday, John managed to solve the problem.
b. John solved the problem.
c. John solved the problem yesterday.

The time at which John managed to do something is also the time at which he did it. One might think that, in such a case, it makes no difference whether one assigns the time adverbial to the main clause or to the subordinate clause. But this is false, as shown by the following examples (brackets are inserted to disambiguate 24b):

(24) a. Before he left, John remembered to call Mary.
b. John remembered [to call Mary before he left].
c. John called Mary before he left.

[6] Similar data are discussed in Huddleston 1969.

The first two sentences give different impressions of what John was supposed to remember; they are not paraphrases of each other. However, both imply 24c. Note that 24c contains more than what is included in the complement of 24a. Similarly, in spite of the relationship 23a → 23c, there is no reason to believe that *yesterday* in 23a is necessarily part of the complement in the underlying representation.

Up to this point, there has appeared to be an entailment relationship between the main sentence with an implicative predicate and its complement. That now turns out to be an oversimplification. The second member of the relationship cannot be the complement as such, but rather the complement as modified by time adverbials in the main sentence. The following examples make this even clearer:

(25) a. Since last year, John hasn't bothered to write to Mary.
b. John hasn't written to Mary.
c. John hasn't written to Mary since last year.

It is obvious that 25b is not implied by 25a; it may well be false while 25a is true. The entailment relationship holds only between 25a and 25c.

What is said above about time adverbials also holds for locative expressions. Of the following two sentences, the first implies the second:

(26) a. At the door, John saw fit to apologize.
b. John apologized at the door.

That is, the place where John saw fit to do something is also necessarily the place where he did it. Again, there is no such rule for non-implicative verbs, no necessary connection between 27a and 27b:

(27) a. At the door, John had in mind to apologize.
b. John apologized at the door.

If the main predicate is an implicative verb, the main sentence and the complement may not contain conflicting locative expressions, but nothing prevents different locative adverbials in sentences with a non-implicative predicate:

(28) a. *On the sofa, John managed to sleep in the bed.
b. On the sofa, John decided to sleep in the bed.

The constraint that operates here is intuitively the same that rules out conflicting time references in sentences such as 20 and 21.

7. *Because*-CLAUSES. It is not surprising to find that subordinate clauses introduced by words such as *because, although, when* etc. behave in general like non-sentential adverbs with respect to implication. For example, 29a clearly entails 29b:

(29) a. Because he did well on the exam, John managed to win a scholarship for the summer.
b. John won a scholarship for the summer because he did well on the exam.

However, there are some unexpected problems with *because*-clauses.[7] In light of

[7] I am indebted to John Kimball for making me aware of these.

the preceding example, one would expect that 30a implies 30b:

(30) a. Because the ring was cheap, John managed to purchase it.
b. John purchased the ring because it was cheap.

Such a prediction is clearly false. The *because*-clause in 30b seems to attribute to John a certain motivation; in 30a, it constitutes an explanation of what made the purchase possible. In that sense, 30b is not implied by 30a. Note that the *because*-clauses in 29b and 30b are understood quite differently. In the former case, *because* naturally suggests some sort of causal explanation, just as in 29a. Under this interpretation, the expected implication, 29a → 29b, is clearly valid.

Additional proof of the inherent ambiguity of *because* is provided by the following example:

(31) The driver was killed because he did not wear his safety belt.

This sentence is normally understood to mean something like 'That the driver got killed is explained by his failure to wear his safety belt.' However, 31 could also mean 'The driver was killed for not wearing his safety belt.' If this interpretation of the *because*-clause as a motivation sounds far-fetched, it is not for any linguistic reason.

It is not at all clear what determines the interpretation of *because*-clauses in particular cases, or how the intuitive distinction between 'motivation' and 'explanation' ought to be represented.[8] However, the discovery that *because* is systematically ambiguous explains to some extent why the expected implication holds in 29 and fails in 30. It seems that sentences such as 29a and 30a, with a verb like *manage* as predicate, permit only the 'explanatory' sense of *because*. The same is true of 29b. On the other hand, in the context of 30b, the same *because*-clause that counts as an explanation in 30a can also be understood as a motivation; in fact, this is the preferred interpretation. The apparent failure of the expected implication in 30 is probably due to the fact that what ought to be the sentence implied by 30a turns out to have another possible analysis, which for some reason is far more probable than the one we expect. If this interpretation of the data is correct, the above case is analogous to the failure of certain syntactic derivations. For instance, consider the fact that 32b cannot be thought of as the result of extraposition from 32a:[9]

(32) a. The woman that was attractive accepted the job.
b. The woman accepted the job that was attractive.

8. DISCUSSION. What, then, is the basic distinction between implicative and non-implicative verbs? The data that have been briefly discussed certainly do

[8] The *because*-clause in 31 cannot be understood as a motivation unless the main sentence is assumed to have an animate agent. It is also necessary that the main sentence denote some deliberate act like purchasing or killing, not an event like winning, over which the subject has no control.

[9] The term 'transderivational constraint' has recently been proposed by George Lakoff, as a name for a constraint that blocks the application of some rule on the basis that the resulting output would be indistinguishable from a structure belonging to another derivation. Some constraints of that type are undoubtedly needed for a variety of cases where a sentence apparently is not ambiguous in as many ways as the grammar would otherwise predict.

not consist of unrelated facts. There should be some underlying general principle from which they all follow. It would be rather pointless for anyone just to propose that there be some new 'semantic feature'—call it [+implicative]—that distinguishes between the two classes of verbs. Such a feature can serve as an index to a list of semantic and syntactic peculiarities, but it in no way explains them.

As a first approximation, let us try to account for the properties of implicative verbs in the following way. Let 33 stand for the basic structure that, according to the standard transformational analysis, is common to the underlying representations of all the sentences in 34:

(33) $_{S_1}$[John manage $_{S_2}$[John open the box]$_{S_2}$]$_{S_1}$.

(34) a. John managed to open the box.
b. John didn't manage to open the box.
c. Did John manage to open the box?
d. John should manage to open the box.
e. Yesterday, John managed to open the box.
f. In his office, John managed to open the box.

Note that 33 is intended to represent the bare 'propositional core' of these sentences, without any illocutionary force and without any time or locative references. It incorporates the very non-controversial assumption that the superordinate sentence S_1 and the complement sentence S_2 have the same subject. Let us now construct for each example in 34 a further sentence—call it S_3—as follows: S_3 consists of the complement S_2 augmented by all the modifiers, such as negation, tense, time and locative references, that in the original sentence in 34 are associated with the main clause S_1. For example, for 34f, the result is

$$_{S_3}[\text{John opened the box in his office}]_{S_3}$$

Intuitively, the construction of S_3 is easy to grasp; a more rigorous definition would depend on details beyond the scope of the present paper.

The facts discussed above can now be accounted for with the help of the following rule:

(35) The illocutionary force of S_1 (i.e. assertion, command, question etc.) is shared by S_3.

It follows from 35 that, for S_1 to be semantically well-formed, it is necessary that S_3 be semantically well-formed. For example, to assert or query a sentence such as *Yesterday in his office, John managed to open the box* is to assert or query, implicitly, the sentence *John opened the box in his office yesterday*. The sentence *John managed to open the box tomorrow* is anomalous, since one of its components, the assertion *John opened the box tomorrow*, has conflicting time expressions. *John took the time to visit Mary, but he didn't visit her* is contradictory, since it is contradictory to assert *John visited Mary, but he didn't visit her.*

This proposed way of accounting for the facts about sentences with implicative predicates seems descriptively adequate, however informal and unspecific it may be. It leaves open the question of their ultimate semantic representation. For instance, one might propose that the underlying representation of such sentences already contains the implied sentence, our S_3, as a proper part, and

that the conventional 'deep structure' of the type in 33 is derived by transformations. Another approach, which is followed here, is to assume that the implied sentence is in a sense secondary, derivable from the semantic representation of the original sentence by certain rules of inference which are part of general semantic theory. It is not clear whether any empirical issue is involved here, any essential difference between 'interpretive' and 'generative' rules. Either way, we have to explain the fact that this kind of implicative relationship comes into being only with a certain class of verbs. We also have to account for the way in which the constituents of the implied sentence are distributed between the main clause and the complement. For instance, nothing has yet been said about the difference in meaning between 24a and 24b.

Is there any simpler way to explain the difference between implicative and non-implicative verbs? Intuitively, the facts described in the preceding paragraphs make sense. What does it mean to say, for example, that John *managed to do* something? All that takes place when John *manages to do* something is that he does it. While *intending to do* is one thing and *doing* another, *managing to do* is inseparable in space and time from *doing*; it is the same event. The referential identity of the two notions is what seems to underlie not only the implication from S_1 to S_3, but also the syntactic phenomena of tense agreement, and the prohibition of conflicting temporal and spatial references between the main clause and the complement.

9. PROPOSITION AND PRESUPPOSITION. It has now been established that all sentences in 36a imply 36b:

(36) a. Yesterday, John didn't { happen / manage / remember / get / bother } to kiss Mary.

b. Yesterday, John didn't kiss Mary.

But it is still unclear in what way the different main verbs in 36a contribute to the meaning of these sentences—which, of course, are not synonymous, nor do they imply each other.

It seems necessary to try to distinguish two parts in the semantic representation of the examples in 36a. Let us call them 'proposition' and 'presupposition'.[10] The propositional component carries the illocutionary force of the sentence; only that part can be asserted or questioned. The presuppositional component expresses the unstated beliefs of the speaker that underlie the proposition. Associated with each main verb in 36a, there are a number of suppositions that have to be fulfilled if the sentence is going to count as a felicitous utterance. This question has already been discussed briefly in connection with the apparent logical equivalence of 3a and 4a, which turned out to rest on the unwarranted assumption that a certain supposition underlying the verb *manage* is always fulfilled. All the examples in 36a obviously make different assertions, i.e. have different propositional components. In the following, the individual properties

[10] I follow Searle 1969 in his non-standard use of the term 'proposition'.

of the implicative main verbs are discussed in some detail. By this analysis, I am trying to show the underlying presupposition of each particular main verb to be such that, taking the assertion and the presupposition together, 36b can be legitimately inferred in every case.

With *manage* as the main verb, the speaker must assume that whatever is meant by the complement sentence is in some way difficult for the subject to accomplish. But that is not all. As pointed out before, even in negative sentences like 36a, *manage* requires that the subject at least attempted the act described in the complement. The suggestion of difficulty may result from the fact that one does not think of anybody attempting or trying to do something unless there is some reason to believe that he might not succeed. It also seems that if the attempt is successful, this is credited to the skill or ingenuity of the subject; a failure, as in 36a, is understood to show that those necessary qualities were not present to a sufficient degree. The supposition underlying *manage* in 36a thus amounts to something like the following: 'Yesterday, John attempted to kiss Mary, and his success depended only on his skill and ingenuity.' Of course, the exact wording of this presupposition is not to be taken too seriously.

Remember as the main verb presupposes that the subject was obligated to carry out the act described in the complement. It also presupposes a basic willingness on the part of the subject to carry out his obligation. Further, *remember* in 36a suggests that, whether or not John kissed Mary, it depended on nothing else but on his keeping his commitment in mind. Ex. 36a with *remember* would clearly be an infelicitous utterance if John did not even see Mary all day, and thus had no opportunity to kiss her, or if Mary was uncoöperative and refused to be kissed. If these observations are correct, the supposition underlying *remember* in 36a is approximately the following: 'Yesterday, John was obligated to kiss Mary, and intended to do so, and whether or not he did depended only on whether he remembered his commitment.'

Bother seems to imply that some conscious effort is needed on the part of the subject, in order to carry out the complement. It also suggests that the subject's willingness to make this effort is the crucial factor that determines the outcome. Ex. 36a with *bother* would be inappropriate if John failed to kiss Mary for any other reason.

Get is like the preceding verbs in that the supposition associated with it appears to state a decisive condition, determining whether or not the event described in the complement took place. The supposition underlying *get* in 36a is something like the following: 'Whether or not John kissed Mary depended only on whether he got a chance to do so.' It is easy to imagine circumstances under which 36a with *get* would be infelicitous.

It is not too difficult to make the same sort of explanation work for *happen*. In 36a, *happen* suggests that John had no plans either to kiss or not to kiss Mary. Whatever turns out to be the case is supposedly accidental; there is no other factor except chance that could have determined the outcome. Let us say that the speaker assumes: 'Whether or not John kissed Mary, it only depended on chance.'

In the above examples, one can easily point to a common feature that seems typical of the suppositions associated with implicative verbs. It is assumed that

there is some necessary and sufficient condition, expressed by the main verb, which alone determines whether the event described in the complement took place.[11] This crucial factor may consist of showing enough skill and ingenuity in one's attempt, as in *manage*, keeping one's commitment in mind, as in *remember*, or making an effort, as in *bother*, etc. The same generalization clearly also applies to predicates such as *see fit, have the misfortune, take the time, take it upon oneself*, and other implicative verbs listed at the beginning of this paper but not discussed in detail.

In the following, let us ignore the individual differences among implicative verbs and try to state more precisely in what respect they are all alike. Let v stand for any implicative verb and S for the sentence that manifests itself as the infinitival complement of that verb in the surface structure. I assume that, in the representation of the main clause, $v(S)$ constitutes the central part of the proposition to which negation, modals, and time and locative references are attached. Leaving out these other details, the semantic analysis of the whole sentence can be represented by the following schema:

(37) PRESUPPOSITION: $v(S)$ is a necessary and sufficient condition for S.
PROPOSITION: $v(S)$.

As mentioned above, the propositional component carries the illocutionary force of the utterance. Only that part is asserted or questioned. The presupposition represents what the speaker must believe in making the utterance.

As informal and schematic as this analysis is, it makes many of the facts discussed in the earlier part of this paper easy to understand. For example, if the main sentence is an affirmative assertion, it states, according to the speaker's supposition, that a sufficient condition for the truth of the complement sentence is fulfilled. Thereby the speaker indirectly asserts that the complement is also true. A negative assertion claims that a necessary condition for the truth of the complement is not fulfilled; therefore it must be false. If the main clause is questioned, the speaker must be ignorant of whether the complement sentence by itself would make a true assertion. It is also obvious that, whatever time and locative references there are in the main sentence, the complement proposition is valid only under those same constraints. The analysis in 37 thus constitutes a justification for the procedure given earlier, in connection with 35, for deriving the implied proposition from a given sentence with an implicative main verb. The fact that the examples in 36a all imply 36b is explained by pointing out that, although the sentences in question presuppose different crucial conditions for the truth of their complement sentence, they all assert that the condition was not fulfilled yesterday. Therefore, 36b can be inferred in all cases.

10. VERBS WITH NEGATIVE IMPLICATION. There is a sub-category of implicative verbs that has not yet been mentioned. This includes the following:

(38) NEGATIVE IMPLICATIVES: forget, fail, neglect, decline, avoid, refrain.

It is obvious that these verbs are just like other implicative verbs except that they seem to incorporate negation. That is, 39a implies 39b—just like 39c, which

[11] I am indebted to James D. McCawley for his help in reaching this conclusion.

contains overt negation:[12]

(39) a. John forgot to lock his door.
b. John didn't lock his door.
c. John didn't remember to lock his door.

A possible way to account for the properties of the verb *forget* would be to consider it a substitution for *not remember*. Both verbs share the same assumption of obligation, and presuppose that the truth of the complement depends only on whether the subject kept his commitment in mind. The verb *fail*, being ambiguous, would replace either *not do* or *not succeed*.[13] By analysing *forget* in the proposed manner, we would also be in a position to account for these examples:

(40) a. John didn't forget to lock his door.
b. John forgot not to lock his door.
c. John didn't remember not to lock his door.
d. John locked his door.

That is, we can say that the positive implication of 40a and 40b is due to the cancellation of double negation, just as in the case of 40c. In fact, 40b and 40c would have the same underlying representation.

One apparent problem with any such analysis is that, taken literally, it has the unwelcome consequence that verbs such as *neglect* and *avoid* should also have an underlying positive counterpart, which just never happens to manifest itself directly. If necessary, this problem can always be avoided by assuming that, instead of 37, verbs with negative implication have the following analysis:

(41) PRESUPPOSITION: $v(S)$ is a necessary and sufficient condition for $\sim S$.
PROPOSITION: $v(S)$.

There is nothing in this proposal to entail that all negative implicatives must have a positive counterpart. This would be an accidental fact about *forget* and *fail*. At this point, there is no crucial evidence that would decide between the

[12] Should *try* be classified as a verb with negative implication? The fact is that

(a) John tried to solve the problem

often suggests failure, except when it is followed by some explicit statement to the contrary, e.g. '... and, to his own surprise, he succeeded.' Many other putative non-implicatives, e.g. *want, intend, attempt*, are similar to *try* in this respect. But if *try* were an implicative verb like *fail*, then (b) should imply (c):

(b) John didn't try to solve the problem.
(c) John solved the problem.

How could John have solved the problem if he didn't even try? We cannot explain the suggestion of failure in (a) by assigning *try* to the same category with *fail*.

It seems that the explanation comes from H. P. Grice's theory of 'conversational implicatures' (William James Lectures at Harvard, 1967–1968). One of Grice's maxims is that one should not make a less informative statement than one is in the position to make. Thus, if the speaker asserts (a) instead of (c), which would be more informative, this fact 'conversationally implies' that he is unable to make the stronger statement; i.e., (c) is false, or the speaker has no knowledge about it.

[13] The emphatic *do* and *succeed* must be regarded as implicative verbs in spite of their syntactic peculiarities. *Avoid* and *refrain* (*from*) also take gerund rather than infinitive complements. *Can't help* (as in *John couldn't help liking Mary*) is a peculiar idiom that has a positive implication in spite of the apparent negation.

two alternatives. However, depending which way we choose, the following problems will be handled somewhat differently.

Neither of the two alternatives is yet adequate to account for the fact that, while 39a and 39c are synonymous, 42a and 42b do not necessarily have the same meaning:

(42) a. All of the board members forgot to come to the meeting.
b. All of the board members did not remember to come to the meeting.
c. Not all of the board members came to the meeting.
d. None of the board members came to the meeting.

For most people, 42b is ambiguous; it can be interpreted to imply either 42c or 42d. On the other hand, 42a can only be understood in the sense of 42d. It is clear that the order of logical operators in the implied sentence must correspond to their order in the semantic representation of the original sentence. Since 42a is unambiguous, the following amendments must be added. If *forget* is considered to be a lexical replacement for *not remember*, that negation must have the narrowest scope among the logical operators in the main clause. If the negative implication of *forget* is spelled out in the presupposition, as in 41, that negation must have a narrower scope than any of the logical operators that bind the proposition.

Another complication is that the following examples are not all paraphrases of each other:

(43) a. Did John forget to come?
b. Didn't John remember to come?
c. Didn't John come?

Ex. 43a does not suggest that the speaker had any particular presumption about the matter, but 43b gives the impression that the speaker is wondering whether he has been wrong in believing that John came. Without some modification, the analysis of *forget* as *not remember* leads to the false prediction that the first two examples are both equivalent to 43c; in fact, only 43b is. Note that the answer *Yes* to 43a means 'John didn't come'. But *Yes* to 43b and 43c means 'John came'; it confirms the speaker's presumption. These overtly negative questions are answered the same way as negative tags: *John remembered to come, didn't he?* In spite of the implicit negation in *forget*, 43a cannot be interpreted in this manner. This fact does not show that there is anything wrong with analysing *forget* as *not remember*. However, in that case, the grammar must also incorporate the constraint that a question counts as a negative tag to a preceding assertion or implicit presumption if, and only if, it contains negation in the surface structure.[14]

11. RESIDUAL PROBLEMS. There are many verbs that must sometimes be understood in an implicative, sometimes in a non-implicative sense. These include the following verbs:

(44) POSITIVE: choose, be able, can, be in the position, have the time/opportunity/chance/patience, be ____ enough (to).
NEGATIVE: refuse, be too ____ (to).

[14] Such a constraint, which directly relates a certain surface feature with a certain as-

In the following pairs of examples, the (a) sentences are intended to suggest an implicative interpretation, while the (b) sentences are meant to have a non-implicative sense:

(45) a. Twice before, John has chosen to ignore my request.
b. John has chosen to become the best student next semester.
(46) a. In the last game, the quarterback was able to complete only two passes.
b. Ten years ago, John was able to seduce any woman in Torrance.
(47) a. John refused to believe that he was sick.
b. John refused to come to Mary's party tomorrow.

It seems that *has chosen to ignore* in 45a means something like 'has deliberately ignored', but *has chosen to become* in 45b, because of the future time reference, cannot be understood as 'has deliberately become'. If the quarterback in 46a did not in fact complete two passes, it is very improbable that anybody would regard 46a as true. On the other hand, 46b does not require an analogous demonstration of ability in order to count as true; it does not imply **John seduced any woman in Torrance ten years ago.*

The group of ambiguous predicates also includes all constructions of the type *be* + ADJ + *enough* and its negative counterpart *be* + *too* + ADJ. Consider the following examples:

(48) a. John was clever enough to leave early.
b. John was clever enough to learn to read.
(49) a. John was stupid enough not to call the cops.
b. John was stupid enough to be called an idiot.
(50) a. John was too stupid to call the cops.
b. John was too stupid to be a regent.

From 48a, one easily gets the impression that John left early, and that this was in some way an advantageous course of action. But in 48b, *clever enough* just seems to mean that John had sufficient mental capacity for learning to read; it does not say whether he really learned. Exx. 49a and 50a both suggest that John did not call the cops, but 49b does not necessarily mean that John was called an idiot, and the truth of 50b does not prevent John from being a regent. Note that the properties of these *enough-* and *too*-constructions have nothing to do with the particular adjectives. Thus *clever*, by itself, is factive, as shown by the contrast between 51a and 51b:

(51) a. It wasn't clever of John to leave early.
b. John wasn't clever enough to leave early.

For some of the verbs in 44, it makes no difference whether they appear in an affirmative or in a negative sentence; either way, these verbs do not have a definite implication. In particular, this is true of *choose*, *refuse*, and the *enough-* and *too*-constructions. Although these verbs are clearly sometimes used with the understanding that they express the necessary and sufficient condition for the

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pect of the semantic representation, would be an example of what Lakoff 1969 calls 'derivational constraints'.

truth of the complement sentence, that presupposition is not always necessary.[15] It is an optional element in their semantic analysis.[16]

For the remaining verbs in 44, there is a difference between affirmative and negative sentences. Note that, while 52a is acceptable, 52b is a contradiction:

(52) a. John was able to come but he didn't come.
b. *John wasn't able to come but he came.

In negative sentences, *be able* necessarily entails that the complement is false. The same is true of many constructions of the type *have the* ____ *(to)*.[17] The paradigm case is illustrated by the word *possible*:

(53) a. It was possible for John to come.
(↔ John came.)
b. It was not possible for John to come.
(→ John did not come.)

It is obvious that, like *possible*, predicates such as *be able*, *have the courage* etc. express at least a necessary condition for the truth of the complement sentence. Using the same symbolism as before, a sentence that has one of these verbs as predicate can be analysed in the following way:

(54) PRESUPPOSITION: $v(S)$ is a necessary condition for S.
PROPOSITION: $v(S)$.

What remains to be explained, however, is why *be able* and other similar verbs in contexts like 46a, which I am unable to describe in any general way, must be interpreted as giving not only a necessary but also a sufficient condition for the truth of the embedded sentence. Even cases like 55, which need not have a definite implication, are normally interpreted in accordance with 37, unless there is some indication in the context that *be able* cannot express a sufficient condition:

(55) John was able to come.

That presupposition is suspended if the implication is explicitly denied, as in 52a—or if it would yield an ungrammatical result, e.g. the inference from 46b.

[15] Fred W. Householder has brought to my attention the following bit of American history that illustrates the ambiguity of the verb *choose*. When Calvin Coolidge was interviewed about running for re-election in 1928, he replied, *I do not choose to run*, which in New England dialect was commonly given an implicative interpretation. But the newspapers and other commentators preferred to give it a non-implicative sense, implying that Coolidge wanted to be drafted.

[16] The optionality of this presupposition in some English words is related to the initially rather puzzling fact (see fn. 3) that, in addition to the local equivalent of *remember*, some languages permit many other verbs that have to do with cognitive or sensory functions to be used as implicative verbs. For instance, in Finnish the verb *keksiä* 'invent, discover' is one such verb. The sentence *Jussi keksi tulla ajoissa* 'John had the foresight to come in time' would come out word-for-word in English as '*John discovered to come in time.' It is often difficult to find a good translation in such cases. A lengthy explanation, e.g. 'John discovered that it was in some way advantageous to come in time, and he did come in time just for that reason', might reflect more accurately the meaning of the original, but it would fail as a translation for other reasons.

[17] There is a difference between the nouns mentioned in 44, e.g. *opportunity*, and nouns such as *right*, *permission*, *order*, *authority* etc. Of the two examples *John did not have the opportunity to leave the country* and *John did not have the right to leave the country*, only the first implies that John did not leave the country.

Another group of verbs that need special attention includes these:

(56) POSITIVE: cause, make, have, force.
NEGATIVE: prevent, dissuade.

In this case, it is again necessary to distinguish between affirmative and negative sentences. In affirmative sentences, the expected implication holds, e.g. 57a → 57b:

(57) a. John forced Mary to stay home.
b. Mary stayed home.
c. John asked Mary to stay home.

This fact distinguishes the verbs in 56 from such syntactically similar verbs as *ask, order, advise, request* etc.[18] Obviously, there is no implication from 57c to 57b. In negative sentences, the difference between *force* and *ask* disappears. 58b is implied neither by 58a nor by 58c:

(58) a. John didn't force Mary to stay home.
b. Mary didn't stay home.
c. John didn't ask Mary to stay home.

In 58a, *force* makes no claim about the truth of the complement sentence.

These facts suggest that the verbs in 56 express a sufficient but not a necessary condition for the truth of the complement sentence. The relationship between 57a and 57b can be explained by analysing the former sentence into a presupposition and a proposition in the following manner:

(59) PRESUPPOSITION: $v(S)$ is a sufficient condition for S.
PROPOSITION: $v(S)$.

That is, if $v(S)$ is asserted, the speaker is committed to the truth of the complement sentence. But since it is not a matter of a necessary condition, asserting $\sim v(S)$ does not commit the speaker to the negation of the complement. Therefore, 58a ↛ 58b. Note that *be able* and other similar verbs in 44 have just the opposite property.

12. SUMMARY. In this paper I have tried to show that, in addition to factive verbs, there are other interesting classes of verbs which take sentential complements. Like factive verbs, implicative verbs involve presuppositions, although in a different way. An implicative verb, such as *manage*, carries a presupposition that it represents a necessary and sufficient condition for the truth of its complement sentence. Whether the speaker is committed to the truth of the complement sentence thus depends on the composition of the main sentence, e.g. on the presence of negation and modals, as well as on the illocutionary force of the whole utterance. Adding these to the complement sentence yields an implied proposition, e.g. an implied assertion, question, or command, which must be well-formed if the original sentence is to count as well-formed. The implied proposition must also contain all the temporal and spatial references of the main sentence.

In addition to implicative verbs par excellence, there are a number of verbs,

[18] Austin calls these and other similar words 'illocutionary' verbs. The verbs in 56 are a subset of his 'perlocutionary' verbs, which also include verbs like *check, stop, warn, humiliate*.

such as *choose*, which are sometimes used in an implicative, sometimes in a non-implicative sense. Another group consists of verbs like *be able*, normally understood as implicative verbs, which can sometimes also be used with the weaker presupposition that they constitute only a necessary, but not a sufficient, condition for the truth of the complement sentence. Finally, verbs like *force* express a sufficient but not a necessary condition for the truth of the complement.

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Received 27 May 1970]