

Government and Binding and Arabic Verbal Modals

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Abstract

We try, in this paper, a somewhat comprehensive analysis of what we call "Arabic verbal modals" in the Government and Binding framework. The Arabic we are interested in is Modern Standard Arabic, henceforth referred to as (MSA). This paper assumes a fair knowledge of Chomsky's Government and Binding (GB), and its recent trends.

Although the paper touches briefly on the semantic properties of Arabic verbal modals, it deals with their morphological and syntactic properties very extensively.

In addition to the semantic, morphological and syntactic analysis, we include short sections on the logical formulae, negation and question of verbal modals of modern Arabic. Technical concepts such as scope of negation, subjunctive mood assignment, scope of question elements, and barriers to negative and question elements are suggested and discussed with relevance to modal structures.

We hope that by the end of this study, a class of what we shall call "Arabic verbal modals" is recognized in modern Standard Arabic on morphological, semantic and syntactic grounds.

Key of Transliteration Forms and Phonetic Description of Modern Standard Arabic Sound System

Terminal Medial Initial Alone Transliteration			Phonetic Description		Transcription
Consonants					
ا	أ	آ	glottal stop		ʔ
ب	ب	ب	voiced bilabial stop		b
ت	ت	ت	voiceless dental stop		t
ث	ث	ث	voiced dental stop		ð
ج	ج	ج	voiced interdental		ʃ
ح	ح	ح	voiceless pharyngeal fricative		ħ
خ	خ	خ	voiced pharyngeal fricative		ʁ
د	د	د	voiced dental stop		d
ذ	ذ	ذ	voiced interdental		ð
ر	ر	ر	apical flap of trill		r
ز	ز	ز	voiced alveolar fricative		z
س	س	س	voiceless alveolar fricative		s
ش	ش	ش	voiceless palatal fricative		ʃ
ص	ص	ص	voiceless alveolar emphatic fricative		ʂ
ض	ض	ض	voiced alveolar emphatic stop		ʒ
ط	ط	ط	voiced alveolar emphatic stop		ʈ
ظ	ظ	ظ	voiced alveolar emphatic fricative		ʁ
ق	ق	ق	voiced pharyngeal fricative		q
ك	ك	ك	voiced velar fricative		k
گ	گ	گ	voiced labio-dental fricative		g
ف	ف	ف	voiceless labio-dental fricative		f
ف	ف	ف	voiceless uvular stop		q
ك	ك	ك	voiceless velar stop		k
ل	ل	ل	lateral apical		l
ل	ل	ل	bilabial nasal		m
ن	ن	ن	dental nasal		n
ي	ي	ي	voiced glottal fricative		h
و	و	و	labio-velar semi-vowel		w
ي	ي	ي	palatal semi-vowel		y
Short vowels					
ا	أ	آ	+ front, + low		a
و	و	و	+ high, + back		u
ي	ي	ي	+ high, + front		i
Long vowels					
ا	أ	آ	+ front, + low		a
و	و	و	+ high, + back		u
ي	ي	ي	+ high, + front		i
Diphthongs					
اي	اي	اي			ay

1. Introduction

Unfortunately, although modality is quite properly marked in MSA, it has been studied very little. Modality in MSA, as in English, is marked by a number of different syntactic classes, i.e. modal verbs, adverbs etc. Nevertheless, they keep in line with the main notions of modality.

Reviewing syntactic studies of MSA, we did not find one that analyses the syntactic structures of modal sentences in depth, according to any one of the modern syntactic trends. However, we hope that by the end of this study, a class of what we shall call "Arabic Verbal Modals" is established in MSA on morphological, syntactic and semantic grounds, within the government and binding theory, henceforth (GB).

The version of GB we are adopting is that of Chomsky (1981) and Bouchard (1984). Some concepts vital to our argument are the following:

- (i) Case assignment takes place at S-structure and not after it. "We assume that case-assignment takes place at S-structure". (Chomsky LGB: 94).
- (ii) Adjacency is a condition for case assignment at the syntactic level only. "We assume that case-marking takes place at S-structure... Therefore, the notion of adjacency is that of S-structure". (Chomsky LGB: 94).
- (iii) INFL is not a syntactic node but is attached to V in the lexicon. "Another possibility is to assume that INFL is not a syntactic node but it is attached to V in the lexicon, following an axiom of lexical phonology that all affixation is done in the lexicon (cf. Kiparsky, 1982; Liebero, 1980; Psetsky, 1979)" (Bouchard, 1984:143).

For more details about this approach, see amongst others: Chomsky, N, (1981), 1986b; Bouchard, D, 1984, 1985; Haegeman, L, (1993) and Homeidi, M, 1987, 1991, 1994.¹

2. Identification of Expressions of Modality in MSA

The only recent study of modality in MSA is: Sayed, H. A. *Pragmatic Approach to Modality and Modals: With Application to Literary Arabic*, 1983.

In his thesis Sayed states:

"There are eight modals in LA (Literary Arabic), (four modal verbs and four modal particles),... the following are the modal verbs:

yajib	'must/have to'
yanbaghii	'have to'
yumkin	'it is possible for...'
yastatii	'can/be able to'." ²

He groups the modal particles under the sub-title of LA semi-modals:

"Laa budda	'it is necessarily the case that..'
rubbama	'it is possible that...'
qad	(two meanings), 'it is possible that case that...'
	'actually the case that..'
?alaa	'it is incumbent upon'." ³

However, our interest lies in the first group i.e. the modal verbs in MSA. We suggest that the four modal verbs listed by Sayed, (1983:2) are not the only modal verbs in MSA. To them one can add the following verbs:

yajuuzu	'may/can'
yalzamu	'must'
yatahattamu	'should'
?asaa	' may'
yuhtamalu	'may/can'

One can collapse the two groups into one under the name of verbal modals in MSA as follows:

Arabic Modal Verb	English Equivalent
yajuuzu	may/can
yalzamu	must/should
yumkinu	can/may
yajibu	must/have to
yastatii u	can/be able
yanbaghii	have to/ought to
yatahattamu	should/have to
?asaa	may
yuhtamalu	may/can

Table (1) The Verbal Modals of MSA

Henceforth, Table (1) will represent the class of modal verbs in MSA.

To summarize, we have been arguing for the establishment of a class of modals as in Table (1). A second but less important class would be the class of particle modals consisting of those mentioned by Sayed, (1983) under the name of "semi-modals".

3. A General Semantic Analysis of the Verbal Modals in MSA

The class of verbs identified in Table (1) are impersonal verbs because they cannot have an explicit subject expression of any kind when they express modality. This class of verbs takes a complement clause preceded by either ?an or ?anna, which are two different types of complementizers in a modal sentence structure, e.g.:

(2) yajibu ?an yahdar-uu ?al-?imtihaan-a

must sit for - they - nom the exams - acc

they must sit for the exam.

(3) yuhtamalu ?anna-ha tughannii fii ?al-masrah-i ?al-?aaxari

may she -acc sing in the theatre -obl the other

She may be singing in the other theatre.

In (2) the modal verb yajibu has taken an ?an clause as its complement. while in (3) yuhtamalu is followed by an ?anna clause as its complement.

Semantically, the class of modal verbs identified in Table (1) are defined as follows:

"Semantically, these impersonal verbs are verbs of necessity and propriety."⁴

In his paper "A Semantic Analysis of Arabic Verbs", 1976, McCaruis, N. Ernest divides the Arabic verbs into four classes as follows:

state verbs, activities, acts and inchoatives.

The verbal modals (group IC in his study) are assigned the semantic features

[- action, - imperative, - personal subject].

In fact, all the verbal modals in Table (1) can be included in class (IC) in Table (2) of McCaruis' study.

Some other modal sentences with ?an are:

(4) yajibu ?an yasil-un ghadan
must arrive - they - nom tomorrow
They must arrive tomorrow.

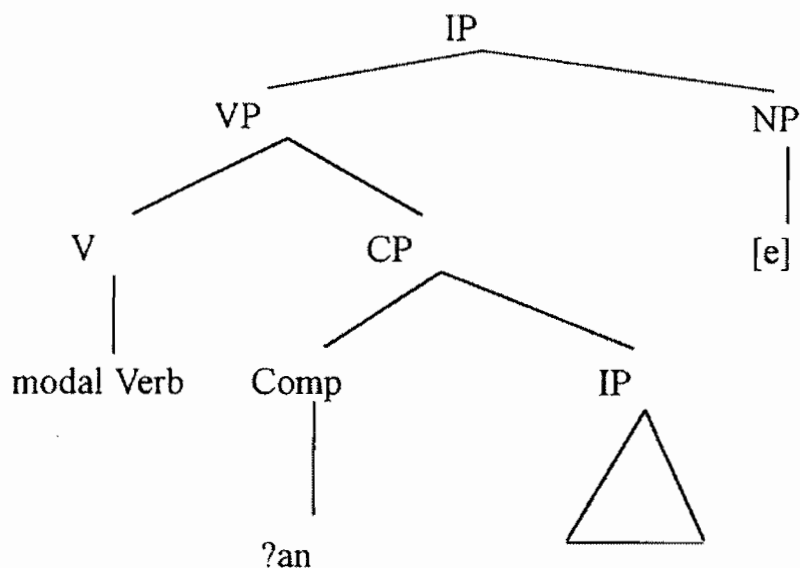
(5) yumkinu ?an tughanniya ghadan
may/can she - sing tomorrow
She may/can sing tomorrow.

A modal structure with ?anna is:

(6) yuḥtamalu ?ann-hum yal- ?ab-uuna.
They may be playing.

The sentences which occur with a verbal and ?an in (4, 5) have the following S-structures which can also represent their logical form (LF) Henceforth:

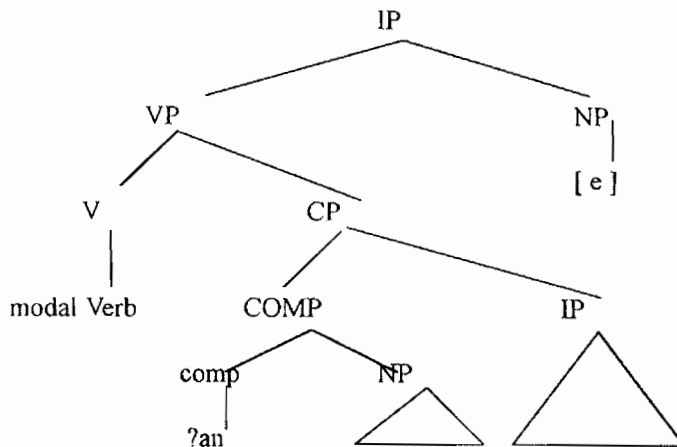
(7)



The modal structure with ?anna as in (6) however, has the following S-

structure and LF structure:

(8)



(7) and (8) are of course identical except for the structure of the COMP node. (7) will be taken to represent the basic type of modal sentence in MSA in the forthcoming discussion. An example is the following:

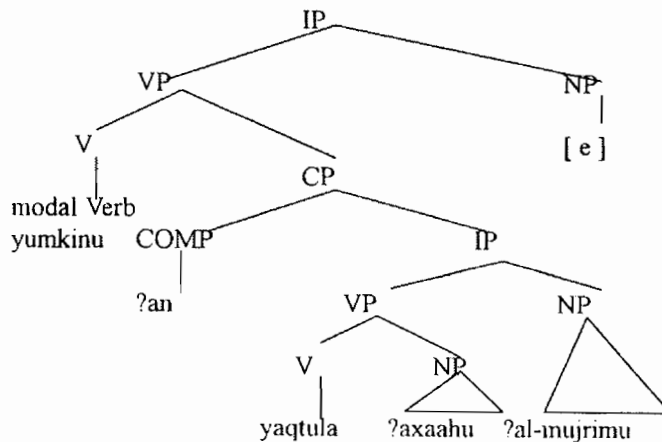
(9) yumkinu ?an yaqtula ?al-mujrim-u ?axaahu

may that kill the murder - nom brother-acc-his

The murderer may kill his brother.

The D - S - and LF structures of (9) are the following:

(10)



Notice, how in logical terms, the CP structure lies inside the scope of the modal verb yumkinu. The logical formula of (10) can be drawn as follows:

(11) yumkin (X yaqtula Y)

where: yumkin = $\diamond$ = possible

X = ?al-mujrmu = murderer

Y = ?axaahu = his brother.

Then (11) can be formulated more elegantly as:

(12) $\diamond$ (X kill Y).

However, we will not go into any more detail in this paper. For the syntactic structures of the modal sentences and their logical formulae in relation to the potential diverse and versatile meanings of modals, see Homeidi (1986).

4. A General Morphological Analysis of the Verbal Modals in MSA

Through a morphological analysis of the modal verbs in Table (1), we show that this class should be recognized as a distinct class of verbs within the verbal system in MSA.

The verb in MSA has six inflectional categories, i.e. aspect, mood, voice, number and gender. In fact, the verbal modals in Table (1) do not enjoy the full inflectional categories of main verbs; their defective inflectional paradigm is shown in Table (3).

As the morphological analysis of the modal verbs in Table (3) shows, the verbal modals should be treated as a distinct class within the MSA verb system when they express modality. For more information about the morphological analysis of Arabic in general and the verb system in particular, see Travis (1979)⁵.

Lexical Root	Aspect		Voice		person			Number			Gender		Mood		
Lexical Root	Imperfect	perfect	Active	Passive	first	second	third	Sing	Dual	Pl	Mas	Fem	Ind	Subj	juss
jwz	yajwuzu	jaaza	+	+	-	-	-	-	-	-	-	-	+	+	-
lmz	yalzamu	lazima	+	-	-	-	-	-	-	-	-	-	+	-	-
mkn	yunkinu	-	+	-	-	-	-	-	-	-	-	-	+	-	-
wjb	yajibu	wajaba	+	-	-	-	-	-	-	-	-	-	+	-	-
sl	yaslatii`u	-	+	-	-	-	-	-	-	-	-	-	+	-	-
nbgh	yabaghii	?inbayaa	+	-	-	-	-	-	-	-	-	-	+	-	-
hm	yatahamu	tahama	+	-	-	-	-	-	-	-	-	-	+	+	-
?s	-	assa	-	-	-	-	-	-	-	-	-	-	-	-	-
hml	yuhnamu (passive)	?uhumila (passive)	-	+	-	-	-	-	-	-	-	-	+	-	-

Table (3) The inflectional paradigm of the modals in MSA (adapted from Macarous N. Ernest, 1976)

So far we have been stressing the difference between the verbs in Table (1) and the main verbs in MSA. But there are some aspects in which the modal verbs in Table (1) behave like main verbs.

5. Modal And Non-Modal Verbs Compared

The modal verbs in Table (1) behave in a similar way to main verbs in MSA in the following:

(i) As normal verbs, modal verbs in MSA are negated by the preverb negative particle laa, e.g. (13) represents the negation of a main verb while (14) represents the negation of a modal:

(13) laa ta -?kul tilka ?al-tufaahat-a.
not you-eat that the apple-acc
Don't eat that apple.

(14) laa yajib ?an ta- ?kul tilka ?al-tufaahat-a
not you you-eat that the apple-acc
It is not necessary/obligatory for you to eat that apple.

(ii) Like normal verbs, modal verbs in MSA are questioned by the question particle hal, e.g. (15) represents a questioning of a normal verb, while (16) represents the questioning of a modal:

(15) hal ta-dhhabu ?ila ?al-cinema kulla yawmin.
do you -go to cinema - obl every day
Do you go to the cinema everyday?

(16) hal yuhtamalu ?an yasila ?al-talaamiidh-u ghadan.
is possible that arrive the students - nom tomorrow.
Is it possible for the students to arrive tomorrow?

(iii) As main verbs, some modal verbs in MSA have perfect/imperfect aspects. Some examples are:

(17) wajaba ?an yasila ?ahmadu ?al-baarihata.
should arrive Ahmad -nom yesterday
Ahmad should have arrived yesterday.

(18) jaaza dhaalika fii ?al-maadii wa-lakin laysa ?al- ?aana.
was possible that in the past-obl and not now
That was possible in the past but not now.

The above three syntactic functions, in which the modal verbs were shown to behave like normal verbs, were provided to show that the modal verbs in MSA can, in fact, be considered as a sub-class in the Arabic verbal system with distinct syntactic, semantic and morphological properties.

2. Towards a Syntactic Analysis of the Verbal Modals in MSA

2.1 Introduction

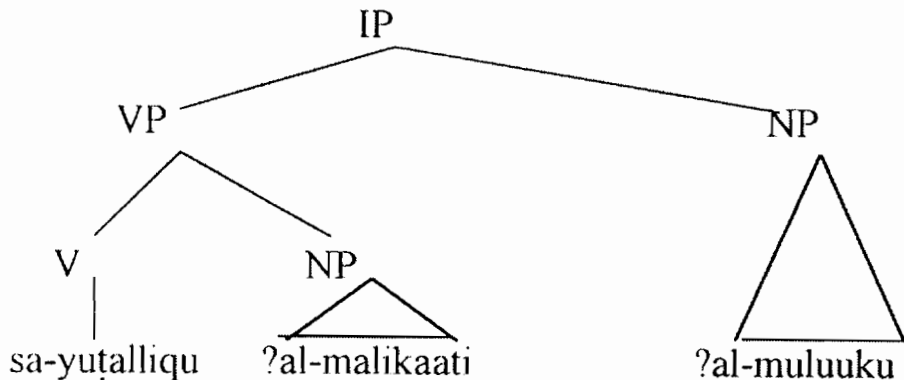
In this section the syntactic properties of the modal sentences in MSA are explained. The argument will be divided into two parts: the first deals with the modal sentences that are possible with ?anna; the second deals with the possible structures which can occur with ?an.

2.2. The Verbal Modals of MSA and ?anna Complemented

Consider the following simple sentence in MSA:

- (19) sa-yuṭalliqu ?al-malikaat-i ?al-muluuk-u
will -divorce the queens -acc the kings - nom
The kings will divorce the queens.

In our framework (19) is assigned the following S-structure:



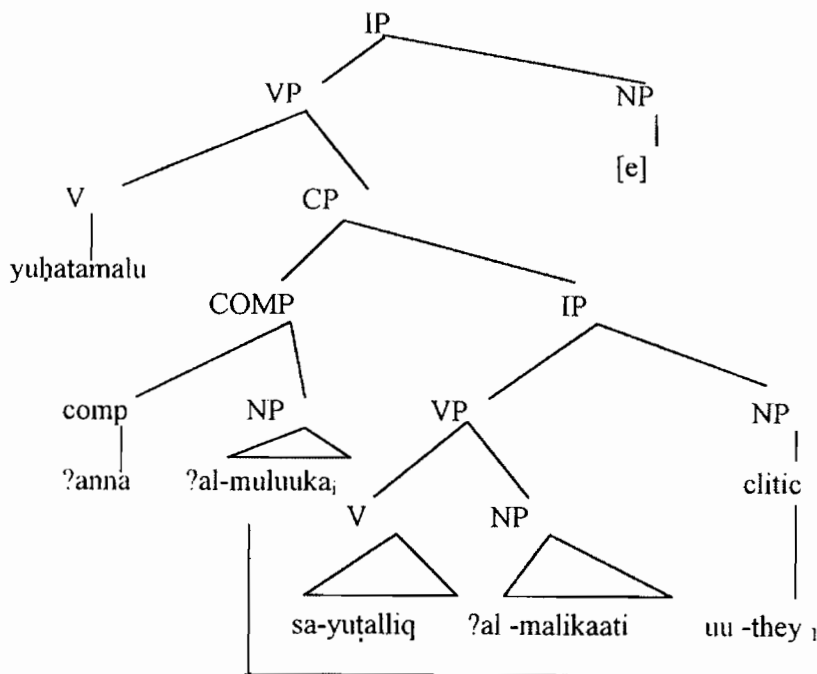
In (20) the NP object ?al-malikaati is assigned an accusative case and a $\emptyset$ role as a patient by the governing verb yutalliqu. On the other hand the NP subject ?al-muluuku will receive a nominative case and a $\emptyset$ role as an agent when percolation of the INF elements to VP takes place in the syntax.

To make a modal sentence from (18), we insert the modal verb yuḥtamalu "may" in its structure. As far as the modal verb yuḥtamalu is concerned, it needs a complement clause preceeded by ?an or ?anna. If we choose ?anna this means its lexical properties should be observed, i. e. followed by an NP in the accusative, e.g:

- (21) yuḥtamalu ?anna ?al-muluuk-a sa-yutalliquuna ?al-malikaati
may the kings-acc will-divorce they the queens -acc
The kings may divorce the queens.

(21) is assigned the following S-structure:

(22)



In (22) the modal verb yuḥatamalu is followed by an embedded clause preceded by ?anna. The word -order after ?anna is Np- S. This is evident from the inflectional ending of the also verb. This must be the case in order to satisfy the subcategorization of ?anna. Had the word-order after ?anna been VP-NP, our assumptions predict that the complementizer ?anna cannot have occurred, and the sentence should be ruled incorrect. But since the sentence is correct, this means that the lexical properties of ?anna are met.

Now as far as the $\emptyset$ role and case assignment are concerned, they are assigned properly in our framework:

(i) The NP object ?al-malikaati is assigned an accusative case, and a $\emptyset$ role as a patient by the governing verb yuṭalliq; on the other hand, the NP subject clitic uu is assigned a nominative case and a $\emptyset$ role as an agent when percolation of the INFL element to VP takes place in the syntax.

(ii) The NP ?al-muluuka in Comp will be assigned an accusative case by the governing accusative case assigner ?anna; it will receive its $\emptyset$ role through co-indexing with the clitic uu which it triggered in its original place.

The NP [e] subject of the matrix clause in (24) is guaranteed to be caseless if we adopt the option that percolation of the INFL elements to VP can be delayed until LF. For this point see Bouchard, (1984)⁶. Also the NP [e] of the matrix clause is not co-indexed with any NP in (21) for interpretation. This means, it is caseless with no $\emptyset$ role.⁷ Consequently,⁸ it can escape both the principle of lexicalization and denotability, and can surface as NP [e].

The only remaining point which needs comment is the following: did the movement of the NP ?al-muluuka happen in the syntax or PF? The answer is, of course, that it occurred in the syntax, because it enjoys all the properties of the movement in the syntax.⁹

Notice that we can carry another movement in the syntax in (21) to get:

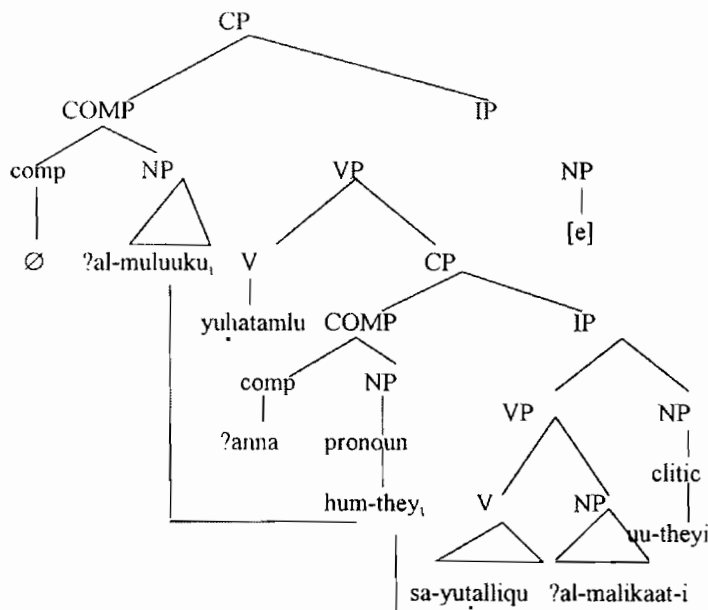
- (23) ?al-muluuk-u yuhtamalu ?anna-hum sa-yuṭalliq-unna ?al-malikaat-i

The kings-nom may -ind them-m will- divorce-they the queens-acc.

The kings may divorce the queens.

(23) will be assigned the following S-structure:

(24)



(24) is identical to (22) with the following two differences:

Firstly, in (24) the subject of the most embedded clause has run two movements into COMP in the syntax, and left two pronouns with the same $\emptyset$ role, while in (22) it has moved only once with one clitic.

Secondly, whereas the NP ?al-muluuka is assigned an accusative case in (22) because it is governed by ?anaa, in (24) it is assigned a nominative case because it is governed by the complementizer in COMP. Hum is assigned an accusative case by ?anna.

What we have done so far is that we moved the subject of the embedded clause into COMP, once in (22) and twice in (24) to end up with the moved NP at the head of the matrix clause. Notice that it is impossible to carry the two movements in (24) in one long movement, i. e., (25) is absolutely incorrect.

(25) * ?al-muluuk-u yuḥtamalu ?ann sa-yuṭalliq-uuna ?al- malikaat-i
the kings, -nom may will divorce -they the queens- acc

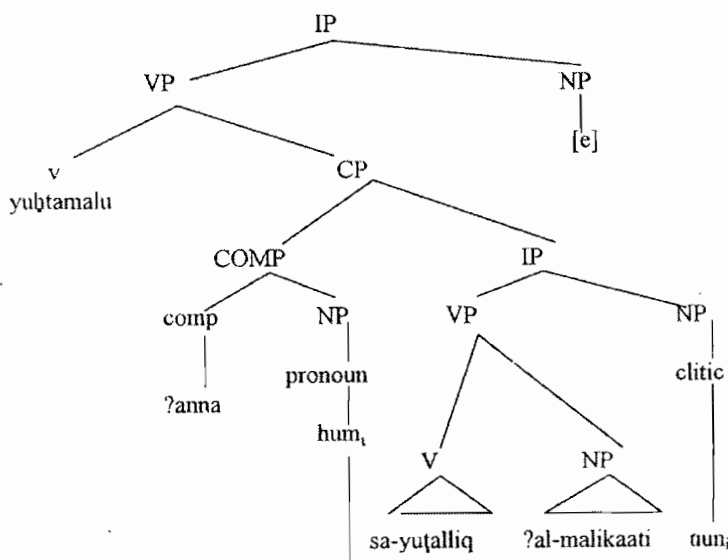
The reason is that in (25) the lexical properties of the complementizer ?anna are not met, namely: it is not followed by an NP in the accusative

Still, in the possible modal structures with ?anna complementizer, MSA has the possibility of having the subject of the most embedded clause to be a clitic pronoun, e. g.:

(26) yuhtamalu ?anna -hum sa-yutalliq-uuna ?al-malikaat-i
may them will-divorce -they the queens-acc.

(26) has the following S-structure:

(27)



In (27) case assignment and $\emptyset$ role marking are carried as usual in our framework.

The clitic uun in (27) shares the same $\emptyset$ role of the pronoun hum as is evident from the co-indexation, but each has a different case from the other. The clitic uun, the subject of the embedded clause, is assigned the nominative case by virtue of percolation of the INFL elements to VP in the syntax, while hum in COMP is assigned an accusative case by the governing complementizer ?anna. This leads to the conclusion that some syntactic chains of some moved elements in MSA are restricted to $\emptyset$ role only, and not case.¹⁰

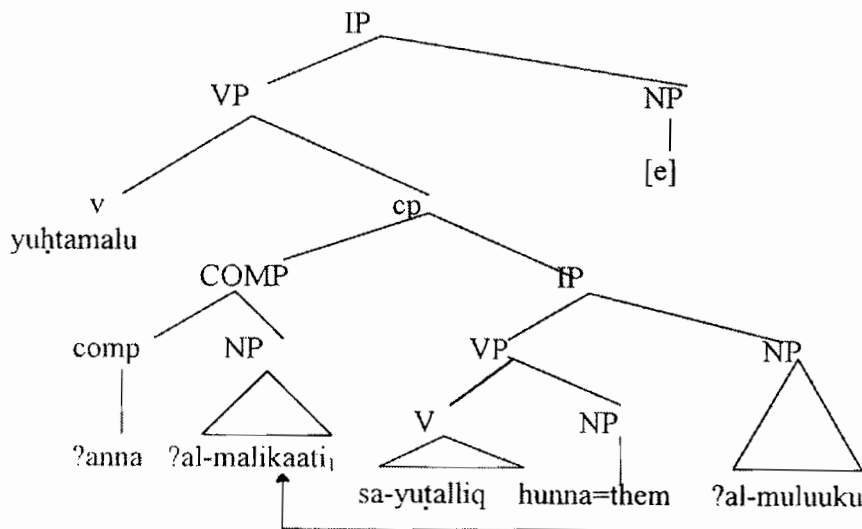
In the sentences (21 - 27) we have shown how MSA allows the movement of the subject into COMP in modal sentences with ?anna. However, MSA also allows the movement of the object of the embedded clause into COMP as in (28):

(28) yuḥtamalu ?anna ?al-malikaat-i sa-yuṭalliqu-hunna ?al- Muluuku
may the queens-acc will-divorce -them the kings -nom

It is likely that the queens will be divorced by the kings.

(28) will have the following S-structure:

(29)



(29) has the same mechanism of $\emptyset$ role and case assignment as that of

(21) with one exception: whereas in (21) the subject of the embedded clause is moved into COMP, in (28) it is the object. Everything else is identical.

What we have noticed so far, is that the modal verbs in MSA with ?anna behave in a very well-defined syntactic way. The syntactic behaviour of the modal verbs has nothing to do with the inner structure of the embedded clause.

2.2.1 Logical Characterization of Modal Sentences with ?anna

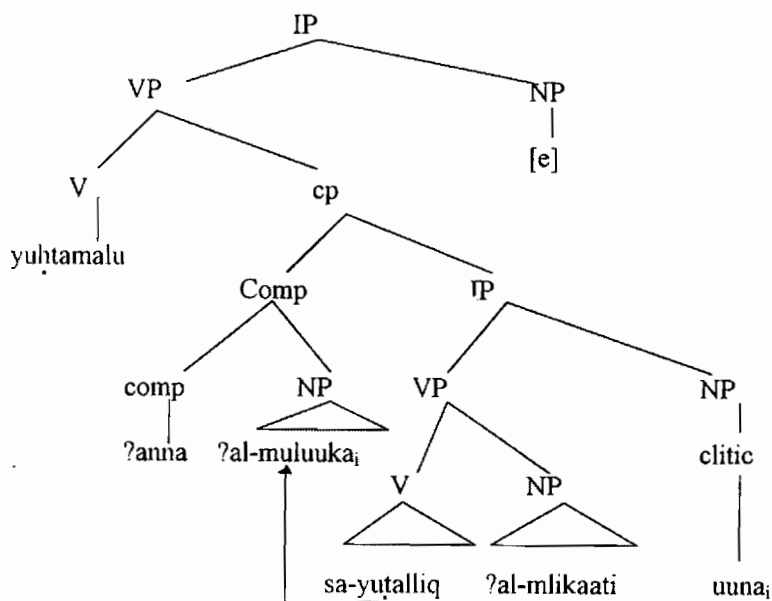
Briefly, we try to characterize the logical formula that a modal sentence with the ?anna complement may take in L/F. If we take (21) as the main S-structure and LF of the basic modal sentence is with ?anna, then we find that a verbal modal in MSA takes a CP under its scope, e.g.:

- (30) yuhtamalu ?anna ?al-muluuk-a sa-yuṭalliq-yuna ?al-malikaati
may the kings-acc will divorce -they the queens -acc

The kings may divorce the queens.

(30) is assigned the following S-structure:

(31)



As far as the definition of scope is concerned, the notion of C-command catches it quite properly because in (31) the first node which dominates the modal verb yuhtamalu is the VP of the matrix clause. At the same time, this node dominates the CP node which lies under the scope of the modal verb in

the traditional sense.

In (31), there is no difficulty of drawing a logical formula as follows:

(32) *yuhtamal* (X *yutalliq* Y)

In (32), if the modal verb expresses an epistemic meaning then (32) can be detailed as follows:

(33) possible (X *yutalliq* Y)

where X = *?al-muluuku*

Y = *?al-malikaat*.

Or, equivalently, (33) can be paraphrased as (34):

(34) It is possible (for X to divorce Y)

where X = *?al-muluuku* (the kings)

Y = *?al-malikaat*. (the queens)

In both (33, 34) the main proposition of the sentence lies inside the scope of the modal verb.

However, if we choose the modal *yuhtamalu* in (31) to have a root meaning, then the logical formula would be something like:

(35) It is possible (X *yutalliq* Y)

where X = *?al-muluuku*

Y = *?al-malikaat*.

In (35) the main proposition lies inside the scope of the modal verb.

The conclusion which can be drawn from the above examples is the following: the root/epistemic or other possible meanings of the modals can be handled by some means other than syntax.

2.3. The Verbal Modals of MSA and the *?an* Type Complementizer

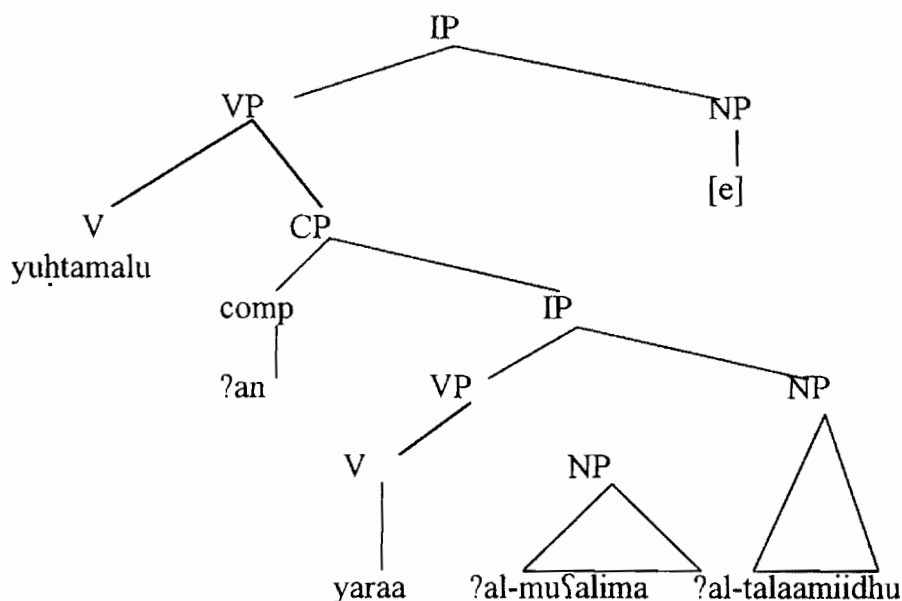
Through some examples we will test our assumptions about word order after *?an* and see how the assignment of the subjunctive mood takes place. Can it be carried through government and if yes, how? If we can achieve the assignment of subjunctive mood through government, that would be a great advantage to the theoretical notion of government and to the similarity between case-assignment and subjunctive mood assignment. Consider the following example:

- (36) *yuḥtamalu ?an yara-a ?al-talaamiidh -u ?al-muṣallima*
 may that see-subj the pupils -nom teacher -acc

The pupils may see the teacher.

- (36) will be assigned the following S-structure:

(37)



In (37) *?an* is followed by a VP-NP word-order as required; the verb after *?an* is marked +subjunctive; how can we interpret this syntactically?

As far as case-assignment and $\emptyset$ role marking are concerned, they are assigned through government in our framework, so we will not repeat the argument. The question is how does the transitive verb in the embedded clause receive its subjunctive mood marking. The answer in our framework is through government, because Comp C-commands VP.

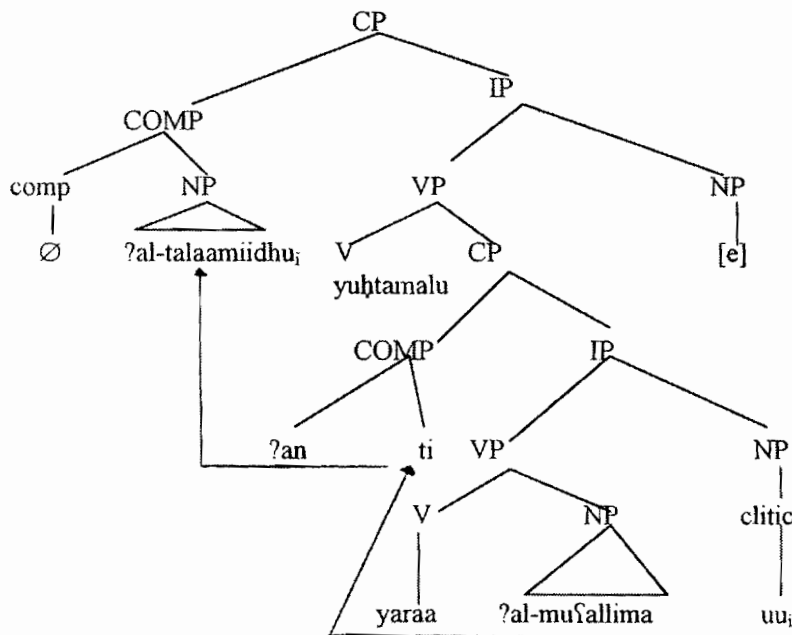
After deciding that the subjunctive mood assignment of the verb that follows *?an* is carried through government, let us see how many modal sentences can be derived from (36). The first possibility is to move the subject of the complement clause into COMP to get:

- (38) *?al-talaamiidh-u yuḥtamalu ?an yara-uu ṣal-muṣallim-a*
 the pupils -nom may see-they the teacher-acc

It is the students who will possibly see the teacher.

(38) will be assigned the following S-structure:

(39)



In (39), the NP ?al-talaamiidhu in COMP will be assigned a nominative case by the governing Ø comp. However, it receives its Ø role through co-indexation with the clitic it triggered in its original place as the subject of the embedded clause. The subject of S is guaranteed to be NP [e] by delaying percolation of the INFL element of the modal verb to VP until LF. On the most embedded sentence level, cases and Ø roles are assigned through government as usual.

However, in (38) MSA allows the possibility of moving the object of the embedded clause into COMP, e.g.:

(40) ?al-muḥallim- u yuḥtamalu ?an yaraa-hu ?al-talaamiidh-u
the teacher -nom may that see-sub- him the pupils -nom
The pupils may see the teacher.

(40) will have the same structure as (39) with one exception. Whereas in (39) the NP in COMP is the subject of the embedded clause, in (40) it is the object.

Still, with the modal verbs with ?an complement, MSA allows the subject

of the embedded clause to be a pronoun as in (41) or the object to be a pronoun as in (42), or both the subject and the object to be pronouns as in (43), e.g.:

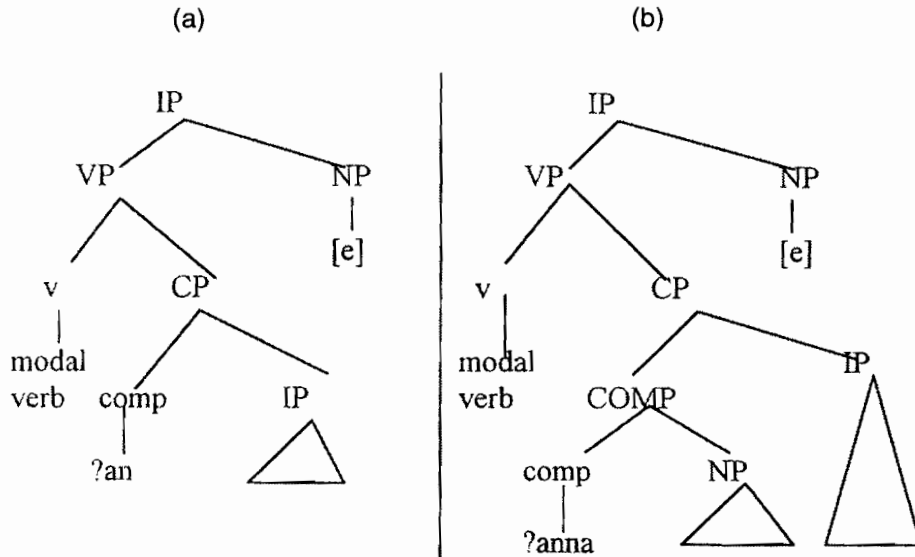
(41) yuḥtamalu ?an yaraa-uu ?al-muṣallim-a
may see-they teacher -acc
They may see the teacher.

(42) yuḥtamalu ?an yaraa-hu ?al-talaamiidh-u
may see-him the students-nom
The students may see him.

(43) yuḥtamalu ?an yaraa-uu-hu
may see- they - him
They may see him.

By (43) we believe the modal sentences with the ?an complement are exhausted. We can now decide the main structures of a modal sentence in MSA as (44.a) and (44.b):

(44)



In the following discussion (44. a) will represent the basic modal structure in MSA.

2.3. 1. Logical Characterization of Modal Sentences with ?an

The logical characterization of the modal sentences with ?an seems to

us not to differ at all from those with ?anna. In fact they are identical.

The logical formula of (36), which represents the basic modal structure with ?an can be drawn as follows:

(45) yuḥtamalu (X yaraa Y)

If we choose the modal verb yuḥtamalu in (45) to have an epistemic meaning, then (45) can be rewritten as (46):

(46) possible (X yaraa Y)

where X = ?at-talaamiidhu

Y = ?al-mu'allima.

or equivalently:

(47) it is possible (for X to yarra Y)

Where X = ?al - talaamidihi

Y = ?al-mu'allima.

However, if we choose the modal verb in (45) to have the root meaning, then the logical formula of (45) will look like this:

(48) for X it is permissible (for X to see Y)

where X = ?al-talaamiidhu

Y = ?al-mu'alima.

The important point which we would like to make is that whether the potential meaning of the modal verb is a root or an epistemic, this bears no effect on the syntactic argument at all.

3. Negation of Verbal Modal Structures in MSA

3.1. Introduction

In this section, we try to incorporate the concept of negation into the syntactic structures of modal structures in MSA, which we argued for in the previous section. Many points will be discussed:

(A) How the scope of negation will be defined in modal sentences in MSA.

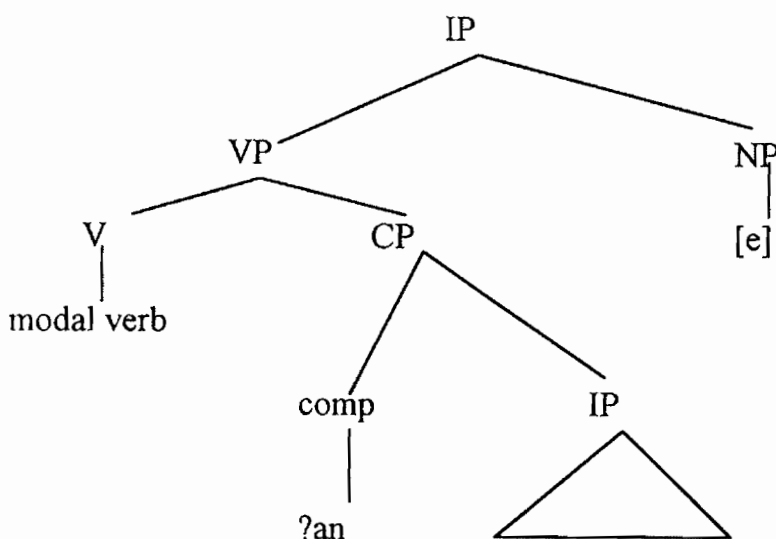
(B) When do we have a wide scope and when do we have a narrow one, and how are they realized in modal structures in MSA?

Quirk, et al, define the scope of negation as follows:

"A negation form may be said to govern (or determine) the occurrence of a non-assertive form only if the latter is within the scope of negation, i. e. within the stretch of language over which the negative meaning operates. The scope of negation normally extends from the negative word itself to the end of the clause, or to the beginning of a final adjunct. The subject, and any adjunct occurring before the predication normally lie outside it"¹¹

On the other hand, we have argued for (44. a) repeated here as (49), to represent the basic syntactic structure of the modal sentence in MSA with modal verbs:

(49)



In (49), we have three possibilities as far as negation is concerned:

(50) (i) negating the matrix S, giving a wide scope to the negative element in the traditional sense;

(ii) negating the embedded S and thus giving the negative element a narrow scope;

(iii) a third option is to negate the matrix S as well as the embedded S, i. e., double negation.

We suggest that Quirk's definition of the scope of negation quoted earlier can be captured quite precisely by a syntactic notion defined on syntactic grounds, namely government.

Government, for defining the scope of negation in negated modal sentences, will be defined as follows:

(51) α governs β

If (i) α is a negative element.

(ii) α C-commands β , where α C-commands β if the first dominating node that dominates α dominates β .

Notice how the new definition of the scope of negation in (51) can be incorporated into (49), and how it will account for the three possibilities of negation that we may have in (50). The only question left to be answered, before providing concrete data from MSA to show how the mechanism of negation in the modal sentence works, is to decide where to insert the negative element at D-structure.

To decide where the negative element may be inserted at D-structure, two approaches may be considered:

The first is the position of transformational grammar before (1970). This position is mostly clarified by Klima's seminal paper (1964) on negation. In this type of analysis we find the following, in the words of R.P. Stockwell ¹²:

"One of Klima's fundamental conclusions is that, except for double negation, all negation sentences should be accounted for on the basis of a single deep structure constituent NEG, whose position in the base should be the same no matter what constituent its superficial reflex is associated with. Furthermore, his use of the concept 'in construction with' leads him to conclude that NEG must be immediately dominated by S in the deep structure."

The second is the position of generative grammar from 1970 to the present. In Bresnan, J. *On Complementizers: Toward a Syntactic Theory of Complement Type*, (1970), the COMP node is suggested as a universal presentential position where the negative, question, relative and Wh elements are inserted. This is taken up in principle in most of the syntactic work within the extended standard theory and the GB framework. So, without dwelling much on this point we adopt the view that the position of the negative as well as the question element in MSA is in COMP.

3.2. Negation of Verbal Modals with ?an/?anna

In (2.3) we discussed the syntactic structure of modal sentences in MSA with ?an. We suggested (36) repeated here as (52) to represent the basic structure of this type of sentence:

(52) yuhtamalu ?an yara - aa ?al-talaamiidh-u ?al-muṣallim-a
may see -sub the pupils-nom the teacher- acc
The pupils may see the teacher.

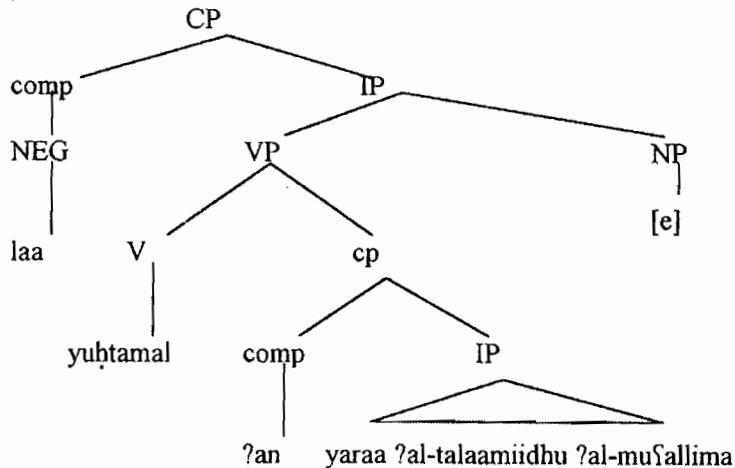
First let us negate the modal verb in (52), e.g.:

(53) laa yuhtamallu ?an yaraa ?l-atalaamiidh -u ?al-muṣallim -a
not may see the pupils-nom the teacher- acc

The pupils may not see the teacher.

(53) will be assigned the following S-structure:

(54)



In (54) the modal verb is negated because it lies inside the scope of the negation element.

The second option in (53) is to negate the main proposition, e.g.:

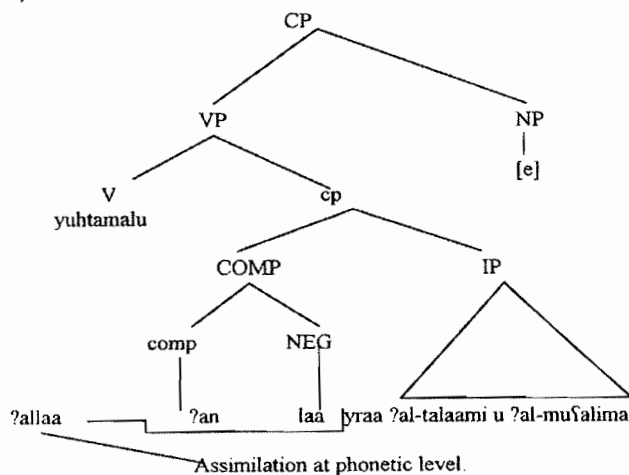
(55) yuḥtamalu ?al-laa yaraa ?al-talaamiidhu ?al-mu' allima

may ?an-not see the pupils-nom the teacher-acc

The pupils may not see the teacher.

(55) will be assigned the following S-structure:

(56)



In (56) the embedded S is negated because it lies inside the scope of the negative element.

The third possibility is to negate the matrix clause and the complement clause in (52). In this case MSA uses two negative elements, e.g.:

(57) laa yuhtamalu ?al-laa yaraa ?al-talaamiidhu ?al-mu'allima

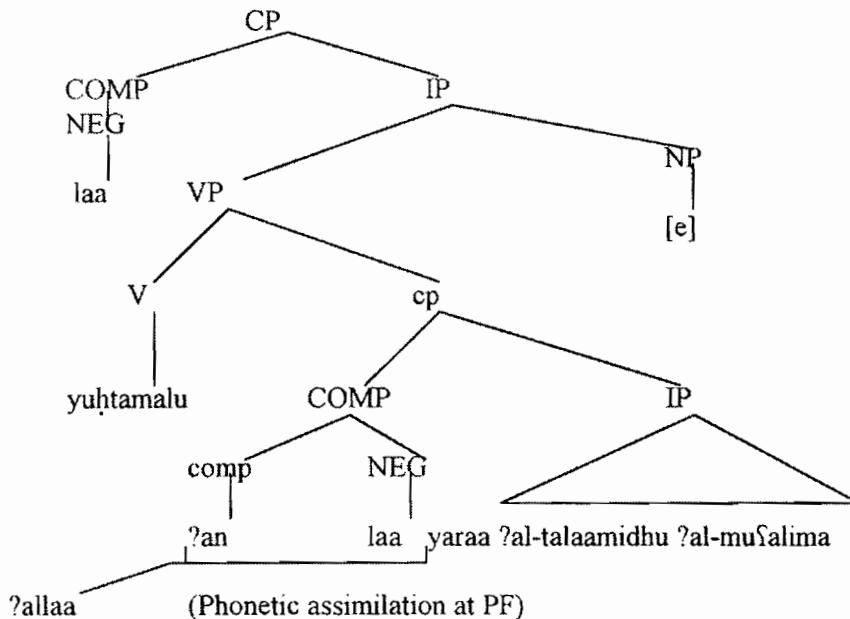
not may not see the pupils- nom the teacher-acc

The pupils may/can not the teacher.

It is not possible that the students will not see the teacher.

(57) is assigned the following S-structure:

(58)



Notice how the prediction of (51) on the definition of the scope of negation comes true. Since both the complement clause and the matrix are negated, MSA uses two negative elements.

Negating modal sentences with ?anna does not differ from those with ?an in any significant way. The modal verb can be negated as in (59) or the complement clause as in (60), or both as in (61):

(59) laa yumkinu ?anna ?amerika sa-tabda?u ?la-ħarba

not can/may U.S.A. -acc will -start the war-acc

It is not possible that America will start the war.

(60) yumkin ?anna ?amerika laa-tabdada? u ?al-ḥarba

can/may U.S.A. -acc not -start the war-acc

The U.S.A. cannot start the war.

It is possible that America will not start the war.

(61) laa yumkin ?anna ?amerika lan tabda?a ?al-ḥarba

not may/ can U.S.A. -acc will -start the war-acc

It is not possible that America will not start the war.

So we notice that our formulation of the scope of negation in (51) seems to work properly. Also the suggestion that MSA has three possibilities of negation in modal sentences seems to be correct.

3.2.1. Logical Characterization of the Negated Verbal Modals with ?an/ ?anna

In this section the three sentences (53, 55, 75) which represent the three possible negative modal sentences with ?an in MSA will be discussed. (53) will take (62) as its logical formula:

(62) ($\Diamond$ /P) X see y)

where: laa = not

$\Diamond$ /P = possible/permissible

x = ?at-talamiidhu = pupils

y = ?al-mu?alima = the teacher

The logical formula of (55) would be:

(63) ($\Diamond$ /P) X see y)

where : $\Diamond$ /P = possible/permissible

x = ?at-talamiidhu = pupils

y = ?al-mu?alima = the teacher

laa = not

(64) will represent the logical formula of (57):

(64) ($\Diamond$ /P) (X see y)

where laa = not

◇/P = possible / permissible

x = ?at-talamiidhu = pupils

y = ?al-muʕalima = the teacher

In fact, the logical formula of negated modal sentences with ?anna are identical in every way to those with ?an. We will not repeat the argument.

4. Questioning Modal Sentences in MSA

4.1 Introduction

In this brief section the general outline of question formation in modal sentences in MSA will be discussed. The scope of the question element will be defined, and a logical characterization for the questioned sentence will be drawn.

It seems to us that question operation in modal sentences in MSA, is less complicated than in negative sentences. We shall argue that the syntactic position of the question particle is the same as that of the negative element namely in COMP.

The scope of the question element will be defined in terms of (51), which was suggested for defining the scope of negative elements in MSA on the syntactic basis.

The question particles which work on modal sentences in MSA are the following:

(65) Hal

?aa = (?al-hamza)

There is no difference in syntactic terms whether we question the modal sentences with hal or ?a, but there may be a stylistic rule which prefers either one in certain contexts, which is not of our concern.

4.2 Questioning Modal Sentences with ?an / ?anna

Consider the following sentence:

(66) {Hal} yajibu ?an yaqdama ?ahmad-u ghadan

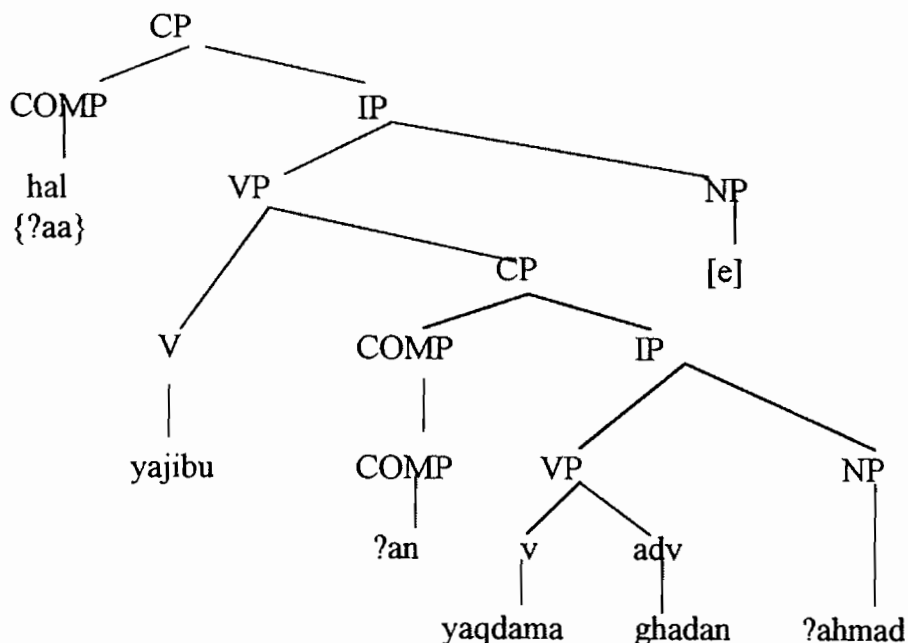
{?a}

Q must come Ahamd-nom tomorrow - acc

Must Ahmad come tomorrow?

According to our hypotheses about the syntactic structure and negation of modal sentences, (66) is assigned the following S-structure:

(67)



Notice how questioning modal sentences of this type differs from their negation. Questioning is different, in the sense that we cannot question, the main proposition, or the main proposition and the matrix S together in (66). (68) and (69) are incorrect in MSA.

(68)* {hal} yajibu ?an {hal} yaqdama ?ahmad-u ghadan

{?aa} {?aa}

must come ?ahmad-nom tomorrow.

(69)* yajibu ?an {hal} yaqdama ?ahmad-u ghadan

{?a}

must come Ahmad-nom tomorrow

We conclude that the questioning of a modal sentence with ?an is restricted to the questioning of the modal verb and not of the main proposition at all.

Questioning modal sentences with ?anna is identical to those with ?an in every aspect. One example would be enough:

(70) {hal} yuhtamalu ?anna ?al-talaamiidha wasal-un ?al-baarihata.
{?a}

Q may/can the pupils-acc arrived-they yesterday - acc

Is it possible for the pupils to have arrived last night?

Notice, like sentences with ?an, the complement clause cannot be questioned together with the matrix clause in (70).

(71) * {hal} yuhtamalu ?anna {hal} ?al-talaamiidhu wasal-uu ?al-
{?a} {?a}
baarihata.

Q may/can Q the pupils-acc arrived-they yesterday

4.2. 1. Logical Characterization of Questioned Modal Sentences with ?an / ?anna

We noticed in (4.2.), that in direct question structures, only the matrix clause is questioned in modal structures in MSA:

(72) {hal} yajibu ?an yaqdama ?ahmadu ghadan.
{?a}

Q must come-sub Ahmad-nom tomorrow

Must Ahmad come tomorrow?

(72) can be represented in a logical formula as follows:

(73) ? ($\square$ / O) (X come tomorrow)

where: ? = question

$\square$ / O = necessary / obligatory

X = Ahmad

The same argument holds with ?anna:

(74) {hal} yuhtamalu ?anna ?al-talaamidhu sa-yasil-uuna ghadan
{?aa}

Q may the pupils-acc will-arrive-they-nom tomorrow

Is it possible for the pupils to arrive tomorrow?

The logical formula of (74) is:

(75) ? ($\diamond$ /P) X arrive tomorrow

where ?=question

$\diamond$ /P=possible/permissible

X = ?al-talaamiidha = the pupils

So, both types of modal sentence in MSA behave in a very similar way in their negation, question and logical formulae.

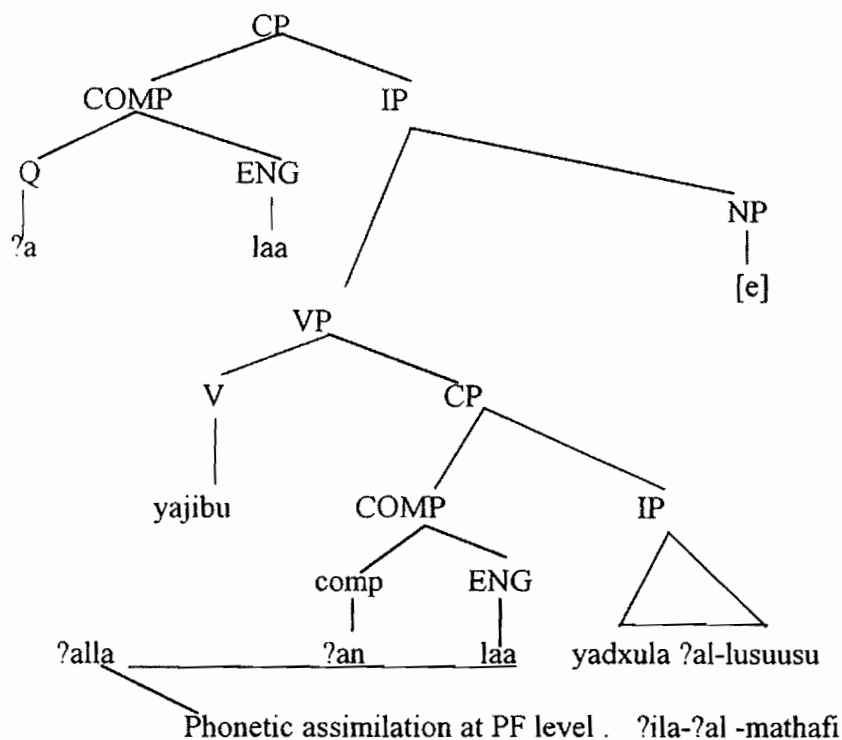
5. A Note on the Negative and Question Operations Together in the Modal Sentence in MSA

Since we have argued that the two types of modal sentences in MSA behave in an identical way in their question and negative forms, we will test this hypothesis by having the negative and the question elements work in one sentence, e.g.:

- (76) ?a-laa yajibu ?alla ya-dxula ?al-lušušu ?ila ?al-maṭḥaf-i
 w-not must ?an-not enter the thieves-nom to the museum-obl
 Is it not necessary/obligatory that the thieves must not enter the museum?

(76) is assigned the following S-structure:

(77)



In (77) the modal verb *yajibu* is questioned and negated respectively by the question element *?a* and the negative element *laa*.

However, the main proposition is negated by the second negative element laa, daughter of the complement clause. Notice if we question the embedded clause in (77) in addition to its negation, we get the following incorrect sentence:

(78) *ʔa-laa yajibu ʔa-laa {ha} yadxula ʔal-luʃuuʃu ʔal-maṭḥaf-i
{ʔaa}

not must ʔan-not enter the thieves to the museum - obl

So the formulation of our hypotheses about negation and question of modal sentences in MSA are correct. We need two negative particles if we want to negate both the modal verb and the main proposition in a modal sentence, whereas we can only question the modal verb and not the main proposition in modal sentences in MSA.

The logical formula of (77) can be drawn as follows:

(79) ʔ ~ (□/O ~ (X enter Y))

where: ʔ=question

~ = negation

□ / O =necessary / obligatory

X = thieves

Y = the museum

What is noticeable is that there is a plausible way to characterize the modal sentences in MSA in logical formulae without complicating or adding any ad hoc rules to the structures.

6. Summary

We have argued for the establishment of a class of modal verbs in MSA on morphological, semantic and syntactic bases. This class of verbs is discussed in full in syntactic terms within the theory of Government and Binding. A full analysis of the syntactic properties of ʔan and ʔanna is made in relation to word-order in MSA.

Lastly, full analyses of negation and question processes of modal structures are presented, with a logical characterization for each process.

Notes

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