Universitatea din Bucuresti

Facultatea de Limbi si Literaturi Straine

MODALS AND NEGATION IN ENGLISH

Coordonator: Prof. Dr. Larisa Avram

Student: Bleotu Adina Camelia

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1. Introduction

A question which has puzzled linguists for some time now has been how come modals in English exhibit such an odd behaviour with respect to negation. How come, for example, that, if we take a sentence like:

(1) You must not swallow the cherry-stone, my dear!

the interpretation of this sentence will be that it is necessary (for you) not to swallow the cherry-stone, with modality (necessity) scoping above negation, while, from a syntactic point of view, the negative marker *not* seems to negate the modal verb (since it allegedly passes all Klima's tests for negativity (1964))? How can we explain the divergence between syntax and semantics? Can we truly accept the idea that, although the negative operator syntactically negates the modal verb, it does not do so from a semantic point of view? If so, what becomes of one of the ideas which has been at the very heart of generative grammar, namely, that the interpretation of a sentence is read off from its syntax, in other words, that syntax is a mirror of semantics?

The case presented above involves the divergence between semantics and syntax in the case of a modal verb receiving a particular reading (deontic). Interestingly, such a divergence only occurs in the case of some modal verbs. In the case of a verb like *may*, under a deontic reading, for example, there is no such divergence. A sentence like:

(2) You may not buy that blue-haired teddy-bear! Annie says so.

is clearly interpreted as 'You are not allowed to buy that blue-haired teddy-bear'/ 'It is not permitted that you buy that blue-haired teddy-bear', with negation scoping above modality (possibility (permission)), which fares well with the fact that negation syntactically negates the modal verb.

Moreover, some modal verbs scope differently with respect to negation according to whether they receive a deontic or epistemic interpretation. Such is the case of *may*. If it receives a deontic interpretation, it will scope above negation (2). If, however, it receives an epistemic interpretation, it will scope below negation. In a sentence like:

(3) Linda may not have spent too much time reading lately.

the interpretation is that 'It is possible that Linda has not spent too much time reading lately', where negation scopes below modality. Despite this, it is not the case that *all* modals behave in such a fashion. A verb like *should*, for example, will not be sensitive to the deontic-epistemic contrast in the same way as *may*. Sentences like:

(4) a. You should not talk dirty to the parrot! He might surprise you one of these days!

b. Linda should not be very sad to be married to such a rich man.

receive interpretations in which negation scopes below modality (necessity), although (4a.) receives a deontic reading, while (4 b.) receives an epistemic reading.

As it stands, modal verbs seem to behave in a non-unitary fashion with respect to negation. In some cases, the syntax of modal verbs and negation seems to reflect their semantics, in others, it seems not to. Some modals seem to change their behaviour with respect to negation according to whether they receive a deontic or an epistemic interpretation, others do not. Not even the necessity-possibility contrast is able to capture the different behaviour of modals with respect to negation. How are we, then, to make sense of all these oddities?

The aim of this paper is to try to offer an answer to this question. In doing so, it will start from the very strange behaviour of modals in general, trying to see in what way linguists have managed to account for contrasts such as the necessity-possibility contrast, or the deontic-epistemic contrast.

The paper is divided into two parts. In the first part, we will be dealing with modal verbs, discussing their status as a distinct morpho-syntactic class, discussing their semantic properties, and presenting the various syntactic proposals put forth by linguists in order to account for the odd behaviour of modals. In the second part, we will be dealing with negation and modals in English. We will first present the way in which modals behave with respect to negation, according to the traditional view. Then, we will put forth our own hypothesis, claiming that many of the 'misplacements' of the negative marker with respect to modals in English are but the result of ill usage on the part of the speaker,

and/ or of misinterpretation on the part of the hearer. On our view, neither the necessity-possibility contrast, nor the deontic-epistemic contrast can account for the different behaviour of modals with respect to negation, at least not in the sense in which linguists such as Cormack & Smith (2002) or Butler (2003) have claimed. Since the idea that there is a divergence between semantics and syntax in the case of some modals is a completely unacceptable idea, syntacticians have tried to make syntax fit semantics, and, in their attempt to save the idea that syntax is a mirror of semantics, they have resorted to an extremely complicated syntactic machinery so as to account for the behaviour of modals with respect to negation. A more appealing alternative to this is to claim that the blame for irregularity does not rest with the extremely complex system of modals and negation in English, but with those making use of language. On such a view, English is just as regular as any other language, since negation of the MoodP results in negation of modality, and negation of the VP results in negation of the complement of the modal. Many of the odd interpretations given to sentences containing modals and negation spring from the ambiguity between sentence negation (negation of the modal) and adverbial negation (negation of the lexical verb). Such a distinction proves crucial in explaining the interpretation of modals with respect to negation. At the end of the paper, after showing in what way the syntactic proposals put forth by Picallo (1990), Ouhalla (1991), Cormack & Smith (2002), Butler (2003) fail to account for the behaviour of modals with respect to negation, we will tentatively offer our own syntactic representation of modals and negation. According to us, all modal verbs occur under one single head (MoodP), and the different interpretations offered to modals (deontic-epistemic) are a result of the interplay between semantics and pragmatics. The interpretation offered to sentences containing modals and negation is read off from their syntax. If we are dealing with a negative marker which is an instance of NegP (occurring above the MoodP), then negation will semantically scope above modality. If, however, we are dealing with a negative marker which is an instance of adverbial negation (occurring below MoodP and above VP), then negation will semantically scope below modality. In this way, we can avoid the idea of a mismatch between syntax and semantics. On our view, such a syntactic representation, coupled with a pragmatic account of the oddities in English, can capture the behaviour of modals with respect to negation in English.

2. Modal Verbs in English

2.1. "Being modal"

A first important although trivial remark is that the verbs we are dealing with in this paper are labelled by grammarians as "modal verbs", not just as "verbs". By labelling them as such, grammarians obviously want to make a point, namely, to make it clear that the verbs *shall, should*, must, can, could*, may, might*, ought,, need, will, would** are not just like the other verbs, but they represent a distinct class of verbs, set apart from all the other verbs by being modal. Now the next question which pops into our mind is, obviously, what exactly being modal means.

A first tentative answer we could give would be to say that being modal means expressing modality. But then we are faced with the task of defining modality, which is not at all easy. The reason for this is that modality is "a semantic concept which covers, ***inter alia,*** notions such as possibility, necessity, probability, obligation, permission, ability and volition" (Barbiers 2002: 1). In our attempt to deal with such a diversity of notions covered by modality, we thus either produce incomplete enumerations, which are by no means definitions (such as the one above), or, driven by the need to point out what all these notions have in common, we come up with a too narrow or a too large definition. We might, for example, say that modality expresses the speaker's attitude towards a proposition. Such a definition picks out of all linguistic items adjectives like "sure", "uncertain" a.o., adverbs like "surely", "possibly", "allegedly", "presumably", "probably" a.o., lexical verbs such as "doubt", "wonder" a.o., and epistemic modals. But such a definition, some might claim, is too narrow, because it only captures epistemic modality (namely, the modality concerned with the speaker's confidence or lack of confidence in the truth of the proposition expressed) or, in terms of the notions expressed, it only covers necessity and possibility. They might argue that root modality (encompassing deontic meanings (obligation and permission) and dynamic modality (ability, volition)) is not speaker-oriented, but agent-oriented (where the agent can be derived pragmatically as in

"The letters must be on the desk by tomorrow morning")[1]. In the absence of a clear definition, what we choose to operate with instead is an enumeration of (most of) the notions covered by modality.

Another point to be made concerning the array of notions covered by modality is that we rule out notions which are combinations of the notions that we already mentioned, such as, for example, the notion "possibility-ability", or the notion "necessity-obligation". In other words, no linguistic item can express more than one notion in a given context. The cases where it cannot be decided whether an item expresses a root meaning or an epistemic meaning due to the absence of further contextual specifications which can help the hearer make his choice do not represent a counterargument to the statement above. The reason is that, in such cases of ambivalence, the hearer himself is confused, and, in order to interpret the sentence, he actually always makes a choice. Moreover, a richer context would always help the hearer select one meaning as the one intended by the hearer[2].

Returning to the discussion concerning modal verbs, now that we have shed some (it is true, not so revealing) light upon the notion of modality, we could tentatively claim that modal verbs are set apart from the other verbs by expressing, ***inter alia,*** necessity,

[1] Coates (1995) actually claims that subjectivity is the very property which distinguishes epistemics from roots. Studies in the history of language explain the emergence of epistemics from roots by means of "subjectification in grammaticalisation" (Traugottt1982, apud Papafragou 2000). However, there are certain linguists who do not agree with the view that only epistemics involve subjectivity. Papafragou (2000), for example, claims that what can partly explain the development of epistemics from the class of former root modals in the history of language is a change in the type of admissible modal restrictor (e.g. in the case of *should*, the normative restrictor is replaced by the domain of beliefs). Moreover, she links the emergence of epistemics in child language to the capacity to reflect upon one's thoughts, i.e. to metarepresentational abilities. However, in her view, deontic modals also involve mentalising to a great extent, because, she says, in dealing with what is necessary or possible on the basis of social or moral rules and regulations, one does not deal with representations of reality, but with descriptions of an ideal world. We shall not insist any longer on the debate concerning whether all modals involve mentalising or not. What is of interest at this point is the fact that defining modality is far from being an easy task.

[2] This clearly goes against Coates (1983), who postulates the existence of a semantic phenomenon called Merger, which allows root and epistemic notions to merge, thus yielding very strange, hybrid creatures which are partly root, partly epistemic.

obligation, permission, ability and volition. This definition of modal verbs as being those verbs which express modality predicts that the verbs *have to* (2), *need to (*3), *want (to) (*5), *manage (to) (*7) in the examples below are also modal verbs:

(1) I must visit my grandmother tomorrow.

(2) I have to visit my grandmother tomorrow.

(3) I need to visit my grandmother tomorrow.

(4) Mary will do what her boyfriend has asked her to. She simply adores him.

(5) Mary wants to do what her boyfriend has asked her to do. She simply adores him.

(6) Linda can swim very well.

(7) Linda managed to swim very well yesterday.

Using Sweetser's analysis (1990), we can say that *must*, *have to* and *need to* all express obligation, although of a different type. *Have to* in (2) expresses obligation imposed by an external authority, whereas *need to* in (3) expresses an obligation which is internal to the doer (this is why a sentence like "I need to visit my grandmother because you say so" is felt to be awkward). *Must* is different from both verbs. While *have to* and *need to* can be resisted- you can say something like "I have to/ I need to visit my grandmother, but I think I'll go see Mike first", this is not possible with *must,* which expresses an irresistible force towards some act: "?I must visit my grandmother, but I think I'll go see Mike first."

If *have to* and *need to* are considered by some linguists to be modal verbs (e.g., by Sweetser (1990)), though not by all of them (e.g. Cormack and Smith (2002) claim that *have to* and *need to* are lexical verbs scoping lower than the other modals), the other verbs, namely *want* and *manage* are clearly not among those verbs which we label as

modal verbs, but they are lexical verbs. Despite this, they are clearly picked out as modal by our definition: *want* expresses volition, and *manage (to)* ability. Modality is thus not a criterion by means of which we can distinguish modal verbs from lexical verbs expressing modal notions, despite its capacity to distinguish modal verbs from the auxiliaries *have, be, do,* which are semantically light. We thus need to resort to more than modality if we want to set modal verbs apart from lexical verbs. Modality will be of use in delimiting the class of modal verbs within the class of auxiliaries. We shall return to it when making this delimitation.

2.2. Modals- a Distinct Class

A second, more reliable answer to the question of what being a modal means would thus be to say that it means belonging to a distinct class, a class evincing a set of morpho-syntactic (and semantic) properties which clearly set them apart from both lexical verbs and auxiliaries. One first important thing about modals is that they are auxiliaries. Hence, modals will share with auxiliaries all the properties which set them apart from lexical verbs. The second important thing about modals is that they are not like the other auxiliaries *have, be, do,* namely the class of modals has some specific semantic and morpho-syntactic properties which delimit it within the class of auxiliary verbs.

2.2.1. Modals-a Distinct Morpho-Syntactic Class

The morpho-syntactic properties that set modal verbs apart from lexical verbs can be separated into two sets: (1) morpho-syntactic properties that the modals share with the other auxiliaries, and (2) morpho-syntactic properties that only modal verbs, but not the other auxiliaries have.

(1) Among the most striking syntactic properties that modals share with the other auxiliaries are the NICE properties (Huddleston 1976), the label NICE being an acronym where N stands for Negation, I stands for (Subject-Auxiliary) Inversion, C stands for Coda, and E stands for Emphasis. Negation, subject-auxiliary inversion, coda and emphasis are in their turn key words that point to different contexts in which auxiliaries, and hence modals as well, behave in one way and

lexical verbs behave in another way. We shall state these properties only with respect to modal verbs, the focus of our paper, but, in order to make it clear that they also obtain in the case of the other auxiliaries, but that they do not, however, obtain in the case of lexical verbs, we shall illustrate this in all the cases mentioned above. Thus, the properties are as follows:

(i) Negation can attach to the modal, without DO-support:

(8) "I must not play with Santa's beard. Why is that?," the smart child wondered.

(9) * "I do not must play with Santa's beard. Why is that?," the smart child wondered.

In the same way:

(10) "I have not played with Santa's beard yet. Why is that?," the smart child wondered.

(11) * "I do not have played with Santa's beard yet. Why is that?," the smart child wondered.

(12) "I am not playing with Santa's beard. Why is that?," the child wondered.

(13) * "I do not be playing with Santa's beard. Why is that?," the child wondered.

However, in the case of lexical verbs, DO-support is required:

(14) "I did not play with Santa's beard. Why is that?," the smart child wondered.

(15) * "I played not with Santa's beard. Why is that?," the smart child wondered[3].

[3] However, the order verb-negation was a licit order at a certain point in the history of the English language, and it can be still used nowadays, but with poetic effects.

(ii) Subject-Modal Inversion is possible in interrogative sentences and in tags:

(16) Should the Big Bad Wolf repent for what he has done to the three little pigs?

(17) *Does the Big Bad Wolf should repent for what he has done to the three little pigs?

In the same way:

(18) Has the Big Bad Wolf repented for what he has done to the three little pigs?

(19) *Does the Big Bad Wolf have repented for what he has done to the three little pigs?

(20) Is the Big Bad Wolf showing his remorse to the three little pigs?

(21) *Does the Big bad Wolf be showing his remorse to the three little pigs?

However:

(22) Does the Big Bad Wolf repent for what he has done to the three little pigs?

(23) *Repents the Big Bad Wolf for what he has done to the three little pigs?

(iii) Modals can appear in the "coda":

(24) Santa can sing "Jingle Bells", and so can Rudolph.

(25) *Santa can sing "Jingle Bells", and so does Rudolph.

In the same way:

(26) Santa has just sung "Jingle Bells", and so has Rudolph.

(27) *Santa has just sung "Jingle Bells", and so does Rudolph.

(28) Santa is singing "Jingle Bells", and so is Rudolph.

(29) *Santa is singing "Jingle Bells", and so does Rudolph.

However:

(30) Santa sang "Jingle Bells", and so did Rudolph.

(31) *Santa sang "Jingle Bells", and so sang Rudolph[4].

(iv) Emphatic affirmation is possible without DO-support.

(32) "I CAN take the little puppy home. Can you believe it, Mary?," the child shouted with glee.

(33) *"I DO can take the little puppy home."

In the same way:

(34) "I HAVE taken the little puppy home. Can you believe it, Mary?," the child shouted with glee.

(35) * "I DO have taken the little puppy home."

(36) "I AM taking the little puppy home. Can you believe it, Mary?," the child shouted with glee.

(37) * "I DO be taking the little puppy home."

However:

(38) "I DID take the little puppy home. Can you believe it, Mary?"

(39) * "I TOOK the little puppy home. Can you believe it, Mary?"

This set of properties is labelled as the "The NO-DO SUPPORT" set (Avram 2003) for obvious reasons. In the P& P framework, this is accounted for by saying that

[4] However, it can be used with poetic effects.

lexical verbs and auxiliaries occupy different positions in the structure of the sentence. Lexical verbs are generated under VP and they do not move to Inflection; hence, in all the cases mentioned above, DO is inserted as a last resort in order to save the derivation, i.e. to provide a host for the affix under Inflection- which is required by the Stranded Affix Filter (Lasnik 1981). Auxiliaries, on the other hand, appear at some point in the derivation under Inflection: *have* and *be*, for example, are generated under VP, but they can, nevertheless, move to Inflection (V-to I movement), whereas modals are assumed to be inherently tensed and are inserted under Inflection. Obviously, once under Inflection, auxiliaries can move further up to C^o , thus undergoing I-to-C movement (as illustrated in (ii) and (iii) above).

Evidence in favour of this hypothesis comes from the behaviour of verbs with respect to sentence-medial adverbs (*always, often, sometimes* etc.). Lexical verbs occur after sentence-medial adverbs, whereas auxiliaries occur after. Thus, we have:

(40) Ben often dreams about pigeons.

IP
/ \
Ben_i I'
/ \
I^0 VP
-s / \
AdvP VP
often / \
t_i V'
| \
V^0 PP
dream about pigeons

BUT

(41) Ben has often dreamt about pigeons.

IP
/ \
Ben_i I'
/ \
I^0 VP
-s / \
AdvP VP
often / \
t_i V'
| \
V^0 VP
have t_i dreamt about pigeons

(42) Ben will often dream about pigeons.

IP
/ \
Ben_i I'
/ \
I^0 VP
will / \
AdvP VP
often / \
t_i V'
| \
V^0 PP
dream about pigeons

It has been argued (Pollock (1989), in Avram (2003)) that the fact that in English lexical verbs cannot move to Inflection can be related to the fact that English is a language with impoverished morphology, and such languages do not allow their main verbs to move to Inflection, because the verbs would no longer be able to assign θ-roles to their arguments from that position. In this, English would be radically different from French or Romanian, languages with rich morphology, allowing all verbs to move to Inflection.

The P&P framework thus managed to offer a rather neat account of the difference between auxiliaries and lexical verbs. However, as the minimalist framework developed, linguists tried to offer a minimalist account of the contrast between auxiliaries and modals, since such an important contrast could simply not be overlooked by a theory that claimed itself superior to the previous one.

Chomsky (1993, 1995) adopts a lexicalist approach to verbal morphology, claiming that all verbs come fully inflected from the lexicon, and that they simply check their features against the corresponding abstract features of the functional heads. Thus, in Chomsky's view (1993, 1995), inflection is featural, it is represented by a bundle of features, it is no longer affixal, as in the P&P framework. Feature checking is done either through movement in syntax (i.e. overtly) or through movement at LF (i.e. covertly). If inflectional features are strong, they are checked by overt movement, if they are weak, movement is covert. In English, inflection is weak, as can be easily inferred from the fact that main verbs do not raise overtly in English. By contrast, in French, inflection is strong, since, in French, main verbs move to Inflection. As Cornilescu (2003) points out, the problem about this analysis is that auxiliaries do raise to Inflection. Chomsky's solution is that *have* and *be* are semantically vacuous, and, thus, if they have not raised overtly by LF, they will not be able to do so at LF. However, this does not solve the problem of English modals, which are not semantically vacuous, but are semantically contentful. A first way out would be to say that modals support tense (and are, hence, generated under T). Two possibilities open up at this point: from under T, they either move further up to check some other features that they have (e.g. against a possible MoodP) or they don't . A

second way out would be to say that modals are directly inserted under a Mood head which is below Tense. Both solutions account for the correctness of (42). However, unfortunately, Chomsky does not enlighten us with respect to the status of modal verbs but, instead, resorts to an uncomforting tentativeness: in a footnote (apud Avram 1999), he says that it is *possible* that modals are inserted under Tense. The question of whether a Mood head is required or not will be resumed later on in further detail.

Another very important approach which blends minimalism with the P&P framework is that advocated by Lasnik (1995, 1998). According to him, in the case of main verbs, inflection is affixal, whereas, in the case of auxiliaries, it is featural. His hybrid account of verbal morphology is supported by evidence coming from VP- deletion. Thus, it seems that main verbs and auxiliaries behave differently with respect to VP-deletion. At a first glance, it looks as if main verbs could be deleted under strict identity (43 a.) and also sloppy identity (43 b.-c.), whereas auxiliaries could be deleted only under strict identity (44)[5]:

(43) a. I will eat an enormous fig, and Mary will too.
b. I ate an enormous fig, and Mary will too.
c. *I ate an enormous fig, and Mary will ate too.

(44) a. ?The clown should have slipped on a banana peel, but our little boy shouldn't (have slipped on a banana peel).
b. *The dog has slipped on a banana peel, but the child shouldn't (have slipped on a banana peel).

However, saying that deletion can operate on both identical items (as the term "strict identity" suggests) and non-identical items (because "sloppy identity" is actually no identity at all) runs counter to our intuitions. We would obviously expect deletion to

[5] Under strict identity, the two items, the second of which is deleted, are identical in form. Under sloppy identity, the two items differ slightly, e.g. by virtue of a certain tense or aspectual marker, as in "look" when compared to "looked".

operate on identical items, so that nothing is lost when deletion applies to an item, or, putting it in more technical terms, so that what is deleted can be retrieved in totality. If VP-deletion could be shown to operate in fact on identical items, this would be a much more appealing approach to deletion than the one mentioned above. Actually, if one adopts Lasnik's hybrid approach to verbs, and, in addition, one assumes that VP- deletion operates before Affix Hopping in the case of main verbs (an idea coming from Sag (1976), who originally proposed this for all verbs), then we can very neatly obtain that deletion operate on identical forms, since it would take place at a point in the derivation where the inflected form of the main verb has not been created.

(45) a. The bride swooned, and the groom will too if we don't do something quickly.

b. The bride Infl *swoon*, and the groom will *swoon* too.

On the other hand, in the case of auxiliaries, which come from the lexicon fully inflected, deletion can never apply when we have "sloppy identity". Moreover, in the case of modal verbs, deletion can never apply. This is because modals are inherently tensed (and, hence, always the first in a string of auxiliaries), and, if one deleted a modal which is identical to another modal from a previous sentence, then the sentence where deletion applied would be tenseless, and, hence, no sentence at all:

(46) a. John should wipe the windows clean, and David should wipe the windows clean too.

b. *John should wipe the windows clean, and David wipe the windows clean too.

c. John should wipe the windows clean, and David should too.

d. John should wipe the windows clean, and David too.

(47) Mary went to the sea, and John to the supermarket.

(48)

a. Fred slapped the frog into dizziness, and Wilma slapped the frog into dizziness too. What pre-historic manners

b. *Fred slapped the frog into dizziness, and Wilma the frog into dizziness too.

c. Fred slapped the frog into dizziness, and Wilma did so too.

d. Fred slapped the frog into dizziness, and Wilma too.

(49) a. Barney must have married out of love, and Fred must have too.

b. ?Barney must have married out of love, and Fred must too.

c. *Barney must have married out of love, and Fred have married out of love too.

d.*Barney must have married out of love, and Fred must married out of love too.

What is interesting is that the whole IP can be deleted: “slapped the frog into dizziness” or “should wipe the windows clean”, but not merely the element that carries the tense (and modal) information. It is not possible, for example, to delete just “should” (which is under T or Mood or T/ Mood) or just “slapped". If we have identical phrases, deletion cannot apply to identical heads contained within the identical phrases. This is obvious in (49 d), where we cannot delete “have” – it is not a phrase. But (47) is OK. Since the phrases were not identical, only “went” was deleted , and another PP “to the sea” was inserted instead of “to the mountains”.

When deleting a modal verb which is under identity with another one, the resulting structure is ungrammatical not only because of its tenselessness, but also because of its being semantically deprived of modality. (48) b. is ungrammatical for two reasons: (i) the tenselessness, and (ii) there is no verb at all to specify what Wilma did to the frog. A sentence like “Fred slapped the frog into dizziness, and Wilma slap the frog

into dizziness too", although ungrammatical, is significantly more comprehensible to the hearer than (48b.), for the simple reason that it furnishes "the frog" a verb. In the same way, a sentence with a deleted modal is ungrammatical and hardly comprehensible for the same reasons: (i) tenselessness, (ii) semantic deficiency (due to the absence of the modal operator). However, in case we have deleted *have* or *be* when these are the first auxiliary in the string (and, hence, tensed) , semantic deficiency is not so much a problem as tenselessness is.

(50) *Jane is playing with one rabbit, and Bill play with one rabbit too.

Although ungrammatical, this sentence is clearly comprehensible.

The test of VP-deletion thus brings evidence in favour of the view that modals, just like main verbs and unlike auxiliaries, are semantically contentful. We shall use this later on when discussing the semantic properties of modals.

For the moment, we can note in passing that VP-deletion does bring strengthening evidence in favour of Lasnik's hypothesis that, in the case of main verbs, inflection is affixal, whereas, in the case of auxiliaries, inflection is featural. On this approach, modals come fully inflected from the lexicon and check their features against the corresponding abstract features of the functional heads. This is something that modals share with the other auxiliaries. The difference is in the features checked.

(2) Apart from the syntactic properties that modals share with the other auxiliaries, modals also have specific morpho-syntactic properties which neither the other auxiliaries, nor lexical verbs have. These properties are as follows (Avram 2003):

1. they are always the first in a string of auxiliaries:

(51) a. They must have trimmed the bushes by now, don't you think?

b. * They have must trimmed the bushes by now, don't you think?

The order of auxiliaries is indeed fixed: Modals> *Have- en*> *Be-ing.*

In the Aspects model the Aux component was claimed to be made up of the following elements: Aux-> T^M^ (have-en)^ (be-ing), elements which were gathered under Inflection, later on, in the P&P framework. However, due to the heterogenous class of elements present under Inflection, what finally happened in the minimalist framework was that Inflection was split into its component elements: Agr> T> Asp> Asp> V. As for modals, basically two solutions were proposed: either insert modals under Tense (in this way, we have a hybrid T/MP), or project one MoodP (or even more).

2. they are incompatible with non-finite forms:

(52) a. *The children are always shoulding to behave properly.

b. *It annoys me to must do my homework every day.

c. *Canning (to) cook, I convinced Bill to marry me over Laura, who was a butterfingers.

d. *Having mayed/ mayn (to) go to the cinema, the child was on cloud nine.

e. *Oughting to be nice to people you are not particularly like is not always so easy.

3. they are incompatible with agreement

(53) a. * He musts take care of his little sister all the time.

b. *The dog mays sleep in your room just this once.

c. *Lucy mights have been at that party, but I'm not sure.

4. they always select a short infinitive as their complement

(54) a. *Brenda must to go to Switzerland with some business.

b. *The children may not to ask their teacher questions all the time.

5. they have no passive form

(55) *The papers were musted bring this morning.

6. they have no imperative

(56) *Must clean up the mess, John! I won't tolerate this in my house.

7. they cannot co-occur

(57) *They should can go to Spain, as far as I know.

However, in some dialects, co-occurrence of modals seems to be possible, although some linguists (Cormack &Smith (2002) have argued that the second modal is actually not a modal verb proper, but a main verb with modal meaning. Nevertheless, we shall give here some examples:

(58) a. You might would say that.
b. I don't feel as if I should ought to leave (Avram (2003): Southern USA, from Denison 1993).

8. some modals have two tense forms (59), some have a past tense form which can only be used in reported speech (61), while others have only one form (60):

(59) a. Mary can swim very well.
b. Mary could swim very well when she was a little girl.

(60) a. Tom must take care of Tammy, he is the Tom-cat, the man, that is.
b. He said that Toby must take care of Tammy.

(61) a. The teacher may speak rudely to the students in our school, we believe this makes the student respect him more.
b. The principle said the teacher might speak rudely to the students in his school, because, presumably, this made the student respect him more.

These properties thus seem to provide evidence in favour of the view that modals have a functional status (Avram 2003). Nevertheless, if modals have been subject to the process of grammaticalization, it is clear that this has not gone hand in hand with semantic bleaching, as it usually happens when a category changes its status from lexical to functional (Avram 2003).

2.2.2. The Semantics of Modal Verbs.

Just like the other auxiliaries, and unlike lexical verbs, modal verbs do not have an e-structure, and, hence, they do not theta-mark their arguments. Unlike the other auxiliaries, however, which are semantically light (*have, be, do),* modal verbs are semantically weightier.

2.2.2.1. Types of Modality

In what follows, we will try to present the main types of modality that modals have been claimed to express in various contexts. In this brief presentation, we will rely heavily on Papafragou (2000), who lists the following types: (1) deontic modality, (2) epistemic modality, (3) dynamic modality, (4) alethic modality. We shall discuss them one at a time.

(1) Deontic modality is the modality which captures notions such as obligation and permission, in other words, necessity and possibility granted by social or moral laws. Obligation and permission are clearly the two basic notions of deontic modality, illustrated by means of the modal verbs below. The examples are accompanied by corresponding paraphrases:

(62) a. John must do his homework although he doesn't want to. (obligation)
'It is obligatory that John do his homework…'
b. Linda may/ can take the tortoise home if she promises to see to it that the tortoise does not run away. As if that could ever happen! (permission)
'It is permitted that Linda take the tortoise home…'

However, many linguists (Coates (1983), Cormack and Smith (2002)) have claimed that deontic modality captures a much wider array of notions than obligation and permission. One of their proposals (which Cormack and Smith took over from Coates) is, for example, that *should* expresses advisability, as can be easily seen from the paraphrase of the sentence below (of course, under the deontic reading):

(63) Mary should come home before midnight.

'It is advisable for Mary to come home before midnight.'

Now the question is whether postulating such a notion is theoretically desirable. The answer in our view is that it is not. A first reason is economy: if we can deal with the existing facts of language by resorting to fewer notions, namely, merely to the notions we already have (i. e. obligation and permission), then why assume other useless notions such as "advisable"? There is absolutely no need to postulate advisability, since, as Papafragou (2000) clearly points out, *should* expresses "a necessity relative to existing stereotypes or norms" (62), therefore, obligation imposed by norms. Thus, both *must* and *should* express obligation, what differs though is the source of imposition. In her semantics, Papafragou (2000) deals with this by stating that *must p* means that p is/ can be entailed by any domain ($D_{unspecified}$), whereas *should p* means that p is entailed by the domain of norms ($D_{normative}$). Therefore, the obligation expressed by *must* is not necessarily one imposed by norms, as is the case with *should.* There is thus no need for such a notion as advisability, obligation will do[6]. To make this more palpable, let us take some examples:

(64) a. Tin-Tin must sell his golden watch- if he doesn't, he will not be able to buy his dog the latest costume created by the prestigious firm *Il Pero/ Dogsace.*

b. Tin-Tin should sell his golden watch- with the money he would get on the watch, he could really help many people in need.

c. ?Tin-Tin should sell his golden watch- if he doesn't, he will not be able to buy his dog the latest costume created by the prestigious firm *Il Pero/ Dogsace.*

[6] In passing, it is important to note that Papafragou (2003) does not make use of the notion of obligation in her semantics. Instead, a modal of necessity coupled with p means that p is entailed by a certain domain. According to the nature of the domain, the verb will express necessity or obligation. If the domain is a metarepresentational domain, the domain of beliefs, then the verb will express necessity, if otherwise, the verb will express obligation. The same thing happens with the notion of permission in her semantics, namely, it is missing. Instead, *may p* means that p is compatible with a domain ($D_{unspecified}$), we thus have the notion of compatibility with a domain. If the domain is metarepresentational, then the verb will express possibility, if not, then it will express permission.

If in (64)b., Tin-Tin is sort of obliged by moral laws/ norm to sell his golden watch so as to help the poor, in (64)a., this is not the case- Tin-Tin's obligation to sell his golden watch is not imposed by morality and not even by social norms (though, perhaps, it could be argued that, if Tin-Tin is an extremely rich male-model, then the obligation to take care that everything he owns (including his dog) should be in tune with the latest trends in fashion is somehow imposed upon him by the norms of the society of fashion snobs he is part of). Nevertheless, the same sentence with *should* instead of *must* does sound extremely strange (c). Unless Tin-Tin loves dogs very much and he is a militant for their rights, believing that it is somehow a moral duty on his part to provide his dog with expensive clothes, or, unless, by any chance, it is clinically proved that, unless he sells his watch to buy dog clothes, either his dog or himself will run mad (and, so, it becomes question of morality to sell the watch), then, what we are left with is a sentence that does not make much sense.

The example above does therefore shows that there is a clear difference between *must* and *should* when both express deontic modality. In our view, it was the fact that the difference was sensed by various linguists that led to their deeming it necessary to stipulate another notion for *should* such as "advisability". In this way, we avoid strange paraphrases of the sentences with modals. A paraphrase like "It is advisable for Mary to come home before midnight.." to (63) can, in our view, be replaced with a paraphrase like "It is obligatory that Mary come home before midnight…", or, more neatly, "According to family norms, it is obligatory that Mary come home before midnight…".

Another reason why the notion "advisable" should be abandoned is that there isn't any advisability operator in deontic logic. If we want to show scope relations between the modal and the subject or other operators like negation, then we must try to paraphrase the sentences that contain modal verbs in a way that translates into words the formalizations logic operates with. Since, in deontic logic, the only primitive operators are obligation and permission, we believe it is only reasonable to do away with "advisability" when paraphrasing sentences with *should.* Footnote: Moreover, *should* also has epistemic uses. Hence, we would need a corresponding notion for "advisability" in the epistemic domain. Cormack & Smith (2002) provide us with the notion "predictability". However, there is

no predictability operator in epistemic logic- the only primitive operators are necessity and possibility (□, ◊).

We will thus not accept that deontic modality captures any other notions apart from necessity (obligation) and possibility (permission). The modals expressing obligation are *must, should, ought to.* They differ in the source of imposition: in the case of *must,* we have to deal with a very strong obligation possibly imposed by any source; in the case of *should,* the source of the imposition is represented by norms (social an moral); in the case of *ought to,* the source of the imposition is again represented by norms (but especially moral norms)- the difference between *should* and *ought to* is primarily one of register (*ought to* is much more formal). To these verbs some linguists (e.g. Sweetser (1990)) add *have to* and *need to,* who argues that *have to* expresses a resistible obligation imposed by an external authority, whereas *need to* expresses a resistible obligation imposed by something internal to the doer. As we can see, the reasons for including them in the class of verbs expressing obligation are semantic: both verbs express deontic modality, more precisely, obligation. However, in our view, these verbs are not to be included among the class of modal verbs[7].

Other verbs with a controversial status are *will* and *shall.* One controversial fact about them is whether they encode tense information or modal information or both, for that matter. Many linguists have argued that what they express differs according to the way in which they are used, in other words, that there is a volition *will,* a future *will,* a prediction *will* a.o. We will not, however, adopt a view according to which *will* is a future marker in one use and a modal in the other. We consider such a view to be too heterogeneous, and, hence, totally undesirable. Instead, we will consider *will* and *shall*

[7] A similar point of view can be found in Cormack & Smith (2002), arguing that *have to* and *need to* scope lower than modal verbs. The reasons for this are syntactic, namely, these verbs evince certain properties which clearly differentiate them from the other modal verbs e.g. they require Do-insertion in the negative, interrogative and other contexts. They thus behave more like lexical verbs than modal verbs. Because of this, we will not include them in the class of modals of obligation.

modals in all of their uses. The reason is that, from a morpho-syntactic point of view, they qualify as modals. Another matter of controversy, this time among those linguists who consider them modals, has been whether they are deontic or epistemic. Cormack and Smith (2002) consider that they express intention to do something and, hence, include them in the class of deontic modals. Other linguists (Coates (1983)) consider them epistemic, due to their referring to the necessity of a certain action in the future. Others argue that both uses can be found: *will* can express both deontic modality and epistemic modality (Sweetser (1990)). The examples she gives us are quite convincing: (14a) "He will be home in three hours." exemplifies real futurity, meaning the event really takes place in the future, whereas (14b) "He will be home by now; I just saw the lights go on" exemplifies the epistemic futurity of knowledge- as Sweetser puts it, "the actual event is not in the future, but only its verification" (55). However, Sweetser does not group *shall* together with *will*, she argues that *shall* indicates "the speaker or imposer (rather than the subject of the action) making himself responsible for the carrying out of the action" (54). One relevant example that she gives is (12) "If Mr Jones wants tickets for our concert, he shall have them". Of all the points of view presented above, the one which we find most appealing is Sweetser's, and, hence, it is her view upon the modals *will* and *shall* we are tempted to adhere to in the present paper[8].

The other class of modals expressing deontic modality are the modals of permission, namely, *may, might, can, could.* Linguists generally include *might* and *could* in this category, considering them modal verbs in their own right. In the case of *might,* their argument would basically be that it does not function as the past tense form of the verb *may,* except in indirect speech. We find it necessary, thus, to make a distinction between *might* as a modal verb expressing permission (65 d., e.) and *might* as the past tense form of *may (*observing the strict Sequence of Tenses) in (65 c.) The situation with

[8] In our paper, we treat *should* as a modal verb in its own right. Although, from a historical point of view, it started out as the past tense form of *shall,* it is no longer used as such, having a different meaning. Whereas a sentence like "You shall go to school." is understood as an order, a sentence like "I told him he should go to school." is felt more like a mild suggestion. As far as *would* is concerned, it is often regarded as the past tense form of *will,* and not as a modal verb in its own right. Due to its past reference, it is felt to be more polite than *will*- "Would you pass me the salt?" counts as a more polite request than "Will you pass me the salt?"

could expressing permission is not so clear, since *could* does function as the past tense form of *can* (66 b.), which would tempt us into assuming that it cannot function as a modal verb in its own right, unlike *might*. However, even permission *could* can sometimes be used in contexts in which it is not understood as the past tense form of *can (*66 d., 66 d.). However, this can only happen in certain special contexts, one such context being the interrogative (65 d., 66 d.). Both sentences offered as examples count as polite ways of asking permission to do a particular thing, and they are felt as more polite than the sentences containing *may* or *can.* On such a view, it is possible to consider deontic *might* and *could* modal verbs in their own right. Linguists like Leech and Coates, however, do not adopt such a point of view, assuming that deontic *might* and *could* are to be regarded as the past tense forms of *may* and *might.* A possible counterargument to this could be to say that, even though this may very well be the way in which the modals *might* and *could* originated, the fact is that they can be used in contexts where it is clear that they cannot be understood as the past tense of *may* and *can.* (65 d, e.) and (66 d., e.) exemplify the 'conditional' uses of these modals, best captured by the paraphrase ' it would be possible for (me) to…'.

(65) a. Bill may see his children only on Sundays.

b. Bill might see his children only on Sundays after the divorce. (#a)

c. The judge decided that Bill might see his children only on Sundays.

d. Might I go to the theatre tonight, Mommy?

e. She is wondering if she might go to the theatre tonight.

(66) a. Mark can speak Chinese at the reunion, but not Japanese. Linda won't allow it.

b. Mark could speak Chinese at the reunion, but not Japanese. Linda would not agree to it.

c. Linda said that Mark could speak Chinese at the reunion, but not Japanese.

d. Could I go see Dennis in the park, Daddy?

e. John is wondering if he could see Dennis in the park.

However, the fact that *might* and *could* can be used to express permission only in certain limited contexts casts serious doubt on the idea that they are modal verbs in their own right. Why, for example, is it not possible for me to say "He might go there tonight, his mother is in a cheerful mood." so as to express permission, if permission is precisely what deontic *might* allegedly expresses? And then, what exactly is the difference between *may* and *might* if both express permission? Why can't we use *might* to grant somebody permission to do something, if the only difference between the two would be that *might* is more polite than *may?* As it clearly results from the semantic account Papafragou proposes in her paper (2000), for two modal verbs to be considered different (from one another), it is necessary that they differ in either one of two respects: either in the logical relation holding between the proposition p (compatibility or entailment) and the modal restrictor, or in the modal restrictor ($D_{factual,}$ $D_{ideal,}$, $D_{normative}$ etc.). While, for example, *can* and *may* in their deontic uses can be distinguished in these terms: *can p* means that p is compatible with $D_{factual}$, whereas *may p* means that p is compatible with $D_{unspecified}$ (therefore, in their case, it is the modal restrictor which differs), *might* cannot be properly distinguished from *may,* nor can *could* be properly distinguished from *can.* This poses a serious problem for those who claim that deontic *might* and *could* are modal verbs in their own right, but, as pointed above, the opposite point of view is not devoid of problems. This is why, at this point, we will abstain from choosing between the two.

Before moving further on to verbs expressing epistemic modality, we will however linger a little on an issue which we consider extremely relevant for our paper, namely, the way in which we have paraphrased sentences containing modal verbs with a deontic interpretation. Our paraphrases have the form: "It is X that p", where "X" stands for "obligatory" or "permitted", thus placing the modal operator above p. If such paraphrases do reflect the scope relations between items, then this means that, deontic modals, which we have been concerned with up to now, always scope above p, and, hence, also above the subject. From a paraphrase like "It is obligatory that John do his homework" to (62)a., we can thus read that "obligatory" has a higher scope than "John". Actually, there are some linguists who do not adhere to this point of view. We can clearly see this in the way *they* paraphrase such sentences with modals. A sentence like (62)a. would in their view be much better paraphrased in the following way: "John is obliged to

do his homework". In a similar fashion, a sentence like (62)b. ("Linda may take the tortoise home…") would be much more adequately paraphrased by something like "Linda is permitted to take the tortoise home…" rather than "It is permitted that Laura take the tortoise home". The reason is that, in this way, they claim, the paraphrase would capture our intuition that the deontic modal and the verb which follows it form a sort of complex verb, and that it is *this* complex verb rather than just the verb which follows the modal that is predicated about the subject of the sentence. Moreover, Butler (2003) claims that such paraphrases show that the subject scopes higher than the verb expressing deontic modality. Now we are at a standstill. Who is right and who is wrong? How should we paraphrase sentences with modals expressing deontic modality? And, another more important question, is it really the case that such paraphrases show scope relations among items? Unfortunately, we do not have very neat answers to these questions. However, we shall try to offer some arguments in favour of the view that our way of paraphrasing is better. A first argument is inspired by Wurmbrand (1999), who, it is true, used it against the claim that deontic modals assign an adjunct theta-role to the subject of the sentence (adjunct because the subject is assigned one more θ-role from the verb taken as a complement by the modal verb). Her argument is that deontic modals can take expletive subjects. One of her examples is (3)c. "There must be a solution to this problem on my desk, tomorrow morning!". Now, to such a sentence, where the subject does not even have semantic content (hence, it cannot by any means be a responsible person on whom we can impose any obligation whatsoever), the adequate paraphrase is "It is obligatory that there is a solution to this problem…". A paraphrase like "There is obliged to be a solution to this problem…" is awkward (not to mention, ungrammatical), since "there" is in no position to be obliged by anyone. But let us take simpler cases. Let us take for example the case of a sentence containing a deontic modal, which has an inanimate subject:

(67) Flowers must sense sunlight if you want them to grow beautiful.
"It is obligatory that flowers sense sunlight…"
? "Flowers are obliged to sense sunlight…"

As can be seen in the example above, the paraphrase with "obligatory" above the subject is again much more adequate than the one with the subject above "obliged". It is very clear that the imposee in such sentences is not represented by the group made up of flowers, but by the person who takes care of the flowers (indicated in the sentence above by means of the deictic "you"). Inanimate subjects like the one in the sentence above make it very clear that the syntactic subject may not coincide with the imposee or permitee, i.e. the person on whom something is imposed or who is permitted to do a certain thing. As Barbiers (2002) points out, in such sentences, "the matrix subject cannot be interpreted as the person being obliged or permitted to do something" (6)[9].

Where the matrix subject can be interpreted as the imposee or permitee, i.e. where the matrix subject is animate (preferably human), it usually is. However, although this is the tendency, it is by no means the norm. And so, even a sentence with a human subject like the following:

(68) The child must eat healthy food every day.

can receive more than one interpretation, according to the miscellaneous contexts in which it is used. According to whether (68) is continued by (a) or (b):

a. or the mother will be sent to prison for child mistreatment.
b. or he will not be allowed to eat cookies after lunch.

[9] In saying that inanimate subjects cannot be interpreted as the imposees, we clearly leave out fictional contexts (or real-world contexts where we indulge in childish behaviour), where this is obviously possible (Sweetser (1990)). The reason is that, in fairy-tales, we experience "the marvellous" (Todorov), one manifestation of which is that inanimate elements become animate, and may even acquire human characteristics. We shall here give some (invented, but plausible) examples just for the sake of bringing a smile on the supposedly serious faces of lovers of linguistics:

(i) "The brooms must sweep the floor, and the towels must wash the dishes," said the loving princess.
(ii) "You must turn into a beautiful carriage," the Fairy said to the pumpkin .
(iii) "You may talk to each other while I'm away, but don't wake my child," said the mother to her beloved flowers.
(iv) "You may not upset me right now, I've had a horrible day already. Pleeease!," the tired woman begged before the dying fridge.

the interpretation of the sentence changes: in (a), the responsibility rests with the mother, or, putting it in other words, the imposee is the mother; in (b), the responsibility rests primarily with the child, who has to take care not to buy junk food at school, imitating the other kids.

Such a view upon things, according to which the matrix subject is not necessarily the imposee, brings a whole new light upon the way in which we should paraphrase sentences with deontic modals if we want to better express the relations between items, namely, by means of the already mentioned formula: "It is X that p", where "X" stands for "obligatory" or "permitted", and "p" stands for the verb taken as a complement by the modal.

Unless we settle for a particular way of paraphrasing, or find an explanation for why a particular type of paraphrase obtains in a certain context and why it does not in another context, we are bound to enter an area of confusion, which is something we must try to avoid. Paraphrasing is truly an issue of great importance, since, as it stands, many of the arguments in favour of placing modals in a particular position in the derivation are arguments related to the paraphrases of the sentences containing those modals. It is a general assumption in the literature concerning modal verbs (and not only) that such paraphrases actually show the scope relations between items. If, for example, I paraphrase the sentence "Bilky may go to the theatre tonight" by 'Bilky is permitted to go to the theatre tonight', the general claim would be that what the way in which I have paraphrased the sentence actually shows is that, in the syntactic representation of this sentence, at LF, the subject will scope over the modal. Since scope relations are read off from LF, what the linguist will actually try to do is make the LF ordering of items resemble the paraphrase as much as possible. In this way, in offering a syntactic account of a particular sentence, the linguist will heavily rely on his 'semantic' intuitions. The only (big) problem is that such intuitions may sometimes not be as reliable as we would like them to be. More often than not, pragmatic constraints may lead us on the wrong path. We may, for example, reach the conclusion that, with modals receiving a deontic interpretation, the subject always scopes above modals, not taking into account sentences with inanimate subjects or expletive subjects, in which this is not at all possible. By

relying too much on our intuition, we might, thus, reach the conclusion that something belonging to the realm of pragmatics actually belongs to the realm of semantics, and, in this way, we might come up with absolutely awkward LF representations of sentences.

What would be almost amusing, were it not downright tragic, is the fact that we can find different ways of paraphrasing modals receiving the same interpretation or even different ways of paraphrasing the same modal with linguists who heavily rely on paraphrases as scope indicators. Cormack and Smith (2002), for example, paraphrase the sentence "Alfred shouldn't eat nuts" as 'It is advisable for Alfred not to eat nuts', with the modal verb scoping over the subject. On the next page, however, the paraphrase they offer to the sentence "Edwin can not climb trees" on one of its readings is 'Edwin is permitted not to climb trees', with the modal scoping over the subject. Cormack and Smith do not discuss the scope relations between modals and subjects, they are only interested in the relation between modals and negation. Well, then, some might wonder, " if their purpose was only that of establishing the scope relations holding between modals and negation, why should we blame them for not discussing the scope relations holding between the subject and modals? Surely, if they further refined their analysis, they would somehow manage to account for these differences just as well." Those arguing thus would obviously make a point were it not for the very way in which Cormack and Smith establish the LF ordering of modals and negation. In so doing, Cormack and Smith heavily rely on paraphrasing, we might say, actually, that their only argument in establishing the position of modals with respect to negation is the fact that this is the way in which we understand the sentences. On their approach upon modals, paraphrases are thus viewed as essential indicators of scope phenomena. And, so, how can we then explain the miscellaneous behaviour of modals, as it would result from the paraphrases? How come, on one reading of "Edwin can not climb trees", the paraphrase they offer is 'It is not permitted that Edwin can climb trees.', with the modal scoping over the subject, whereas, on another reading of the same sentence, the paraphrase they offer is 'Edwin is permitted not to climb trees", with the subject scoping over the modal? If, in the case of deontic *should* and deontic *can,* it could perhaps be claimed that the different behaviour with respect to subjects would result from their being two different verbs (one- a modal of necessity, the other- a modal of possibility), this argument can no longer be brought in

this case, where we have to do with one single verb, *can* expressing permission. Unless we adopt a view under which negation can change the scope relations holding between the subject and the modal, we cannot help wondering how come Cormack and Smith resorted to such different paraphrases? They could have paraphrased the sentence "Edwin can not climb trees" by 'Edwin is not permitted to climb trees', instead of 'It is not permitted that Edwin climb trees'. In this way, the subject would have scoped above the modal in both cases. Or, they could have paraphrased the sentence "Edwin cannot climb trees" by "It is not permitted that Edwin does not climb trees.", and, in this way, the subject would have scoped under the modal in both cases. Either way, we would have had a homogeneous account of the scope relations holding between the subject and the modal.[10]

The conclusion to the whole discussion concerning the issue of paraphrasing would be that it is not all that clear whether paraphrases correctly capture the semantics of the sentence. Appealing as they might seem, paraphrases may trick us, they may make believe to be semantic, when, in fact, they are the result of pragmatic processing. As much as we would like to trust our intuitions, the truth is that we simply can't. And the fact that

[10] A very important thing to be noted is that Cormack and Smith (2002) cannot be argued to offer a plausible account of the behaviour of modals with respect to subjects be on the grounds that the differences in paraphrasing sentences with modals result from their occurring with different types of subject. There are linguists (Butler (2003)) who have argued that the scope relations holding between modals and subjects do not only depend on the type of modal, but also on the type of subject (whether it is a 'strong', existential DP, or a 'weak', quantified DP). This is a consequence of Butler's adopting Diesing's theory, according to which 'strong' DPs occupy SpecTP, whereas 'weak' DPs occupy Spec VP. On such a view, if deontic *must* combines with a strong DP, e.g. a proper name, the subject will scope over the modal, whereas, if deontic *must* combines with a weak DP, e.g. a bare plural indefinite, the modal will scope over the subject:

(i) Linda must go to the bakery.
'Linda is obliged to go to the bakery.'
(ii) Dogs must help their masters in times of trouble.
'It is obligatory for dogs to help their masters in times of trouble.'

However, with Cormack and Smith, it is not the case that the subject is of a different type. The sentence "Edwin can climb trees" has two readings, but, in each of the two readings, the modal and the subject are the same: the modal is permission *can*, the subject is the proper name "Edwin", i.e. a 'strong' DP. Despite this, we do not have the same scope relations holding between the modal and the subject. If we view the paraphrases offered by Cormack and Smith as scope indicators, we thus seem to get into serious trouble.

even linguists like Cormack and Smith may sometimes make mistakes is indicative, we believe, of the misty realm of paraphrasing. However, this does not mean that we should dismiss paraphrases altogether. In the ideal, paraphrases *do* reflect the semantics of the sentence, they *do* provide us with the LF of the sentence. This is why what we must try to do is set apart the semantic and the pragmatic, and come up with neat paraphrases, which can clear up at least some of the mist, if not all. In the issue of paraphrases of sentences containing deontic modals, what we are certain of is the fact that it is not always the case that the subject of such sentences is interpreted as the imposee or permitee, and, hence, to argue that the paraphrase "X is obliged/ permitted to…" is the universal paraphrase of such sentences is wrong. In our view, such a reading depends on context. This is why, a paraphrase like "It is obligatory/ permitted that X do sth" would be more adequate in our view. We have insisted so much upon the issue of paraphrasing, because it will prove of utter relevance later on in the paper, when discussing the scope relations between modality and negation.

(2) The second type of modality which is of interest to us is epistemic modality, i.e. the modality which deals with the speaker's evaluation of a proposition on the basis of internally represented evidence. As Papafragou (2000) puts it, while "in root interpretations, the modal domain includes propositions taken as descriptions of states of affairs; in epistemic interpretations, the modal domain D is relativised to a set of propositions which form part of the speaker's belief-set- and thus participate in her mental life" (73). This amounts to saying that the modal restrictor will basically be the same in the case of all modal verbs expressing epistemic modality, namely, the domain of beliefs: D_{belief}- the difference will consist in the type of beliefs allowed in the domain. Unlike root interpretations, "epistemic interpretations of modal verbs involve a propositional representation being used *interpretively:* the complement of the verb (: the embedded proposition) is not used as a truth-conditional representation of a state of affairs in the world but as a representation of an abstract hypothesis, which is considered to be compatible with/ entailed by the speaker's beliefs" (70). From the speaker's point of view, thus, we could say that the employment of epistemic modality is seriously related to the capacity to reflect on the content of one's beliefs, to what has been generally termed in the literature as ToM abilities (Theory of Mind abilities).

Just like in the case of deontic modality, there are two classes of modal verbs which express epistemic modality: modal verbs of necessity and modal verbs of possibility. In their epistemic use, such verbs will be employed to evaluate a proposition p as either a necessary conclusion (in the case of necessity modals) or a possible conclusion (in the case of possibility modals) on the basis of some evidence which the speaker possesses. What the modal verb will actually do is, hence, communicate the degree of speaker commitment to the proposition p.

In the case of necessity modals (*must, should, ought (to)),* the speaker will communicate that p describes a necessary conclusion with respect to a set of assumptions available to him. He will, therefore, express strong commitment to the truth of the proposition p. However, we cannot speak about full commitment, not even in the case of the strongest modal of necessity, namely *must*. This is because, when the speaker is fully committed to the truth of the proposition p, he will not go for a modalized assertion, but for a non- modalized one. In case he knows precisely that a proposition is true, because he has, for example, seen what he reports with his own eyes, there will be absolutely no reason for him to relativise the modal restrictor to the domain of his beliefs. And, so, he will not do that. Full cognitive access goes hand in hand with non-modalized assertions[11]. `To make this clear, let us look at the following example:

(69) a. Alice turned green with envy.

b. Alice must have turned green with envy.

While we would expect (69) a. to be uttered by somebody who actually saw how Alice turned green with envy, when, let's say, her ex-husband appeared at a certain party accompanied by a gorgeous top-model, (69) b. is something we would expect to hear from somebody who was not there, but instead evaluates the proposition "Alice turned green" as a necessary conclusion on the basis of the evidence she possesses. So, although, (69) b. does convey that the speaker strongly believes in the truth of p, there is a still a possibility left open for evidence lying beyond the speaker's beliefs to disconfirm the

[11] "Although it might appear that a statement is strengthened by putting the proposition that it expresses within the scope of an operator of epistemic necessity, this is not so, as far as the everyday use of language is concerned "(Lyons 1977, apud Papafragou 2000).

embedded proposition. It might actually be the case that Alice did not in fact turn green because she was too proud a person to let it show that she was hurt by her husband's behaviour, which is something the speaker might not have taken into account when uttering (69) b. By choosing a modalized assertion, the speaker makes it clear that she is not completely certain of the truth of the proposition. This is completely different from (69) a., where, as a result of having actually had perceptual access to what happened, the speaker expresses full commitment to the truth of the proposition. Opting for a modalized assertion over a non-modalized assertion in (69) b. is but an expression of the fact that inference is not so reliable a source of knowledge as perception.

Having settled on this issue, we will now discuss a little some of the differences which exist among the epistemic modals of necessity. It is a fact about *must, should, ought (to)* that they all basically express that a certain proposition p is a necessary conclusion with respect to the assumptions held by the speaker. However, since language is optimally designed, it is only natural that these verbs are not synonyms. In Papafragou's semantics, *must p/ should p/ ought to p* all mean that p is entailed by the domain of the speaker's beliefs, so the difference does not lie in the type of logical relation holding between the proposition and the modal domain, which is one of entailment. However, although the modal domain consists in each case of the speaker's beliefs, this does not mean that the verbs allow the same type of beliefs. While *must* leaves open the type of evidence that supports the embedded proposition, *should* only accepts evidence based on norms/ expectation. To make these differences clear, let us look at the following sentences:

(70) a. Linda must be awesome to kiss.
b. Linda should be awesome to kiss.

In our interpretation of these examples, we will rely on the way in which R. Lakoff (1972) interprets similar examples (Papafragou 2000). Suppose that we have two boys talking to one another, and looking at the so much-wanted Linda. (70) a. could be uttered if there were some indications that Linda was awesome to kiss, for example, the fact that she was kissing another boy right then, before their eyes, and they could see that the boy was extremely happy. By contrast, (70) b. would be appropriate if the boy uttering this

sentence knew nothing about Linda's kissing abilities from first-hand experience, but had heard from some friends of his that Linda was awesome to kiss. In Lakoff's words, "*should* is used in the case of a likelihood based on future expectation and verifiable in the future, and *must* of a likelihood based on present conjecture and verifiable in the present." (75).

As far as *ought to* is concerned, the modal domain is specified for ideals and moral imperatives:

(71) This song ought to be easy to perform for a brilliant musician like you.

In the case of possibility modals, the speaker conveys the idea that the proposition p is a possible conclusion with respect to the evidence he possesses. According to many linguists, the verbs belonging to this category are *may*, *might*, *can*, even *could (*though Coates (1983), for example, does not consider *could* a modal verb in its own right, but only a preterite form of *can).* In Papafragou's view (2000), however, *can* is excluded from this list (and, as a consequence, probably *could* too) on the grounds that it only allows a factual domain as its restrictor, which precludes any epistemic use. On such a view, a sentence like:

(72) Can what Mary told last night really be true?

is no longer interpreted epistemically. Such an interpretation is awkward, since, Papafragou argues, "the speaker cannot be expecting the addressee to supply the information whether a proposition is compatible with the speaker's beliefs" (78) . Instead, on her approach, such a sentence will receive a root reading.

In contrast with *can*, by means of which the speaker communicates that p is compatible with the set of factual propositions in the world, i.e. that the state of affairs in the world allows for p to be the case, *may* is used to express that a certain proposition is compatible with the set of the speaker's beliefs. In addition to this, a further difference between the two modals seems to be that *may p* seems to rely more on the future for the verification of the embedded proposition than *can p:*

(73) a. Jack can be hiding something.

b.Jack may be hiding something.

Apart from deontic modality and epistemic modality, logicians (von Wright, 1951 apud Papafragou 2000) have also brought into attention notions such as dynamic modality and alethic modality:

(3) Dynamic modality captures such notions as ability and volition. The modal verbs conveying dynamic modality in English are ability *can* and volition *will:*

(74) a. The frog can swim in the lake.
b. The boy will kiss the blue-eyed girl.

As we will see later on in the paper, modal verbs expressing dynamic modality behave in a different way from those expressing deontic modality. It has been argued (e.g. Avram (2003)) that the modal verb expressing dynamic modality and the lexical verb combine so as to jointly assign a theta-role to the subject, which has syntactic consequences, e.g. sentences with dynamic modals cannot undergo passivization (without a meaning shift). This means that the notion of dynamic modality may be relevant for syntax as well as for semantics.

(4) Whether the notion of alethic modality is relevant for syntax is, however, not so clear. It is, however, an important notion in semantics. Alethic modality expresses absolute necessity and possibility (von Wright 1951, apud Papafragou 2000) For this reason, most of the sentences conveying alethic modality are sentences expressing scientific truths (75a.) or analytic truths (75 b.):

(75) a. Two and two must be four.
b. A bachelor must be unmarried.

From a semantic point of view, a proposition is a logical necessity if it is entailed by the set of propositions in any domain D, and in a similar fashion, a proposition is a logical possibility if it is compatible with the set of propositions in any domain D.

There have been attempts at conflating alethic modality and epistemic modality. However, Papafragou (2000) goes against such attempts, one of her arguments being that alethic *must p* is stronger than the unmodalised proposition p, since the former means that p is not just true but necessarily true (true in all possible worlds). A sentence like (75) a. "Two and two must be four" is stronger than the sentence "Two and two is four", while a sentence like "She must be a very good doctor", where *must* is used epistemically is weaker than its unmodalized counterpart "She is a very good doctor". If we were to establish a scale indicating the strength of each element, what we would get is: alethic *must*> *is*> epistemic *must.*

Despite this very clear semantic difference between epistemic and alethic modality, the fact is that modals expressing alethic modality do not behave in any way different from the modals expressing epistemic modality from a morpho-syntactic point of view (Palmer 1995 apud Papafragou 2000). This is why, in our paper, we shall treat sentences receiving an alethic interpretation on a par with sentences expressing epistemic interpretations.

Although perhaps we would have expected root modality to be expressed by a particular class of modals, and epistemic modality to be expressed by a completely different class of modals, we clearly see that this is not how things stand: the same modal can be used to express various types of modality. Now the obvious question is how can we account for this ambiguity which is the case not only in English, but actually holds cross-linguistically?

Before trying to answer this question, we need to settle certain aspects related to the semantics of modals. A first thing is the fact that, just like all the other auxiliaries, modal verbs do not θ- mark their arguments[12]. Despite this, however, modals do have semantic content. An issue over which there has been much debate in the literature has

[12] This is actually a matter that has been much debated in the literature. According to some linguists (e.g. Picallo (1990), there are certain modals (deontic and dynamic) which do θ- mark their subjects. As further research (Wurmbrand (1999)) showed, however, this does not seem to be the case with deontics.

been how exactly this semantic content is organized in the lexicon. Do modal verbs have two unrelated semantic entries, two related semantic entries, or only one semantic entry?

2.2.2.2. Approaches to the Meaning of Modal Verbs

There have been three main approaches in the literature to the meaning of modal verbs: the homonymy approach, the polysemy approach, and the monosemy approach.

A. According to the Homonymy Approach (labelled as 'the ambiguity approach' in Papafragou (2000)), modal verbs express meanings that are not related in any way (i.e. we are dealing with several lexical entries). On such a view, deontic necessity and epistemic necessity are not at all related. One linguist who adopts such a view is Palmer (1995). According to him, each modal verb encodes a particular cluster of distinct modalities: deontic, epistemic, dynamic (neutral or subject-oriented), among which it is not always so easy to discern. A major problem about this approach is that it explains the various meanings of modal verbs by resorting to a complicated, heavy semantic machinery, instead of resorting to pragmatics. Moreover, it does not seem to hold water in the case of modal verbs. A very reliable test in seeing whether two items are homonyms is the translation test, i.e. we translate them into another language, and, if what results are two different words, and not the same word, we can be sure that the two items are not polysemous, but homonymous. The fact that the same word is used for epistemic and deontic modality cross-linguistically is a clear indication that modal verbs are either polysemous or monosemous.

B. The Polysemy Approach claims that modal verbs express meanings that are related in some way (i.e. we are dealing with one single lexical entry with various subentries). One illustrious advocate of this view is Sweetser (1990), who considers the epistemic meanings of modal verbs to be the result of a metaphorical mapping of force-dynamic notions such as force or barriers to the mental domain, instead of the real world (as is the case with deontic modals). The example of "may" is a case in point:

(76) a. Bill may hold the teddy-bear in his arms.

'Bill is not barred by his mother from holding the teddy-bear in his arms.'

b. Linda may have been a wonderful singer.

'I am not barred by my premises from the conclusion that Linda was a wonderful singer.'

In Sweetser's view (1990), the role played in the case of deontic modals by the force imposing an obligation or granting permission to the interlocutor is played in the case of epistemic modals by the premises on the basis of which an inference is drawn.

However, although this approach does seem to make a lot of sense of the deontic-epistemic contrast, it does not cope so well with the fact that modal verbs also have other values, apart from the deontic and the epistemic, such as, for example, the dynamic value.

C. Apart from the Polysemy Approach, there is also the Monosemy Approach, claiming that modal verbs have an underspecified semantic content, and the various readings of modals are the result of meaning in context, i.e. of pragmatic factors (hence, we are dealing with one single lexical entry without anty subentries). One linguist assuming this point of view is Papafragou (2002). According to her, modals are operators which take scope over the proposition in the matrix and relate it to a restrictor: OPERATOR (Restrictor, Matrix). What the modal verb conveys is that the proposition p in the Matrix bears a certain logical relation R relative to the set of propositions in the modal domain D: R (D, p). The logical relation R can either be one of entailment (in the case of modals of necessity) or of compatibility (in the case of modals of possibility). The modal domain can be factual ($D_{factual)}$, ideal (D_{ideal}) or it can be the domain of beliefs (D_{belief}), as it is in the case of epistemics. In the case of the verb "can", for example, as in:

(77) People can be very mean sometimes.

the verb "can" conveys that the proposition "be very mean sometimes" is compatible with the set of propositions in the factual domain ($D_{factual}$).

On such a view, in the case of epistemic values of modal verbs, the modal domain is represented by the domain of beliefs (D_{belief}). Moreover, in the case of epistemic readings, we are dealing with an *interpretive* use of a proposition: the complement of the

verb (i.e. the embedded proposition) is not used as a truth-conditional representation of a state of affairs in the external world, but as a representation of an abstract hypothesis, which is considered to be compatible with/ entailed by the speaker's set of beliefs.

An advantage this view presents over the Polysemy Approach is that it relies heavily on pragmatics, without burdening the semantics too much. Instead of stipulating that there is a whole array of related senses, the advocates of monosemy will lay the burden on pragmatics, claiming that the various readings which obtain are the result of context.

Of the three views presented above, the more plausible are the Polysemy Approach and the Monosemy Approach. Of the two, the most popular with syntacticians has been the latter.

2. 3. The Syntax of Modal Verbs

The question we are basically trying to answer in this part of the paper is what exactly the place of modal verbs is in the derivation. At first sight, it might seem that offering an answer to this question is something fairly easy, all we have to do, some might think, is decide if we are to consider modal verbs as a lexical category or a functional category, and then place them in the derivation accordingly. And, in one sense, they would be right: the main directions in the analysis of the English modals are roughly the ones hinted at above: (i) the modal as lexical verb analysis, and (ii) the modals as auxiliary/ a distinct class analysis. However, such an answer is far from satisfactory. In finding a place for modal verbs in the derivation, what we must try to account for is the different behaviour of root modals and epistemic modals. And this makes the task a thousand times more complicated, because we have to commit ourselves to a particular semantics, assuming one of three things: that modal verbs are homonymous (which is highly unlikely), that they are polysemous, or that they are monosemous. Our choice will have extremely important consequences for the syntactic representation of modal verbs. If, for example, we adopt a unitary semantics for modal verbs, then we will most certainly not have a semantic account of the contrast between root and epistemic interpretations. In this case, we can only have a syntactic account, assuming that the different readings

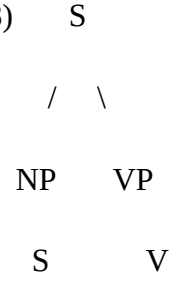
modal verbs are associated with are the result of their being merged in different positions in the derivation (e.g. Avram (1999, 2003), Butler (2003)), or we can have a pragmatic account, in which case there is no need to place modals in more than one position in the derivation (e.g. Papafragou (2000)). However, adopting a unitary semantics for modal verbs is not the only possibility. Another possibility would be to assume that modals are polysemous, in which case we would probably need more than one position in the derivation, because it would be fairly odd to have the same position for both meanings of modals, be they related. In case we adopt the view that modals are homonymous, the situation would be more or less the same as in the case of polysemy.

In what follows, we will present some of the accounts which have been put forth in the literature.

2. 3. 1. The Transitive-Intransitive Analysis

In early generative studies concerned with modality (Ross (1969), Newmeyer (1970), Huddleston (1978)), modal verbs have been argued to be main verbs. In Ross (1969), in particular, modal verbs are treated as main verbs which can occur in both transitive and intransitive structures. As we can see, Ross proposes a lexical analysis of modal verbs, i.e. modals are listed in the lexical compartment of the lexicon, not in the functional one. The question is whether modals are monosemic, polysemic or ambiguous. What Ross says is that epistemic modals are inserted into intransitive configurations (78), whereas deontic modals are inserted into transitive configurations (79):

(78)



John come tomorrow may

(79) S

/ \

NP VP

/ \

V NP

I may John come tomorrow

He is not that clear about the semantics of modals. It seems, however, that he adopts a monosemy view, with the deontic and epistemic readings of the modals being the result of the insertion into a particular syntactic structure. However, such an account cannot capture the difference in meaning between deontics and epistemic. This difference is certainly not the regular difference between a transitive and an intransitive. If we take a traditional example like (80), where *sink* in (a) is transitive, whereas *sink* in (b) is intransitive, we can see that the difference between them can be argued to be related to the presence of the semantic predicate *CAUSE*. In other words, *sink* in (80) a. can be understood as "*CAUSE sth [the two ships] to SINK",* whereas in (80)b., *sink* lacks the predicate *CAUSE*, although, of course, conceptually, we understand that there was a cause to the sinking of the ships in the second case as well, not just in the first.

(80) a. The artillery sank the two ships.

b. The two ships sank.

However, we can see that the difference between deontics and epistemics cannot be accounted simply by means of the presence in one case of the predicate *CAUSE*. Although in (81) a., we do feel that the speaker acts as a source of imposition upon the hearer, we cannot consider him a cause proper for the man's going to war. Nevertheless, we must note that what the "I" present in the case of the representations of deontic modals tries to capture is precisely this "causative" nature of deontics: "I" is the indicator of the causer

(the one who permits or imposes a certain action). It is obvious, however, that it is not always the case that the one granting permission or imposing something on someone else is the speaker[13]. Despite this, the fact is that deontic *must* does not mean "*CAUSE sth to MUST (epistemic)".*

(81) a. You must go to war, you're a man, for God's sake! Act like one for a chance!

b. The man must go to war, the law system in our country says so.

c. The man must have gone to war in his youth! Look at his scars!

Thus, in order for his account to make more sense, Ross would have to blend his syntactic approach with a polysemy or ambiguity semantics to modals.

There are many reasons why we consider such an analysis incorrect. Of course, as it was already suggested above, a reason would be related to the presence of "I" in the representation of deontic modals. The presence of "I" is strange in many respects. Ross places it in the tree as the subject of the S containing the deontic modal; however, this "I" is not present phonologically in the sentence. Moreover, it sometimes cannot even be pragmatically inferred as the source of imposition or permission, as already argued above. In our view, except for the cases where it is present at the phonological level, this "I" should not be present in the representation of modals[14]. Ross's "I" clearly has no place in syntax, but in pragmatics.

[13] We might speculate that, in introducing the "I" in the representation of deontic modals, Ross focused on the performative use of deontics, forgetting about their descriptive use. In (81)b, for example, *must* is used descriptively, and the imposer of the obligation upon the man is not the speaker, but the law system. It is true that epistemics can only be used "descriptively "(hence no "I" in the tree); however, deontics are not restricted to a performative use.

[14] As a matter of fact, sentences with the "I" as subject, like "I may go to the supermarket" pose a problem to his analysis, since, then, we would have a representation like "I may I go to the supermarket", where we can detect the presence of two "I"-s: one "I" is phonologically present and plays the part of the permitee, the other "I" is phonologically absent and plays the part of the one who grants permission. However, in most sentences having "I" as subject, the one who grants permission (or imposes something) is not the speaker- the permitee or imposee is usually different from the one who grants permission or imposes something on somebody else. In the sentence offered as an example above, the one who grants permission may be the husband, for example, or the lady's boss.

The problem with the "I" is an important reason for rejecting Ross's analysis. However, if we deal with English, there is perhaps an even more important reason than that. As Barbiers (2002) puts it, the issue of whether modal verbs should be represented as main verbs or as functional verbs is a relevant issue for languages like German, where modal verbs evince many of the properties of main verbs, e.g. they take agreement. However, in the case of English, where this is not the case, adopting a lexical verb analysis for modal verbs is not appropriate. Since Ross's analysis of modals is a lexical verb one, then we can easily conclude that it is inappropriate. If this reason is not sufficient, then another reason may easily be put forth. Again, following Barbiers, we can say that, if epistemics are intransitive, then they can be but two things: unaccusatives or unergatives. But, as we can easily see from (82) and (83), the epistemic-root alternation can be reduced neither to the transitive-unaccusative alternation, nor to the transitive-unergative alternation (since, in the latter case, the monadic alternant of the modal in (83 b.) does not have an epistemic meaning):

(82) **transitive-unaccusative**

a. Jan breekt de ruit.
   John breaks the window.
b. De ruit is/ *heft gebroken.
   The window is/ has broken.
c. de gebroken ruit
   the broken window

(83) **transitive-unergative**

d. Jan rookt een paling.
   John smokes an eel.
e. De kachel heft/ *is gerookt.
   The stove has/ is smoked.
f. *de gerookte kachel
   the smoked stove

(84) **root-epistemic**

a. Jan mag eten.
   John may eat.
   John is allowed to eat.
b. Eten heft/ *is altijd gemogen.
   eat has/ is always may-PART
c. *het gemogen eten
   the allow-PART eating

On these grounds, we obviously cannot adopt Ross's account of modals. Nevertheless, his remarks concerning modals are not to be ignored, since they may be of use further on in our understanding of the behaviour of modals.

2. 3. 2. The Control-Raising Analysis

A second analysis worth bringing into discussion is that advocated by Zubizaretta (1982) and Picallo (1990), the control-raising analysis of modals (apud Avram 1999). Under such an analysis, modals are (probably) considered monosemous. The different readings of modals are derived from their being inserted in different syntactic configurations. Deontic modals are analysed as being generated in VP-adjunct position and are associated with control structures (85), where the subject of the modal controls PRO. Epistemic modals, on the other hand, are analysed as generated under Inflection and associated with raising structures (86), in which the subject of the lexical verb raises to the subject position of the matrix.

(85) "You can eat one more almond ice-cream, but just one!," the mother said to the child.

You_i can [PRO_i eat one more almond ice-cream].

(86) "Oh, you fool! Yes, it's true. It's not yet the 6th of December, and the presents are in the house, but this does not mean that mommy and daddy bought them. **Saint Nicholas must have arrived earlier with the presents**, I'm sure!," the older brother said to the extremely inquisitive 7-year old boy.

Saint $Nicholas_i$ must [e_i have arrived earlier with the presents].

In (85), the subject of the matrix "you" controls the empty subject PRO, with which it is coreferential. In (86), the subject "Saint Nicholas" has raised out of the embedded clause to the subject position of the matrix, leaving behind a trace. In θ- assignment terms, what is claimed is that, unlike epistemic modals, deontic modals assign a θ-role to the subject of the sentence. Thus, in (85), the subject "you" of the matrix is assigned a θ- role by the modal verb "can", while PRO is assigned a θ-role by the lexical verb "eat one more almond ice-cream". In (86), however, "Saint Nicholas" receives its θ-role from "have arrived" in the embedded clause, and raises to the subject position in the matrix for reasons of case.

By resorting to issues related to θ-assignment, what the control-raising analysis actually tries to capture is the intuition that, in sentences containing deontic modals, the modal is felt to predicate about the subject ((85) can be paraphrased as "You are allowed to eat one more almond ice-cream!"), whereas, in sentences containing epistemic modals, this is not the case, the subject is felt to be more related to the lexical verb in the embedded clause rather than to the modal in the matrix (the sentence containing an epistemic modal in (86) can best be paraphrased as "It is necessary that Saint Nicholas has arrived earlier with the presents").

Apart from its being intuitively appealing, the control-raising analysis can account (or so the linguists claim) for what they consider clear-cut properties of deontics and modals. The alleged properties are the following:

(1) Only deontic modals impose selectional restrictions upon the forms of the verbs taken as a complement, namely, while epistemic modals are compatible with perfect infinitive (87 a.) or progressive complements (87b.), deontic modals can only take a bare infinitive (87 c-e).

(87) a. Britta must have had so much fun yesterday, watching cartoons all day long!

b. “Linda may be reading Orwell for her exam tomorrow, I don’t think we should tempt her into going to the movies with us!,” said John to his friends.
c. The girl may go the anniversary she so much wanted to go to, her mother finally agreed to it.
d. *The girl may be going to the anniversary. (permission reading)
e. ???The girl may have gone to the anniversary. (permission reading)

The control-raising analysis accounts for this property by placing epistemics under Inflection. In this way, the VP taken as a complement by the modal may take any form: it can be a bare infinitive, a perfect infinitive, or a progressive. On the other hand, deontics are projected as VP-adjuncts, they are adjacent to the VP which can have no other form but that of a bare infinitive. It is from this bare infinitive that PRO receives a θ-role, not from the auxiliaries “have” or “be”, which do not have an e-structure, and which cannot, hence, assign θ-roles to any argument whatsoever. Note that in a Split-Inflection framework “have” and “be” would occur higher in the tree than the VP. This would certainly explain the incompatibility between the perfect infinitive or the progressive and the deontic modals, which are projected lower in the tree.

(2) Only deontics impose selectional restrictions upon the subject (88 a-b), e.g. they cannot take expletive elements as their subjects. In contrast, epistemics are compatible with any type of subject (88 c-d). This is due to the fact that it is the lexical verb which assigns a theta-role to the subject in the case of epistemics.

(88) a. *It may seem a bad solution, but it isn’t. (permission reading)
b. This boy may see his brother next week, he finally managed to convince the policeman.
c. It may be a rainy day tomorrow.
d. The student must have felt very sad when she learnt that she had failed her exam.

Within the control-raising analysis, this property is accounted for by saying that, in the case of epistemic modals, it is the lexical verb, not the modal which assigns a theta-role to the subject- this obviously explains the compatibility of epistemics with any type of subject, whereas, in the case of deontics, it is the modal which assigns a θ-role to the subject, and this modal imposes certain restrictions upon the subject.

However neat it might seem, the control-raising analysis exhibits a series of problems which cannot be ignored if our purpose is to offer a good account of modals in English. In presenting various counterarguments brought against the control-raising analysis, we will rely heavily on Wurmbrand (1995) and Avram (2003).

I. We shall start with the problems related to the θ-marking of the subject by deontic modals:

(1) According to Wurmbrand (1999), a first problem with the control-raising analysis from a theoretical point of view would be that associating deontics with control structures would result in the subject having more than one θ-role, and, implicitly, in a violation of Chomsky's θ-Criterion (requiring a one-to-one correspondence between a syntactic position and a θ-role). In our view, Wurmbrand wrongly reaches the conclusion that Chomsky's θ-Criterion would be violated by treating the subject and PRO as a chain. We must remember that the subject and PRO do not form a chain (as argued in Cornilescu (1995)), and, hence, there is no θ-role sharing. In a chain, such as that formed, for example, by *there* and the DP *a man* in the sentence "There was a man in the garden", *there* brings the case (which *a man* needs), and *a man* brings the θ-role, so that *there…a man* represent one single linguistic object, with only one θ-role and only one case. Since, in our case, both elements (the subject of the matrix and PRO) have a θ-role of their own, they cannot form a chain. In this way, by adopting the view that the subject of the matrix and PRO do not form a chain, but are separate linguistic objects, we cannot say that the subject receives an adjunct θ-role from the modal, since it has already received a θ-role from the lexical verb in the embedded clause. Instead, the correct thing to say would be that the subject of the matrix receives a θ-role from the modal, while PRO, which is controlled by the subject, receives a θ-role from the lexical verb in the embedded clause[15]. Wurmbrand's objection is thus not a licit one.

[15] Note that, under an analysis maintaining that PRO and the controller of PRO form a chain, we would even come to the conclusion that the subject of "tried" in (i), namely "I", has two θ-roles, one from "tried", the other from "to talk", which is clearly not the case:

(i) "**I tried to speak to my guardian angel,** and I spoke, but he never said a word. I do hope he heard me." the innocent child told his mother, who lovingly drew him into her arms.

2) Nevertheless, even if the control-raising analysis cannot be dismissed on the grounds above, it can be dismissed if taking into account the empirical (distributional) evidence it fails to account for.

(a) As we well know, the control-raising analysis claimed to account for the "property" that expletive subjects are only allowed with epistemic modals, but not with deontic modals. Wurmbrand challenges this view, arguing that actually expletive subjects *are* allowed with root modals. Among the examples she gives are the following (p.3):

(89) a. There can be a party as long as it's not too loud. (*permission)*

b. There must be a solution to this problem on my desk, tomorrow morning! (*obligation)*

This represents a serious threat to the control-raising analysis, since, as it stands, it seems that it manages to account for a difference between deontics and epistemics which does not exist. If expletive subjects occur with all types of modals, not just with epistemic modals, as the control-raising analysis claims, then it might be the case that all modals are syntactically alike. Interestingly enough, raising verbs like *seem* occur with expletive subjects (90 a.), unlike control verbs (90 b.):

(90) a. There seems to be a problem.

b. *There hope to win the battle many students.

We obviously want to claim that all control constructions are alike. Thus, if we adopted the claim that deontic modals are control constructions, we would expect deontics to disallow expletive subjects. But, as we have seen above (90), this is not the case. Therefore, by resorting to a simple *modus tollens*, we reach the conclusion that deontics are not control constructions, and, hence, do not θ-mark their subjects.

I tried [PRO to talk to my guardian angel].

(b) Evidence in favour of the view that deontic modals might not be control constructions also comes from the behaviour of modals with respect to case in Icelandic. When verbs that require quirky case marked subjects[16], are embedded in a control construction, the case of the matrix subject is determined by the higher verb. When they are embedded under raising constructions, the case is determined by the lower verb. If we assumed that deontic modals were control structures, we would expect the case of the matrix subject to be determined by the modal. However, this is not what actually happens; on the contrary, just like raising structures, modal constructions retain quirky case, irrespective of their deontic or epistemic meaning:

(91) a. Haraldi/ *Haraldur verður að lika hamborgarar
Harold-DAT/ *Harold-NOM must to like hamburgers
'Harold must like hamburgers' (in order to be accepted by his new American-in-laws)

b.Umsækjandann verður að vanta peninga
The-applicant-ACC must to lack money
'The applicant must lack money' (in order to apply for this grant).

Icelandic thus provides strong support for the claim that, just like epistemics, deontic modals also involve raising structures and not control structures.

(c)This claim is also supported by the behaviour of modal verbs with respect to passivization.

(c1) On the one hand, passive of modal verbs is impossible for English and German. In German, passive is possible iff the predicate has an underlying external argument, i.e. it is possible only in the case of transitive and unergative predicates, but not in the case of unaccusatives. Since raising verbs are by definition unaccusatives, they do

[16] Wurmbrand's assumption is that quirky case is not determined structurally but rather determined idiosyncratically by certain predicates.

not allow passivization. By assuming that modals are raising verbs, we would thus have a clear explanation for the fact that they do not allow passive.

(c2)On the other hand, passivization of the embedded object is only possible with raising constructions, but not with control constructions. Neverthelesss, deontic modals allow passivization of the embedded object, which provides evidence in favour of the claim that they are raising structures, and not control structures:

(91) a. The cherries seem to have been eaten up by Lily.

b. *The cherries tried to be eaten up by Lily. (*try*-establishes a thematic relation with an agentive external argument)

c. The cherries may be eaten up by Lily..

The explanation for this behaviour is simple: while control verbs like *try* establish a thematic relation with an agentive external argument, raising verbs do not impose any sort of thematic restrictions on the subject. This would provide further support for the claim that deontic modals do not θ-mark their subject.

3) There are also <u>semantic reasons</u> for rejecting the control-raising analysis, namely, deontic modals exhibit scope properties which are also exhibited by raising constructions, but not by control constructions.

(a) Unlike control structures, for example, raising constructions allow an interpretation in which the subject takes narrow scope with respect to the matrix verb.

(92) a. Someone from Cucuieţii din Deal is likely to win the beauty contest.

a'. There is somebody from Cucuieţii din Deal, and it is likely that she will win the beauty contest.

a''. It is likely that somebody from Cucuieţii din Deal will win the beauty contest.

b.Someone from Cucuieţii din Deal promised to win the beauty contest.

b'. There is somebody from Cucuieţii din Deal who promised to win the beauty contest.

This contrast is explained by Wurmbrand by means of the availability of a lower position for the subject at LF (the trace left by the subject) in raising constructions but not in control constructions. What is interesting to note is that the same ambiguity is found both with epistemic modals and root modals, not just with epistemics, as we would expect.

(93) Somebody from Cucuietii din Deal must have won the beauty contest.

1. *In view of the evidence available it is necessarily the case that somebody from Cucuietii din Deal won the beauty contest.*
2. *There is somebody from Cucuietii din Deal, and in view of the evidence available it is necessarily the case that he won the lottery.*

(94) A Romanian dog breed must win the beauty contest.

1. *It is necessary that a Romanian dog breed (whatever it be) win the beauty contest.*
2. *There is a (specific) dog breed and it is necessary that it win the beauty contest.*

(b) In raising constructions, but not in control constructions, the embedded object can take scope over the surface subject, which is expected under the claim that only short-distance QR is possible and that two LF-positions are available for the subject in raising constructions. Interestingly, not only epistemic, but also deontic modals behave like raising verbs in this respect, allowing the embedded object to take scope over the surface subject:

(95) According to university regulations, at least one professor must supervise every student.

a. *University regulations require that there is at least one professor who supervises every student.*

b. University regulations require that every student is supervised by at least one professor.

This serves as clear evidence for the claim that, just like epistemics, deontics are raising structures.

4) The claim that deontic modals θ-mark their external argument, whereas epistemic modals do not can also be dismissed on pragmatic grounds, since there are sentences with deontic modals, in which the matrix subject cannot be interpreted as the person being obliged or permitted to do something. This is obvious in sentences with inanimate subjects such as:

(96) This letter must be in London before 5 o'clock. (Barbiers (2002: 6)), or
(97) The biscuits may be finished by Paul. (Wurmbrand (1999: 6))

As Sweetser (1990) very neatly puts it, "the interpretation of the subject of the clause as the subject of the modality (the imposee) is only a pragmatic tendency (due to our general feelings about who is responsible) and not a fact about semantic structure"(66). So as to show that modals are semantically neutral towards the choice of the subject of the modality from among the NPs in the sentence, Sweetser uses an example from Lakoff (1972), in which the subject of the modality is represented in each case by someone different:

(98) The witch must be kissed by every man in the room.
(a) or the leader of the coven will demote her to leprechaun. (the witch)
(b) or they'll all be turned into star-nosed moles. (the men)
(c) because that's the law (the world at large).

Lakoff's example clearly shows that, though necessary, the animacy of the matrix subject is not a sufficient condition for its being the subject of the modality.

Although in most cases, deontic forces are directed towards the subject, as in:

(99) a. Jenny must tell John the whole truth.

b. “The kitty may sit with us at the table, but just this once.,” Mommy said to the kitty-loving kid.

this is not always the case. Wurmbrand (1990) actually comes up with examples in which the preferred interpretation in the unmarked case is that in which the modal force is not directed towards the subject, such as:

(100) a. The traitor must die.

b. The old man must fall down the stairs and it must look like an accident.

II. Apart from the problems related to the θ-marking of the subject by deontic modals, the control-raising analysis also exhibits problems related to the selectional restrictions imposed by modals upon the verbs taken as complements.

5) According to the control-raising analysis, a property which distinguishes epistemics from deontics is that only epistemics allow perfect complements. However, this is not the case: deontic modals can have a perfect infinitive as their complement:

(101) “You may not have eaten the pizza before I get home,” the Mother said to the crying child.

It is true, it is generally epistemic modals which take perfect infinitives as their complement, and not deontics. However, this is not a syntactic property distinguishing between epistemics and deontics, but rather a pragmatic tendency. Sweetser (1990) argues that modals in sentences concerning future actions are weighted towards a root interpretation, whereas sentences concerning past actions are strongly weighted towards an epistemic reading, and she explains that this is because “I cannot seriously and cooperatively inform you that you are hereby put under an obligation, or given permission, to have done something yesterday.” (64). A great deal of context would be needed so as to produce a sentence containing a deontic modal taking as complement a perfect infinitive having past orientation. This context may be provided by fairy-tales:

(102) “You may have lived in 1220.,” the Fairy said to Prince Charming.

Apart from these very particular contexts, deontic modals may take perfect infinitives as their complements, but only if certain conditions are met. Barbiers (2002) puts forth the suggestion that a perfect infinitive can occur as the complement of a deontic modal only as long as it indicates perfectivity in the future, as in:

(103) You must have cleaned the room by 9 o’clock tomorrow.

In this case, what I am informing you is that you are under the obligation to clean your room until tomorrow at 9 o’clock, so I am imposing on you an obligation which you are to fulfill in the future.

However, not all deontic verbs require their perfect infinitives to have a future orientation. This is more or less related to the meaning of the modal verb. Note the difference, for example, between (104 a.) and (104b.):

(104) a. The teacher must have evaluated the papers by the same criteria.
b. The teacher should have evaluated the papers by the same criteria.
c. The teacher should have evaluated the papers by tomorrow.
d. The teacher must have evaluated the papers by tomorrow.

(104 b.) can have two readings: a deontic reading (which is, perhaps, more accessible) and an epistemic reading. Nevertheless, what we should retain from this is that *should* combines freely with a perfect infinitive having a past orientation, unlike *must*. The interesting thing is that, if the perfect infinitive *should* takes as complement is oriented towards a future reading (by means of a PP like “by tomorrow”, for example), then the epistemic reading (indicating probability) becomes the preferred reading (104 c.). Nevertheless, (104 c.) also allows for a deontic reading, under which the complement selected by *should* has a future orientation, indicating perfectivity in the future.

Therefore, *should* can combine both with perfect infinitives having a past orientation and with perfect infinitives having a future orientation.

As far as (104 a.) is concerned, obviously, the reading we are more likely to assign to (104 a.) is the epistemic one. Now the question is whether (104 a.) also allows for a deontic interpretation, i.e. can we read (104 a.) as "The teacher has the obligation to have evaluated the papers by the same criteria"? This would sound rather awkward, because people are generally under the obligation to do things in the future, not to have done things in the past. The only way in which we could make this sentence acceptable under such a reading would be if we regarded this obligation on the part of the teacher as an obligation still holding in the present, as part of the professional duties of a teacher. However, such an interpretation is quite far-fetched, to say the least. Consequently, we will adopt the suggestion to be found in Barbiers (2002) and Papafragou (2000) that perfect infinitives are allowed with deontic modals as long as they have a future orientation. Building upon the similarity between deontic modal readings and a class of imperatives with the illocutionary force of permission and obligation, Papafragou notices that the latter also have a future orientation:

(105) a. Be quiet tonight.
b. ? Be quiet yesterday. (Papafragou 2000: 104)

However, as already mentioned above, Barbiers's and Papafragou's remarks are not valid with respect to all deontic modal verbs. Unlike *may* and *must,* which can only take as complements only perfect infinitives having a future orientation, *should* and *ought* may take as complements both perfect infinitives having a past orientation and perfect infinitives having a future orientation.

Nevertheless, given the fact that it is not only epistemic modals which take perfect infinitives as their complements, but also deontic modals, it seems that the control-raising analysis tries to account for something which is NOT a syntactic property distinguishing epistemics from deontics. This obviously discredits his account.

6) The same situation is to be found in the case of the progressive complements of modal verbs. According to the control-raising analysis, a property distinguishing between epistemics and deontics is that only epistemics select progressive complements, whereas deontics do not. This is again not the case.

(106) a. One must be watching the children every minute, otherwise who knows what they'll come up with.

b. We must be leaving soon. (Papafragou 2000: 102)

What is interesting in the examples offered by Papafragou is that, in neither of them, the progressive infinitive taken as a complement by the modal has a present reference. In (106 a.), the progressive receives an iterative reading, due to the frequency adverbial "every minute", whereas, in (106 b.), the progressive infinitive has a future orientation, supported by the time adverbial "soon". In none of the examples does the progressive infinitive have an orientation towards the present. If, for example, we had something like:

(107) You must be watching the children.

where the progressive infinitive is interpreted as referring to the present moment ("now"), the interpretation assigned to the sentence is epistemic, not deontic. We could put forth the hypothesis that deontic modals can take progressive infinitives as their complement as long as these infinitives are not SLPs, i.e. they do not indicate a temporary state of affairs holding at ST.

Nevertheless, deontic modals do take progressive infinitives as their complements, and, hence, the control-raising analysis again seems to offer a syntactic account for something which is not the case.

7) Apart from these problems, the control-raising analysis is problematic because of its treating deontic and dynamic modals alike (Avram 2003), in spite of the fact that they behave very differently. Let's take, for example, the following sentences:

(108) The bird could fly up to the nest in two seconds a month ago. Now she can't do it anymore, she's got a broken wing, the poor thing!

(109) Under no circumstances can the bird leave its cage.

Whereas in (108), where the reading of "could" (the past form of "can") is dynamic (i.e., of ability), the subject "the bird" receives a theta-role from the complex verb made up of the modal and the lexical verb ("could fly"), in (109), where the reading of "can" is deontic (i.e., of permission), the subject "the bird" receives a theta-role from the lexical verb selected as a complement. Apart from this, their interpretation is highly different: whereas (108) describes a state of affairs in the world, (109) expresses an imposition upon the current state of affairs. The control-raising analysis, however, ignores such differences, treating deontics and dynamics alike.

8) Moreover, the control-raising analysis of modals as control/ raising verbs fails to account for their special morpho-syntactic behaviour and, in this way, clearly set them apart from other lexical verbs entering the same type of configuration (Avram 2003). Why, for example, is it the case that modal verbs only select a bare infinitive as their complement, whereas lexical verbs entering the same type of configuration only select a full-infinitive, as we can clearly see in the examples below:

(110) a. The boy_i will [PRO_i see his girlfriend tonight] , in spite of his parents.

b. The boy_i wants [PRO_i to see his girlfriend tonight].

(111) a. The $Tramp_i$ seems [e_i to be thrilled to have met the lovely Lady].

b. The $Tramp_i$ must [e_i be thrilled to have met the lovely Lady.]

The control-raising analysis offers no sort of explanation for this behaviour. We could, of course, try to solve this problem by saying that the selection of a bare infinitive as a complement by modals is encoded in the lexicon. However, this gives rise to a problem related to the distribution of PRO. In (110 a.), PRO appears as the subject of a bare infinitive taken as a complement by a modal, whereas in (110 b.), it appears as the

subject of a full-infinitive, i.e. a TP, taken as a complement by a lexical verb. But, whereas it is pretty clear that we can assume the presence of PRO in (110 b.), can we also assume it in the case of (110 a.)? Not really, such an assumption is highly problematic, given the fact that, in Germanic languages, infinitival complements without "to" cannot have PRO as their subject (Barbiers 2002). Unlike Macedonian, for example, or Romanian, for that matter, where it is possible for a modal to take a CP or TP complement, XPs which allow a PRO-subject, this does not seem to be the case for Germanic languages. In the case of English, which is of interest to us, modal verbs can only take a bare infinitive as their complement. But, given the fact that bare infinitives cannot have PRO as their subject, it would be rather odd to claim that deontic modals are the only case in which this becomes possible. A generalization like "Bare infinitives do not have PRO as their subject, except when they are taken as a complement by deontic modals" is to be avoided at all costs, even if this means giving up the idea that deontic modals are control constructions altogether.

9) A further objection which could be brought to the control-raising analysis would be that it is not homogeneous. The control-raising deontics in the VP and epistemics in the IP. Up to this point, no problems arise. However, if we take a closer look, we will notice that he provides each modal class with a different syntactic status. While deontics are analysed as VP-adjuncts, epistemics are analysed as heads. This is rather odd, to say the least. Although the two classes of modals behave differently in many respects, the differences which distinguish between the two are not enough to provide one class with the status of head and another one with the status of adjunct . A more reasonable approach would be to say either that both of them are heads, or that both of them are adjuncts. Having reached this point, we can choose among the two variants, by analysing whether they behave more like adjuncts, on the contrary, they behave more like heads. In our view, a head analysis of modals would be much more adequate. This is because, as Cormack & Smith (2002) point out, adjuncts are optional constituents, which can occur more than once in a structure; this is something modals cannot do:

(112) a. She was very, very happy.

b. *She may may go to the party.

c. *She should can go to school tomorrow.

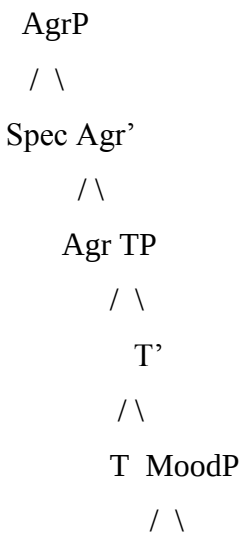
On the basis of all the reasons presented above, we will dismiss the control-raising analysis.

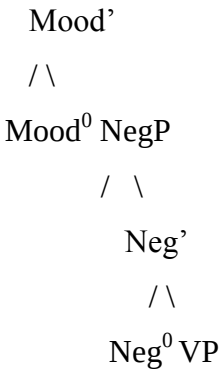
2.3.3. Ouhalla's analysis

According to Ouhalla (1991), there is only one position in the case of all modal verbs: a Mood P placed below Tense. According to such an analysis, modal verbs are no longer viewed as lexical verbs, but are treated as a syntactically distinct class, a line of investigation going back to Chomsky (1957), who placed English modals outside the VP constituent, under the node AUX. Such a view focuses on the differences between lexical verbs and modal verbs, more precisely, on the fact that, unlike lexical verbs, modal verbs cannot assign theta-roles, as a consequence of their functional nature.

Ouhalla (1991) argues that modals represent a distinct syntactic category heading its own maximal projection (MoodP), between Tense (TP) and Negation (NegP):

(113)





In this way, he claims, he manages to account for the fact that all modals precede negation in English. It also manages to account for the fact that modals are inherently tensed. On such a view, modals are inserted under Mood^0 and can move further to Tense to check the [+T] feature under the head . However, not all linguists agree that modals are inherently tensed. Fiengo (apud Avram 2003), for example, argues that epistemic modals are tenseless, unlike root modals. Another problem with this analysis would be that it treats dynamic modals on a par with deontic modals, which is clearly not the case, since, unlike deontics, dynamics can theta-mark their subjects.

So as to account for the contrast between root and epistemic interpretations of modals, this account obviously has to be coupled either with a polysemous semantics or with a pragmatic account.

2.3.4. The Avram-Butler Analysis

We will now be dealing with two other approaches which try to account for the behaviour of modals: the first approach belongs to Avram (1999), the second belongs to Butler (2002). On both approaches, English modals have one single entry in the lexicon. The different readings associated with modals are accounted for in structural terms, resulting from the different positions which they occupy in the structure, a direct consequence of their merging in the derivation with small clauses of varying complexity. What we are faced with, thus, is a syntactic account of modals coupled with a unitary

lexical semantics. Though both analyses can be subsumed under this label, they differ with respect to the positions modals associate with. Roughly speaking, the difference would be the following: if, with Butler, root modals (i.e. modals receiving a root interpretation [17]) merge in one position, and epistemic modals (i.e. modals receiving an epistemic interpretation) merge in another[18], with Avram, this is not the case, namely, although epistemics can only occupy one single position in the structure (above T), there is no such position for deontics.: deontics can occur both in the position which is generally associated with deontic readings (below T), but they can also occur in the position generally associated with epistemics (above T).The only modals which have a specific position in the structure are dynamic modals: it is dynamic modals and only dynamic modals which can occur in that position (inside the VP). With Butler, things are much simpler: epistemics merge in one position (above T), and roots merge in another (below T). As far as dynamics are concerned, they are treated in a similar fashion to deontics. Appealing as it might seem, Butler's approach fails, nevertheless, to account for certain phenomena related to modal verbs (such as the behaviour of dynamics or the fact that deontics can also take a perfective complement) which Avram's approach manages to account for. Nevertheless, Avram's approach has its own problems.

In what follows, we shall present each of the two analyses in more detail, trying to explain the reasons for which the two authors assumed that modals occupied the positions mentioned above.

2. 3. 4. 1. Avram's Analysis

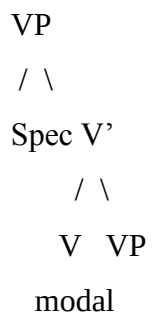
[17] Note that the terms 'root modals' and 'epistemic modals' are rather improperly used in case we adopt a unitary lexical semantics for modals, as is the case with Avram and Butler. On a monosemic approach to modality, there is no semantic divide between the two. As Butler points out, the terms are actually used as shorthand for 'modals receiving a certain type of interpretation (root or epistemic)' (970) For the sake of economy, however, we shall use these terms throughout the paper.

[18] This is an oversimplification of Butler's theory, because, on his approach, modals actually merge in four different positions, not just in two. Butler further divides roots and epistemics into necessity and possibility modals, with necessity modals always scoping above possibility modals, so as to account for scope phenomena related to negation. What we get is the order Necessity modal> Negation> Possibility modal, obtaining both in the case of roots and in the case of epistemics. Nevertheless, there is a clear-cut distinction between the positions where a root modal can occur and the positions where an epistemic modal can occur.

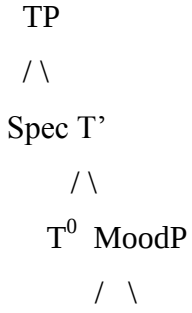
We shall start by presenting Avram's account of modality, then we will discuss Butler's account, and, in the end, we shall make a comparison between the two so as to choose the better account of the two.

On Avram's analysis, English modals can occupy the following positions:

(i) under the VP:



(ii) in a Mood projection under Tense (Mood1P) (the position proposed by Ouhalla (1991) for all the English modals (apud Avram (2003)):



Spec Mood’

/ \

Mood^{0} AspP’

/ \

Asp VP

(iii) under a node Mood2P, higher than Tense (roughly corresponding to the one proposed by Rivero (1994) for the languages of the Balkans (Albanian, Bulgarian, Modern Greek and Romanian) (apud Avram (2003)):

Mood2P

/ \

Spec Mood2’

/ \

Mood2 T/ AgrSP

(i) <u>Modals under VP</u>

The lowest position which modals can occupy is under VP. The modals which merge in this position are the so-called ‘dynamic modals’, namely, ability *can* and volition *will*, as in the following examples:

(114) Mike can repair bicycles, and he’s just 14 years old. What a boy!

(115) Sophie will marry Bill, and there’s just nothing anyone can do about it, not even her parents! She’s just mad about him!

Dynamic modals are set apart as a distinct class from the other deontic modals on semantic grounds: they are interpreted as denoting one single event across the modal and its complement:

VP

/ \

Spec V’

/ \

V VP

can repair bicycles

will marry Bill

We must note that the term “event” is used here rather improperly: what ability *can* and the verb taken as a complement denote is not actually an event, but a state.“Mike can repair bicycles” in (114) can best be paraphrased as “Mike is able to repair bicycles.” It is the state of being able to repair bicycles/ the ability of repairing bicycles that is being predicated of Mike, not the event of so doing. In the same way, “Sophie will marry Bill” in (115) is interpreted as a sentence in which what is predicated of Sophie is her desire to marry Bill. In the sentences above, therefore, a state is being predicated about the subject of the sentence, a state which is expressed by the complex verb made up of the modal and the verb taken as a complement by the modal. This is quite different from what happens in the case of the other deontics, which we shall label as “proper deontics”. Sentences containing proper deontics are not interpreted as denoting one single event across the modal and the verb. Instead, the SC with which the modal merges denotes a situation that has not obtained yet (i.e. ET is prior to ST). In a sentence like:

(116) You may call your Grandma.

what we understand is something of the following sort: “You are given permission now to call your Grandma (in the (near) future))”. We shall come back to this later on in the paper, when we discuss the second position occupied by modals in the structure of the sentence.

For now on, what we are to retain from this is that dynamics and proper deontics do not denote events in a similar way. Dynamics couple with verbs in order to denote one

single event. Proper deontics denote a different event from the one denoted by the verb. For the sake of clarity, let us compare the following sentences:

(117) Minnie can swim.

(118) Minnie can swim in the pool, but not in the sea. Her mother won' t let her.

(119) "The sea is not the place for you yet, but you can swim in the pool, Minnie dear!," the Mother said to her child.

While in (117) *can* receives a dynamic interpretation (an ability reading), in (118) and (119) we have to deal with a proper deontic reading of *can.* In (118), the proper deontic *can* is used descriptively (so as to describe a particular state of affairs in the world), whereas in (6) it is used performatively (so as to impose a change in the present state of affairs in the world). What is important to note is the following thing: while in (117) there is one single 'event' denoted across both the modal and the verb taken as a complement by the modal, namely, Minnie's ability to swim, this is not the case in (118) or (119), where "can" and "swim" denote two different 'events': while permission is anchored at ST, i.e. in the present, the swimming event is to take place in the future ("Minnie is given permission now to swim in the future", "You are given permission now to swim in the future"). This is true both of (118) and of (119), since, in both sentences, we have to deal with a proper deontic reading of "can". However, while in (118), permission *can* is used descriptively, in (119), it is used performatively[19].

[19] The difference between the descriptive and the performative use of modal verbs can be made more clear if we discuss these uses in view of the relationship between the speaker and the source of imposition/ permission, and, respectively, the relationship between the hearer and the imposee/ permitee. To be more explicit, whenever a proper deontic modal is used descriptively, this means that the speaker is different from the source of imposition/ permission, whereas, whenever a proper deontic modal is used peformatively, this means that the source of imposition/ permission is the speaker. As far as the relationship between the hearer and the imposee/ permitee is concerned, we can say that, in the case of a descriptive use of deontics, the imposee/ permitee need not be the same as the hearer, whereas this aspect is debatable in the case of the performative use of deontics. The question which we have to answer is whether the identity between the hearer and the imposee/ permitee is a necessary condition for the performative use of deontics. In other words, apart from the requirement that the source of imposition/ permission be the speaker, is it also necessary that the imposee/ permitee be the hearer so as to be able to say that a modal is used performatively? And, another question, does a performative use of modals require the presence of the pronoun "you" in the sentence? Almost all examples in which deontics are used performatively seem to involve sentences containing the pronoun "you":

(1) "You may kiss the bride," said the registrar of births, marriages and deaths.

It has been claimed in the literature that, unlike epistemics, deontics can be used performatively, i.e. they can be used to change the world, to make the world fit the word. However, this is an overgeneralization. It is not the case that *all* deontics (roots) can be used performatively, but only proper deontics. Dynamics do not allow such a use, they can only be used descriptively:

(120) "You can swim, Minnie dear!," Mickey shouted with enthusiasm, a little amazed by Minnie's performance.

(121) "Wow, you can actually cook!," the irritated husband remarked when his wife finally prepared something at home instead of ordering pizza for the whole family.

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(2) "You must go into the woods and shoot Snow-White. I want to be the fairest of them all!, "The Queen said to the hunter.
(3) "You must go to bed right now, it's ten o'clock!", the Mother said to the child.

Given the fact that it is always in the present that one can try to make the world fit his words, it becomes extremely easy to understand the regular association between the performative use of deontics and the use of the pronoun "you", a deictic pronoun. There are, however, a certain number of cases where it could be argued that we have to deal with a performative use of deontics, but, despite this, the subject is not a 2nd person pronoun, as in:

(4) "The witnesses may go home," the policeman said looking at their devastated appearance.
(5) "Linda must do her homework again," the teacher said in front of the whole classroom.
(6) "The child must receive special treatment," the doctor said to the mother.

As we can see, these are very special cases. In (14), although the witnesses are present, the policeman does not address them, but, instead, speaks about them as if they were not present. This can be easily grasped if we bear in mind the fact that the policeman is in a context where he is doing his duty, and, consequently, he acts like it. He has the authority to give the witnesses permission to leave, and he does it in a rather formal manner, abiding by the conventions imposed by his profession. Although it might seems that what the policeman is actually doing is describing a state of affairs in the world, he is actually effecting a change in the world by means of his words. The witnesses are aware of this, since they can easily identify themselves as the persons denoted by the NP "witnesses" in the policeman's words. We can, thus, say that the "you" is inferred pragmatically. Nevertheless, the policeman's words also have a descriptive function, since the policeman is probably conducting an investigation, and he intends his words to be heard not only by the witnesses, but also by his employees, who are supposed to note them down. A similar situation is to be found in (5). In the case of (6), we can see that the performative function of the deontic modals is also fulfilled, since what the doctor is actually saying is not that the child has an obligation to receive special treatment, but that the mother must see to it that the child receive special treatment (this is, of course, one possible interpretation). In this case also, the pronoun "you" is again inferred pragmatically.

From the examples above, we can infer the following conclusion related to the performative use of deontic modals. Apart from the condition that the speaker be the source of imposition/ permission, the additional condition that needs to be fulfilled for performativity is the pragmatic inference of a "you" as the permittee/ imposee. This "you" need not be explicitly present in the sentence, but it must be possible for us to infer it pragmatically.

(122) "My God, I can actually write a good essay!," the student said when seeing that the teacher had given him such a good mark.

(123) "You can turn anything into gold if you just say the words: "Hocus-pocus! Gold I'll mould!" ," the conman said to the gullible man.

(120) and (121) cannot be interpreted as sentences in which either Mickey or the irritated husband effect a change in the current state of affairs in the world, they can only be interpreted as sentences which describe a state of affairs: in (120), Minnie's ability to swim, in (121), the wife's ability to cook. Normally, ability *can* does not normally go with "you" as the subject. When this happens, the sentence is no longer felt as an impersonal, objective description of a state of affairs in the world, but as an expression of the speaker's involvement: in (120), we find Mickey enthusiastic about Minnie's performance, in (121), we can detect an irony in the husband's remark. In both cases, the speaker's comment seems to bring new information in the universe of discourse. Before seeing Minnie's performance, it was not at all clear to Mickey that Minnie could actually swim, nor was it clear to the husband that his wife could cook (or so the husband wants to suggest). Mickey's remark, as well as the husband's come to contradict the presupposition that Minnie could not swim or that the wife could not cook, which the speakers could have thought was the case. However, although the subject of the matrix is "you" , we cannot in any way interpret these sentences as performative. They can be but descriptive. By saying that someone is able or willing to do something, I do not in any way provide them with the ability to do that something or make them willing to do that something. I can, of course, influence them, but that is something completely different. Dynamic modals only have descriptive uses, their meaning prevents them from being used performatively. As mentioned above, so as to have a performative use of deontic modals, the only condition is that the source of imposition/ permission be the hearer. In the case of dynamic modals, there is no source of imposition/ permission. Since the condition is not met, we cannot speak about a performative use of dynamics. The fact that, out of the class of root modals, it is only deontics that allow both a descriptive and a performative use, but not dynamics, is, of course, a consequence of their different meanings.

Apart from semantic and pragmatic differences, there also exist syntactic differences between dynamics and deontics. A first difference is that sentences which contain a dynamic modal resist passivization, unlike proper deontics:

(124) a. The magician can turn Phoebe into a pigeon.

b. Phoebe can be turned into a pigeon by the magician.

(125) a. You must water the flowers every day.

b. The flowers must be watered every day.

Whereas the difference in meaning between (124) a. and (124) b. is not so great, this is not the case with (124) a. and (124) b. While (125) a. can best be paraphrased as "The magician is able to turn Phoebe into a pigeon." (124 a.'), (124) b. can be paraphrased as "It is possible for Phoebe to be turned into a pigeon by the magician" (125 a.'), which is something completely different from (124 a.'). This can be seen as a consequence of the different the way in which dynamic modals and deontic modals relate to the subject in θ- assignment terms. Whereas dynamic modals combine with lexical verbs so as to jointly assign a θ-role to the subject, this is not the case with deontic configurations, where the subject is assigned a θ-role by the lexical verb.

A second difference is that these modals have a genuine past tense form of their own, unlike proper deontics:

(126) a. Jane can dance salsa.

b. Miss Brody could dance salsa when she was a teenager. But now, I'm afraid a waltz is all she could cope with.

(127) a. "I will play the guitar, and, if you won't buy me one, I'll take a part-time job, and I'll manage somehow!, "the angry boy shouted at his mother.

b. The doctor would play the guitar when he was a teenager, but he never got a chance to, his mother simply wouldn't buy him one.

(128) a. "You simply must kill the spider. But don't splash its blood all over the wall.," Mary said to Kill-Bill.

b. *Kill-Bill must kill the spider last night, but he had to take care not to splash its blood all over the wall.

c. Kill-Bill had to kill the spider last night, but he had to take care not to splash its blood all over the place.

While the past tense counterpart of ability *can* is *could*, as we can easily see in (126), and the past tense counterpart of volition *will* is *would*, as we can see in (127), the past tense counterpart of obligation *must* is by no means *must.* Instead, *had to* would be appropriate (128 c.)[20]. What we must retain from this is that, unlike proper deontics, dynamic modals can move to Inflection overtly. According to Avram (2003), a possible

[20] Actually, saying that proper deontics do not have a past tense form of their own might be too strong a generalization. Permission *can*, for example, has the form *could* as a past tense counterpart:

(1) Jimmie could play with kittens when he was a little boy, as long as he didn't pull their tails too violently.

'Jimmie was permitted to play with kittens when he was a little boy, as long as he didn't pull heir tails too violently".

'Jimmie avea voie/ putea sa se joace cu pisoiasii cand era copil, atata vreme cat nu le tragea de coada prea tare.' (imperfect)

(2) a. 'You can kill the spider. It's fine by me, as long as you don't splash its blood all over the wall.," Mary said to Kill-Bill.

b. ?' You could kill the spider last night, Mary let you do it. But I'm in charge now, and I won't let you kill any innocent creature,' the Greenpeace employee shouted.

'Ai avut voie/ putut sa ucizi paianjenul aseara. Mary ti-a dat voie. …' (perfect compus)

In both cases (1) and (2), the form *could* is appropriate as a past tense counterpart of permission *can*. However, in the second case, *was allowed to, was permitted to* would somehow be more adequate. To make a generalization, we could say that, when permission *can* is used descriptively, the most adequate past tense form is *could*, while, when permission *can* is used performatively, the forms *was allowed to/ was permitted to* are felt to be more appropriate in the context.

explanation for this could be the fact that some deontic modals have retained, in present-day English, the verb-like properties they had in Old English and Middle English, when they could move to Inflection. Since their behaviour is more like that of the auxiliaries *have* and *be* than like that of the other modals, some researchers have even denied their modal content (apud Avram (2003): Steele (1975), Boyd and Thorne (1969)). Interestingly, ability *can* has even retained non-finite forms in certain English and Scottish dialects.

Before moving on to the second position occupied by modals, we should discuss a little the type of complement selected by dynamic modals. Although it might seem that all modals select a bare infinitive as their complement, this is not exactly the case. With Avram, it is only dynamic modals that select a bare infinitive (VP) as their complement, deontic modals select an AspP as their complement, whereas epistemic modals select a TP as their complement. This, of course, has consequences for the way in which events are understood. Unlike deontics and epistemics, in the case of dynamics, the modal and the bare infinitive taken as a complement denote one single event:

(129) Mary can run for 2 hours without getting tired.

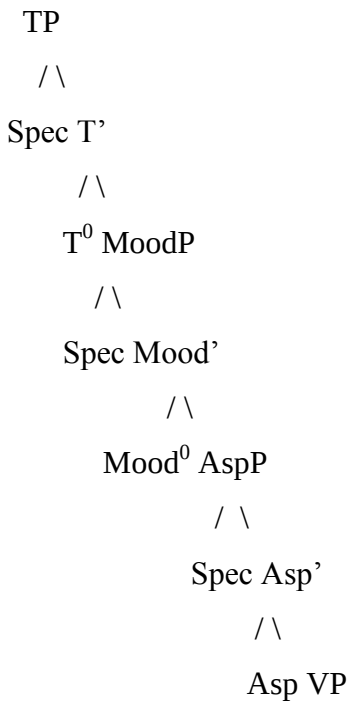
Another important remark is that the bare infinitive taken as a complement is a VP, not a TP, like its *to*- counterpart, the full infinitive, which denotes a different event than the verb taking it as complement:

(130) The bear hopes to find a lot of blackberries today, because he's very hungry.

In (130), the infinitival clause denotes something which is to be fulfilled in the future: whereas the hoping event is in the present, that which is hoped for is in the future. This is not the case with the bare infinitive, sharing its e-structure with the modal.

(ii) <u>Modals hosted by a projection below Tense</u>

Modals can also occur under a functional node placed below Tense:



In Avram's approach, this position is associated with deontic modals:

(131) You must take some Spanish lessons. Your pronounciation is really bad!

(132) "You may throw a party while we're away. Just take care not to ruin the whole place!," the parents said to their child.

As already discussed at (i), the examples above illustrate a different configuration than the one resulting from the association of a dynamic modal with a lexical verb. The modal and the lexical verb no longer denote a single event. While the modal is anchored at ST (RT=ST), the SC with which the modal merges denotes a situation that has not obtained yet (RT prior to ET). Due to the fact that the relation between ET and RT is responsible for the aspectual value of the sentence, Avram claims that the modal no longer merges with a bare infinitive, a VP, but with an Aspect Phrase (AspP).

A very important thing is that the modals under Mood1also occur under Tense can raise to Tense. We would thus expect the modals under Mood1 to have a past tense form of their own. However, out of all the modals occurring in this position, it appears that only the verb *can* meets our expectations:

(133) Genie could go out with older boys when she was a teenager.

(134) Genie is a teenager. Genie can go out with older boys.

(135) "You can go out with Jim," the mother said to Genie last night.

(136) Genie could go out with Jim last night. Her mother agreed to it.

(137)*Genie might go out with older boys when she was a teenager. (*might*- not the past form of *may)*

Now the question which we have to answer is the following: how can we account for the absence of a past tense form in the case of the other deontic modals? How come *must* or *may* do not have a genuine past tense form, but, instead, so as to convey obligation or permission in the past, we have to use *had to* and *was allowed to/ was permitted to.* A possible answer to this could be to say that the modal verbs initially did not lack a past tense form of their own, but, that, with the passing of time, this form became specialized, it became a modal verb in its own right, and, so, another verb needed to be used in order to convey what the specialized form initially conveyed. Such is the case, for example, with *might* and *should.* Interestingly, such forms, initially the past tense counterparts of *may* and *shall,* have become modals in their own right. Apart from indirect speech contexts, where they can be used as the past forms of *may* and *shall, might* and *should* have acquired a modal status of their own. *Would, could* can be argued to be modals in their own right as well, at least in certain uses. As for *must,* it is the only verb with the same form both in direct and in indirect speech, perhaps because of its expressing an irresistible obligation.

According to Avram (2003), another important property which deontics have is that, unlike dynamic modals, they do not resist passivization:

(138) Little Miranda may take the ducklings in the bathtub.

(139) The ducklings may be taken in the bathtub by little Miranda.

(139) is a possible passive counterpart of (138). This can be explained by means of the fact that, unlike dynamic configurations, where the modal and the lexical verb combine so as to jointly assign a θ-role to the subject, in such deontic configurations, the modal does not assign any θ-role. A possible counterargument which could be brought to the claim that deontic modals do not resist passivization is the fact that there are cases in which we can notice a clear difference in meaning between the active sentence and its passive counterpart, for example, when the subject in the passive sentence is animate:

(140) The teacher may visit the convict.
(141) The convict may be visited by the teacher.

In (140), it is the teacher who is given permission to see the convict, while in (141), it is the convict that is given permission to be visited by the teacher. The difference is obvious if we read the sentences as predications about the subject. However, if we read (140) as 'It is permitted that the teacher visit the convict', and (141) as 'It is permitted that the convict be visited by the teacher' (which are marginal, but possible readings), then the meaning shift is not sensed so acutely. The fact that it is the predication readings that are preferred when the subject is animate, even more so when it is [+human] can very easily be explained by the fact that animals, people can be permitted/ obliged to do certain things, whereas non-animate entities cannot, except when treated as animate by the speaker. This is why, when the subject is [-animate], the preferred reading is that with the modal scoping over the subject: "It is permitted that X…", whereas when the subject is [+animate], the preferred reading is that with the modal scoping under the subject: "X is permitted to…". The perceived meaning change in passivization can thus be explained on pragmatic grounds. As Papafragou puts it, "it is due to different contexts made available for processing the active and passive version of an utterance." (100) In this way, the claim that deontics do not resist passivization can still be maintained.

A last remark before moving on to the third position occupied by modals is related to their uses. As already discussed, the modals occurring in this position in the structure

can be used both descriptively and performatively. Unlike dynamic modals, which can only be used to describe a state of affairs, deontics can also be used to effect a change in the state of affairs in the world. This is, of course, a consequence of the difference in meaning between the two classes of modals.

(iii) Modals hosted by a projection higher than Tense

The third position which modals can occupy is Mood2P, above TP:

Mood2P
/ \
Spec Mood2'
/ \
Mood2 T/ AgrSP

Unlike the first and the second position, which could only be occupied by a certain class of modals, the first position by dynamics, the second position by deontics, this position can be occupied both by epistemics and deontics. However, apart from some more or less rare cases in which the deontic modal takes a perfective or a progressive infinitive as a complement, this position is mainly associated with epistemic modals:

(142) The spirit of the river may have died because of so much pollution.

(143) "Oh, that annoying sound! Where do you think it comes from?" "Well, the mouse must be crunching something, I guess. But, don't worry! He's our friend!"

Nevertheless, there is a particular modal which frequently takes a perfect infinitive in its deontic use, namely, *should:*

(144) You should have told me all about it! I was so worried!

Coming back to the sentences (142) and (143), we can easily notice that the modal is not used to describe or perform a change in the state of affairs in the world, but is instead used to mark the speaker's evaluation of the situation denoted by the SC in terms of possibility and necessity.

The SC with which the modal merges is temporally independent: the SC can denote a situation going on at ST (143), prior to ST (144), a situation which began prior to ST and is still going on at ST (145), or a situation taking place in the future (146):

(145) Jane must have been cleaning the house up ever since we called her.
(146) Bill may be taking the kids to Disneyland next week.

This is quite different from the behaviour of deontics, requiring the SC they combine with to denote an event taking place in the future, after ST. As we can clearly see, there is no such constraint in the case of epistemics. The SC may denote a situation taking place anytime, not just in the future. Building on the idea that the SC the modal merges with is temporally independent, Avram puts forth the hypothesis that the modal merges in this case with a TP. This can very neatly account for the fact that they are incompatible with Tense, they are always present, marking "the evaluation of a proposition with respect to the current belief set of the speaker in the here-and-now of the talk exchange" (Papafragou 119)[21].

Just like dynamics and unlike deontics, epistemics cannot be used performatively. Their meaning prevents such a use. By saying that something is necessary or possible with respect to my beliefs, I do not effect any change in the state of affairs in the world, I simply express my own subjective view with respect to a particular proposition. By uttering the words in (147), I do not make my child any more intelligent than he is, but,

[21] It is this indexicality which explains part of their behaviour, such as the fact that they cannot be the complement of a verb of telling, or the fact that they cannot appear in the antecedents of conditionals:

(1) ? Linda told us that Jack must be watching "The Sound of Music" for the third time this month.
(2) ? If Gina must be a naughty girl, then her parents should try and talk her out of naughtiness.
In this respect, they behave just like performatives, exhibiting the same indexical character.

instead, I evaluate his being intelligent as a necessary conclusion, given his high score in the exam:

(147) My child must be really intelligent if he managed to do so well in the exam.

The contribution of the modal *must* to the sentence is more like that of an adverb such as *certainly*, expressing the speaker's evaluation of the truth of a proposition. The epistemic modal is not used here in order to describe a state of affairs in the world, but rather to interpret a proposition in terms of possibility-necessity on the basis of present evidence. Its use is neither performative, nor descriptive, but interpretive (Papafragou 2000). By placing the epistemic modal above the IP, Avram tries to provide a syntactic representation of the semantic interpretation of the epistemic modal as an expression of the speaker's comment with respect to a particular proposition. In so doing, Avram adopts the view that epistemics do not contribute to the truth-value of the whole sentence.

Avram's analysis can account for many phenomena. It accounts for the special behaviour of dynamic modals. It establishes a connection between the complexity of the SC the modal combines with and the modality encoded by the modal : the more complex the SC, the heavier the modality. It can explain why modals cannot co-occur: on Avram's approach, modality is interpreted along a Mood-chain with three links: one at the borderline between the Complementizer layer and the functional layer, one in the functional layer and one in the lexical domain, and along this chain, Mood can be overtly marked only once:

(148) *Linda must may go to the opera tonight.

However, it presents a serious problem: it treats deontics which take a perfective or progressive complement just like epistemics, placing them in the same position in the tree. This is rather strange, considering the fact that, in the case of epistemics, we have to deal with a SC which is temporally independent (i.e. it can denote a past, present, or future event), whereas, in the case of deontics, the SC which the modal combines with

cannot denote a past event (apart from *should*), but it always has future orientation, even if it is represented by a perfect or progressive infinitive. Another problem arises: deontics taking such a complement are placed above Tense, just like epistemics; however, unlike epistemics, which are felt to be tenseless, deontics are not.

2.3.4.2. Butler's analysis

An analysis which is similar in many respects to Avram's analysis is Butler's analysis. However, at this point, we will not present it in its full-fledged form, but we will stick to Butler's more general hypothesis, namely, that deontics occupy one position in the tree, and epistemics occupy another position. In *A Minimalist Treatment of Modality* (2002), Butler brings evidence in favour of this view, but he doesn't stop here. He goes a lot further, and, in order to explain scope phenomena related to modals and negation, he divides each of the two positions modals are associated with into two distinct positions which scope differently with respect to negation: necessity modals above negation, possibility modals below negation. This is, however, something which we will discuss later on in the paper. In what follows, what we will understand by "Butler's analysis" is actually the simplified version of the analysis Butler proposes in his article, namely, the two-position analysis.

Just like Avram's analysis, Butler's analysis is a marriage between a syntactic account of modality (in minimalistic terms) and a unitary semantics. The different readings modals are associated with are the result of the position where they are merged in the derivation. In trying to make sense of modality, Butler starts from the idea taken over from Kratzer that modals are propositional operators, and he tries to establish what exactly a proposition is. Leaving aside semantic definitions of the term "proposition", Butler adopts a syntactic definition instead, which he takes over from Chomsky. According to Chomsky, anything which has full argument-structure counts as a proposition. Exploring this idea, Butler reaches the conclusion that there are two XPs which count as propositions: one is vP, the other one is TP. As a consequence, when we say that modals are propositional operators, what we actually say is that they can occur in either of these two positions. What he tries to establish is the exact way in which these

positions can be related to the distinctions linguists generally operate with when discussing modal verbs, namely, on the one hand, the distinction deontic-epistemic, and, on the other hand, the distinction necessity-possibility. Starting from the idea taken over from Cook (1978) that "epistemic modality modifies a sentence and deals with the truth value of that sentence", while "root modality relates a subject to an activity and deals with permission, obligation and ability", Butler puts forth the hypothesis that epistemics operate over TPs, whereas deontics operate over vPs.

In favour of the view that deontics express a relationship between a predicate *p* and its subject, while epistemics signal a speaker's attitude towards a proposition P, Butler brings several types of evidence.

1) A first piece of evidence regards the difference in behaviour between epistemic and root modals in clauses with symmetric predicates (Brennan (1997)). In the case of symmetric relations, the inference pattern R(x,y)-> R(y,x) is valid. There are two classes of predicates denoting such relations: predicates with commutative (*shake hands with, walk with, play basketball with)* and equivalence relations (*get the same score as, be as tall as, be in the same room as).* In both cases, the inference pattern R(x,y)-> R(y,x) goes through:

(149) Timmy played basketball with Linda yesterday afternoon.-> Linda played basketball with Timmy yesterday afternoon.

(150) Mickey is as tall as Minnie.-> Minnie is as tall as Mickey.

However, if clauses with symmetric predicates also contain modals, the inference R(x,y)-> R(y,x) only remains valid under epistemic readings:

(151) Our child got the same score as their child.-> Their child got the same score as our child.

(152) Our child must get the same score as their child.*-> Their child must get the same score as our child.

(153) Our child must have got the same score as their child->Their child must have got the same score as our child.

While the entailment from R(x,y) goes through in (153), since, if it is a necessary assumption that our child got the same score as their child, then it must be a necessary assumption that their child got the same score as our child, this is not the case in (152): if our child is required to get the same score as their child, there is clearly no obligation on the part of their child to get the same score as our child.

Assuming that epistemic modals operate over propositions (i.e. predicates already combined with their subject) and root modals operate over predicates (without their subjects) correctly predicts the observed behaviour. As Butler puts it, "a propositional operator shouldn't be able to affect the way a predicate and an argument combine, since they are already combined before it even gets a look in, whereas a predicate operator will by definition change the nature of a predicate: the subject will no longer combine with the original predicate but rather the new one." (979).

2) A second piece of evidence in favour of the view that epistemics are propositional operators, while roots are predicate operators is the behaviour of VP (predicate) adverbials in modal contexts.

(154) Peggy must read at least one book a week. (root/ epistemic)

(155) In virtue of being a first-year student, Peggy must read at least one book a week (root only).

(156) Lucy may go to the party tomorrow. (root/ epistemic)

(157) In virtue of being a good girl, Lucy may go to the part tomorrow. (root only).

The presence of the predicate adverbial in (155) and (157) only allows a root reading for the modal, which is to be expected if the adverbial modifies a modalized predicate, and not a proposition, as it happens in the case of epistemic modals. The incompatibility of epistemic modals with predicate adverbials can also be explained on pragmatic grounds. While a person can grant another person permission or oblige that

person to do something in virtue of some social conventions, regulations which make this possible, the speaker's evaluation of a proposition is not in any way conditioned by such regulations.

3) A third argument concerns the interactions of modals and subjects. Basically, the idea would be the following (according to McDowell, 1987; Brennan, 1997): subjects scope below epistemics and above roots[22] :

(158) Prince Charming must kiss Sleeping Beauty so as to wake her up from eternal sleep.

'Prince Charming is obliged to kiss Sleeping Beauty so as to wake her up from eternal sleep.'

(159) "Prince Charming must be really handsome," the little girl said.

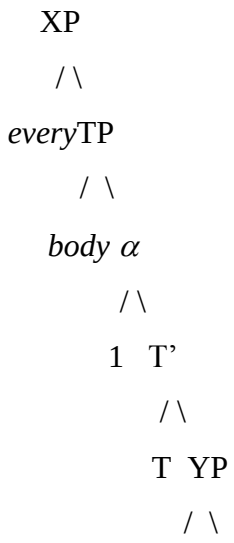
'It is necessary that Prince Charming is really handsome.'

Butler seems to adhere to the view that deontics are associated with a predicate reading, whereas epistemics are associated with a propositional reading. However, his analysis is threatened by the fact that there are sentences containing deontic modals which have an inanimate subject. "X is permitted to…" does not in any way represent the way in which we understand the sentence "X may…" in case X is [-animate]. So it seems

[22] Actually, in his paper, Butler shows that the picture is more complex than this. Indefinite subjects vary their scope with respect to modal verbs according to whether they receive an existential or a quantified reading. Butler takes over from Diesing (1992) the idea that these two readings are associated with two different positions of the subject at LF: when the subject is interpreted as existential, it must be associated with its theta position [Spec, vP], and when the subject is interpreted as generic, it must be associated with its case position [Spec, TP]. On such a view, epistemics should scope higher than a bare plural/ weakly quantified subject, since the scope position associated with epistemics is higher than either scope position associated with the subject, whereas roots should scope lower than a bare plural/ weakly quantified subject when it is interpreted as presuppositional/ quantificational, and higher than a bare plural/ weakly quantified subject when it is interpreted as non presuppositional/ existential, since the scope position associated with roots is between the two scope positions associated with the subject. According to Butler, these predictions are borne out by the data: the sentences "Some philosophers must go to those seminars." (epistemic necessity), "Some philosophers might go to those seminars" (epistemic possibility), "Some philosophers must go to those seminars"(root necessity), "Some philosophers can go to those seminars" (root possibility) receive exactly those readings which are predicted by the analysis.

that Butler's generalization does not really hold water. As it stands, Butler tries to offer a syntactic account for something which is not always the case, which is highly problematic, no doubt. In the previous chapter, we put forth the proposal that the predicate reading of sentences containing deontic modals obtains when the matrix subject is [+animate], and especially [+human]. In other words, we claimed that the contrast between predicate and propositional readings is determined pragmatically. In this way, there would be absolutely no need for a syntactic account for something for which we already have a pragmatic account. Moreover, Butler's syntactic account of the contrast between predicate and propositional readings is rather cumbersome. Butler tries to explain how come, when combining with the subject, the complex made up of the modal verb and the lexical verb taken as a complement is no longer understood as a proposition, but as a predicate. His line of reasoning goes as follows: "if we are claiming modals, as propositional operators, can operate over vP, we need to take account of the subject trace in [Spec, vP]. But when it comes to interpret the overt subject in [Spec, TP], we need what it is combining with-modalized vP-to be interpreted not as propositional, but as a predicate." (976). This is why he resorts to the insertion of an operator which is supposed to bind the variable left in the DP's initial position:

(160) Everybody must get stoned. (Butler's example)



must vP

t_1 get stoned

Since, in the case of epistemics, it is the propositional reading which obtains, there is no need there for the insertion of any operator. On a propositional reading, the sentence "Everybody must get stoned" has the following representation:

YP

/ \

must$_i$ XP

/ \

every TP

/ \

body$_j$ T'

/ \

t_i vP

t_j t_i get stoned

Despite this, Butler's account does make a lot of sense if we assume that modals are propositional operators. Another problem with this analysis would be that it does not take into account dynamic modals (ability *can*, volition *will).* It only captures the contrast between deontic and epistemic readings. Nevertheless, the analysis could, obviously, be further refined in order to account for dynamic modality as well.

These are more or less the most important hypotheses which have been put forth in the literature so as to account for the deontic-epistemic contrast. Out of the analyses presented above, we will dismiss Ross's analysis and the Picallo-Zubizaretta analysis as inappropriate accounts of the deontic-epistemic contrast. Hence, what we are left with are Ouhalla'a analysis, Avram's analysis and Butler's analysis. In other words, we can place modal verbs either under a single node, a MoodP, in which case we definitely have to assume that the various readings of modal verbs derive from context (as with Ouhalla-

Papafragou), or under more than one node, in which case the different readings which obtain are syntax-driven (as with Avram or Butler). We have to choose, therefore, between a pragmatic account of modality and a syntactic account of modality. Given the fact that, as shown above, both Avram's analysis and Butler's analysis have their problems, we are extremely tempted to opt for a pragmatic account of modality. Further research into the behaviour of modals with respect to negation could shed some light upon the issue, helping us decide between the two. In consequence, we will now move forward into the area of negation and modality, trying to make sense of the oddities in their behaviour

3. Negation and Modals

3.1. Something is rotten in the realm of negation and modals

In theory, there shouldn't be any problems in the area of negation and modal verbs, at least as long as we pay attention to what exactly we want to negate: the modality expressed by the modal verb, or the proposition expressed by the complement of the modal. "In the ideal or regular situation the grammatical placement of the negative indicates the scope of negation. If the modal is negated, the expected paraphrase will be 'It is not possible/ necessary that…', while if the full verb is negated, the paraphrase will be 'It is possible/ necessary that… not…" (Palmer 1990: 455-6). To exemplify this, let's take the case of Romanian:

(1) a. Copilul trebuie să se uite la Cartoon Network, deşi nu e prea încantat de asta. Ar prefera să citească o carte. Mama lui susţine însă că prea multă carte strică,

Child-the must cond-look at Cartoon Network.

'The child must watch Cartoon Network, although he's not too thrilled about it. He would rather read a book. His mother claims, however, that too much lore can bring one to the ruins.'

b. (i) Copilul nu trebuie să se uite la Cartoon Network, nici sa-şi facă temele. Mama lui se proclamă un părinte modern şi, în consecinţă, îi lasă copilului libertate deplină.

Child-the not must cond-look at Cartoon Network.

'The child does not have to watch Cartoon Network, or do his homework. His mother proclaims herself a modern parent, and, in consequence, she offers her child complete freedom.'

(ii) Copilul poate să nu se uite la Cartoon Network.

Child-the may cond-not look at Cartoon Network.

'The child may NOT watch Cartoon Network.'

c. (i) Copilul trebuie să nu se uite la Cartoon Network. Desenele animate, spune mama lui, nu te ajută sa iei note mari la şcoală.

Child-the must cond-not look at Cartoon Network.

'The child must not watch Cartoon Network. Cartoons, his mother says, don't help you get great marks at school.'

(ii) Copilul nu poate să se uite la Cartoon Network.

Child-the not may cond-look at Cartoon Network.

'The child may not watch Cartoon Network.'

If we want to negate the deontic necessity expressed by the modal verb "trebuie" ('must'*)* in (1a.), all we have to do is place the negative marker "nu" ('not'*)* in front of the modal verb expressing necessity. If (1 a.) receives the paraphrase 'It is necessary for the child to watch Cartoon Network', (1 b. (i)) can be paraphrased as 'It is not necessary for the child to watch Cartoon Network', which is exactly what we wanted to obtain. As we can clearly see, negation of the modal verb results in the negation of the modality expressed by that modal verb: "nu trebuie"('not must') means 'not-necessary'.

If, on the other hand, we want to negate not the modality expressed by the modal, but the proposition taken as a complement by the modal, what we have to do is negate the verb which the modal combines with. In our case, if what we want to express is the idea that it is necessary for the child not to watch Cartoon Network, we simply have to place the negative marker "nu" in front of the verb the modal "trebuie" ('must') combines with

(as in 1 c (i)). Negation of the verb taken as a complement by the modal thus results in the negation of the proposition: "trebuie sa nu" means 'necessary-not'.

As a consequence of the logical equivalences NOT NECESSARY=POSSIBLE NOT and NECESSARY NOT= NOT POSSIBLE, the 'possible-not' form ("poate sa nu ") can also be used to express the 'not-necessary' meaning, counting as a negation of the modality of necessity (1 b. (ii)). In the same way, the 'not-possible' form ("nu poate") can also be used to express the 'necessary-not' meaning, counting as a negation of the proposition taken as a complement by the modal verb (1 c.(ii)). These forms, however, only represent alternatives to the perfectly all right (1b (i)) and (1 c (i)). We can thus conclude that, in Romanian, there is a very neat correspondence between the negation of the modal and negation of the modality, on the one hand, and negation of the full verb and negation of the proposition, on the other hand. However, although this regularity seems to be the case in Romanian, just as in Modern Greek (Palmer 1995), for that matter , it is by no means the case in all languages, one of the languages exhibiting an irregularity in this respect being English.

The regularity in the case of Romanian can easily be explained. In Romanian, modal verbs can take CPs as complements, which makes it very easy to distinguish between the negative marker which negates the modal verb and the negative marker which negates the verb taken as a complement by the modal. Moreover, the negative marker in Romanian is placed before the modal ("nu trebuie" ('not must'), "nu poate" ('not may')), which, again, helps us discern between the negation of the modal (placed in front of the modal) and negation of the verb (placed after the modal)[23].

English does not behave in a similar fashion. On the one hand, unlike Romanian, English modals do not take CPs as their complements. On the other hand, in the case of English, which is a Germanic language, the negative marker is not placed before, but after

[23]A case like: "Să nu piardă vremea trebuie, dacă vrea sa ia examenul" ('Not waste any time she must, if she wants to pass the exam.'), where the negation of the lexical verb seems to precede both the lexical verb and the modal verb does not represent an appropriate counterexample to the claim made above. There is no way in which we could take the negative marker "nu" for the negation of the modal verb. On the one hand, "nu" ('not') is directly attached to the lexical verb, not to the modal verb. On the other hand, the fact that "nu" ('not') appears in the sentence before the modal verb is but a consequence of placing the sentence "Sa nu piarda vremea" in TOPIC position.

the modal. In this way, Palmer argues, "it is not at all certain that it can be determined whether it is the modal or the full verb that is negated" (468). Because the negative is generally cliticized (*mustn't, can't, shouldn't),* it is generally assumed that the negative is formally associated with the modal.

However, there is at least one case in which it is not at all that clear that the negative is associated with the modal, namely, epistemic *may not* , which is not normally cliticized (Palmer 1995), and which is moreover understood as expressing 'possible-not' instead of 'not-possible'. If we assumed that the "not" after "may" were an instance of sentence negation, then what we would face would be an irregular form, more precisely, a not-possible form expressing 'possible-not'. This is a highly undesirable consequence, which could obviously be avoided by assuming that the "not" appearing after "may" is actually an instance of adverbial negation. We will, however, not go into this issue right now. What we should retain, nevertheless, is the idea that, in English, it is not at all that clear whether the "not" appearing after the modal is always an instance of sentence negation.

According to Palmer (1995), English is an irregular language in what concerns the negation of modal verbs. What we should very well understand is what exactly Palmer means by 'irregular'. Palmer himself distinguishes between two types of irregularity. One type of irregularity resides in the use of a suppletive form to express a certain meaning:

(2) a. He must have read "Alice in Wonderland". (necessary)
b. He may not (NOT) have read "Alice in Wonderland". (possible-not=not-necessary)
c. He can't have read "Alice in Wonderland". (not-possible= necessary-not)

In (2), the forms "may not" and "can't" are suppletive forms, since the negation is not added to the verb "must", but to a possibility modal. Although it seems that today "must not" can no longer be used to express epistemic meanings, (except for American English, where a sentence like "He must not have read "Alice in Wonderland" is synonymous to "Alice can't have read "Alice in Wonderland"" (Tottie 1985)), it could be used to such a purpose in the past. The fact that, nowadays, for example, we have to say "He may not (NOT) be happy." instead of "He mustn't be happy" if we want to express the idea that something is not-necessary is but a consequence of frequency in use. Logical

equivalences made it possible for speakers to express the same meaning in two ways; at a certain point in history, however, one of the forms started to be used more frequently than the other, until the latter disappeared. In our view, there is absolutely nothing strange about that. This is why, in our view, such an irregularity should not cause too many problems in our analysis of negation of modals.

The second type of irregularity is by far more significant, since it concerns the fact that, in the case of English, we cannot speak of a neat correspondence between the negation of the modal and the negation of modality, or between negation of the full verb and negation of the proposition. A point in case is, Palmer argues, deontic "must": while a sentence like "The girl mustn't take a walk in the woods during the night." is clearly negative from a syntactic point of view (since *n't* can only be an instance of sentential negation, but not of adverbial negation), from a semantic point of view, it is not the modality that is negated, but the proposition- the form "mustn't", a not-necessary form seems to express a 'necessary-not' meaning. As already mentioned above, epistemic *may not* also seems to posit a similar problem, since interpreting the "not' after "may" as an instance of sentence negation would result in our having a not-possible form expressing a 'possible-not' meaning. In these cases, we can, according to Palmer, speak of the displacement of the negative marker "not" from a lower position to a higher position, in a similar way to what happens when, instead of saying "I think he won't come.", we say "I don't think he'll come" . Such cases are thus explained by Palmer in terms of raising of the negative marker. In our opinion, however, such an explanation will not do. While the sentence "I think he won't come" is practically synonymous to "I don't think he'll come.", a sentence like "It is possible that he does not come" (the paraphrase of "He may NOT come") is not synonymous to "It is not possible that he comes" (which is what we would get if we interpreted the "not" after "may" as an instance of sentence negation). We have to deal with two completely different situations, and hence, it will not do to say that negation raises[24]. For this reason, in our paper, we will postulate that there is no such thing as an irregular language, and, hence, neither can English be considered one. We will claim that negation of the modal *always* results in negation of modality, and negation of

[24] This might actually not be much of an explanation even in the case of "I think he won't come".

the verb *always* results in negation of the proposition. And, thus, in all that follows, we will try to show that many of the misunderstandings concerning negation and modals are the result of mistaking internal negation for external negation, as a consequence of too much reliance on speaker's intuitions.

3. 2. Internal vs. External Negation. Sentence vs. Adverbial Negation

At this point, we find it necessary to clarify the notions "internal negation" and "external negation", more precisely, we consider it useful to explain the difference between "external negation" and "sentence negation", on the one hand, and the distinction between "internal negation" and "adverbial negation", on the other hand. Basically, "external negation" means negation of modality, whereas "sentence negation" means negation of the matrix verb, in our case, a modal verb. In a similar way, while "internal negation" means negation of the proposition, "adverbial negation" means negation of the lexical verb taken as a complement by the modal. The notions "external negation" and "internal negation" are thus semantic notions, while the notions "sentence negation" and "adverbial negation" are syntactic notions. Although, in our view, sentence negation results in external negation, and adverbial negation results in internal negation, there are some linguists who believe that this is not always the case (e.g. Palmer). Nevertheless, the distinction is extremely useful because it can help us make things clearer.

Now there are two questions which we have to answer:

1) The first question concerns the way in which we can distinguish between external negation and internal negation.
2) The second question concerns the way in which we can distinguish between sentence negation and adverbial negation.

1) Being semantic notions, external negation and internal negation are distinguished by means of (semantic) paraphrases of the sentences containing the modal. If we have, for example, the following case:

(3) a. You may not call John.

'It is not possible (permitted) that you call John'

'It is not possible for you to call John'/ 'You are not permitted (allowed) to call John'

b. You may NOT call John.

'It is possible that you do not call John.'

'It is possible for you not to call John'/ 'You are permitted (allowed) not to call John.'

we can clearly see from the paraphrases these sentences receive that, in (3 a.), we have to deal with external negation ('not-possible'), while in (3 b.), we have to deal with internal negation ('possible-not'). The criterion by means of which we distinguish between external negation and internal negation is whether in the paraphrase of the sentence containing the modal, negation has scope over modality or the other way round. If negation has scope over modality, then we are dealing with external negation, whereas, if negation is in the scope of modality, we are dealing with internal negation. Of course, it is perfectly possible to have both types of negation instantiated in the same sentence, as in:

(4) You may not NOT do your homework today, what's your teacher going to say?

'It is not possible that you do not do your homework today.'

'It is not possible for you not to do your homework today'. / 'You are not permitted not to do homework today.'

In such a case, the sequence 'not-possible-not' is an indication of the fact that we have to do with two types of negation: while the first "not" is an instance of external negation (scoping over modality), the second "not" is an instance of internal negation (being in the scope of modality)[25].

2) Unlike "external negation" and "internal negation", "sentence negation" and "adverbial negation" are syntactic notions. While sentence negation negates an IP, adverbial negation will, in this particular case, negate a VP, so the distinction between the two will become apparent in their syntactic representation. An important thing to note is that we need to resort to tests in order to distinguish between the two only in the case of the negative marker "not", but not in the case of "n't". This is because the negative marker "n't" can only be an instance of sentence negation, and not adverbial negation. Since both sentence

[25] At this point, we need to make it very clear that, when we say, for example, that the first "not" is an instance of external negation, we do not refer to the "not" which is the first in the sentence "You may not NOT do your homework today.", but to the "not" which is the first in the paraphrase of that sentence.

negation and adverbial negation can be expressed by means of "not", how can we tell between the two variants?

a) Klima's tests (1964) are one way of determining whether or not a sentence is negative from a syntactic point of view. The battery of tests devised by Klima comprises the following tests: the tag question test, the *not-even* tag, *either* conjoining, and *neither* tags. We shall exemplify this test with the verb *can* on a permission reading*:*

(5) a. Tag questions:

(i) Minnie can not ride the bicycle today, can she?

(ii) Minnie can NOT ride the bicycle today, *can she?

b. *Not-even* tag:

(i) Minnie can not ride the bicycle today, not even tomorrow.

(ii) Minnie can NOT ride the bicycle today, *not even tomorrow.

c. *Either* conjoining

(i) Minnie can not ride the bicycle today, and Blackie can not ride the bicycle today either.

(ii) *Minnie can NOT ride the bicycle today, and Blackie can not ride the bicycle today either.

d. *Neither* tags

(i) Minnie can not ride the bicycle today, and neither can Blackie.

(ii) Minnie can NOT ride the bicycle today, *and neither can Blackie.

b) There is also another indicator, namely stress. While sentence negation is never stressed, adverbial negation is. In example (5), we could notice the difference between "can not", where "not" is an instance of sentence negation, and, hence, it is not stressed, and "can NOT", where "not" is an instance of adverbial negation, and, hence, it is stressed. Interestingly, when the "not" following "can" is an instance of sentence negation, it can adjoin to "can", actually, the form "can not" is no longer used so much, instead, we have

the form "cannot" (with "can" and "not" written as one single word)[26]. Moreover, the "not" which is an instance of sentence negation can be cliticized, i.e. we can have "can't" instead. None of these phenomena occur in the case of the "not" which is an instance of adverbial negation. This is because, unlike sentence negation, adverbial negation receives stress, and, hence, cannot attach to another element, either in its full form or in its reduced form[27].

Throughout the paper, we will make use of these tests in our attempt to differentiate between sentence negation and adverbial negation when we are dealing with modal verbs. We find this very important, since, in our view, there is a clear correspondence between sentence negation and external negation, on the one hand, and adverbial negation and internal negation, on the other hand. In other words, what we would actually like to claim is that, if from a semantic point of view, negation scopes over the modal, this will be mirrored in syntax, where negation will c-command the modal. In this way, scope can be viewed as a syntactic notion.

3.3. The 'Irregular' System of Negation and Modals in English

In what follows, we will roughly try to present the 'irregular' system English makes use of in negating modal verbs. Palmer (1995) establishes 12 categories which he exemplifies by means of English modal verbs:

[26] The answer Oxford Dictionaries provide to the question "Can 'cannot' also be spelled as two words 'can not' ?" (www.askoxford.com) is that both "can not" and "cannot" are acceptable forms, but "cannot" is much more used. Interestingly, their recommendation is to use the form 'can not' in case 'not' forms part of another construction, such as "not only", in other words, when the "not" which follows "can" is an instance of adverbial negation, and not sentence negation. The difference between sentence negation and adverbial negation thus seems to be mirrored in spelling as well, not just in stress pattern, since the tendency is to use "cannot" in case we are dealing with sentence negation, and "can not" when we are not.

[27] Although it could be argued that stress is not a reliable indicator of whether or not we are dealing with sentence negation, we do not adhere to this point of view. In our view, the fact that sometimes the "not" which is an instance of adverbial negation is not stressed does not represent a counterargument to the claim that stress differentiates between sentence negation and adverbial negation. The reason for this is fairly simple: when the "not" which is an instance of adverbial negation is not stressed, this is not because stress is not necessary, but because speakers fail to express themselves correctly.

(a) Epistemic:

(i) 'possible' *may*
(ii) not-possible' *can't*
(iii) 'possible-not': *may not*

(iv) 'necessary' *must*
(v) 'not-necessary' (*may not)*
(vi) 'necessary-not' (*can't)*

(b) Deontic:

(i) 'possible' *can/ may*
(ii) 'not-possible' *can't/ may not*
(iii) 'possible-not' *(needn't)*

(iv) 'necessary' *must*
(v) 'not-necessary' *needn't*
(vi) 'necessary-not' *mustn't*

The brackets are used in order to indicate that we have to do with a suppletive form, dependent on the necessity/ possibility equivalences.

We shall start with the modals which receive a deontic interpretation. In the case of the modals of possibility (*can/ may),* the form used to express 'possible-not' is, Palmer argues, a suppletive form.

(6) a. "OK, you may read "Snow-White" to our daughter one more time, if you want it so much! But this can't go on forever, you know. Even the child has got bored with it by now!, " Jane said to her fun-loving husband.

'It is possible that you read/ for you to read "Snow- White" to our daughter one more time.' ('You are allowed to read "Snow-White" …')

b. "No, it's not OK, you may not read "Snow-White" to our daughter one more time. It's growing into an obsession, now really!, " Jane shouted at her fun-loving husband.

'It is not possible that you read/ for you to read "Snow-White" to our daughter one more time.' ('You are not allowed to read….')

c. "Well, you needn't read "Snow-White" to our daughter one more time if you don't want to, but I don't know how you can find it in your heart to ignore those pleading eyes…, " Jane said to her husband in a warm tone of voice.

'It is not-necessary that you read/ for you to read "Snow-White" to our daughter one more time.'

In the last case, there is also another possibility, namely, that of using the modal verb "may" followed by an instance of adverbial negation, namely, something like "You may NOT read "Snow- White" to our daughter, if that's how you feel like doing! But don' expect me to cook for you!". Such a sentence could be paraphrased as "It is possible for you not to read…./ You are allowed not to read….", in which case we have a possible-not form expressing a 'possible-not' meaning. This would obviously not be a suppletive form, since the modal verb used would be "may". Although, it is true, the form "needn't" is used much more frequently, "may NOT" is also a possibility. We cannot, thus, speak of an irregularity in the English modal system on these grounds. In this respect, English behaves just like Romanian (and many other languages): the 'possible-not' form can be expressed in two ways: either by means of a possible-not form, or by means of a not-necessary form, which can be easily explained on the basis of the logical equivalence POSSIBLE-NOT= NOT-NECESSARY. The question which immediately pops into our minds is whether a similar thing can happen in the case of (6 b.), i.e. is it the case that, apart from the form *may not*, the 'not-possible' meaning can also be expressed by a form which involves a modal of necessity, namely by a 'necessary-not' form? Of course, we can very well say something like "No, it's not OK, you must NOT read "Snow-White" to our daughter one more time. It's growing into an obsession." What is essential in this case is that the "not' following the modal verb be not interpreted as an instance of sentence

negation, but as an instance of adverbial negation. In contrast, the "not" following the modal verb "may" in (6b.) is an instance of sentence negation, not adverbial negation. However, Palmer does not list the form "mayn't" as a possibility, but only the form "may not". "Mayn't" could be used in the past; however, today, it is felt to be an obsolete form, and, hence, it rarely is used.

As for the verb *can* on a permission reading, the form used to express the 'not-possible' meaning is, according to Palmer, *can't,* and the form used to express the 'possible-not' meaning is, as in the case of *may,* the suppletive form *needn't.* Two remarks are in order here. The first is that Palmer does not list the forms "can not" or "cannot" as ways of expressing the 'not-possible' meaning. A second remark would be that, in addition to the form *needn't,* the 'possible-not' meaning can also be expressed by the form *can NOT*.

As we can very well see only by looking at a couple of verbs, Palmer does not list all the possible ways of expressing a certain modal meaning (like 'not-possible' or 'possible-not'). We find it necessary to explain why this is so. As Palmer himself confesses, he is not interested in making a full list of the ways of expressing a certain modal meaning, but only of the ways which are mostly used. This is why, in almost all cases, he will only list one single form as the way in which a certain meaning is expressed in English. However, this obviously isn't the case. For one thing, when language disposes of two equally correct ways of expressing a particular meaning, a form followed by "not" and a contracted form, Palmer will only list the contracted form. Only when it is the case that the contracted form is rarely used, if at all, will Palmer list the form with "not": this is what happens in the case of "may not". Because of this, we believe, Palmer wrongly comes to consider that a form such as *needn't* is a suppletive form. This is because deontic *needn't* is not the only way in which the 'possible-not' meaning can be expressed. Apart from *needn't,* we also have *can NOT/ may NOT*. In our view, we can only speak about suppletion in case the 'irregular' form which is used to express a particular modal meaning is the only possible option. In case we also dispose of a perfectly regular form, it is not correct to speak about suppletion[28].

[28] Suppletion is a notion related to the absence from the paradigm of a particular regular form, in whose stead we have an irregular form, it is not a notion related to pragmatics, more precisely, to the fact that a different form is generally more used than the form we would expect. When, in the case of the verb "go", for example, we

In the case of the modal of necessity *must*, Palmer argues that *needn't* is used to express the 'not-necessary' meaning, whereas *mustn't* is used to express the 'necessary-not' meaning:

(7) a. You must sing Joan Baez at the concert, everybody's expecting you to.
'It is necessary for you to sing Joan Baez at the concert'/ 'You are obliged to sing Joan Baez at the concert.'
b. You needn't sing Joan Baez if you don't want to.
'It is not necessary for you to sing Joan Baez'/ 'You are not obliged to sing Joan Baez.'
c. You mustn't sing Joan Baez at the concert.
'It is necessary for you not to sing Joan Baez at the concert.'/ 'You are obliged not to sing Joan Baez at the concert.'

Palmer does not here list the forms *must not* or *need not*, he only lists the contracted forms of the modals. According to him, as well as to many other linguists commenting upon the meaning of *mustn't (*Coates (1983), Tottie (1985), Papafragou (2000), Huddleston & Pullum (2002), Cormack & Smith (2002) a.o.), the form *mustn't* is used to express a 'necessary-not' meaning. In our view, however, such a claim defies logic: although it might very well be the case that the form is used in such a way, this does not mean that the *mustn't* actually expresses a 'necessary-not' meaning. We will not adhere to the view according to which the meaning of a word is determined by the way in which it is used. In our opinion, *mustn't* is wrongly used to express the 'necessary-not' meaning. We shall elaborate upon this in the following section. What we should, nevertheless, retain from this is that, according to Palmer, *mustn't* expresses a 'necessary-

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speak of suppletion (e.g. *I go- He went),* one of the things we mean to say is that the form "went" is not a regular form, it is not formed by adding the suffix "-ed" to the verb "go": *goed* is not a correct form of the past simple of *go,* in other words, it is never the case that it can be used instead of *went* other than wrongly. When we say that we can speak of suppletion in the case of deontic *may,* what we actually say is that the 'possible-not' meaning is not usually expressed on the basis of the modal verb *may.* Although we can use the form *may NOT,* we usually use *needn't.* Thus, in Palmer's view, suppletion is obviously a pragmatic notion. It is a question of pragmatic choice whether *may NOT* is used or *needn't,* not a matter of grammaticality. This is fairly obvious if we notice that there is a logical relation between *may NOT* and *needn't.* Given the fact that POSSIBLE-NOT is logically equivalent to NOT-NECESSARY, the speaker can choose between the two forms that which he believes fits his needs most. This is not so in the case of *goed* versus *went:* he has no other choice but *went.*

not' meaning, although, from a syntactic point of view, it seems to be the case that the modal is negated, and not the verb taken as a complement by the modal[29].

We shall now move on to the modal verbs receiving an epistemic interpretation. According to Palmer, the modal which can be used to express epistemic possibility is *may*, the form used to express a 'not-possible' meaning is *can't,* while the form used to express a 'possible-not' meaning is *may not:*

(8) a. The child may receive a doggy for his birthday.
'It is possible that the child receive a doggy for his birthday.'
b. The child can't receive a doggy for his birthday.
'It is not possible that the child receive a doggy for his birthday.'
c. The child may not receive a doggy for his birthday.
'It is possible that the child does not receive a doggy for his birthday.'

Now the question which comes to our minds is whether we can also express the 'not-possible' meaning by using the form *may not* or *mayn't.* Considering the fact that "n't" is an instance of sentence negation, the form *mayn't* should express a 'not-possible' meaning. However, many speakers argue that this is not a possible form in English. While *mayn't* is sometimes used instead of *may not* on a deontic reading, the same thing does not happen on an epistemic reading. In (8 c.), we can detect an irregularity, in the sense that the form "may not" seems to express a 'possible-not' form. This poses a serious problem, which, nevertheless, could be solved very easily if we assumed that the "not" following "may" is not an instance of sentence negation, but an instance of adverbial negation: "The child may NOT receive a doggy for his birthday." This might easily explain why "may NOT" on an epistemic reading does not contract to "mayn't", unlike "may not" on a deontic reading. Interestingly, so as to express a 'not-possible' meaning, we do not use "may not"(where "not" is an instance of sentence negation), but *can't.* A possible explanation for this could be the fact that speakers were already using a form

[29] According to Huddleston, *must not* (where *not* is an instance of sentence negation) patterns in the same way. In a sentence like "They must not read it.", Huddleston argues, "*must* has scope over *not* ("it is required that they not read it") […]. Nevertheless, *not* belongs syntactically in the matrix clause." (804).

based on "may" followed by negation, in order to express a 'possible-not' meaning, and, they might have felt that another form was needed to express the 'possible-not' meaning, so as not to generate confusion. Taking the "may not" form in (8 c.) to express a 'not-possible' meaning, speakers felt that the form "may not" could no longer be used to express a 'possible-not' meaning as well. In our view, this is the mistake which gave rise to the use of *can't* to express a 'not-possible' meaning instead of *mayn't.*

As far as epistemic *must* is concerned, the form used to express a 'not-necessary' meaning is, according to Palmer, *may not,* while the form used to express a 'necessary-not' meaning is *cannot:*

(9) a. She must be very happy with Mark.
'It is necessary that she is very happy with Mark'.
b. She can't be very happy with Mark.
'It is not possible that she is very happy with Mark'='It is necessary that she is not happy with Mark'
c. She may not be very happy with Mark.
'It is possible that she is not very happy with Mark'= 'It is not necessary that she is happy with Mark'

The forms *can't* and *may not* are, in Palmer's terms, suppletive forms, based on logical suppletion. Neither of the terms which are most frequently used is based on the verb *must* followed by negation. This does not mean, though, that a form based on *must* followed by negation cannot be used as well, although more rarely. So as to express a 'necessary-not' meaning, we can very well have something like "She must NOT be very happy with Mark.", meaning 'It is necessary that she be (is) not very happy with Mark." According to Gunnel Tottie (1985), the form "mustn't" can also be used to express the meaning 'necessary-not', i.e. 'not-possible', being synonymous to "can't"(in American English). In our view, however, although it is a fact about the verb "mustn't" that it can be used as such, we cannot say that is correctly used. In our view, *mustn't* expresses a 'not-necessary' meaning, while *can't* expresses a 'not-possible' meaning (since "n't" is an instance of sentence negation), and, in consequence, the two verbs cannot be claimed to

express the same meaning, since NOT-NECESSARY is not equivalent to NOT-POSSIBLE, but to POSSIBLE-NOT.

In his presentation of the irregular system of modals and negation in English, Palmer only lists what he terms as "the modals of necessity and possibility". In his view, verbs like *should, ought (to), will* or *shall* are not to be included in this category, neither is *can* on an ability reading, for that matter. This is because, on the one hand, Palmer assumes that ability *can* and volition *will* represent a distinct class of modals, expressing dynamic modality, and, on the other hand, that the other modal verbs mentioned above express neither necessity, nor possibility. However, this is not the only view available on the market. With authors such as Papafragou (2000), or Cormack & Smith (2002), verbs like *should, ought (to), will* or *shall* also express such modal notions. Cormack & Smith (2002) argue in favour of the view that all the verbs mentioned above always scope above negation, and are to be included in the class represented by modals of necessity. We shall exemplify their claim only in the case of *should:*

(10) A. a. You should really try to talk her out of quitting school!

b. You should not try to talk her out of quitting school! She knows very well what she's doing.

c. You shouldn't try to talk her out of quitting school!

B. a. He should be sad to hear about Linda's accident.

b. He should not be sad to hear about Linda's accident.

c. He shouldn't be sad to hear about Linda's accident.

Cormack and Smith (2002) assume that the modal verb *should* expresses the notion 'advisable'. However, as we argued in the chapter concerning modal verbs, postulating the existence of such a notion is highly undesirable. Instead, we shall assume that the verb *should* expresses necessity. In (10 A) we have to deal with a deontic interpretation of the modal verb, while in (10B) we have to deal with an epistemic interpretation of the modal verb. In both cases, it seems to be the case that modality scopes above negation. According to Cormack and Smith, (10A b.) and (10 A c.) are practically synonymous, meaning 'It is advisable that you do not try to talk her out of leaving school.' The same

thing happens in the case of *should* receiving an epistemic interpretation, namely, the modal verb scopes above negation. Not everyone agrees with this view. Coates, for example, would paraphrase (10 A b.) or (10 A. c.) as 'It is not advisable that you try to talk her out of leaving school', with negation scoping over modality. In their paper on modals and negation in English, Cormack and Smith argue that this is not a correct paraphrase of the sentence, since it might be the case that negative raising effects are at work, namely, the "not" in the matrix may have raised from its initial position in the subordinate clause. However, the same thing could be argued in all cases where the paraphrase is such that negation scopes over modality ("It is not X that…."). Does this mean that we are never to make paraphrases where negation scopes over modality, for the simple reason that they are all ambiguous? It most certainly doesn't. It is for this reason that we will dismiss the counterargument proposed by Cormack & Smith against Coates's paraphrase. At this point of the paper, we will limit ourselves to saying that things are not that clear in the realm of modals such as *should, ought (to), will* or *shall.* In our view, in sentences such as (10 A. b) or (10A. c.), negation should scope over modality, for the simple reason that the negative marker attached to the modal is in each case an instance of sentence negation. A paraphrase with modality scoping over modality should be available in case we have something like "You should NOT try to talk her out of quitting school!". The same situation is to be encountered in the case of *ought (to), will* or *shall.*

Since things are so messy in the realm of negation and modals, perhaps we believe we could make use of Klima's tests in shedding some light on the whole issue.

3. 4. Klima's Tests Revisited

In the previous chapter on negation, we presented the tests Klima set up for distinguishing between negative sentences and sentences with negative constituents, namely (a) tag questions, (b) *not-even* tags, (c) *either* conjoining, and (d) *neither* tags. For us to be able to assert that a sentence is negative, i.e. the Pol head has the feature [+neg], we have to see if it passes each of these tests. In other words, each one of these tests is in itself a necessary and sufficient condition for determining whether the sentence is

negative. We would not expect to have a negative sentence failing, for example, the tag question test, but passing all the others.

Having settled on this seemingly clear issue, we will embark upon the wearisome task of seeing how the negative marker accompanying modal verbs behaves with respect to Klima's tests. We shall start by examining modals receiving a deontic interpretation. How does *may*, for example behave with respect to Klima's tests? If we take the following example, let's say:

(11) "You may not call me at home!," the teacher shouted at his students.

does this sentence pass Klima's tests for negativity or not? In other words, is the "not" occurring after the modal an instance of adverbial or sentential negation? Let us investigate into the matter. As we can clearly see from below:

(12) a. ? You may not call me at home, may you?
b. You may not call me at home, not even at work.
c. You may not call me at home, and my colleagues may not call me at home either.
d. You may not call me at home and neither may my colleagues.

it seems that the sentence passes all tests but one: the tag question test, which is rather bothering if we take into account the fact that Klima devised each and every one of these tests as a necessary and sufficient condition for the negativity of a sentence. Perhaps the reason why (12 a.) is felt as awkward is not because the sentence "You may not call me at home." is not a negative sentence, but because of something else. The situation becomes much clearer if we look at a sentence which is more or less similar in meaning to the one we have discussed, and which is clearly negative (since the negative marker "not" has been cliticized to "n't"):

(13) Don't call me at home!

In this case, the clearly negative sentence also fails the tag question test, since a sentence of the type "Don't call me at home, do you?" is out of the question. In such a case, a more

appropriate continuation would probably be with another verb, "will", for example, as in: "Don't call me at home, will you?". However, it cannot be claimed that the sentence really passes Klima's test. A possible explanation for this could be related to the fact that we have to deal with a 'disguised' imperative, with a sentence by means of which the teacher tries to impose something upon his students, and such an authoritative impulse is by no means compatible with the general meaning of tag questions.

If I say, for example, "The weather is really wonderful today, isn' t it?" in a dialogue with a friend of mine, what I am actually inquiring is whether he also believes the same thing as myself, whether, to his mind, "the weather is wonderful" is also a true proposition. I am not asking whether the weather is actually wonderful, i.e. I am not inquiring about a state of affairs existent in the world, what interests me is whether he believes that what I have just said is true. If I say this sentence to myself, the question may acquire a deliberative flavour. In both cases, the tag seems to question the truth of the assertion I have just made. The tag, however, seems rather awkward if the sentence preceding the tag does not function as an assertion, but as a directive, for example, by means of which I try to make the world fit my words, I try to effect a change in the state of affairs in the world.

It is in this light that we shall discuss (12 a.). As we well know, modals receiving a deontic interpretation can be used in either one of two ways: descriptively or performatively. In our example, however, "may" is not used descriptively, but performatively, since the source of the imposition is the speaker himself, and not somebody else. If it is the speaker himself who imposes something upon the students, it is only natural that he will not question his imposition immediately after establishing it, unless, of course, he is a seriously disturbed person, with frequent slips of memory, or unless he has had some sort of revelation that a good teacher should perhaps not be kinder to his students. If, however, the verb "may" were not used performatively, but descriptively, if, for example, the source of imposition were not the speaker, i.e. the teacher, but the college regulations, then the tag question would no longer be felt as awkward. On such a reading, (12 a.) could mean something like " The college regulations do not allow you to call me at home, as far as I remember, do they?". In this way, we have shown that Klima's tag question test only works for assertions, but not for directives. In a

similar line, (12 c.) and (12 d.) may sound a bit strange on a performative reading of the modal "may", if we assumed the absence of the teacher's colleagues from the room. Since the second part of the sentence seems to favour a descriptive reading, we are tempted to interpret the first part as a description as well.

The reason for which (13) fails the tag question test is thus not because it is not negative, but because the modal "may" is used performatively by the speaker.

The same situation is to be found with deontic "must":

(14) "You must not kiss the strange donkey!, " the Mother said to the naughty child.

(15) a ?. You must not kiss the strange donkey, must you?

b. You must not kiss the strange donkey, not even the cute little rabbit.

c. You must not kiss the strange donkey and Didi must not kiss the strange rabbit either.

d. You must not kiss the strange donkey and neither must Didi.

On a performative reading, (15 a.) sounds most awkward. However, just as in the case of *may,* this may be put down to the fact that the tag is not appropriate in a performative context. (15c.) and (15 d.) are also more appropriate under a descriptive reading of the modal rather than a performative one.

We are at this point facing a very difficult problem: although the sentence "You must not kiss the strange donkey!" seems to count as negative from a syntactic point of view, i.e. it seems to be the case that it is the modal verb that is negated, from a semantic point of view, nevertheless, it is not the modality that is negated, but the event. "You must not kiss the strange donkey!" would paraphrase as "It is necessary that you do not kiss the strange donkey" (or "It is necessary for you not to kiss the red donkey"). However, in our opinion, it cannot be the case that the modal is negated, but the modality isn't. This is why we tend to think that, if we admit that Klima's tests are passed, then the correct paraphrase of the sentence "You must not kiss the strange donkey" as it appears in the contexts in (15) is actually "It is not necessary that you/ for you to kiss the strange donkey."/ "You are not obliged to kiss the strange donkey."

If we consider that the sentence is paraphrased as "It is necessary for you not to kiss the strange donkey"/ "You are obliged not to kiss the strange donkey.", then we don't believe we can really say that Klima's tests are passed. Let's take (15 a.), we would have something like "It is necessary for you not to kiss the strange donkey, is it?", which is not at all appropriate, not even under a descriptive reading of the modal. In (15 b.), we would have "It is necessary for you not to kiss the strange donkey, not even the cute little rabbit" , which is again odd. If, instead, we had something like "It is not necessary for you to kiss the strange donkey, not even the cute little rabbit.", (15 b.) would be much more appropriate. "It is necessary for you not to kiss the strange donkey , and it is necessary for Didi not to kiss the strange donkey either" is not a grammatical sentence of English. The same thing happens in the case of (15 d.): "It is necessary for you not to kiss the strange donkey and neither is it necessary for Didi not to kiss the strange donkey".

In other words, although from a phonological point of view, it would look as if we had to deal with the same sentence both in (14) and (15), in fact, this is not how things stand. While an adequate paraphrase for (14) would be 'It is necessary for you not to kiss the strange donkey.', the correct paraphrase for "You must not kiss the strange donkey." in (13) is 'It is not necessary for you to kiss the strange donkey.' In (14), we have to do with adverbial negation: "You must NOT kiss the strange donkey.", whereas in (15), we have to do with sentence negation: "You must not kiss the strange donkey". In this case, mistaking the one for the other can be explained by the fact that, in both cases, we have to deal with the same negative marker "not".

However, the confusion in the case of "must" and negation goes way beyond this. To make this clear, we shall take a sentence in which we have "mustn't" and not "must not" (16):

(16) "You mustn' t worry about the issue, dear."

(17) a. You mustn't worry about the issue, must you?

b. You mustn't worry about the issue, not even about Jane's problem.

c. You mustn't worry about the issue, and Luca mustn't worry about the issue either.

d. You mustn't worry about the issue and neither must Luca.

(18) a. You mustn't worry about the issue, if you do, you are bound to go into hospital.

b. You mustn't worry about the issue, there are more important things in life than this stupid problem.

In this way, we can be pretty sure that we are dealing with sentence negation, since "n't" can only be an instance of sentence negation. Such a sentence will pass all of Klima's tests successfully. What is interesting about this example is the fact that it is understood as expressing a 'not-necessary' meaning, and not a 'necessary-not' meaning, as it was the case with (14). "You mustn't worry about the issue, dear" is felt to be synonymous to "You needn't worry about the issue, dear." However, we can easily create a context which can mislead – we believe- speakers of English (even native) into saying that that they understand the sentence as expressing a 'necessary-not' meaning. If, for example, we add a sentence like "if you worry, you are bound to go into the hospital", by means of which we focus upon the tragic consequence of the act of disobeying the interlocutor's demand (as in (18 a.)) then what we will get is probably a great number of speakers arguing that "mustn't" expresses a 'necessary-not' meaning. If, on the other hand, we continue the sentence "You mustn't worry about the issue" as in (18 b.), we will get speakers arguing the very opposite, namely, that "mustn't" expresses a 'not-necessary' meaning. Since, we believe, it isn't possible for the same form "mustn't" to express two different meanings (especially considering the fact that it is a form in which we can recognize a clear instance of sentence negation, namely "n't"), we have to opt for one of the two variants. Obviously, the one we will opt for is the variant in which "mustn't" expresses a 'not-necessary' meaning. In this way, we can claim that negating the modal by "n't" results in the negation of the necessity meaning expressed by the modal. The fact that "mustn't" is sometimes interpreted as expressing a different meaning, namely a 'not-necessary' meaning is, we argue, a consequence of the pragmatic context which misleads the speaker. The type of verb the modal combines with may also incline the balance in favour of one reading instead of the other. In the case of a verb like "worry", a verb which assigns to the subject the theta-role of Experiencer, we are more likely to get speakers arguing for a 'not-necessary' reading of "mustn't". A sentence like "You mustn't be sad, dear.", on a deontic reading, is most likely to be interpreted as synonymous to "You needn't be sad, dear" (unless speakers are once again misled by the context, e.g. by a

continuation like "You mustn't be sad, or I'll shoot you with my own hands"[30]). This is because, generally, you cannot impose on anybody the obligation to feel or not to feel something, the only thing you can impose on him is the obligation to do or not to do a certain thing. For this reason, many speakers will argue that "You mustn't go there" expresses a 'necessary-not' meaning. In our view, this is not the case: we shall argue in favour of the view that "mustn't" can only express a 'not-necessary' meaning. Such a statement goes against everything linguists and even mere speakers argue is actually the case. In our view, the fact that "mustn't" is used nowadays to express a 'necessary-not' meaning is but a consequence of the speakers' careless use of language. Instead of saying "You must NOT go there", many speakers would simply say "You mustn't go there", as if it were the same thing. A consequence of the generalization of this mistake with speakers was the specialization of the form "needn't" for expressing a 'not-necessary' meaning. A great contribution to the bad understanding of sentences with "mustn't" was made by the pragmatic context (e.g. a misleading continuation like in (18 a.)) or the association with an agentive verb, as already explained above.

In our view, "mustn't" is wrongly used and understood as expressing 'necessary-not'. The use of "mustn't" in such a way must have had some impact upon the form "needn't" being used more and more in order to express a 'not-necessary' meaning[31]:

(19) You needn't wear high heels if you don't want to!

(20) a. You needn't wear high heels, need you?

b. You needn't wear high heels, not even dancing shoes.

c. You needn't wear high heels, and Lolita needn't either.

d. You needn't wear high heels, and neither need Lolita.

[30] In this case, the sentence "You mustn't be sad." would wrongly be paraphrased by many speakers as "It is necessary for you not be sad". In such a context, "be sad" would be interpreted as a [+control] stative (or, perhaps, as an agentive verb meaning "show that you are sad").

[31] Of course, what we here provide is mere speculation. When exactly "needn't " started to be used, how exactly "mustn't" was used, these are questions which are supposed to receive an answer after a thorough investigation into the history of the English language. Nevertheless, the hypothesis seems fairly plausible

The sentence successfully passes all of Klima's tests for negativity. The same thing happens in the case of "need not" (without any stress on "not"), which clearly indicates to us that we are dealing with an instance of sentence negation.

As far as "should" and "ought (to)" are concerned, there is a general consensus that they behave just like "must" with respect to negation, namely, "should not" and "ought not (to)" express a 'necessary-not' meaning. But let see how they behave with respect to Klima's tests:

(21) a. You should not buy your child all the toys he wants, should you?
b. You should not buy your child all the toys he wants, not even all the books he wants.
c. You should not buy your child all the toys he wants, and his father should not either.
d. You should not buy your child all the toys he wants, and neither should his father.

It seems to be the case that "not" passes all the tests for sentence negation. Just like in the case of *may* and *must* on a deontic interpretation, *should* has to receive a descriptive reading rather than a performative reading in (21 a.) for the tag question to make sense, in other words, the source of the advice/ imposition has to be someone other than the speaker himself. There is no such requirement in (21 b-d). In the case of "should not", thus, we seem to be facing a case where the negative marker is clearly an instance of sentence negation, but, despite this, it does not express a 'not-necessary' meaning, but a 'necessary-not' meaning. How can we solve this puzzle? In two ways: we can either say that that the "not" following "should" is both an instance of sentence negation and external negation, in other words, "should not" does not express a 'necessary-not' meaning, but a 'not-necessary' meaning[32],or we can say that "should not" truly does express a 'necessary-not' meaning, and, therefore, the "not" following "should" is not an instance of sentence negation, but of adverbial negation. In the latter case, however, we would be facing a quite difficult problem, because "should not" seems to pass all the tests for sentence negativity. Moreover, the "not" following "should" contracts to "n't", which is a clear indication that we are dealing with sentence negation, and not with adverbial

[32] In Coates's terms, "You should not buy your child all the toys he wants" would paraphrase as 'It is not advisable for you to buy your child all the toys he wants.'

negation. If the "not" following "should" were an instance of adverbial negation, it would be stressed, and, moreover, it would not pass any of Klima's tests:

(22) a. You should NOT make fun of your teachers, *should you?
b. You should NOT make fun of your teachers, *not even of your parents.
c. You should NOT make fun of your teachers, and * Billy should NOT make fun of his teachers either.
d. You should NOT make fun of your teachers, and *neither should Billy.

Hence, we will embrace the first option, arguing that the "not" following "should" is both an instance of sentence negation and external negation. We will apply the same reasoning in the case of *ought (to)* followed by a negative marker:

(23) a. You ought not to listen to heavy metal, oughtn't you?
b. You ought not to listen to heavy metal, not even to rock'n roll.
c. You ought not to listen to heavy metal, and Betty ought not to listen to heavy metal either.
d. You ought not to listen to heavy metal, and neither ought Betty.

As we can clearly see in (23), the negation following the modal verb *ought* is an instance of sentence negation. It can contract to "n't" (as we can notice in (23 a.). However, *ought* can also be followed by a negative marker which does not negate the modal verb:

(24) You ought NOT to watch TV late during the night.

Apart from stress, there is also another element which can help us distinguish the negative marker which negates the modal verb from the negative marker which negates the proposition taken as a complement by the modal, namely, the fact that the negative marker which does not negate the modal verb can occur between "to" and the lexical verb

taken as a complement by the modal. In other words, we can have a split-infinitive construction such as:

(25) You ought to NOT watch TV late during the night.

Ought is an interesting case since it is the only modal verb which combines with a full infinitive rather than a bare infinitive. Its complement is thus not a VP (or an AspP), but a TP[33].

We will now move on the modals receiving an epistemic interpretation and see how they behave with respect to Klima's tests. We will start with *may* under an epistemic reading:

(26) a. *Jack may not have passed the LEC test, may he?
b. *Jack may not have passed the LEC test, not even the literature test.
c. *Jack may not have passed the LEC test, and Jill may not either.
d. *Jack may not have passed the LEC test, and neither may Jill.

As we can clearly see, *may not* under an epistemic reading does not pass any of the tests set up by Klima. Our proposal is, hence, to consider that the "not" following the modal verb "may" is not an instance of sentence negation, but an instance of adverbial negation. A correct rendering of the sentence "Jack may not have passed the LEC test." would, in this case, be "Jack may NOT have passed the LEC test.", where the negative marker is stressed, a clear indication of the fact that we are dealing with adverbial negation. Another argument in favour of this idea is that speakers argue that the contracted form "mayn't" cannot be used when it receives an epistemic reading. The fact that we can use *mayn't* under a deontic reading but we cannot use *mayn't* under an epistemic reading could be explained, in our opinion, by saying that *may not* receiving a deontic interpretation can be contracted to *mayn't,* because, in this case, the negative marker is an instance of sentence

[33] Because of this, it could be argued that the negative marker which follows the modal (24) , but does not negate the modal, is also an instance of sentence negation, with the only difference that the sentence it negates is not the matrix, but the subordinate clause.

negation, while *may not* receiving an epistemic interpretation cannot be contracted to *mayn't*, because, in this second case, the negative marker is not an instance of sentence negation, but of adverbial negation, it is actually *may NOT*. The correct paraphrase for the sentence "John may NOT have passed the LEC test." is 'It is possible that John has not passed the LEC test', with modality scoping over negation.

As we presented the matter, it seems to be the case that there is a clear-cut division of labour between *may not* under a deontic reading and *may not* under an epistemic reading. However, this is not really the case. *May* under a deontic reading can easily be followed by a negative marker which is an instance of adverbial negation:

(27) Piggy may NOT to do his homework today, but he'll have to do it tomorrow.

Despite this, epistemic *may* is not used with sentence negation. A sentence like:

(28) Lorry mayn't be happy about your having lost her favourite toy.

should, in our view, receive the interpretation: 'It is not possible that Lorry is happy about your having lost her favourite toy'. However, *mayn't* is never used as such in English. Instead, the form used to express the 'not-possible' meaning is *can't.* A possible explanation for this could be the speakers' need to differentiate between deontic and epistemic readings (since *mayn't* (modal and sentence negation) is generally found with deontic readings, then another form is used with epistemic readings so as to avoid confusion).

One clear way in which we could find out whether it is truly the case that *may* under an epistemic reading can only be followed by a negative marker which is an instance of adverbial negation is by testing whether it can combine both with sentence negation and adverbial negation:

(29) He may not NOT take his pills .

While a sentence like (29) is perfectly possible under a deontic reading, this is not the case when *may* is offered an epistemic reading. If we can have two "not" 's in the same sentence, one of them must be an instance of sentence negation, whereas the other one must be an instance of adverbial negation. Since *may* on an epistemic interpretation is followed by a negative marker which is an instance of adverbial negation, it cannot be the case that we have two "not" 's instantiating the same type of negation[34].

As far as *must* under an epistemic reading is concerned, we can notice that it behaves in the following way:

(30) a. ? He must not have known the answer to the second question, must he?
b. ?He must not have known the answer to the second question, not even to the first.
c. ?He must not have known the answer to the second question, and Jane must not either.
d. ?He must not have known the answer to the second question, and neither must Jane.

(30a.) sounds awkward unless the tag is read as a deliberative question. This is because, given the fact that epistemics express the speaker's **subjective** evaluation of the truth of a proposition, it would be most strange to interrogate a different person with respect to one's own opinions (Papafragou (2000)). The only way in which this would not seem so awkward would be if that someone else which is interrogated were the speaker himself. As for (30 b., c., d.), we can notice that, although it seems to be the case that we are dealing with a negative marker which is an instance of sentence negation (since it is not stressed), they all fail to pass Klima's tests. In case the negative marker "not" is

[34] We can neither have two "not"s instantiating sentence negation, nor two "not" 's instantiating adverbial negation. The explanation for why it is the case that we cannot have two "not"'s instantiating sentence negation in the same sentence is fairly simple: because there is only one Polarity head, and not two. Things get a little bit messier in the case of adverbial negation. If we assume that adverbial negation is a head, then we would expect the same behaviour as in the case of sentence negation, namely, the impossibility of reiterating the negative marker. On the other hand, if we assume that adverbial negation is an adjunct to a VP, then we would expect the reiteration of such an element to be perfectly possible (just like in the case of "very", for example: "She is very, very pretty"). The empirical data seem to bring evidence in favour of the view that adverbial negation is an adjunct and not a head, since we can have something like "You must NOT, NOT eat that junk." (in which the speakers stresses the necessity of his interlocutor not doing a particular thing). What is very important is that the two "not"' s are separated by a comma. This element is, we believe, nothing but a reflection in the realm of spelling of the fact that the reiteration is for reasons of emphasis. In other words, the succession "NOT, NOT" does not mean "yes", as in logic, but a very strong "NOT". Interestingly, though, we cannot the same succession without a coma.

actually “NOT”, i.e. an instance of adverbial negation, it is pretty clear why the sentences fail to pass Klima’s tests, namely, they are simply not negative. In case, however, the negative marker “not” is an instance of sentence negation, the sentences above should readily pass Klima’s tests without any problem whatsoever. Despite this, most speakers tend to interpret the sequence *must not* as expressing NECESSARY-NOT, rather than NOT-NECESSARY. The same thing happens in the case of *mustn’t:*

(31) a. ?They mustn’t be married, must they?

b.? They mustn’t be married, not even engaged.

c. ?They mustn’t be married, and Tina and Tony mustn’t be married either.

d. ? They mustn’t be married, and neither must Tina and Tony.

According to Gunnel Tottie (1985) , in American English, the form *mustn’t* can be used as a synonym for *can’t.* In our view, this is a consequence of the careless way in which speakers use language. *N’t* is clearly an instance of sentence negation, and, hence, *mustn’t* should have received the interpretation NOT-NECESSARY, which is equivalent to POSSIBLE-NOT, and not to NOT-POSSIBLE (*can’t).*

As far as *should* and *ought* are concerned, they behave just like *must:*

(32) a.? She should not have read “The Waves” by now, should she?

b. ?She should not have read “The Waves” by now, not even “Orlando”.

c. ?She should not have read “The Waves” by now, and Loretta should not either.

d. ?She should not have read “The Waves” by now, and neither should Loretta.

In our view, Klima’s tests should definitely be passed in case the negative marker is an instance of sentence negation, whereas they should not be passed in case the negative marker is an instance of adverbial negation. If in (32 a.), we are actually dealing with “NOT” and not with “not”, then the sentence will fail Klima’s tests. If, however, the negative marker is an instance of sentence negation (which can further on be cliticized to

n't), then the sentence successfully passes Klima's tests. Whether it correctly takes the form *should NOT,* or it incorrectly takes the form *shouldn't*, speakers tend to assume that the verb *should* scopes above negation. This is why (32 a., b, c. and d.) are felt to be rather awkward.

In what concerns the verbs *will* and *shall*, we can see that they clearly pass all of Klima's tests:

(33) a. He will not have finished the strawberries by now, will he?
b. He will not have finished the strawberries by now, not even the cherries.
c. He will not have finished the strawberries by now, and Betty will not either.
d. He will not have finished the strawberries by now, and neither will Betty.

In (33), *will* may be argued to receive an epistemic interpretation, and it scopes below negation. In this case, we are dealing with sentence negation. The modal verb *will* can very well combine with adverbial negation, in which case it will not pass any of Klima's tests. In (34), the modal verb *will* expresses volition ('Toto intends NOT to play with the dolphins'):

(34) a. ?Toto will NOT play with the dolphins, will he?

b. ?Toto will NOT play with the dolphins, not even with the little dogs in the yard.

c. ?Toto will NOT play with the dolphins, and Titi will NOT play with the dolphins either.

d. ?Toto will NOT play with the dolphins, and neither will Titi.

As far as dynamic *can* is concerned, it successfully passes all the tests set up by Klima:

(35) a. Becky cannot read the last letters of the alphabet, can she?

b. Becky cannot read the last letters of the alphabet, not even the first.

c. Becky cannot read the last letters of the alphabet, and Pesky cannot read the last letters of the alphabet either.

d. Becky cannot read the last letters of the alphabet, and neither can Pesky.

Obviously, the verb *can* may also combine with adverbial negation, as in "Becky can NOT utter a word for about ten minutes", in which case it will fail Klima's tests.

In our view, thus, in case a modal verb combines with sentence negation, it should successfully pass all the tests set up by Klima, and, in case a modal verb combines with adverbial negation, it should fail Klima's tests. Whenever the situation is different, hence, when the negative marker is an instance of adverbial negation, but the sentence seems to pass Klima's tests, or when the negative marker is an instance of sentence negation, but the sentence seems to fail Klima's tests, we make the claim that we are dealing with a careless use of language on the part of the speaker, or with a misunderstanding of the speaker's words on the part of the hearer.

3.5. Syntactic Accounts of the Behaviour of Negation with Respect to Modals

In this section, we will quickly go through the various hypotheses put forth by linguists so as to account for the behaviour of modals with respect to negation, after which we will tentatively provide a syntactic representation for modals and negation in English.

3.5. 1. The Coates-Picallo Hypothesis

A first hypothesis that was put forth in relation to the syntactic scope of modals with respect to negation was that modals receiving an epistemic interpretation always scope above negation, whereas modals receiving a root interpretation always scope below negation. According to Coates (1983: 237-9) (apud Papafagou (2000)) "negation affects the modal predication if the modal has Root meaning', while' it affects the main predication if the modal has Epistemic meaning.' (88) :

(36) a. You may not live to see your daughter married. (epistemic)

'It is possible that you will not see your daughter married.'

b. "You may not eat the cherries. I bought them for our child, you fool, not for you!," the nervous wife shouted. (root)

'You are not allowed to eat the cherries.'/ 'It is not possible for you to eat the cherries.'

The same claim was made by Picallo(1990) with respect to Catalan:

(37) En Jordi pot no haver sortit (epistemic)
may not have left
'It is possible that Jordi hasn't left yet'

(38) En Jordi no ha pogut sortir (root)
not has *could* leave
'Jordi hasn't been able to leave'.

Thus, one might tentatively assert that it is a fact of UG that epistemics scope above negation, whereas roots scope below negation. Such a generalization obviously has consequences for the syntactic representation of modals and negation. If we assumed that modals only occupy one position in the tree, it would be somewhat problematic to offer a syntactic account of the different behaviour of deontic and epistemics with respect to negation. However, if we assumed that modals receiving a deontic interpretation occupy one position in the tree, whereas modals receiving an epistemic interpretation occupy another position in the tree (as Butler, for example), then we could have a very neat account of the behaviour of negation with respect to modals, because we could simply place Negation between the Mood head associated with 'epistemic modals' (i.e. modals receiving an epistemic interpretation) and the Mood head associated with 'root modals' (i.e. modals receiving a root interpretation):

(39) MoodP> TP> NegP> MoodP> VP

However, such a representation fails to account for the behaviour of modals with respect to negation. The reason for this is fairly simple: it is simply not the case that epistemics scope over negation, whereas deontics scope below negation. Whereas this seems to be the case in Catalan, it is clearly not the case in English. A first counterexample which can be offered to show that the generalization in terms of the deontic-epistemic contrast does not hold water is *must*. Papafragou (2000), for example, claims that, regardless of its interpretation, *must* always assumes wide scope with respect to negation. The example she gives is the following:

(40) a. These children must not be older than three. (epistemic)
'It is certain that these children are not older than three'.
*'It is not certain that these children are older than three.'
b. They must not leave. (root)
'It is required that they do not leave'.
*'It is not required that they leave.'

However, we believe her claim is not correct. As we argued in the previous sections, such a use of "must not" to express a 'necessary-not' form instead of a 'not-necessary' form is but a consequence of a careless use of language. Or, it might be the case that, in the examples in (40), the "not" which appears after "must" is actually an instance of adverbial negation, and not an instance of sentence negation., in other words, we have to deal with "NOT" rather than "not". Hence, we dismiss the verb *must* as a proper counterexample to the previous generalization[35].

A more proper counterexample is the modal verb *need*, which consistently falls under negation, as is obvious from the examples offered by Papafragou (2000):

(41) a. You need not resign.

[35] According to Papafragou (2000) and Cormack and Smith (2002), *should* and *ought (to)* pattern alongside *must*, and so do *will*, *shall*, and *would*.

'It is not the case that you need resign.'

b. The proof need not exist.

'It is not the case that the proof need exist.'

As we can clearly see, whether the verb *need* receives a deontic or an epistemic interpretation, it always falls under the scope of negation.

Another perhaps not so clear counterexample is the modal verb *can*, which again falls under negation, regardless of its interpretation:

(42) a. Blinkie cannot drink all that wine, his girlfriend won't let him.

'It is not possible for Blinkie to drink all that wine,'/ 'Blinkie is not allowed to drink all that wine.'

b. The allegation cannot be true.

'It is not possible that the allegation is true.'

The existence of such counterexamples clearly proves that the generalization that epistemic modals scope outside negation, whereas root modals scope inside negation does not hold water.

3.5. 2. The Cormack & Smith Account

Another hypothesis that was put forth in relation to the behaviour of modals with respect to negation is that modals of necessity scope above negation, whereas modals of possibility scope below negation (Cormack and Smith (2002)).

In order to understand the account Cormack and Smith propose for the behaviour of modals with respect to negation, we first have to understand their more general view upon the organization of the linguistic sign. Cormack and Smith propose a model of their own, which departs from the Minimalist model (Chomsky 1995). If, in the Minimalist model, it can be claimed that, although merged below B, an item A has scope over B because it has been moved to c-command B at LF, in other words, if, in the Minimalist model, *Move* is possible at LF, in the model proposed by Cormack and Smith, this is not

the case. According to them, there is no movement at LF (at least in the case of heads), and, hence, if in a particular interpretation, a particular element A has scope over some item B, then A will be merged in a position c-commanding B. On such a view, scope is thus defined as a syntactic notion.

On such a view, the linguistic sign is split between two parts: the LF-interpretable part of a head, and the PF-interpretable part of a head. The LF-interpretable part of a head is merged in its proper scope position with respect to other heads, and the PF-interpretable part of a head is merged where it is heard relative to other heads. The SPLIT SIGN hypothesis proposed by Cormack and Smith can thus be argued to revisit the traditional split of the word into meaning and form from a modern perspective.

To better understand the model proposed by Cormack and Smith, let us take the following example containing the modal verb "can":

(43) He can not sleep all afternoon, he's got a lot of work ahead of him. (deontic)

'It is not possible for him to sleep all afternoon'/ 'He is not permitted to sleep all afternoon'.

'It is not possible that he sleep all afternoon.' NOT [CAN

As is fairly obvious from the paraphrase of (43), from a semantic point of view, the negative marker "not" takes scope over the modal. In order to capture this scope phenomenon, we will simply place the modal under negation at the level of LF. However, we seem to come across a problem at this point, since the modal never comes after negation in English:

(44) *He not can sleep all afternoon.

As a solution to the problem, Cormack and Smith argue that the modal is split into two parts: while its LF-part is merged below negation, its PF-part is merged where it is heard

relative to other heads, namely, above negation. In other words, we have to deal with a PF-displacement of the modal, so that what we get in the end is the sentence (43)[36].

On the view proposed by Cormack and Smith, modals fall into two classes according to the position in which they are merged with respect to Pol (the head responsible for the polarity of the sentence, which can have two values: Aff, Neg): (a) $Modal_1$, which is merged higher than Pol, and (b) $Modal_2$, which is merged lower than Pol. In English, this split corresponds to the necessity-possibility divide. $Modal_1$ comprises the modals of necessity: *will, shall, should, must, ought (to),* while, under $Modal_2$ we will find the modals of possibility: *can, could* and, in addition, *need* and *dare,* which are treated by Cormack and Smith as NPIs (negative polarity items), requiring to be under the scope of negation for licensing purposes. What we will get at LF is the following ordering:

(45) CT> ($Modal_1$)> Pol (POS/ NEG)> ($Modal_2$)> (Adv [NEG])

The ordering correctly captures the fact that both classes of modals occur above adverbial negation, whereas they differ in their scope with respect to sentence negation (Pol (NEG)).

From a semantic point of view, such a divide is highly convenient, since the scope can be read off from the level of LF. If an element α c-commands an element λ at LF, this means that α has scope over λ. So, all we have to do is look at LF and read off from it the scope relations among elements. By looking at LF, argue Cormack & Smith, we will

[36] Actually, the impossibility of the sentence in (44) does not necessarily lead to the conclusion that it is the modal which undergoes PF-displacement. So as to finally reach the sentence in (43), there are two possibilities which open up: either the modal is displaced, or negation is displaced. Cormack and Smith clearly show that it is the modal which is split by looking at the interaction between modals, negation, and adverbs. If we take the following two sentences:

a. He can often sleep all afternoon. $[_{Pol\ [POS]}\downarrow$ [OFTEN [CAN
b. He can not often sleep all afternoon. $[_{Pol\ [NEG]}$ NOT [OFTEN [CAN

we can easily notice the fact that the LF scope ordering of *not* and *can* is disturbed at PF relative to LF, but that of *not* and the temporal adverb *often* is the same at PF. This makes it pretty clear that it is the modal which splits, and not the negative marker.

see that (i) modals of necessity scope above negation, whereas (ii) modals of possibility scope below negation.

However, despite its very appealing simplicity, the account proposed by Cormack and Smith has its problems. The first major problem, which could make the whole edifice collapse, is that there isn't actually such a neat correspondence between the modals under $Modal_1$ and the modals of necessity, on the one hand, and the modals under $Modal_2$ and the modals of possibility, on the other hand. Cormack and Smith themselves admit this: "It seems that for the majority of modals, the pre-Pol/ post-Pol split in English corresponds to the 'necessity' vs. 'possibility' contrast, rather than to the epistemic vs. deontic contrast." (140) Thus, it is not the case that all modals of necessity scope above negation, nor is it the case that all the modals of possibility scope under negation, but just the majority.

But let us take a look at the exceptions which defy the rule that modals of necessity scope above negation, while modals of possibility scope under negation. A first exception is represented by the modals *may* and *might*, which, it is claimed, scope above negation under an epistemic reading, and below negation under a deontic reading:

(46) He may not sing "Four Strong Winds" at the party.

a. 'It is not permitted that he sing "Four Strong Winds" at the party'./ 'He is not allowed to sing "Four Strong Winds" at the party.' (DEONTIC)

b. 'It is possible that he does not sing "Four Strong Winds" at the party.' (EPISTEMIC)

According to Cormack and Smith (2002), such a contrast is to be accounted for by a specification in the lexicon for Pol in the case of an epistemic reading: "it might be that a single category label, with distinct selection features for individual items (i.e. selecting for Pol or not), is all that is needed" (141). On such a view, from a language acquisition perspective, what the child will have to do is simply learn that *may* and *might* behave differently according to the interpretation they receive (deontic or epistemic). In our opinion, it is not the case that "may" behaves in such different ways.

Another exception is represented by the modal verb *need*, which always scopes under negation:

(47) a. The little boy need not go to school if he is sick.

'It is not obligatory that the little boy go to school if he is sick.'/ 'The little boy is not required to go to school if he is sick.' (DEONTIC)

b. The weather need not be lovely tomorrow.

'It is not necessary that the weather be lovely tomorrow.' (EPISTEMIC)

Cormack and Smith argue that *need* is a NPI (negative polarity item) which has to be c-commanded by negation in order to be licensed, just like *dare*.

Moreover, it is arguable whether *must* or *should* behave like they claim they do. On their approach, *must* and *should* are modals of necessity, and, hence, they always scope above negation. However, in the case of a sentence like "You mustn't worry about the exam tomorrow. I'm sure it will be just fine.", it is not that clear that the paraphrase 'It is obligatory for you not to worry about the exam tomorrow.' would be the most appropriate, but rather 'It is not obligatory for you to worry about the exam tomorrow.' As for *should*, the paraphrase they offer for the sentence "Alfred shouldn't eat nuts" is 'It is advisable for Alfred not to eat nuts.' However, Coates (1983) (apud Cormack & Smith (2002)) considers that the paraphrase 'It is not advisable for Alfred to eat nuts.' is equally possible[37]. Moreover, Cormack & Smith treat volitional *will* and *shall* as modals of necessity, which is highly debatable. The idea that volitional *will* is a necessity modal can easily be dismissed by the simple argument that, if X intends to do something, this does not mean that it is necessary that he will do it. Volitional *will* cannot be said to be a modal of necessity. What can, nevertheless, be said with respect to volitional *will* is that it patterns alongside the modals of necessity, since, according to Cormack & Smith, it scopes above negation. The example offered by them is "John won't come home on time, will he?", where, they argue, volitional *will* (corresponding to intention) scopes above

[37] Cormack & Smith (2002) argue that this is not the case, invoking the argument that such a paraphrase is ambiguous due to negative raising effects. However, if this is truly how things stand, then any paraphrase with the negation coming after the modal operator would be ambiguous.

negation (the paraphrase offered is 'John intends not to come home on time'). However, in our view, it is not all that clear that the sentence "John won't come home on time." is best paraphrased as 'John intends not to come home on time'. 'John doesn't intend to come home on time.' may be argued to be a much better paraphrase of the sentence, with negation coming before the modal, especially if we take into account the fact that the sentence takes a positive tag, which means that we are dealing with sentence negation (Pol [NEG]), and not adverbial negation (WILL [$_{Adv}$ NOT).

All things considered, it is quite clear that the analysis proposed by Cormack & Smith fails to solve the puzzle of negation and modality in English. Despite this, Cormack & Smith do manage to draw our attention to some very important aspects related to modality and negation, which should not be overlooked by any account aiming to solve the puzzle.

A first important remark Cormack & Smith make is that the epistemic-deontic ordering can be explained conceptually. As we all know, in English, we cannot have two modals in the same sentence. However, we can have a modal verb and a verb with a modal meaning (*have to, is to, be allowed to, be able to, be likely to*). And, if we do, an important restriction on the sequence Modal-Verb with modal meaning is that we never get the ordering Deontic-Epistemic. We can have the orderings Epistemic-Epistemic, Deontic-Deontic, Epistemic-Deontic:

(48) a. Betty might have to leave the party before 10. (Epistemic> Deontic)

b. There might have to be four solutions. (Epistemic> Epistemic)

c. The dog may be allowed to sleep on the couch tomorrow. (Deontic>Deontic)[38]

d. *The boy may have to do his homework before going to sleep. (Epistemic> Deontic)

This is what has generally been labelled in the literature as the Modal Scope Constraint: epistemic modality must have scope over deontic modality. According to

[38] In such a case, the source of the modal permit is different.

Cinque (1999) (apud Cormack & Smith (2002)), the epistemic-deontic ordering is syntactic, rather than belonging to logical or conceptual necessity. It is a fact of UG that epistemics scope above deontics:

(49) $Mood_{epistemic}$> T> $Mood_{root}$

Cormack & Smith, however, do not adhere to this point of view. According to them, the epistemic-deontic ordering can be made sense of on a conceptual basis. The reason why we cannot have the order Deontic> Epistemic is the following: "Deontic and other root meanings are normally directed at some responsible person. […]. The responsible person is (or is not) permitted or required to undertake some action or realise some state: for obvious reasons, the requirement should be one that it is possible to undertake; and if its description were modified by epistemic or alethic modals, then that part of the undertaking is not within the powers of the responsible person to alter." (35). There are two ways in which the Epistemic-Deontic constraint could be interpreted: either the constraint holds over representations in the Language of Thought (Fodor 1975), or it is a pragmatic processing constraint or strong preference[39].

Treating the epistemic-deontic ordering as conceptual rather than syntactic has serious consequences upon the syntax of modal verbs. According to Cormack & Smith, two orderings are at work in English: (i) the epistemic- deontic ordering, and (ii) the necessity-possibility ordering. On their view, it is not possible for both orderings to be syntactic, and, since the epistemic- deontic ordering can be made sense of conceptually, what we are left with is the idea that the necessity-possibility ordering is syntactic. However neat their line of reasoning might seem, we do not believe it is correct. A first counterargument to their claim is that it is perfectly possible for both orderings to be

[39] Cormack & Smith seem to opt for the second variant. In a footnote, they create a context in which the Epistemic-Deontic ordering seems to make sense: "Consider a context where if the Knave of Hearts feeds Alice some of the liquid in the bottle, she will necessarily become small. The Queen of Hearts might stipulate, with the deontic addressed to the Knave of Hearts, "no, Alice may not have to be small today."". It, thus, seems to be the case that the Epistemic-Deontic constraint is rather pragmatic, determining that "when two modal expressions occurred in the same modal domain (i.e. without an intervening lexical verb) then they would not be interpreted as a deontic followed by an epistemic, because this was never likely to be the correct interpretation" (155).

syntactic (as we can clearly see in Butler (2003)). A second and more important counterargument is that, even if the epistemic-deontic ordering were conceptual (as we believe it is, for that matter), the necessity-possibility ordering is not syntactic, for the simple reason that there is no such thing as a necessity-possibility ordering. In the approach proposed by Cormack & Smith, we have the ordering $Modal_1$. $Modal_2$. However, as previously shown, there is but a very rough correspondence between $Modal_1$ and the modals of necessity, and $Modal_2$ and the modals of possibility. Nevertheless, what we are to retain from Cormack & Smith is the idea that the epistemic-deontic ordering can be made sense of conceptually.

Another very important thing that Cormack &Smith draw our attention to is a particular use of negation, namely, the use of negation in context such as the following:

(50) A to B: Shouldn't you be at the party?
Interpretation: Is it not the case that you (B) should be at the party?

(51) A to B: You shouldn't be at the party?

(52) You should eat more bananas, shouldn't you?

(53) A: You should eat more meat.
B: No I shouldn't.
Interpretation: No; it's not the case that I (B) should eat more meat.

Such contexts are troublesome, because, in all the examples given above, the modal verb seems to appear under the scope of negation, whereas, in normal contexts, this is not the case. According to Cormack & Smith, the verb *should* always occurs above negation, since it is a modal of necessity. However, we can clearly see that there are certain contexts in which it is the negation which scopes above the verb, and not the other way round. These are ECHOIC contexts, contexts in which a speaker echoes the original content of a sentence. In such cases, Cormack & Smith argue that we are dealing with a particular type of negation, which is external to an echoed proposition, i.e. echo-negation,

which scopes above all modals, even above the modals which normally occur below negation:

(54) (Q) (Echo) C T ($Modal_1$) Pol ($Modal_{2)}$ ($Adv_{[NEG]}$)

In this way, they manage to avoid a serious problem, because, otherwise, it would have been very difficult to explain how different interpretations could obtain in identical situations. By postulating the existence of a different category labelled as ECHO NEGATION, Cormack & Smith manage to accommodate within their framework some cases which are problematic for the behaviour of modals with respect to negation. In this way, the semantic content given by 'NOT [$Modal_1$....' cannot be expressed directly except in echoic contexts. Although it may not be the case that the echoic use of negation can be explained syntactically, by resorting to a category such as ECHO NEGATION, what we must, nevertheless, retain from Cormack & Smith is that there are some special contexts in which negation takes scope over a whole proposition. Any account trying to make sense of the behaviour of modals with respect to negation should clearly differentiate between ordinary contexts and echoic contexts.

Thus, although the account proposed by Cormack & Smith blatantly fails to solve the puzzle of negation and modals in English, it does provide some clear insights into modality and negation.

3.5. 3. Butler's Account

Another account trying to make sense of the behaviour of modals and negation in English is Butler's approach. Butler takes into account both the distinction between necessity and possibility, and the distinction between deontic and epistemic. However, unlike Cormack & Smith, who treat the epistemic-deontic ordering as conceptual and the necessity-possibility ordering as syntactic, Butler treats both orderings as syntactic, so that what we get at LF is the following hierarchy:

(55) epistemic necessity> (negation)> epistemic possibility> (strong) subject> root necessity> negation> root possibility> vP

Butler assumes that, in the case of deontic modals, we get a predicate reading, whereas, in the case of epistemic modals, we get a propositional reading. In order to account for what he considers a neat difference between the two, Butler divides the class of modals into two classes (epistemics and deontics), placing epistemics above the (strong) subjects and deontics below the (strong) subject. Unfortunately, however, this does not solve the problem of the behaviour of modals with respect to negation. And, hence, so as to make sense of their behaviour, Butler has to take into account the contrast between necessity and possibility modals as well.

Butler starts from the assumption that, just like modals, negation is a propositional operator which can affect the way a subject and its properties relate. According to whether it combines with a vP or a TP (the two phrases which qualify as propositions in Chomsky's view), negation can give rise to two distinct readings: to a predicate reading (in case it combines with a vP), or to propositional reading (in case it combines with a TP):

(56) My stupid computer isn't working.
a. ~ [my stupid computer is working]
b. my stupid computer is [~working].

We thus have two scope positions for negation: a low scope position (above vP) and a high scope position (above TP). The lower negation position corresponds to Neg, while the higher one would correspond to the Focus position of Rizzi (1995) (apud Butler (2003)). This would make perfect sense, since the elements associated with Focus bring new information. From a pragmatic perspective, a negative sentence provides novelty by contradicting certain assumptions present in the universe of discourse.

So as to account for the very different behaviour of modals with respect to negation in English, Butler splits both the class of epistemics and the class of deontics into two distinct classes which scope differently with respect to negation. Within the class of epistemics, what we get is the modals of epistemic necessity scoping above negation and the modals of epistemic possibility scoping below negation. Within the class of modals of deontic , what we get is the modals of deontic necessity scoping above negation and the modals of deontic possibility scoping below negation. In other words, "the array *necessity> negation> possibility* appears once immediately above vP, where the modality is interpreted as root, and once immediately above TP, where the modality is interpreted as epistemic." (985).

However neat it might seem, Butler' s analysis is not devoid of problems. Whereas, in Butler's view, it is quite easy to tell whether a modal is deontic or epistemic, and, hence, in Butler's view, whether it takes a vP or a TP as its complement, it is not that easy to tell whether a certain negative marker negates the predicate or the whole proposition. If we have an epistemic modal, we will assume that we are dealing with that negative operator which takes a TP as its complement, whereas, when we have a deontic modal, we will assume that we are dealing with that negative marker which takes a vP as its complement. But making sense of a situation like the following:

(57) The children mightn't have received their gifts.
Scope: epistemic possibility> subject> negation

is problematic. According to Butler, modal verbs expressing epistemic possibility scope under negation. However, this is not the way speakers understand the sentence, but the other way round, with negation scoping over the modal.

The solution Butler comes up with is that we are here dealing with an instance of lower scope negation, rather than higher scope negation. In contrast, in an example like:

(58) The man can't have murdered his wife.

we are dealing with an instance of higher scope negation, since negation scopes above the modal expressing epistemic possibility (scope: negation> epistemic possibility). The criterion by which Butler decides whether a negative marker is an instance of lower scope negation or higher scope negation is dependent on the way in which sentences are paraphrased. According to whether negation scopes with respect to the modal, we will postulate that we are dealing either with higher scope negation or with lower scope negation. If we have an epistemic modal of possibility and negation scoping above it, then we are dealing with an instance of higher scope negation. If we have an epistemic modal of possibility and negation scoping below it, then we are dealing with an instance of lower scope negation. If we have an epistemic modal of necessity, then we can never have negation scoping above it. But, since both types of negation occur below the modal, we may be dealing either with lower scope negation or with higher scope negation. If we have a deontic modal of possibility and negation scoping above it, we may be dealing either with lower scope negation or higher scope negation. We can never have a deontic modal of possibility scoping above negation. If we have a deontic modal of necessity and negation scoping below it, we are dealing with lower scope negation. If we have a deontic modal of necessity and negation scoping above it, then we are dealing with higher scope negation.

Thus, according to Butler, the criterion by which we can tell whether a negative sentence receives a predicate reading (in which case negation operates on vP) or a propositional reading (in which case negation operates on TP) is by looking at the scope relations holding between modals and negation. Taking Butler's hierarchy for granted, and looking at the paraphrase of the sentence, we simply find out whether we are dealing with higher-scope negation or lower-scope negation.

It is not always so easy to decide whether we are dealing with higher scope negation or lower scope negation. In a sentence such as:

(59) Billy may not wear bikini on the beach. He'll make an utter fool of himself!

may is a deontic modal of possibility, scoping below negation. Since both types of negation scope above deontic modals of possibility, it may be the case that we are either

dealing with higher-scope negation or lower-scope negation. In such a context, Butler assumes that we are dealing with lower-scope negation. His line of reasoning goes as follows: since the adequate paraphrase of the sentence above is 'Billy is not allowed to wear bikini on the beach.', where negation scopes below the subject, it must be the case that we are dealing with lower-scope negation. In our view, however, we can either have a propositional reading of negation ('It is not the case that Bill is permitted to wear bikini on the beach) or a predicate reading of negation ('Bill is not permitted to wear bikini on the beach.'), so both readings are perfectly possible.

A similar situation is to be found in a sentence such as:

(60) Billy must not wear bikini on the beach. All the girls will runaway.

We here have a deontic modal of necessity. According to Butler, the interpretation of this sentence is 'Bill is not allowed to wear bikini on the beach', so, we are dealing with lower-scope negation. However, we can also have the interpretation "It is not the case that Bill is allowed to wear bikini on the beach", in which case we are dealing with higher-scope negation. In our view, therefore, Butler's analysis seems to suffer from the fault of ignoring some perfectly possible readings.

Butler claims that his analysis accounts for the fact that most speakers do not accept negation scoping over epistemic necessity. On his view, elements in Focus are easily able to scope over epistemic possibility, but not over epistemic necessity:

(61) a. *Mustn't he have done something bad?
Scope: *negation> epistemic necessity
b. Mightn't he have bought the teddy-bear?
Scope: negation> epistemic possibility

However, as argued in Cormack & Smith (2002), it does seem to be the case that negation may scope over epistemic necessity in special contexts (echoic), one such context being the interrogative (as in (50)).

Unlike the analysis proposed by Cormack & Smith, Butler's analysis does not make the claim that modals which do not express necessity belong syntactically to the class of modals of necessity, or that modals which do not express possibility belong syntactically to the class of modals of possibility. However, it exhibits other problems. In our view, Butler's analysis wrongly sets the correspondence between a deontic modal and a predicate reading, on the one hand, and an epistemic modal and a propositional reading, on the other hand. Although it is perfectly true that, unlike epistemic modals, deontic modals allow a predicate reading (and actually favour it, if the subject is [+animate]), the fact is that they also allow a propositional reading. Butler' s analysis, however, seems to ignore this aspect, and thus builds on a wrong assumption, resulting in the treatment of the epistemic-deontic ordering as syntactic rather than conceptual. Moreover, in order to account for some empirical data which it takes for granted (and which may be argued to be inconclusive e.g. deontic *must)*, it distinguishes between modals of necessity and modals of possibility on a syntactic basis, which is debatable (given the fact that modals of necessity and modals of possibility do not seem to behave all that different from a syntactic point of view).

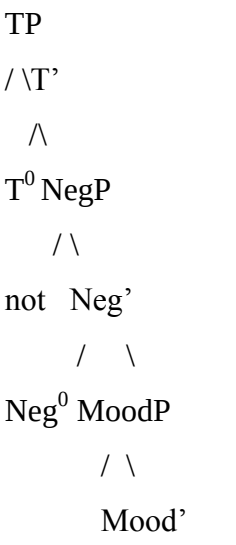
3.5. 4. Our Account

In what follows, we will try to sketch our own view upon the syntax of modals and negation in English. As we have argued in the sections dealing with general aspects related to negation and with Klima's tests, we believe that English is just as regular as any other language with respect to modality and negation, and that the irregularities linguists have noted, and that some have even tried to account for by resorting to extremely complex syntactic machinery are simply the result of the speaker's careless use of language. Most 'irregularities' in the system of modals and negation in contemporary English stem from the speakers' mistaking two different types of negation: sentence negation and adverbial negation. Such is the case with deontic *must* and *should*, for example, or with epistemic *may*, for that matter. The distinction between sentence negation and adverbial negation is a central distinction in our account of modality and

negation. On our view, there is a neat correspondence between sentence negation and external negation, on the one hand, and adverbial negation and internal negation, on the other hand. In other words, semantics very clearly mirrors itself in syntax. There is no divergence between the semantic interpretation and the syntax of the construction involving a modal and negation.

We will assume a unitary semantics for modal verbs, claiming that the epistemic-deontic contrast can be explained on a pragmatic basis. Moreover, we will assume that modal verbs come fully inflected from the lexicon and are inserted under the Mood head, from where they move up in the tree to the T head, in order to check their tense feature. The negative feature [+neg] under Neg^0 is checked through Spec-Head Agreement by means of the negative marker *not,* occurring in SpecNeg, and the [+neg] abstract features in the head of NegP. The modal verb will start out under the Mood head, then it will move to the Neg head so as to check its tense feature, but, since there is no tense feature for it to check there, it will move further up in the tree to T^0. On such a view, the negative marker *not* does not pose any problems to the movement of the modal verb up in the tree, since it is not a head, but it simply occupies a Spec position in the NegP:

(62)



/ \

Mood^0 VP

In our account, the syntactic negation of the modal translates into the presence of the NegP above the MoodP. Hence, we will not adopt the hypothesis put forth by Ouhalla (1991), who places the NegP below the MoodP. Although, from a phonological point of view, the modal always precedes negation in English, from a syntactic point of view, external negation translates into a Neg head placed above the modal[40]. We would like to claim that it is a fact of UG that, if a modal verb is negated from a semantic point of view, from a syntactic point of view, this will mean that the Mood head is below the Neg head. Hence, we do not adhere to the view that there are languages in which the NegP is above MoodP (such as Romanian) and languages in which the NegP is below MoodP (such as English)[41]. Instead, we will make the claim that NegP is always higher than MoodP, irrespective of the language we are dealing with.

Apart from the negative marker *not,* sentential negation can also be expressed by means of *n't.* However, although it is the case that *not* (unstressed) and *n't* are both instances of sentence negation (or, rather, mood negation), the two negative markers exhibit a quite different syntactic behaviour (Cornilescu (2003)), apart from belonging to two different registers (*not* to the formal register, while *n't* belongs to the informal register). Unlike *n't,* the negative marker *not* which is an instance of sentence negation does not raise with the verb:

[40] The term "sentence negation" is quite inappropriate, since the Neg head occurs above Mood, but not above T (the sentence being a TP).

[41] Note that this is quite different from what Laka's NEG Parameter (1990) states. According to Laka's NEG Parameter, there are languages in which NegP is below the Tense projection (such as English), and languages where NegP is higher than the Tense projection (such as Romanian):

a. Nu am mancat clatite ieri.
Not have-1st person, singular eaten pancakes yesterday.
'I did not eat pancakes yesterday.'
b. I did not eat pancakes yesterday.

Laka's NEG Parameter thus divides languages into two classes according to the position of NegP with respect to TP, and not according to the position of NegP with respect to MoodP.

(63) a. Couldn't he have given her some purple flowers instead of taking her to McDonalds?

b. Could he not have given her some purple flowers instead of taking her to McDonalds?[42]

There are two views upon the status of *n't* in the literature. On a first view, *n't* is but a reduced form of the negative marker *not*, being just like *not*, the head of NegP. If we assume that *n't* is a head, then we can either adopt the view that auxiliaries and modal verbs come fully inflected from the Lexicon for negation (i.e., they have a negative form in their paradigm, whereas lexical verbs do not), which is conceptually undesirable (Avram 2007), or assume that *n't* has clitic-like status, requiring a PF host. The second option is clearly preferable to the first. As argued in Avram (2007), "*n't* and the auxiliary form a phonological word, Merge of the auxiliary and the negative marker *n't* takes place at an early stage in the derivation: the linguistic object auxiliary (modal) +*n't* will undergo Spell Out and the object will be sent to PF snd LF. When subject-auxiliary inversion applies, for example, the auxiliary and *n't* are already 'frozen' together and they can only move together. This can explain why the contracted form moves to a higher position whereas the non-contracted one remains behind the auxiliary." (15)

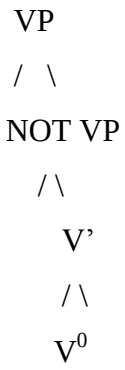
On a different view, *n't* is not the reduced form of *not.* While *not* occurs in Spec Neg, *n't* occurs under Neg^0. Under such an analysis, *n't* is treated as a bound morpheme which incorporates into auxiliaries, the claim being that contracted forms such as *hasn't, isn't, can't* come fully inflected from the lexicon. We will not, however, adopt this view.

What we will assume is that the negative marker *not* occurs in SpecNegP, while *n't* is a head. Instead of adopting the view according to which the contracted forms of the auxiliaries (auxiliary+ *n't)* come fully inflected from the lexicon, we will assume that *n't*

[42] In the chapter dealing with negation from *Complementation in English*, Cornilescu also lists other differences between the negative marker *not* and *n't.* However, when analysing the behaviour of *not,* Cornilescu refers both to the unstressed *not* which is an instance of sentence negation, just like *n't,* and to the stressed NOT, which is an instance of adverbial negation. This is obvious when she argues that the negative marker "not" does not necessarily attach to the highest projection (as we can have something like "He could have not been drinking so much"), or that it can attach to any phrase (QP: "not everyone", AvP: "not long ago"). In this case, Cornilescu obviously has in mind the stressed NOT which is an instance of adverbial negation, and not the unstressed *not* instantiating sentence negation. However, in our view, what is of interest is not the distinction between the adverbial negation marker NOT and *n't,* but the distinction between the sentential *not* and *n't.*

has clitic-like status and that it requires a host at PF. By treating *not* as a specifier and *n't* as a head, we can neatly account for the fact that *n't* raises with the verb, while *not* does not.

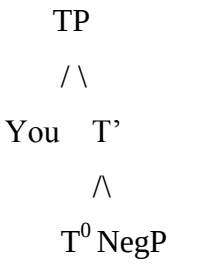
As far as adverbial negation is concerned, its status is either that of a head or specifier in a NegP occurring immediately above VP or that of a VP-adjunct. Given the fact that the negative marker is an adverb and that adverbs generally occupy an adjunct position, we will adhere to the second view:

(64)


The negative adverb NOT is stressed, and, hence, unlike the negative marker *not*, it cannot be reduced to *n't.* Unfortunately, it sometimes happens that a stressed form is illicitly reduced to *n't,* as a consequence of the reckless way in which speakers use language. This has given rise to the by now already familiar mistakes presented by linguists under the label ' the puzzle of negation and modals in English'.

For the sake of exemplifying, we shall here provide the syntactic representation for some sentences containing modal verbs and negation:

(65) a. You must not shout at the sweet dolphin, he can hear you!

(a)'


must / \

not Neg’

/ \

Neg^0 MoodP

[+neg] / \

t_{DP} Mood’

/ \

$Mood^0$ VP

t_{must} t_{Dp} shout at the sweet dolphin

b. You mustn’t shout at the sweet dolphin, I’m sure he can hear you!

(b’)

TP

/ \

You T’

/\

T^0 NegP

must / \

t_{DP} Neg’

/ \

Neg^0 MoodP

n’t / \

t_{DP} Mood’

/ \

$Mood^0$ VP

t_{must} t_{DP} shout at the sweet dolphin

c. You must NOT shout at the sweet dolphin, for God’s sake! You might scare him!

(c’).

TP

/ \

You T’

/\

T^0 MoodP

must / \

t_{DP} Mood’

/ \

$Mood^0$ VP

t_{must} / \

NOT VP

t_{DP} shout at the sweet dolphin

d. You may NOT have shouted at the sweet dolphin.

(d’)

TP

/ \

You T’

/\

T^0 MoodP

may / \

t_{DP} Mood’

/ \

$Mood^0$ VP

t_{may} / \

NOT AspP

t_{DP} have t_{DP} shouted at the sweet dolphin

The way in which these sentences are interpreted (or, rather, ought to be interpreted) is simply read off from their syntactic representations. In (65 a. and b) we are dealing with external negation, whereas in (56 c.), we are dealing with internal negation. The fact that (65 a.) or (b) are sometimes wrongly interpreted in a similar fashion with (65 c.) is only a consequence of people's recklessness in using language. The same argument can be invoked in the case of (65 d.), where it may be the case that the negative marker is actually an instance of adverbial negation

As for the echoic uses of negation, we believe they can be well accounted for on semantic-pragmatic grounds, therefore, there is no need for a distinct syntactic category labelled Echo Negation (as in Cormack & Smith (2002)).

Despite the fact that this syntactic representation can capture the behaviour of modals with respect to negation, if coupled with a pragmatic account of the oddities in English, there is, nevertheless, something extremely bothering about it, namely, it places NegP above MoodP, but below TP. While claiming that it is a fact of UG that NegP scopes above MoodP, this analysis assumes that NegP occurs below TP in the case of English, and not below TP. Unless we assume that it is the case that, in all languages, NegP scopes below TP (which is most likely not the case), we are facing a serious difficulty. As it stands, our analysis seems to be opting for a principle in the case of the position of NegP with respect to MoodP, while opting, nevertheless, for a parameter in the case of the position of NegP with respect to TP, namely, Laka's Parameter. What the analysis assumes is that, while it is the case that, in all languages, NegP scopes over MoodP, NegP does not scope above TP in all languages, a case in point being English (where, according to Laka, negation scopes below tense). This is, obviously, not a consequence we are happy to live with. Hence, we could perhaps also aim at universality in the case of the position of negation with respect to tense, not just in the case of the position of negation with respect to modals. A possibility ready at hand is placing NegP above TP, in which case we would obtain the following ordering:

(66) NegP> TP> MoodP> AspP> VP

However, since assuming this hierarchy results in ungrammaticality ("*not he may shout at the sweet dolphin."), we need another functional projection above NegP, where the modal can move to. We shall assume that the functional projection placed above the modal is AgrP:

(67) AgrP> NegP> TP> MoodP> AspP> VP

In this way, the modal will always come before negation in English, although, technically, the MoodP is below NegP. Placing negation above tense presents a number of advantages. By adopting such a view, we can make the claim that the scoping of negation above tense is a fact of UG[43], just like the scoping of negation above modals, we therefore do not have to opt for a principle in one case (negation vs. modals), and for a parameter in another case (negation vs. tense). Instead, we can assume that (67) actually renders the universal ordering of categories. In this, we follow Lopez (1995) (apud Cornilescu (2003)), who postulated the following universal ordering of categories:

(68) AgrSP> NegP> TP> AspP (*have)*> AspP (*be)*> (AgrOP)> VP

What is extremely appealing about this approach is that, by assuming the ordering AgrSP> NegP> TP, one can make sense of a whole range of empirical data. It can capture the fact that negation occurs after the auxiliary in finite sentences (69 a.), and before the lexical verb in non-finite sentences (69 b.):

(69) a. I do not feel like taking a swim in the sea right now.

b. To eat two strawberries or not to eat two strawberries, that is not a question!

[43] On such a view, we can speak about 'sentence negation', since negation scopes above TP.

If we assume that the full-infinitive (the *to*-infinitive) is a TP, then the fact that negation occurs before the infinitive (69 b.) is but a fairly natural consequence of NegP scoping above TP. In case the verb is finite, negation occurs after the verb, which is, again, only natural if we assume that NegP scopes below AgrSP. Therefore, the empirical data seem to corroborate the ordering AgrSP> NegP> TP.

We will not, however, follow Lopez completely. Instead of placing modals under tense (on the assumption that they are inherently tensed), we will place modals under a distinct Mood head, which we will between TP and AspP, thus obtaining:

(70) AgrSP> NegP> TP> MoodP> AspP (*have)*> AspP (*be)*> (AgrOP)> VP

On such a view, we would thus come up with a syntactic representation such as the following:

(71) a. You must not shout at the sweet dolphin. I'm sure he can hear you.

A'.

AgrSP
/ \
You AgrS'
/ \
must TP
/ \
t_{DP} T'
/\
T^0 NegP
t_{must} / \
not Neg'
/ \

Neg^0 MoodP

[+neg] / \

t_{DP} Mood'

/ \

$Mood^0$ VP

t_{must} t_{Dp} shout at the sweet dolphin

There is, however, a very big problem with this analysis, namely, it is not all that clear why modals have to move to Agr. While it is perfectly plausible to assume that modals move to Tense, since they have to check a tense feature, it is not all that clear why they should move to Agr, given the fact that they do not seem to have any agreement features (person, number) in Modern English. Such a syntactic representation, it might be claimed, could perhaps be more adequate for an earlier period of English, when the modals still had agreement features. However, it is no longer appropriate today. We do not have an answer to this[44]. Two options open up before us: either modals in modern English have agreement features (only they are not visible, as they were in the past), or they don't have agreement features (in which case they may move in the tree so as to check other features). This is an issue which requires further investigation.

The syntactic representation presented above, coupled with the pragmatic explanation for some 'mistakes' in the use of modals and negation, tries to capture the scope relations holding between negation and modals in English. This account is different from all previous accounts, as it does away with the idea that there is a puzzle of modality and negation in English. On such a view, English is just as regular as any other language in this respect, and the blame for 'irregularity' rests with the speakers. This view is extremely appealing from a theoretical point of view, since it does not stipulate any sort of oddity in the case of English. If there is anything rotten in the realm of negation and

[44] An alternative would be to say that modals move across negation to FinP (in a split-CP), where it checks its finiteness features. However, if we adopted this view, other elements would have to move in the CP layer as well. Negation, for example, has been associated with Focus, since it brings new information in the discourse (according to Butler (2003)).

modality, this is not the fault of modals or of negation in English, but of the people making use of them.

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