

Government And Binding And The English Modals

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Abstract:

Although we believe that modality and the modal system could be one of the most researched areas in English and probably other languages, nevertheless, the adventure, of believing that the formulation of modality in concrete and precise framework is possible, is still fascinating. This is, in fact, the impetus behind this paper.

There are two analyses, in the generative Literature, dealing with English modals, neither of which can be considered comprehensive on its own. See (Homeidi 1986: 3.3) for a syntactic critique of both of them.

We try in this paper an analysis for the English modals in the Government and Binding theory, henceforth, GB. The general framework, we are adopting, is that of Chomsky (1981) and Bouchard (1984).

The paper starts by criticizing Chomsky's (1981) position of the modals. Section two is devoted to the new analysis we envisage in GB framework. More evidence is provided in section three. Section four deals with the possible logical characterization of modal sentences in English. A solution for the wide/narrow scope of the negative element in modal sentences is provided in section five. Section six incorporates the different meanings of the modals on the syntactic analysis in section two. Section seven contains the summary and conclusion.

The paper stresses the fact that the English modals should be considered as a distinct class of verbs with distinct syntactic and semantic properties within the English verbal system.

I. Treatment of The English Modals In Chomsky's Lectures On Government And Binding.

What is disappointing in the large volume of **Lectures On Government And Binding**, henceforth LGB, which characterizes the main properties of Government Binding theory, is that there is no mention of the modals in the whole volume with the exception of the following footnote which can be traced in its essence to Jackendoff's position (1972):

Perhaps the Modals also appear within INFL. I will omit any discussion of their status, as well as other questions relating to the auxiliary system which have been the topic of much study and debate. See, among others, Pullum and Wilson (1977), Akmajian, Steele and Wasow (1979), Fiengo (1979), Lasnik (1979), Milsark (1980).

(LGB: 140)

So then, LGB suggests that the modals may appear in INFL. If we follow this line of argument in the LGB framework, we find that INFL is one base category in universal grammar which follows from the universal rule:

(1) S $\longrightarrow$ NP INFL VP. (LGB: 52)

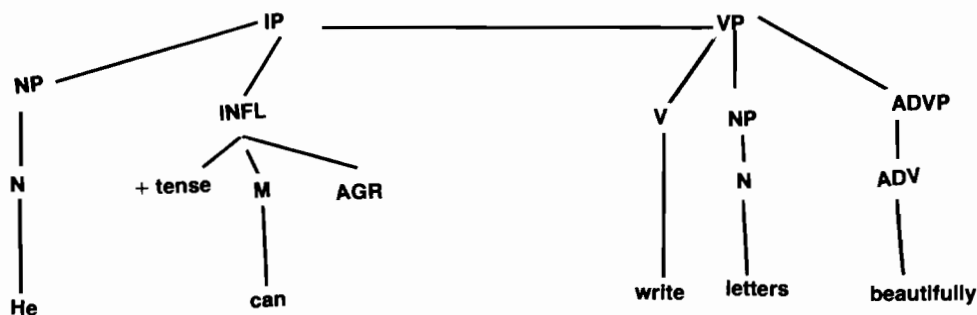
The formal syntactic properties of INFL are characterized in LGB as follows:

The "inflectional" element INFL may, in turn, be [ϕ Tense], i.e., finite ([α Tense]) or infinitival ([β Tense]). If finite, it will, furthermore, have the features person, gender and number; call this complex AGR ("agreement"). The element AGR is basically nominal in character; we might consider it to be identical with PRO and thus to have the features [α N, β V]. If so, then we may revise the theory of government, taking AGR to be the governing element which assigns Case in INFL. Since [α N, β V] is not generally a Case-assigner, we must extend the theory of Case so that [α N, β V, α INFL] is a Case-assigner along with [β N], regarding [α INFL] as basically "verbal," if we take AGR to be nominal. INFL governs the subject if it contains AGR, then assigning nominative Case by virtue of the feature [+INFL]. (LGB: 52)

Accordingly, a sentence such as:

(2) He can write letters beautifully,
will be assigned the following D-S and LF structure:

(3)



Notice that the insertion of **can** under the INFL node does not illuminate or serve any insight or function neither on the syntactic level nor the thematic one. Take for example, case assignment and θ -role marking. In (3) **He** will be assigned a nominative case and θ -role as agent by the governing complex VP α INFL in the syntax. On the other hand, **letters** will be assigned and accusative case and θ -role as patient by the governing verb **write**. So then, the presence or absence of **can** in (3) does not affect the syntactic or the thematic status of the sentence under discussion. However, we know that the modal sentence in (3) is different from its nearest non-modal counterpart in (4):

(4) He writes letters beautifully.

Chomsky's account in LGB does not distinguish between (3) and (4).

Another point is that the scope of the modal in (3) can not be defined precisely by syntactic notions such as C-command, government or any similar notions. In section five we define the scope of the negated modal sentences in terms of the notion of government. We can conclude that the insertion of the modal under the INFL node is not required by any syntactic or thematic rules. More than that, it does not help in clarifying the difference between modal non-modal sentences. For these reasons we will try a different analysis in the forthcoming section.

II. A Proposed Analysis For The English Modals In GB Framework

It seems that a sound approach to the treatment of the English modals in Gb framework is to characterize their lexical properties because one basic assumption in the GB theory is the Projection Principle, which is characterized as follows:

Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

(LGB: 29)

The main idea behind the projection principle is to get rid of the unwanted redundancy between the rules of the lexicon and the categorial component as in the grammar presented in Chomsky (1965) where, for example, verbs like **want** or **persuade** are specified in the lexicon as taking an NP followed by CP complement. But this fact is also specified by the fact that a verb can take an NP and CP complement as specified by the expansion rules of VP. Some characteristics of the Projection Principle are observed as:

The projection principle has far-reaching consequences. It is crucially dependent on trace theory, it precludes any model of grammar, like the 'On Binding' model for example, that incorporates 'structure-building rules'.

(Bouchard 1984:4)

For more about the projection principle see amongst others: (LGB:Ch.2), Bouchard (1984:2) and Riemsdijk and Williams (1987: 251-53).

In this sense we suggest that the English modals, in fact, share the lexical properties of the verb **seem** and the predicate **be likely**; in other words, we suggest that the English modals may be characterized as follows:

- (5) (i) Modals are a class of verbs that assign no role to subject position.
- (ii) Modals are raising verbs and, in fact, Np movement to subject position is obligatory. In this sense the English modals behave quite similarly to the verb **seem** and the predicate **be likely**.
- (iii) The verb in the complement clause is always [-tense].
- (iv) Like **seem** and **be likely**, the modals delete CP in their complement.

Notice that (iv) in (5) is necessary for our characterization. It is the means by which we guarantee that the trace left in the embedded clause is governed. If CP level, which is an absolute barrier for government, is not deleted the result will be ungrammatical.

The trace will, then, be ungoverned, violating one basic principle in GB theory: "Trace is governed".

(LGB: 56)

This same assumption is suggested in (LGB: 68):

"As these examples illustrate, 'raising predicates' that delete $\bar{S}$ and thus govern a trace in the subject position of an infinitival complement are not case-assigners; that is, the trace left by NP movement is governed but not case-marked".

The conditions expressed in (5) are to be understood as conditions describing and controlling the behaviour of the English modals. To take also the following statement made in (Bouchard 1984: 143) about INFL:

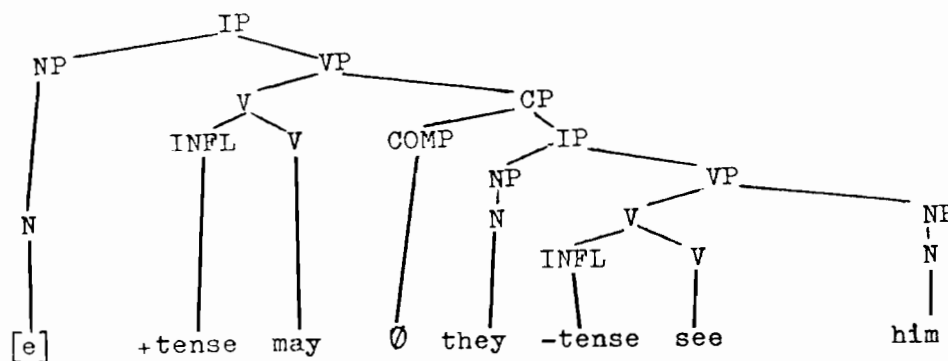
Another possibility is to assume that INFL is not a syntactic node but that is attached to the V in the lexicon. . . the percolation of the INFL features can take place, the features climbing to VP, so that the case-assigning features can govern the NP subject position and assign nominative case to it. . . This analysis of nominative case-assignment preserves the parallelism that often holds between case assignment and θ -role by the verb that governs it. Similarly, the subject of a tensed clause will be assigned case and θ -role by the VP that governs it in our analysis, this VP node being a complex node where the INFL features have percolated.

Let us have the following example:

(6) They may see him.

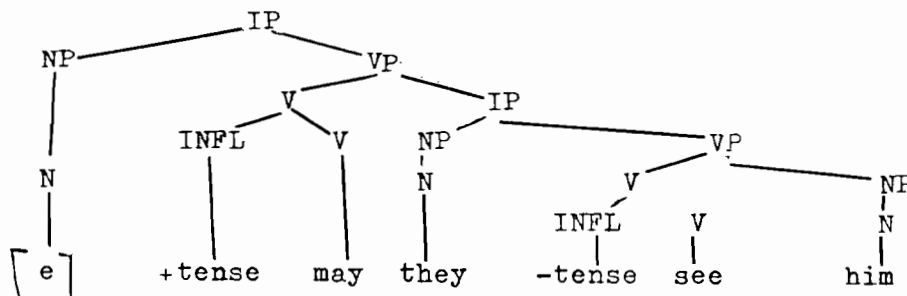
According to (5), (6) should have the following D-structure:

(7)



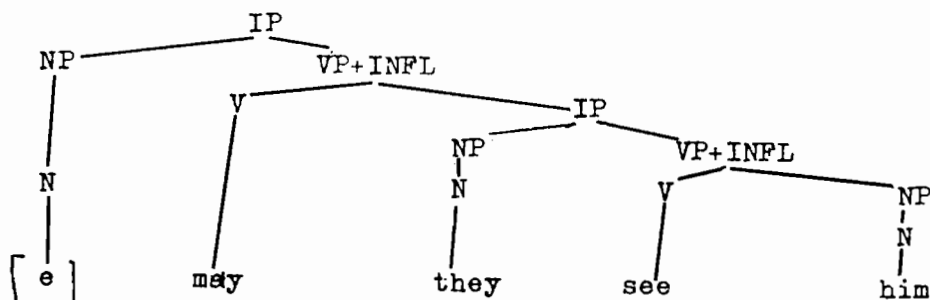
However, after CP level is deleted we get the following:

(8)



In (8) we first need the percolation of the INFL elements to VPs in the syntax so that the assignment of case and θ -role is carried out. (8) will then be (9):

(9)



In (9), on the level of the embedded clause, we have the following: the verb **see** governs the NP 'him' and assigns it an accusative case and θ -role as a patient. The lexical entry of the verb **see** could be characterized, then, as the following:

(10) See: V, +

-----NP
+acc

The complex VP+INFL governs the NP subject 'they' and assigns a θ -role as an agent but can't assign it a nominative case because the inflectional element in the verb **see** is [-tense]. However, on the level of the matrix clause the case is different. The complex VP+INFL governs the NP subject position and assigns it a nominative case but can't assign it a θ -role since the lexical properties of the verb **may**, being a modal, assign no θ -role to the subject; now we get a very interesting case:

First: The NP subject position of the matrix clause is assigned a nominative case in the syntax so it must be filled with a lexical NP to satisfy the principle of LEXICALIZATION which is formulated as follows:

(11)

A noun will be lexicalized if and only if ψ features are present in the entry of N at PF, where ψ = person, number, gender and case.

(Bouchard 1984: 41)

Second: (5:ii) states quite clearly that the modals are raising verbs.

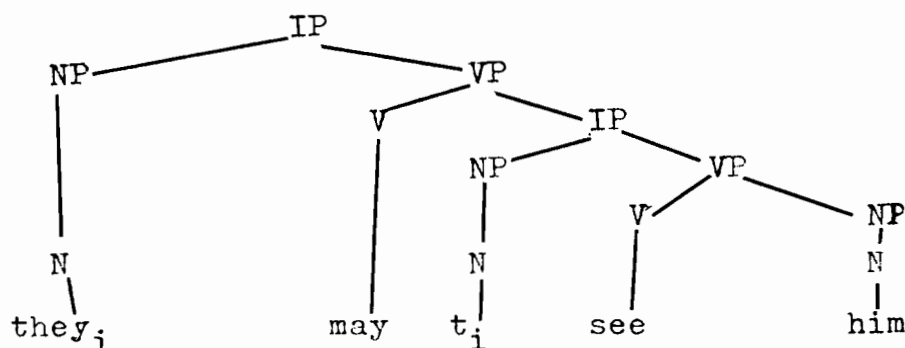
Third: The NP subject position of the complement is a lexical item without a case, so it must move somewhere in the structure to receive case otherwise;

the sentence will be ruled out as ungrammatical by the case filter which is stated in Chomsky (LGB:49) as follows:

- (12) * $[N\alpha]$ where α includes a phonetic matrix, if N has no case.

So then both (4:ii) and the principle of LEXICALIZATION will ensure that the NP subject of the complement clause will move to occupy the empty NP subject of the matrix clause; and thus we get the S-structure in which 'they' is the subject of the matrix clause as in (13):

- (13)



So, although the NP 'they' surfaces as the S-structure subject of the matrix clause [i.e. (13)], in fact, it is the D-structure subject of the embedded clause [i.e. (7)]. This is indicated by the co-indexed trace in its original position. This means that the θ -role of the subject NP of the matrix clause is transmitted through co-indexation with the trace and not assigned through government by the VP. This is, however, in complete harmony with our assumptions so far. This conclusion is also in harmony with (LGB: 41):

If no subject appears at D-structure, the position is not θ -marked at any syntactic level, this convention gives the required distinction, while also permitting NP-movement to S-structure subject position, without violation of θ -criterion.

Since we assumed that the modals are raising verbs, then our assumption about θ -role assignment in subject position of a modal sentence is in complete harmony with (LGB: 113):

"The subject position for a raising verb can not be a θ -position, and more generally, movement to a θ -position is always excluded".

We are also sure that the NP 'they' which surfaces as the subject of the matrix clause by NP-movement does not have two cases because, in principle, the NP subject of the embedded clause has moved to occupy the subject position of the matrix clause to receive case to avoid the case filter in (12).

So then, our analysis of the modals does not violate any principle in the GB framework; on the contrary, it works in complete harmony with its principles.

3. More Evidence for the Proposed Analysis

3.1. On the Lexical Properties of *seem*, *be likely* and the Modals

The lexical properties of **seem** and **be likely** are characterized (LGB: 68) as follows:

"... a lexical property of **seem** and **be likely** is that they take clausal complements and assign no θ -role to their subjects. Therefore by the projection principle, the D-structure for:

- (13) (i) John seems [to be a nice fellow].
(ii) John is [to be a nice fellow].

must be

- (14) (i) NP seems [John to be a nice fellow].
(ii) NP is likely [John to be a nice fellow].

According to Chomsky's argument, the sentences in (14) undergo NP-movement and CP deletion to get the sentences in (13).

What is important for us at this point is that, in their lexical properties, **seem** and **be likely**, are identical to the characterization suggested for the modals in (5). We will see more evidence on the similarity, in syntactic terms, between **seem**, **be likely** and the modals in the following sections.

3.2. The Scope of Negation

The scope of negation is another argument in which the verb **seem**, the predicate **be likely** and the **modals** behave quite similarly. It is well-known in English that a negated modal sentence is ambiguous as far as the scope of negation is concerned, i.e. between a wide scope and a narrow one; e.g:

- (14) He { can not
can't } pray and still go to paradise.
(14) is ambiguous between:

- (15) He can [if he chooses to] not pray and still go to paradise.

In (15) the scope of negation is a narrow one covering the complement clause only.

And:

- (16) He { can't
can not } pray and still go to paradise.

In (16) the scope of negation is a wide one negating the matrix clause including the modal verb. For a similar argument see (Horn, L. 1972).

However, this same phenomenon of wide/narrow scope of negation element shows quite clearly with the verb **seem** and the predicate **be likely**, e.g:

(17) He seems not to be happy. (Narrow scope of negation)

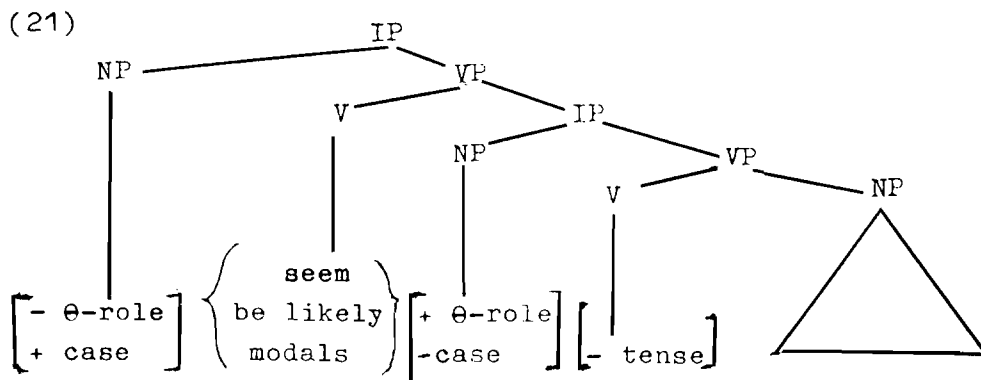
(18) He does not seem to be happy. (Wide scope of negation)

The same thing occurs with **be likely**:

(19) He is likely not to be happy. (Narrow scope of negation)

(20) He is not likely to be happy. (Wide scope of negation)

So we notice quite clearly that the predicate **be likely** and the verb **seem** behave in an identical way with the modals in respect of scope of negation. The question is how to solve this similarity in behaviour. The only solution is to take the D-structure, which represents the sentences from (14-20), to be the following:



In (21) the negative element can appear either as a daughter of the matrix clause (then we get wide scope of negation), or as a daughter of the complement clause, and in this case the scope of negation will be a narrow one. This mechanism is possible directly for the structures containing **seem**, **be likely** and the **modals** all alike.

3.3. The Agreement Argument

A third argument in which the modals behave like **seem** and **be likely** is the Agreement argument. Briefly speaking, a predicate nominal (that is, an NP used as the complement of a copula verb such as be) agrees in number with the subject of its own clause, e.g.:

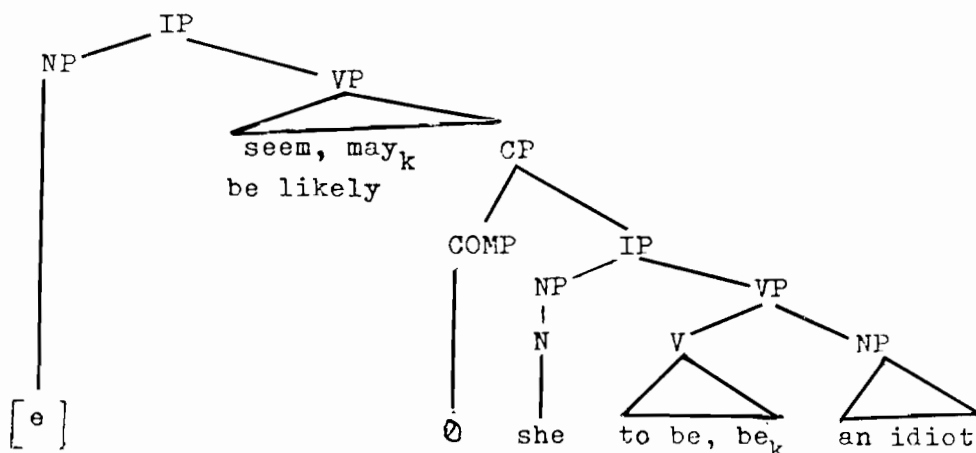
(22) She seems to be an idiot/*idiots.

(23) She is likely to be an idiot/*idiots.

(24) She may be an idiot/*idiots.

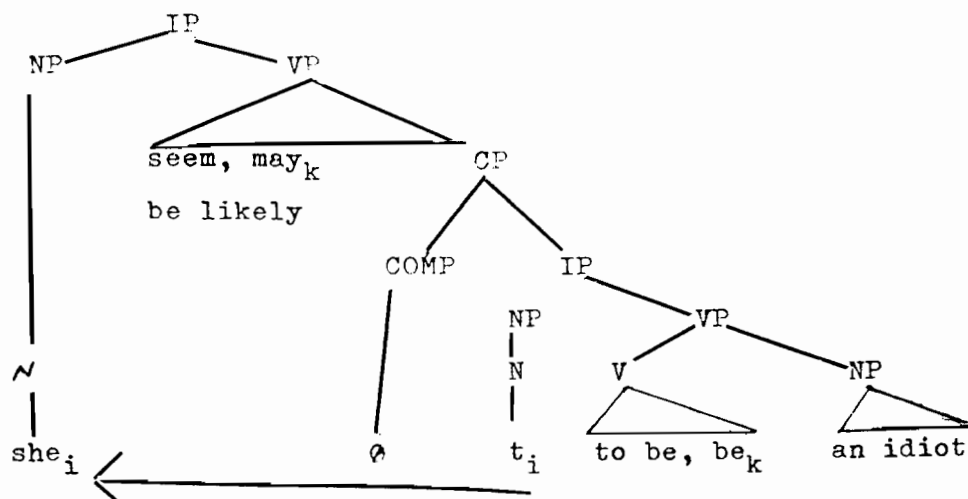
We notice that the predicate nominal **idiot** agrees in number with the NP subject of the matrix clause although it originates in a different clause. How can this be achieved? It can be achieved through an NP movement in the syntax. The D-structure of (22-24) is the following:

(25)



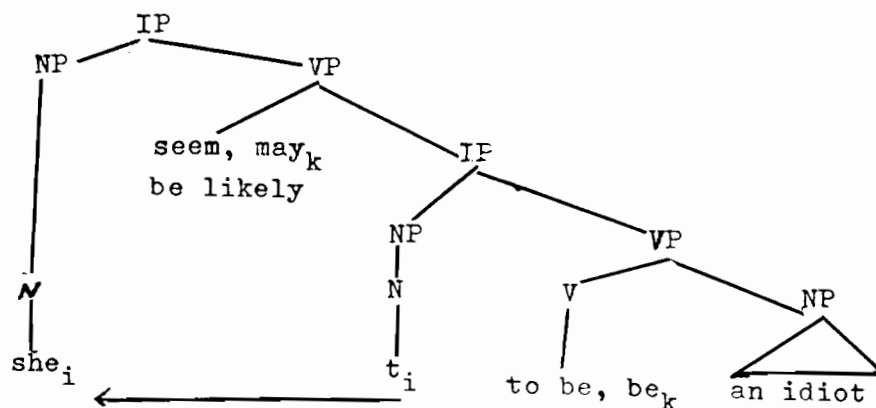
(25) can not surface as it is for the several reasons mentioned in section II. NP-movement is obligatory. Thus, (25) will be (26):

(26)



In (26) the trace is still ungoverned. We need CP level deletion so that the trace will be governed by any one of the tensed verbs **seem**, **may** or the predicate **be likely**. (26) will be (27):

(27)

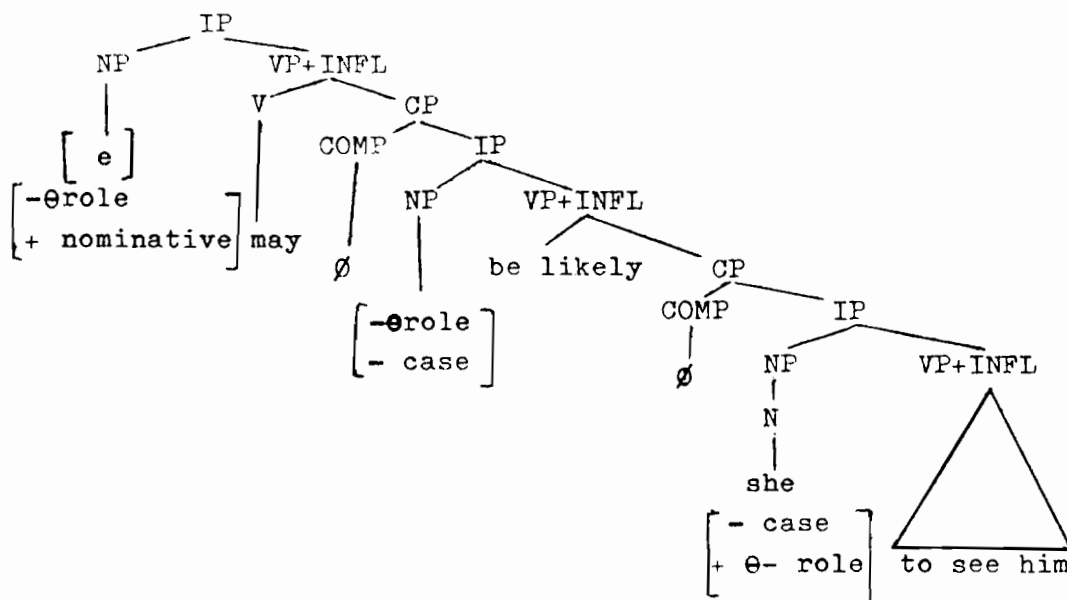


More evidence to the conclusion that NP-movement and SUBJACENCY are maintained in **modal** structures, **seem** and **be likely** all alike, can be drawn from structures with two raising verbs including a modal, e.g.:

(28) she may be likely to see him

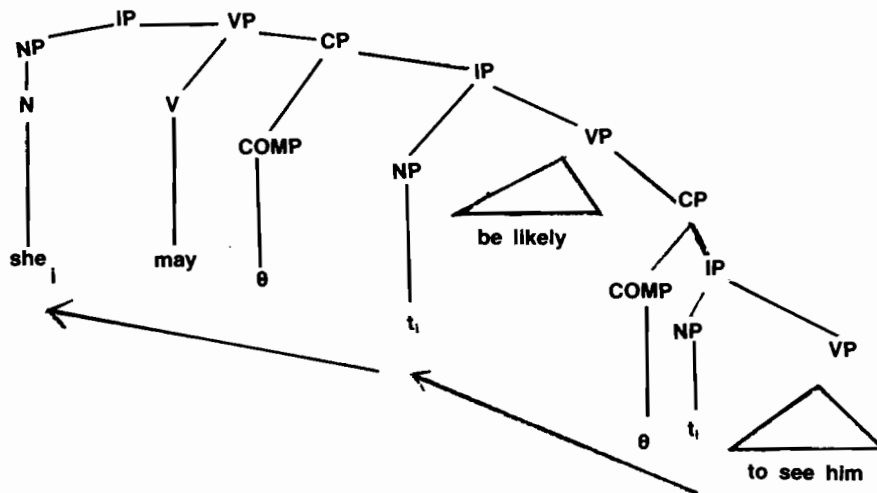
According to (5), (28) will be assigned the following D-structure:

(29)



(29) can not surface as it is because if it did, case filter would be violated in the most embedded clause and, more than that, the subjects of the upper two clauses are not filled with a phonetically realized NPs. However, after NP-movement takes place (29) will be (30):

(30)



In (30) the NP **she** with the two traces in the embedded clauses constitute one chain. This is why they are co-indexed. Subadjacency is observed by the fact that the NP-movement can not cross two CP nodes, e.g. (31) is absolutely wrong:

(31) *She may CP [is likely CP [t_i to see him]].

However, I would like to stress the following point concerning the syntactic structure of the sentences in (22-30). We see that the complement clause of **seem** and **be likely** is always non-finite. However, although the complement clause of the modal lacks the infinitive **to**, the syntactic structure of the complement clause is always non-finite.

This point can be reinforced by the following examples:

- (32) a She can sing beautifully.
 (32) *b She can sings beautifully.
 (33) a He may come tomorrow.
 (33) *b He may comes tomorrow.

There are, of course, other structures with non-finite verb and no infinitive **to** in English e.g:

- (34) a Let many people go.
 (34) *b Let many people to go.
 (35) a He saw the dog jump.
 (35) *b He saw the dog to jump.

We conclude that the modals behave like **seem** and **be likely** in many syntactic and thematic arguments as presented above. These arguments will add more evidence to the previously well-argued analysis for the English modals as main verbs in the Literature. In the following section, we try to seek more evidence for our own syntactic argument from the logical characterization of modal sentences in English.

4. A Logical Characterization Of Modal Sentences In English.

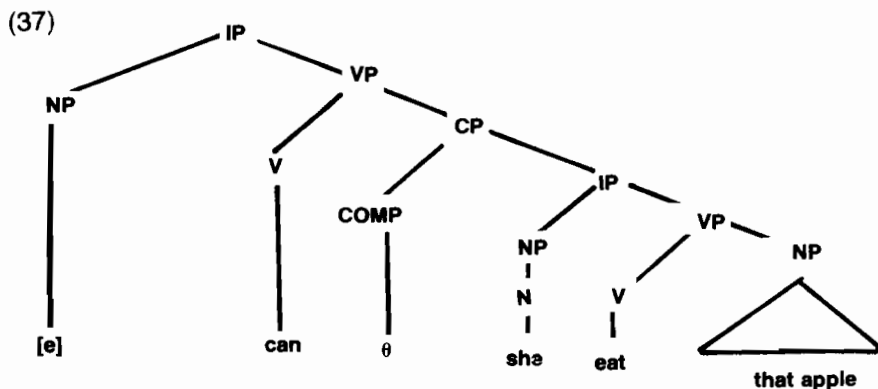
In this brief section we shall try to shed some light on the possible logical characterization of the modal sentences in English in our proposed analysis in section two. However, before doing that, it is necessary to define the LF structure in our framework. We would like to state in this respect that we are adopting May's concept of LF which he defines as follows:

"... that representation at logical form are phrase makers, second it is being held that rules which map from surface structure to logical form are identical in form and functioning to rules mapping from deep to surface structure" (1977:7).

It is a well-known fact, in logic, that modals are sentential predicates i.e. they take a whole sentence under their scope (see Horn, L. 1972, chap 4).

In our framework, this is achieved directly by the projection principle and the lexical properties of the modals in (5). Since the properties of the lexical entries must be observed at any level of derivation, i.e. D-S- and LF, this means that the LF structure of (36) would be (37), which is a direct representation of the projection principle:

(36) She can eat that apple.



From (37) we can draw the following logical formula:

(38) Can (X eat y)

If **can** is taken to express the epistemic meaning, i.e. 'possible', then (38) can be more detailed as follows:

(39) It is possible (for (X) to eat (Y)).

However, if **can** is taken to express the root meaning, i.e. 'permission', then we can draw the following formula:

(40) For (X) it is permissible (for (X) to eat (Y)).

The two logical formulae offered for the root/epistemic characterization of **can** can be collapsed into one general formula as follows:

(41) Can ((X) eat (Y))

Where: can $\Diamond/P$ = possible / permissible.

X she.

Y that apple.

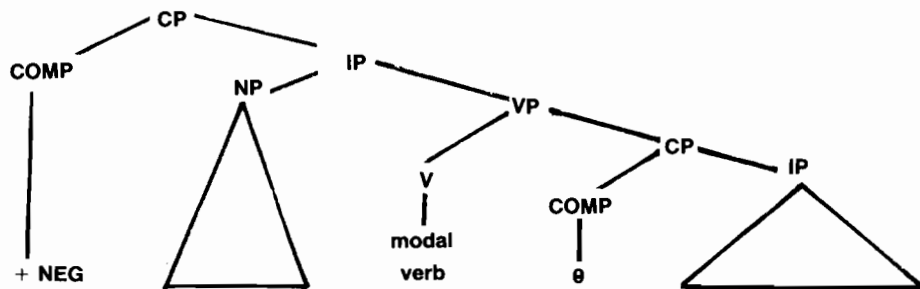
For similar characterization in line with (41) see (Perkins, 1981).

We will see later that the decision between the root/epistemic senses of the modals can be achieved without altering anything in the syntactic structure of the modal sentence. One advantage of such an analysis is that it gives a straightforward logical characterization from the syntactic structure which catches the scope of the modal quite properly.

5. A Solution for the Wide/Narrow Scope of the Negative Element in the Modal Sentence in English.

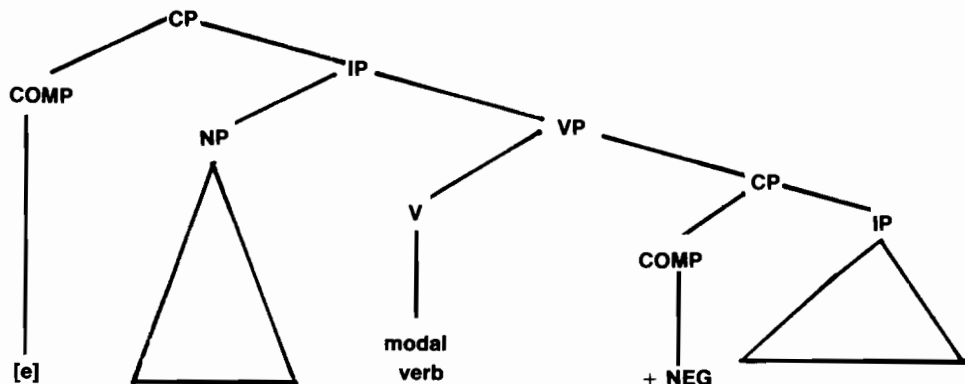
Diagrammatically, the wide/narrow scope of negation can be shown as the following, assuming the negative element to be inserted in COMP in the spirit of most recent studies. (c.f. Bresnan: 1970):

(42)



The structure in (42) represents an S-structure and LF of a negated modal sentence with a wide scope of the negative element.

(43)



(43) represents S-structure and LF of a negated modal sentence with a narrow scope of the negative element.

The wide/narrow scope of negation can be explained in the proposed analysis in section two without any additional or speculative rules. Let us have the following sentences:

(44) She can not see him in the afternoon.

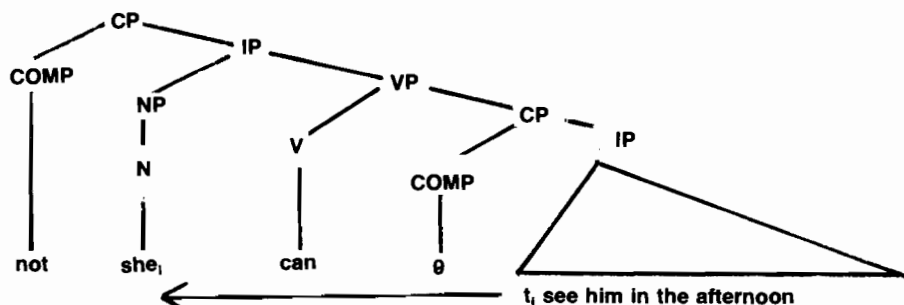
(44) is ambiguous between (45) and (46):

(45) She can [if she chooses to] not see him in the afternoon. (narrow scope)

(46) She can't see him in the afternoon. (wide scope)

In our framework, (46) will have the following S-structure:

(47)



We would like to suggest that the scope of negation can be captured quite properly by the notion of government which we define as follows:

(48) α governs β

- iff (i) α is a negative element.
 (ii) α C-commands β iff the first dominating node that dominates α dominates β .
 (iii) CP is an absolute barrier for negation.

In fact, condition (iii) in (48) follows from a wider and more general rule, i.e. 'subjacency', which is suggested to control the 'Move α ' rule and to define the main properties of bounding theory.

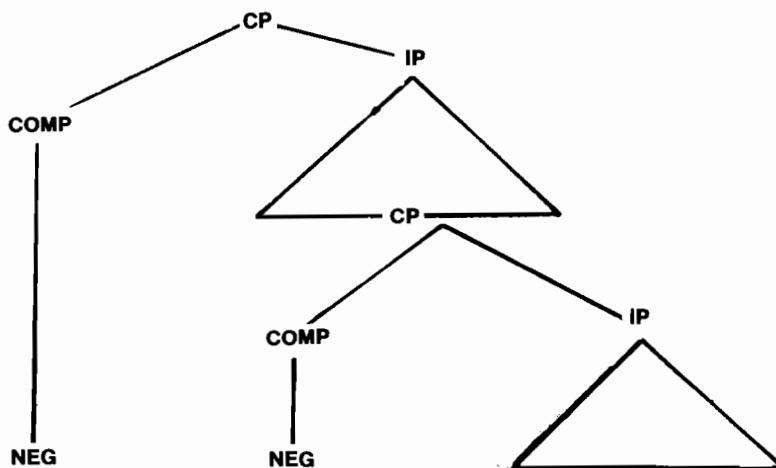
In (47) the scope of the negative element can't run downward to cover anything in the complement clause because of the CP barrier.

In (45) the scope of the negative element can not percolate upward to negate the modal meaning because of the CP barrier also. Its scope is limited to the complement clause only.

As we mentioned earlier, we adopt the view that the place of negative element is in COMP as the place where all the pre-sentential elements are inserted. Then a minor rule will take the negative element from COMP node and insert it after the modal. This rule may be called 'Negative Placement Rule'; its function is to ensure that the negative element is inserted after the modal in the morphological structure of the sentence, i.e. after the modal.

So the syntactic structure of a negated modal sentence will be as follows:

(49)



and then the 'Negative Placement Rule' will ensure that the negative element is in its proper place at surface structure.

6. Incorporation of Modal Meanings Into the Proposed Syntactic Analysis

The syntactic analysis we developed in the previous sections for English modals suggests that we have one syntactic structure for modal sentences regardless of the potentially different meanings expressed by the modal in the sentence under discussion. More specifically, the syntactic structure of the modal sentence, according to the proposed analysis, is the same whether the modal has an epistemic, root or any other possible meaning. This in turn will run out the transitive/intransitive argument offered to account for the root/epistemic meanings as invalid. So we will not discuss this argument at all. For a good refutation of the transitive/intransitive argument see Pullum & Wilson (1977).

In the following we will adopt an argument developed in Perkins (1980) for characterizing the meanings of the English modals and then try to incorporate it into our syntactic analysis developed in the previous sections.

In his own words Perkins (1980:49) states:

"The strategy I propose to adopt here is essentially atomistic in that I will try to isolate a core meaning, or atomic structure for each expression which is independent of its context or use. In choosing such a strategy, however, I accept that it can not tell the whole story, although I do believe that in the case of modal expression it can be particularly illuminating".

Accordingly, Perkins (1980: 61) devises the following formula to characterize the core meaning of **can**:

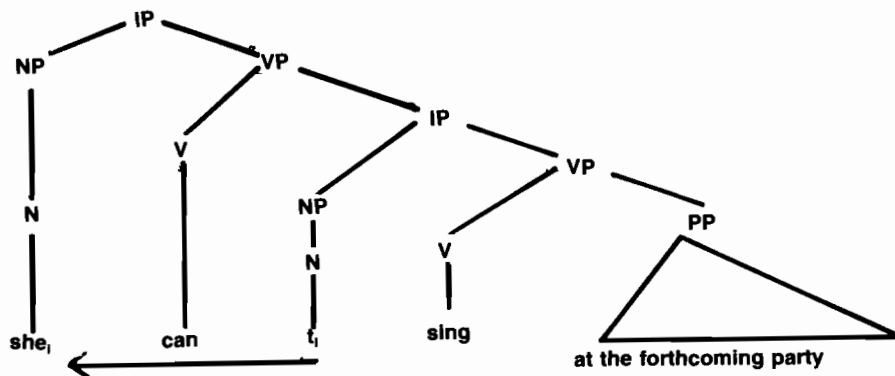
- (50) "K (C does not preclude that e occur)
 (i) K = natural laws.
 (ii) C = an empirical circumstance.
 (iii) e = an event.
 (iv) K (X) = X is the case relative to K."

The formula in (50) can, in fact, capture the core meaning of the modal **can** in epistemic, deontic, dynamic or any other meaning, simply by keeping the same system of laws but changing the values of the variables K and C. Let us have the following example:

- (51) She can sing at the forthcoming party.

According to the syntactic argument offered in section two, (51) will have the following S-structure:

(52)



(52) will go to LF for interpretation and PF for phonological and phonetic realization. To decide the possible meanings of the modal **can** in the LF of (52), we can incorporate Perkin's system of laws. We know that the core meaning of **can** is represented as in (50). In (52) the variables K, C, and X can be assigned the following values:

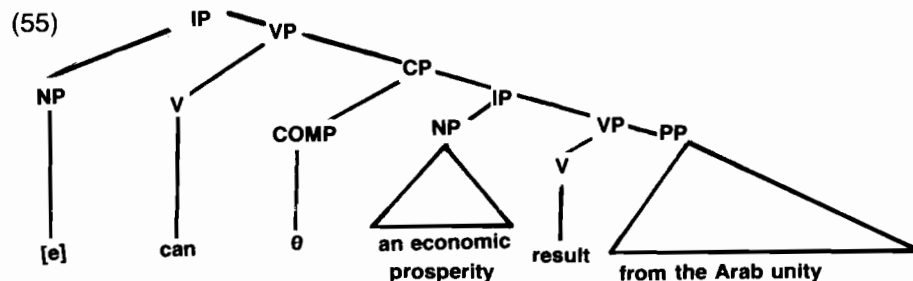
- (53) K = laws and conventions of singing in parties.
 C = empirical evidence, she is asking for permission to sing.
 X = grant of permission.

We end up with the modal **can** in (53) expressing the root **can** of permission. This is decided by pragmatic and semantic bases without any interference of the syntax of the sentence under discussion. The relationship between syntax and semantics or pragmatics is an interesting point, but it lies outside the scope of this paper.

Notice how we can derive the epistemic **can** in a similar fashion:

- (54) An economic prosperity can result from Arab unity.

In our framework, (54) will have the following S-structure;



The structure in (55) will go to LF for interpretation and PF for phonological and phonetic realization.

To decide the meaning of **can** in (55), the variables K, C, and X in (50) can be assigned the following values:

- (56) K = laws of reason, inference and symptoms of economic development.
 C = practical evidence, economic development in the Arab states.
 X = economic prosperity.

We end up with the conclusion that the modal **can** in (55) is the epistemic **can**.

We notice that the derivation of the root/epistemic meanings of the modals **can**, in fact, be deduced from semantic and pragmatic bases without disturbing the syntax of the sentence under discussion.

At this juncture, a formal question may be asked: on what basis are the values of the variables assigned in the formulae suggested to represent the core meanings of the modals so far? The answer to this question, in fact, lies in the essence of the concept of modality itself; this is because modality on the pragmatic level is characterized as:

“a form of participation by the speaker in the speech event, through modality, the speaker associates with the thesis an indication of its status and validity in his own Judgment” (Halliday, 1970: 335).

So then, the values of the variables in the formulae drawn to express the core meanings of the modals lie within the judgement of the speaker, his presupposition, and other pragmatic factors which have nothing to do with the syntax of modal sentences and are not of our concern either.

7. Summary & Conclusion

In the previous sections a proposed analysis for the treatment of English modals in the GB framework is offered, in which the modals are considered to be a class of verbs that assign no θ -role to subject position. In this respect, the English modals are shown to behave in an identical way to the verb **seem** and the predicate **be likely**.

However, we would like to stress the fact that treating the English modals as verbs does not necessarily mean that they must resemble every verb in English in every respect. We would like to suggest that the English modals constitute a distinct class of verbs with distinct syntactic, semantic and morphological properties within the English verbal system.

In section four we shed some light on the possible logical characterization of the modal sentences in English. We argued that this can be achieved

without disturbing the syntax of the modals at all.

In section five a straightforward solution for the problem of wide/narrow scope readings of a negated modal sentence in English is proposed.

In the last section the different meanings expressed by the modals are captured by a neat system as suggested in Perkins (1980), and not by the syntax. The argument offered for incorporating the meanings of the modals onto the syntactic structure gives a homogeneous solution for both the syntax and the semantics of the modals in general (i.e., in any language) without resorting to unmotivated solutions (e.g. transitive/intransitive, etc). On the other hand, it keeps one form for each modal on the syntactic level, and then the semantic and pragmatic different meanings are captured by a neat system which keeps the unity of the syntax and distinguishes the different meanings of the modal under discussion. The role of the presupposition of the speaker, pragmatic factors, and the context, which are claimed to play a role in deciding the meanings expressed by the modal under discussion, are observed in our framework by the fact that the assignment of the values of the variables drawn to represent the core meaning of the modals is decided by the speaker himself and not by the syntactic structure of the modal sentence.

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