

A NOTE ON CONDITIONAL SENTENCES IN ENGLISH

Martin Bell
(Department of Philosophy
University of York)

Introduction

Many logicians agree that the logical form of not only subjunctive but also indicative conditional sentences is not adequately represented by material implication in classical two-valued logic. There has recently been a proliferation of new, strange, binary connectives, whose semantics are expressed by many valued matrices or perhaps in terms of possible worlds, each such connective being offered by its inventor as a plausible candidate for revealing the logical form of at least some types of conditional sentence. Believing that the logical form of sentences is not unrelated to the underlying grammatical form, I recently tried to discover what analyses of conditional sentences had been suggested by contemporary linguists. As far as I was able to discover, not much was available in the literature on this topic, and so I would like to offer in this note a few suggestions which, if acceptable, may serve as a start in remedying this deficiency.

The word if occurs most commonly in English in conditional sentences, and also to introduce yes-no questions. It also occurs between adjectives and adverbs, where it normally has a concessive sense. I shall not say anything about concessive conditionals, nor about other uses of if, for example its use in 'as if' constructions. In section 1, I list some of the facts about if which a theory of if-clauses should explain. In section 2, I give reasons for thinking that if-clauses in conditional sentences are subordinate adverbial clauses. In section 3 I suggest what the structure of these clauses is. Finally, in section 4 I return to the facts listed in section 1, and show how the analysis proposed in the second and third sections explains them.

Section 1

1.1 If-clauses can appear in initial position in sentences preceding the main clause, in final position, and, at least in many people's speech, in positions intermediate between the surface subject and the main verb:

- (1) If the price of petrol goes up again, I shall sell my car.
- (2) I will be delighted if you come.
- (3) The solution to this problem, if there is one, has so far eluded me.

1.2 If is frequently used to introduce indirect yes-no questions as an optional substitute for whether:

(4) I wonder {if
whether} there is any more beer.

1.3 If has co-occurrence restrictions with certain sentence adverbs and adverbial clauses:

(5) *If certainly Tom was there, the party will have been a success.

(6) *We have won our bet if evidently Frank has won the game.

(7) *If, to tell the truth, it is raining, we will go by bus.

1.4 While the main clause in a conditional sentence can be declarative, imperative or interrogative, an if-clause cannot be interrogative or imperative.

(8) If a policeman comes, run for it.

(9) What would you do if you won the pools?

(10) *If do you drink whisky ...

(11) *If wash your hands ...

1.5 In some cases a conditional sentence occurs without if but with auxiliary inversion. Normally this happens only when the clause is subjunctive:

(12) Had I known that, I would never have gone.

(13) Certainly there would be a crisis, were the pound to fall any lower.

1.6 Although if-clauses usually express conditions or stipulations relating to the main clause, there are cases where they do not:

(14) If I may be frank, the man is a fool.

(15) There are biscuits on the table, if you want them.

(16) I was flummoxed, if that's the right word.

Section 2

The suggestion that if-clauses in conditional sentences are adverbial clauses is by no means new. Lakoff (1972) reports that this suggestion is made in Morgan (1970) which I have not seen. Lakoff's evidence concerns adverb preposing, the rule that relates the following synonymous sentences:

(17) Sam smoked pot last night.

(18) Last night Sam smoked pot.

The rule optionally moves an adverb to the front of its clause. Sometimes an adverb may be preposed to the front of a higher clause:

- (19) I think Sam smoked pot last night.
 (20) Last night I think Sam smoked pot.

But some verbs and adjectives in a higher clause block adverb preposing:

- (21) I realize that Sam will leave town tomorrow.
 (22) *Tomorrow, I realize that Sam will leave town.

With respect to preposing, if-clauses behave like other adverbial clauses such as when and because clauses:

- (23) Sam smokes pot $\left\{ \begin{array}{l} \text{if} \\ \text{when} \\ \text{because} \end{array} \right\}$ he can get it cheap.
 (24) $\left\{ \begin{array}{l} \text{If} \\ \text{When} \\ \text{Because} \end{array} \right\}$ he can get it cheap, Sam smokes pot.

Preposing of if-clauses to the front of a higher clause is permissible or forbidden in just the cases referred to already in which adverb preposing is permissible or forbidden. Thus corresponding to (19) we have

- (25) If he can get it cheap, I think Sam smokes pot.

and corresponding to (22) we have

- (26) *If he can get it cheap, I realize that Sam smokes pot.

As Jackendoff (1972) shows, adverbs occur in three main positions in sentences, initial, auxiliary and final, and they can be divided into classes depending on which of these positions they can occupy. Thus such adverbs as happily, clumsily, carefully can occupy all three positions; such adverbs as evidently, probably, certainly can occupy only initial and auxiliary position (although they may occur in final position if separated from the rest of the sentence by a pause); such adverbs as well, hard, less, can occupy only final position; and such adverbs as merely, truly, utterly, can occupy only auxiliary position. As we have seen, if-clauses can occupy all three adverb positions. Jackendoff argues that nearly all adverbs which can occupy both initial and auxiliary positions have at least one reading in which they function as sentence adverbs, that is, in which they function to modify the entire proposition expressed by the rest of the sentence. Such adverbs as evidently and probably appear to be only sentence adverbs, while others, such as happily, are sentence adverbs on one reading only. It seems clear that if-clauses are sentence adverb clauses, and function to modify the proposition appearing as the main clause. Jackendoff argues further that there are, semantically, three kinds of sentence adverbs. Some function to express the attitude of the speaker. Thus when happily is read as a sentence adverb in

(27) Happily John ate the oysters

the sentence means roughly

(28) I am happy that John ate the oysters.

Jackendoff calls these speaker adverbs. Secondly, some sentence adverbs, while modifying the proposition expressed by the rest of the sentence, do so by providing further information about the subject. Thus when cleverly is read as a sentence adverb and not a manner adverb in

(29) Cleverly John ate the oysters

the sentence means

(30) It was clever of John to eat the oysters

in whose underlying structure 'John ate the oysters' appears as an embedded sentence. Such adverbs Jackendoff calls subject adverbs. Thirdly such adverbs as probably modify the rest of the sentence, but do not function as either speaker or subject adverbs. These Jackendoff calls neutral. It seems that neutral sentence adverbs function simply to express something about the truth value of the proposition in the rest of the sentence. They often have paraphrases of the form 'It is Adj that ...' or 'It is Adj-ly true that ...', for example:

(31) { It is probable that
It is probably true that } John ate the oysters.

It seems evident that if-clauses are neutral sentence adverb clauses, and thus function to express something about the truth value of the proposition in the main clause.

Section 3

I turn now to the syntactic structure of if-clauses. In the previous section the behaviour of if-clauses was seen to be the same with respect to preposing as the behaviour of when and because clauses. These last are representatives of two main kinds of subordinate adverbial clauses, clauses of time and place introduced by when and where, and clauses introduced by subordinating conjunctions such as because, although, since and as. Insofar as if has been considered at all in recent linguistics, I think that it has been treated as a straight subordinating conjunction. Although this appears plausible in considering shallow syntax, there is an important semantic difference between if and other subordinating conjunctions which suggests some difference in deep structure. The difference is that while for other such subordinating conjunctions a sentence of the form $S_1 + \text{sub.conj.} + S_2$ implies S_2 , no sentence of the form $S_1 + \text{if} + S_2$ implies S_2 . (Some

sentences of this form imply S_1 , others do not. I will return to this later.) For example,

(32) Sam smokes pot because he can get it cheap

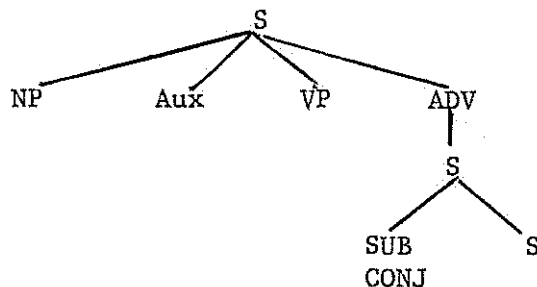
implies

(33) He can get it cheap.

Replace because by if in (32) and the implication fails.

I shall assume that the deep structure of sentences of the form of (32) is

(34)



where ADV is directly dominated by the highest S, so showing that the subordinate sentence dominated by ADV is a sentence adverbial clause. I shall now argue that the deep structure of conditional sentences differs importantly from (34).

To do so, I want to consider for a moment the other kind of adverbial clause mentioned in section 2, adverbial clauses of time and place. In the case of these, it is reasonable to assume that the embedded sentence contains a noun phrase marked for time or place, which also has the features $[+Pro]$ and $[+WH]$, which is moved to the front of the clause. On the face of it the resulting pronoun when or where could be either interrogative or relative. Semantically, it would be nice to think that the embedded sentence is interrogative, for consider the difference between

(35) We will go at noon.

(36) We will go when Bill gets here.

One might say that although both sentences say when we will go,

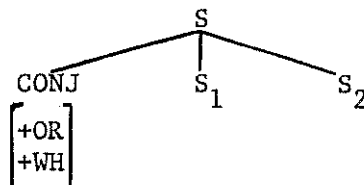
(35) does so directly by specifying definitely a time, while (36) does so only indirectly. Thus knowing only (36), one knows when we will go only if one can answer the question, 'When will Bill get here?' But though semantically nice, from a syntactic point of view the suggestion is almost certainly wrong. Instead it appears that when and where in adverbial clauses are relatives, and the whole subordinate sentence is a reduced relative clause with deleted head noun. Languages such as Latin which distinguish morphophonemically between interrogative when (quando) and relative when (cum) use the relative here. And thus it appears that (36) and

(37) We will go at the time when Bill gets here

must have the same deep structure.

Although the idea that adverbial clauses have an interrogative element in deep structure peters out in respect of time and place adverbial clauses, I want now to argue that the suggestion is correct for if-clauses, and that the presence of an interrogative element in if-clauses explains, among a number of phenomena, the semantic difference already noted between these and other clauses with subordinating conjunctions. Let us briefly recap on contemporary analyses of English interrogatives. Given the two types of English questions, Katz and Postal (1964) proposed two deep structure interrogative markers, the symbol Q and the feature [+WH] on noun phrases. In their analysis, yes-no questions contain only Q, which triggers the interrogative transform by attracting the auxiliary to the front of the sentence, while WH-questions contain both Q and [+WH] on some noun phrase. Subsequent analyses have tried to get by without Q. A very satisfying suggestion is that made by Stockwell, Schachter and Partee (1973), according to whom yes-no questions are all derived from alternative questions, which have a deep structure in which [+WH] appears as a feature of a conjunction marked as disjunctive by [+OR], thus:

(38)



where $S_2 = \text{NOT } S_1$

Simplifying somewhat, the surface structure of a direct yes-no question is obtained from (38) by the following steps:

- (a) Conjunction spreading, which changes (38) into a structure in which CONJ and its features appear in front of both S_1 and S_2 ;
- (b) WH spreading, which shifts [+WH] from under CONJ, and attaches it under S_1 and S_2 ;
- (c) Initial conjunction deletion, which deletes CONJ from in front of S_1 ;
- (d) Auxiliary inversion and WH deletion, which has the usual effect;

and finally

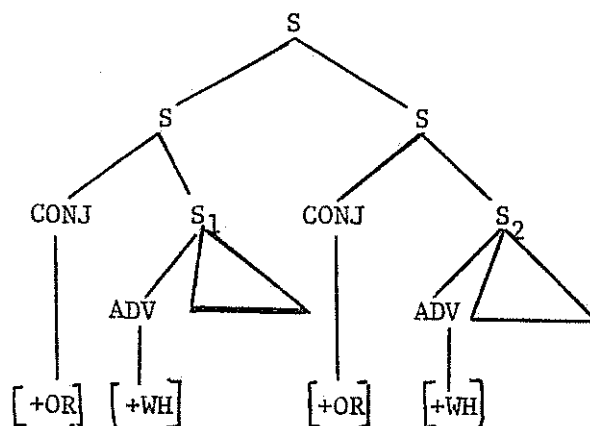
- (e) Alternative question reduction, which is an optional rule allowing for various kinds of reduction in S_2 .

This last will yield such sentences as, for example,

- (39) a Are you coming or are you not coming?
- b Are you coming or are you not?
- c Are you coming or not?
- d Are you coming?

As the authors themselves remark, there is a problem about step (b) in the above derivation, which concerns the movement of the interrogative marker from the conjunction node into the sentence. Where should it be attached? They appear to favour a suggestion already in Katz and Postal: attach [+WH] under a sentence adverb node. Thus at this stage in the derivation we will have the following structure:

(40)



Where for yes-no questions $S_2 = \text{NOT } S_1$. However, once this is accepted, there seems no reason why the interrogative marker should not be directly assigned to the S adverb node. Consider next what happens when such a structure is embedded under a noun phrase, to produce an indirect yes-no question. In this case auxiliary inversion does not take place, and standardly we get an indirect question introduced by whether. Bearing (40) in mind we note that when S_2 does not equal $\text{NOT } S_1$, both S_1 and S_2 can begin with whether as in

- (41) I don't know whether he will come today or whether he will wait until tomorrow

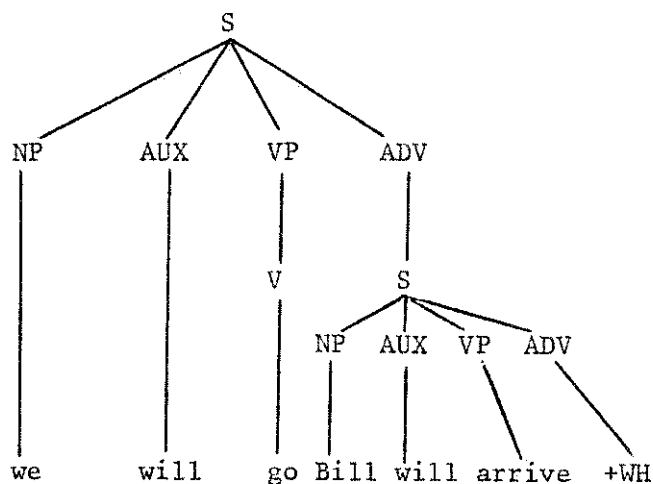
and thus it appears that we can regard whether as the surface form given a questioned sentence adverb which has no lexical content in the context of a disjunction, when the sentence is embedded in a higher sentence. With regard to the requirement of a disjunctive context, it is worth remembering that whether was originally an interrogative pronoun meaning "which of two" and occurred in direct questions (cf. the entry for whether in the Oxford English Dictionary).

The step from here to an analysis of if-clauses is a short one. My suggestion is that if differs from whether in the respect that if does not require a disjunctive context. Thus if appears as the surface form of a questioned sentence adverb in an embedded sentence. Then a sentence like

- (42) We will go if Bill arrives

will have the deep structure

- (43)



Comparing this with (34) we see that if does not figure as a subordinating conjunction in the deep structure. The embedded sentence in (43) is not, of course, a full yes-no question. It may be compared to the left hand side of an alternative question giving rise to a full yes-no question, or to a question expecting a positive answer. (I will return to this in the next section.) But it is the presence of the interrogative marker in the deep structure of if clauses which explains the failure of (42) to imply 'Bill will arrive'.

Section 4

I return now to the facts about if noted in section 1, and seek to show how the analysis just given explains these, numbering my comments to correspond with the subsections of that section.

- 4.1 The distribution of if-clauses in sentences is explained by the fact that these are adverbial clauses functioning as sentence adverbs. As was shown in section 2, if-clauses have the same distribution as many ordinary sentence adverbs.
- 4.2 Given the analyses offered of whether and if in section 3, it seems that the use of if to introduce indirect questions is not, as might be thought, unrelated to its use in conditional sentences. It seems likely that the close similarity between the deep structure environments of if and whether has resulted in if coming to be used in this way, especially in view of the fact that the second disjunct in yes-no questions is optionally deleted. The resulting surface form then looks rather like the deep structure environment of if.
- 4.3 The co-occurrence restrictions between if and certain adverbs and adverbial clauses are the same as those holding in direct questions. If these restrictions are stated to hold between the interrogative marker and the adverbs, then on this analysis they will automatically apply in the if-clause of conditionals.
- 4.4 The assumption that an interrogative marker already occurs in the deep structure immediately explains the non-occurrence of sentences with if-clauses like (10) and (11).
- 4.5 The existence of conditional sentences without if but with auxiliary inversion is easily explained by the proposed analysis. It appears that we have an optional rule of auxiliary inversion, with a condition that the clause be subjunctive. Jespersen (1940), however, gives historical examples when this condition was either ignored or did not yet exist, and auxiliary inversion occurs with indicative clauses.
- 4.6 There appear to be two possible explanations of the occurrence of if-clauses such as those in (14), (15) and (16). One

possibility is that what appears as the main clause in surface structure originated as embedded under a higher clause which has been deleted. In this case the if-clause is still regarded as an adverbial clause, but attached to the original highest S, and not to the S that appears as surface main clause. Although this is plausible in some cases, I think that in many cases the if-clause is not adverbial at all. Instead I think that it occurs as a parenthetical sentence. Jackendoff (op.cit.) illustrates the close connection between sentence adverbs and parenthetical clauses, showing that they can occur in the same positions in sentences. He proposes a base rule which generates sentence adverbs and parenthetical sentences in the same way:

$$(44) \quad S \longrightarrow NP - AUX - VP - \left(\begin{array}{c} \{ ADV \\ PP \\ S \} \end{array} \right)$$

If we assume this rule, then if the parenthetical S contains a questioned sentence adverb node, we shall get the parenthetical if-clauses of the kind we are considering. When we have such a structure, the sentence of the form $S_1 + \text{if} + S_2$ will imply S_1 . The semantic rule which says that this is so will be applicable quite generally to all sentences containing parentheticals. The close relation generally between parenthetical and sentence adverbs explains the misleadingly similar surface structure of sentences like (14) and genuine (adverbial) conditionals.

Finally, a remark about the meaning of if-clauses. The analysis suggests that these contain an interrogative element, but they are not full questions. We can express this by saying that the if-clause does not function to assert the proposition it expresses, but to raise the question in a way that carries a supposition of a positive response. The main clause is then asserted within the scope of this supposition. It has often been noted that the parenthetical if-clauses read like questions, except that they do not genuinely seek information. The same is true, I think, for conditional if-clauses. Indeed surface forms can sometimes be found where the interrogative nature is explicit, as for example in 1st Corinthians, Chapter 7, verse 27, which reads in the Authorized Version:

- (45) Art thou bound unto a wife? Seek not to be loosed.
 Art thou loosed from a wife? Seek not a wife.

The meaning of (45) is the same as if auxiliary inversion had not occurred, and each sentence began with if.

Note I would like to thank Dr. David Reibel of the Department of Language, University of York, who encouraged me to write this paper, and made many helpful suggestions. Of course the result does not necessarily represent his own view.

REFERENCES

- Jackendoff, R. 1972 Semantic Interpretation in Generative Grammar
Cambridge, Mass.
- Jespersen, O. 1940 A Modern English Grammar, Part 5. Copenhagen.
- Katz, J. and P. Postal 1964 An Integrated Theory of Linguistic
Descriptions. Cambridge, Mass.
- Lakoff, G. 1972 "Linguistics and natural logic" Semantics of
Natural Languages. Davidson, D. and Harman,
G. (eds.) Dordrecht.
- Morgan, J. 1970 "On the derivation of if-clauses" University
of Michigan mimeograph.
- Stockwell, R.P.,
P. Schachter and
B. Hall Partee 1973 The Major Syntactic Structures
of English. New York.
- The Oxford English Dictionary.
Oxford 1933.
- The Holy Bible. Authorized Version.