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<thead>
<tr>
<th><strong>Title</strong></th>
<th>A Note on Constituent Structure of a Sentence with Auxiliary Verbs</th>
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</thead>
<tbody>
<tr>
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<td><strong>Additional Information</strong></td>
<td></td>
</tr>
</tbody>
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A Note on Constituent Structure of a Sentence with Auxiliary Verbs

Yoshikazu Katsuyama

1. Introduction

Within generative grammar, several proposals have been presented with respect to the auxiliary system in English. It seems to be possible to divide them into two major groups according to the content of the assumptions they make. Following the terminology given in Akmajian, Steele, and Wasow (1979), in what follows, let us call them the Phrase Structure analysis (the PS analysis) and the Main Verb analysis (the MV analysis) respectively.

The PS analysis, which was first proposed in Chomsky (1957) in the following form,

(1) AUX—T (M) (have-en) (be-ing)

assumes that AUX must be recognized as an independent syntactic category which is necessary to account for syntactic phenomena in surface structure, and that the auxiliary verbs be introduced under an AUX node in the base, and that the relative order among auxiliary elements be specified by the PS rule such as (1). In this analysis, for example, the deep structure of a sentence such as (2) is schematically represented as (3).

2) John had been smoking pot.

On the other hand, the MV analysis, which was first proposed in Ross (1967) and reinforced in McCawley (1971), assumes that there
be not a syntactic category such as AUX, the elimination of which leads to the simplification of the grammar of English, and that what has been considered as auxiliary verbs in traditional grammar be main verbs taking sentential complements as subject in deep structure, and that the surface form be produced by well-attested transformations of Extrapolation and Subject Raising. Thus, in this analysis, a sentence such as (2) has (4) as deep structure, and (5) as surface structure.\[1\]

(4)

(5)
2. The Aim

In this paper, I would like to make four claims: (i) the adequate analysis concerning the auxiliary system in English must provide a correct surface constituent structure of a sentence as well as appropriate statement of syntactic phenomena in surface structure such as Negative Contraction, Auxiliary Reduction and so on, (ii) the MV analysis is inadequate in this regard though semantically well-motivated, as will be shown in the next chapter, (iii) deep structure must be determined on purely syntactic grounds, (iv) auxiliary verbs except the modals must have ‘stacked’ VP constructions in syntactic structure. In what follows, we shall begin our discussion with a more detailed account of the MV analysis, and in the course of discussion we shall examine the above four claims in comparison with the PS analysis.

3. Three Arguments in Support of the MV Analysis

In beginning discussion, it should be kept in mind that the MV analysis is based on a semantically-oriented theory such as Generative Semantics, not on a syntactically-oriented theory such as Standard Theory, so the underlying structure is determined by semantic considerations in the MV analysis.

Several arguments in support of the MV analysis are presented in several papers. (Ross (1967), McCawley (1971, 1975), Huddleston (1974, 1976a, 1976b), and Pullum and Wilson 1977)) In this paper, however, we shall confine ourselves to three of them, two semantic and one syntactic, since overall consideration of them all is unnecessary here.

The first argument for the MV analysis is that the semantic scope of auxiliary verbs is not the main verb,
Consider the following sentences.

(6) John may win the match.
(7) John was mowing the lawn.

In (6), "mood of possibility applies to John’s winning the match, not just to ‘winning’" and in (7), "what was in progress was John’s mowing the lawn." Further, when two auxiliary verbs are present, the semantic scope of the second is embedded in that of the first.

(8) John may be running in the park.

In (8), progressive aspect is assigned to John’s running in the park, whereas modality is semantically associated with John’s running in the park plus progressive aspect.

Information of this sort concerning scope interpretation of auxiliary verbs is, in the MV analysis, represented in underlying structure. For a semantically-based theory assumes that underlying representation contain semantic information of all sorts with regard to the sentence.

Returning to the examples (6) and (8), then, their underlying structures are, in the MV analysis, (9) and (10) respectively.

(9)

```
(\text{S}) \quad \text{NP} \quad \text{VP}
```

In (9) and (10), the fact that auxiliary verbs have sentential scope in meaning is accounted for by their having sentential complements as subject in underlying structure.

Another support can be gained from setting up underlying structures
such as (9) and (10). This has something to do with meaning similarity between (6) and the next sentences.

(11) It may be that he will win the match.
(12) It is possible that he will win the match.

Sentences such as (11) and (12) are considered to be derived from underlying structure similar to (9) by Extraposition. If (9) is the underlying structure of (6), semantic similarity between the three sentences above can be naturally accounted for by stating that they are assigned the identical underlying structure.

The second argument advanced in favor of the MV analysis is that certain verbs such as *happen, begin* and *seem* show the same behavior as auxiliary verbs with respect to voice.

To see this, let us consider the following.

(13a) John happened to notice the error.⁶
(13b) The error happened to be noticed by John.

(14) John refused to help Mary.

(14a) Mary refused to be helped by John.

(15a) John may have noticed the error.
(15b) The error may have been noticed by John.

With these sentences, Huddleston (1974) says as follows:⁷

In (1) (=13) and (3) (=15) the a and b sentences are truth-
functionally equivalent, in (2) (=14) and (4) they clearly are not. The standard way of accounting for the difference between (1) (=13) and (2) (=14) had been to say that happen is an intransitive verb taking subject complementation, while refuse is a transitive verb taking object complementation. Underlying structures for (1a) (=13a) and (2a) (=14a) are thus roughly as follows:

Incidentally, the deep trees for (14) are (16).

Non-equivalence of truth value in sentences such as (14) can be, as is stated above, accounted for by setting up distinct deep subjects in active and passive forms. In (14a) it was John who refused, while in (14b) it was Mary who refused. Yet this kind of semantic difference does not exist in sentences such as (13). The choice of a surface subject does not affect the meaning of the sentences. This would mean that the deep subject of the verb happen in (13) is not a specific single NP John or the error, but a sentential complement John
notice the error. The existence of the following sentence provides additional support for this view.

(17) It happened that John noticed the error.

The same argumentation above is applicable to sentences such as (15) if the distinction between main and auxiliary verbs is removed. Namely, we can say that the voice-neutrality of (15a) and (15b) is due to the fact that they have sentential complement as subject in deep structure. Furthermore, it is possible to give a unified account for the voice-neutrality of different types of sentences such as (13) and (15) by saying that they have the same type of underlying structure. On the other hand, the PS analysis, which assumes an underlying structure of (15) to be (18), quite different from that of (13) (= (PM2)), is incapable of accounting for the voice-neutrality found in (13) and (15) in terms of the structural similarity between them. Another inelegant mechanism is needed in the PS analysis.

(18)

![Diagram](image)

It should be noted that no *ad hoc* rules are necessary to produce sentences such as (13) and (15). They are derived from common underlying structure through the optional application of Passive in the case of b sentences and the obligatory application of Extraposition and Subject Raising in the case of a sentences. The three rules relevant to this derivation have been independently motivated in generative grammar. Therefore, postulating underlying structure like
(PM ) for a sentence with auxiliary verbs does not complicate the grammar, which provides another support for the MV analysis.

The third argument for the MV analysis is that proposed derived structure serves as a correct input to VP Deletion and Pronominalization. To state my conclusion first, this argument does not seem to be so persuasive as it looks. In what follows, general account of VP Deletion will be given first, and then the argument presented above will be examined in detail.

VP Deletion is defined as a rule to delete the VP of the second conjunct of a conjoined sentence under identity with the same VP of the first conjunct, “always leaving behind one or more auxiliary verbs.” Below are the examples.

19) Bill ate the peaches, and Harry did, too.”
20) Either Ivan will write the play, or Boris will.
21) Tom hasn’t smoked the grass, nor has Reuben.
22) Frank may have told Chet, and Joe may have, too.

Deleted elements in the sentences above are eat the peaches, write the play, smoked the grass, and told Chet respectively. In (19) ‘supportive’ do is necessary since TENSE does not appear by itself in surface structure.

Relevant to the present discussion are the following.

23) John must have been using drugs,

\[
\begin{align*}
\text{Bill must have been, too} & , \\
\text{Bill must have, too} & \\
*\text{Bill must, too} & .
\end{align*}
\]

According to the MV analysis, a derived structure of the second conjunct of (23) before VP Deletion applies is (24), with too aside. Notice that in (24) deleted elements—using drugs and been using drugs respectively—form a constituent at the time VP Deletion applies.
Moreover, a derived structure such as (24) is required to account for the possible antecedents of a relative pronoun in sentences such as (25), as is pointed out in McCawley (1971).

(25) Ed says Jill may have been lying.

\[
\begin{align*}
\text{which she may have been.} \\
\text{which she may have.} \\
\text{which she may.}
\end{align*}
\]

In (25), "which" serves as a relative pronoun standing for lying, been lying, and have been lying respectively," all of which are constituents in a structure like (24).

Proponents of the MV analysis seem to consider that this is one of the strongest arguments in support of their own view. There are, however, two reasons to indicate that it is not so persuasive as they consider. First, a deletion rule does not always operate on a constituent, though a movement rule must. See the examples (26)—(28) below. Comparative Sentence Deletion is responsible for the formation of (26), and Gapping for those of (27) and (28).

(26) Stanley smokes more pot than tabacoo.13

(27) Simon quickly dropped the gold, and Jack the diamonds.14

(28) Max writes poetry in the bathroom, and Schwarz radical pamphlets.15

— 115 —
In (26) and (27), missing elements are *Stanley smokes*, and *quickly dropped* respectively. They are not a constituent, but only a sequence of two words. In (28), non-adjacent elements *writes* and *in* are deleted. Of course, they are not a constituent. These facts, therefore, suggest that VP Deletion does not provide an argument for the MV analysis.

Secondly, a constituent structure which serves as an input to VP Deletion and Pronominalization can be given in the PS analysis, too. In fact, Emonds (1976), Culicover (1976), Iwakura (1977), and Akma- jian, Steele and Wasow (1979) have recently proposed interesting models of auxiliary verbs in English. Roughly speaking, they are very much the same though of course delicately different from one another. One typical common feature among them is that their deep structure permits at least three levels of verb phrases whose heads are the perfective *have*, the progressive *be* and a so-called main verb. In this kind of model, the second conjunct of (23) has the following deep structure, with *too* aside.

From (29), it is evident that the PS analysis can make the same syntactic prediction as the MV analysis with respect to the application of VP Deletion and Pronominalization.

These considerations so far lead us to conclude that VP Deletion
and Pronominalization do not play a positive part in supporting the MV analysis.

4. Surface Constituent Structure

At the end of the preceding chapter, we have seen that apart from the modals, verb phrase whose head is an auxiliary verb must be 'stacked' at any rate somewhere in the derivation. In this chapter, we shall examine further the surface constituent structure of a sentence containing auxiliary verbs, in connection with the placement of sentential adverbs (henceforth S adverbs), and show that MV analysis is insufficient in this respect.

Unlike VP adverbs such as completely, S adverbs such as evidently can freely appear in all possible positions of a sentence in surface structure. When more than one auxiliary verbs are present, however, S adverbs cannot be placed after the second and the subsequent auxiliary verbs.

(30) George will evidently have amused the children by the time we get there. 

(31) *George will have evidently amused them when we get there.

The sentence of (33) is not permitted because S adverbs occur before the second auxiliary verb.

On the other hand, semantically, S adverbs do not modify the following items but the sentence as a whole. We can paraphrase(30) as follows.

(32) It is evident that George will be amusing the children by the time we get there.

A natural way to account for these two facts—the surface distribution and the deep semantic scope of S adverbs—is simply to claim that S adverbs be directly dominated by an S node in surface structure. This claim is syntactically and semantically justified.
For a sentence such as (31) will be ruled out on the grounds that the S adverb in question is dominated by a VP node, and the scope of S adverbs is directly indicated in surface configuration.

With this in mind, let us compare the MV analysis with the PS analysis concerning the surface constituency. To this aim, we shall take (30) as an example. In the MV analysis, its surface structure is schematically represented as (33), while in the PS analysis it is as (34). (The subordinate clause by the time we get there is omitted here since it is irrelevant to the present discussion.)

(33)

\[
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
VP \\
\downarrow \\
V \\
\downarrow \\
ADV \\
\downarrow \\
V \\
\downarrow \\
V \\
\downarrow \\
V \\
\downarrow \\
NP \\
\end{array}
\]

George will evidently have amused the children

(34)

\[
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
AUX \\
\downarrow \\
ADV \\
\downarrow \\
V \\
\downarrow \\
V \\
\downarrow \\
V \\
\downarrow \\
V \\
\downarrow \\
NP \\
\end{array}
\]

George will evidently have amused the children

Notice that in (33) the S adverb *evidently* is placed under the highest VP, not under the S. Given such a configuration as (33), we shall ordinarily consider that the S adverb modifies the highest VP, not the S. But this is not clearly a correct interpretation. An S adverb must modify a sentence. More importantly, this difficulty cannot be
remedied in the MV analysis. For (i), in the MV analysis, auxiliary verbs are all supposed to have ‘stacked’ VP constructions in surface structure, and (ii) by general convention two nodes are not allowed to be associated over others nodes as shown in (35).

(35)

```
NP ĵ P
V
ADV
VP
```

On the other hand, in (34), the S adverb *evidently* is dominated by an S node, which provides a correct interpretation for its semantic scope.

5. Summary

So far we have gone into two competing analyses concerning the auxiliary system in English from the surface constituency point of view. What was made clear in the preceding chapters is (i) that the PS analysis is preferable to the MV analysis in that the latter is incapable of giving a correct surface constituent structure of a sentence containing an S adverb, though semantically well motivated (we have seen that the semantic consideration of scope interpretation and voice-neutrality lead us to set up an underlying structure with sentential complement as subject and a surface structure with ‘stacked’ VP constructions, and that these two structures were related by independently motivated transformations of Extraposition and Subject Raising), (ii) that this kind of flaw is fatal because it cannot be remedied in the MV analysis, (iii) that auxiliary verbs except the modals must have ‘stacked’ VP constructions so that VP Deletion and Pronomin-
alization may apply properly, and S adverbs may be directly dominated by an S node.

NOTES

2. Ibid., p. 98.
15. Ibid., p. 24.

REFERENCES


