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Focus and modality

1. In this paper I am going to show that there is an interesting relationship between focus and modality. I will draw my material from Hungarian but at least some of the claims I am going to make will have a more general validity. I will confine myself to epistemic modality. The main concern of this paper will be to demonstaate that there are two types of epistemic modality which are radically different from each other. These two types of epistemic modality can be distinguished from each other on the basis of focus.

2. Focus in Hungarian can be defined positionally (syntactically).[1]
For the present purpose we can take a somewhat simplicistic view of focus and neglect the irrelevant details. The focussed constituent bears main stress and it immediately precedes the verb. Consider

(1)(a)   Péter találkozott Évával.

                'Peter has met Eve'

(b)   Péter Évával találkozott.

                'It is Eve whom Peter has met'

In (1)(a) the focus-position is empty, in (1)(b), however, it is filled with the constituent Évával 'with Eve'. In what follows we will mark the focussed constituent by underlining. Notice, incidentally, that (1)(a) is the unmarked, neutral word order. On

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the other hand, (1)(b) has a marked word order. Let us look at
some more examples.

(2)(a)   Péter megírta a levelet Évának.

                'Peter has written the letter to Eve'

    (b)   Péter Évának írta meg a levelet.

                'It is Eve to whom Peter has written the letter'

    (c)   Péter a levelet írta meg Évának.

                'It is the letter that Peter has written to Eve'

    (d)   Péter írta meg a levelet Évának.

                'It is Peter who has written the letter to Eve'

The only sentence that exhibits unmarked, neutral word order is
(2)(a). All other sentences are marked. The verb ír 'write' is
prefixed here by the perfective prefix meg. Whenever a constituent
is moved into the focus position, the prefix must be moved after
the verb. This can be observed in sentences (2)(b)-(d).

     There are cases where focus does not affect word order, i.e.
neutral word order is not destroyed. Consider

(3)(a)   Péter levelet ír.

                'Peter is engaged in letter-writing'

    (b)   Péter levelet ír.

                'Peter is engaged in letter-writing (and not in
                something else)'

(4)(a)   Péter a szobában dolgozik.

                'Peter is working in the room'

    (b)   Péter a szobában dolgozik.

                'Peter is working in the room (and not somewhere
                else)'

(5)(a)   Péter megírta a levelet.

                          'Peter has written the letter'

   (b)   Péter megírta a levelet.

                          'Peter did write the letter (believe me)'

In the above sentences focussing has not affected neutral word order. Certain constituents immediately precede the verb even if they are not focussed. Such constituents are (i) article-less object nouns (cf. (3)(a)-(b)), (ii) certain locative and temporal adverbials with intransitive verbs (cf. (4)(a)-(b)) and (iii) pre-fixes.[2] All these seem to form a close semantic unit with the verb, they can be considered to be · components of complex verb phrases rather than free arguments. They have often been refereed to as reduced complements.[3] Verbs, too, can occupy the focus position. For example,

(6)(a)   Péter írta a levelet.

                          'Peter has been writing the letter'

   (b)   Péter írta a levelet.

                          'Peter has been writing the letter (believe me)'

The comparison of (3)(a) with (3)(b), (4)(a) with (4)(b), (5)(a) with (5)(b) and (6)(a) with (6)(b) reveals a serious defect in the first formulation of the notion of focus. (6)(b) shows that verbs, too, can be focussed. In addition, there is a marked difference between the stress carried by the verb írta (write' in (6)(a) and in (6)(b).[4] In the latter case, the verb gets an extra heavy stress. Similar things can · be observed in connection with the sentences (3)(a)-(b), (4)(a)-(b) and (5)(a)-(b). In (3)(a)

the constituent <u>levelet</u> 'letter' carries main stress, in (3)(b)
it receives extra heavy stress. Similarly, in (4)(a) the consti-
tuent <u>szobában</u> is the bearer of main stress which gets an extra
heavy stress in (4)(b). The same holds true for the prefix <u>meg</u>
in the sentences (5)(a)-(b).

In view of the above facts focus can now be defined in the
following fashion. Focus (=F) is the constituent that exhibits the
following two properties: (i) it bears an extra heavy stress and
(ii) it is either the verb or the constituent immediately preceding
the verb.

Semantically, F is defined by the property of exhaustive
listing. If 'Eve' is the focus, as in (1)(b), then 'Eve' is the
only person met by Peter. If 'the letter' is focussed, as in (2)(c)
then the letter' is the only thing that Peter has written. In
general terms, "The notion of 'exhaustive listing' relates to the
fact that, under some conditions yet to be specified, the focus
contains all items that can be reported to bear the given relation-
ship (usually expressed by the verb) to the items referred to by
the bound segment of the sentence." (Sgall-Hajicová-Benesová:129)
Or, to put it differently, the set described in the focus is ex-
haustive in the sense that it contains all items for which the
property predicated in the sentence holds. In the examples dis-
cussed above the set under consideration consisted of one element
only. Consider, however, the following sentence

(7)   Péter Évával és Jánossal találkozott.

'It is Eve and John whom Peter has met'

Here 'Eve' and 'John' are the only persons (the only elements of
the set described in the focus) of whom it can be predicated (in
the given context) that they have been met by Peter.

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3. In general, possibility is expressed in Hungarian by means of the suffix -hat/-het. The choice between the two variants is determined by vowel harmony. For example, the verb lát 'see' will receive the suffix -hat: láthat 'may see', the verb énekel 'sing' the suffix -het: énekelhet 'may sing'. The possibility suffix is followed by tense/mood and personal suffixes.[6]

Necessity is expressed by the impersonal verb kell 'must' which is, however, impersonal in its modal meaning only. As a full verb meaning 'need', German 'brauchen', it has a full paradigm. The modal auxiliary kell requires a rather complicated syntactic structure. Consider

(3)   Péternek meg kell írnia a levelet.

          lit. Peter-dat, pref. must write-Pers.suf. the letter-acc.

          'Peter must write the letter'

The modal auxiliary is inserted between the prefix and the main verb, the infinitive,which is inflected according to person in this case. In addition, the 'logical subject','Peter',is put into the dative case.

Semantically one way of looking at possibility and necessity is to take 'modal reasoning' to be the basic notion. In the case of epistemic modality the speaker draws certain conclusions with respect to the validity of a given statement on the basis of what he knows. Each statement activates a certain portion of the speaker's knowledge. Let us call the knowledge activated by the state-of-affairs expressed by the statement at hand the background. The background consists of propositions all of which are taken to be true by the speaker and all of which are relevant for the evaluation of the statement in question. In the simplest case the speaker may just try to determine whether the state-of-affairs expressed

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by the given statement is compatible with the background or whether it follows from it. If the state-of-affairs at hand is compatible with the background, it is a possible state-of-affairs, if it is not compatible, it is not possible, that is, the state-of-affairs in question is excluded. If the state-of-affairs in question follows from the background, it is necessary, if it does not follow, it is not necessary. Let us denote the statement (=proposition) to be modally qualified by p and the background by B. To paraphrase Angelika Kratzer the following definitions may be stipulated (Kratzer 1978):

(9)(a)   It is possible that p iff p is compatible with B.

   (b)   It is necessary that p iff p follows from B.

We have defined B as a set of propositions representing that knowledge that is relevant for the modal evaluation of p. B may thus be termed epistemic background. Evidently, for other types of modalities other backgrounds are needed: there are deontic, dispositional, boulomaic, circumstantial, etc. backgrounds.

Since the possibility or necessity of p hinges on the epistemic background B, (9)(a)-(b) can be made more precise in the following fashion.

(10)(a)   p is epistemically possible iff p is compatible with the epistemic background B.

   (b)   p is epistemically necessary iff p follows from the epistemic background B.

It is generally taken for granted that epistemic possibility and epistemic necessity are interdefinable in the same way as alethic possibility and alethic necessity are. That is, the following equivalences are considered to be valid:

(11) (a)   ◇ P ≡ ～□～P

   (b)   □ P ≡ ～◇～ P

In addition, given an epistemic B, the validity of the following
implication is also taken for granted:

(12)   □P ⊃ P

That is, given B, if p is epistemically necessary, then it follows
that p is the case.

    Let us now see how epistemic possibility is expressed
in Hungarian. Consider the following set of examples.

(13) (a)   Péter __levelet__ írhat.

          lit. Peter letter write-may

          'Peter must be writing a letter'

   (b)   Péter __írhat__ levelet.

          'Peter may be writing a letter'

(14) (a)   Péter a __szobában__ dolgozhat.

          lit. Peter the room-in work-may

          'Peter must be working in the room'

   (b)   Péter __dolgozhat__ a szobában.

          'Peter may be working in the room'

(15) (a)   Péter __nyelvész__ lehet.

        lit. Peter linguist be-may

          'Peter must be a linguist'

   (b)   Péter __lehet__ nyelvész.

          'Peter may be a linguist'

Though all these sentences contain the possibility suffix __-hat/-het__,
the interpretation of the (a) sentences is radically different
from that of the (b)-sentences. Notice that in the (a)-sentences
the focus position is occupied by a reduced complement of the verb

whereas in the (b)-sentences the modalized verb stands in focus. The (a)-sentences can only be interpreted epistemically whereas the (b)-sentences may also have other modal readings. In this paper, however, only the epistemic reading will be considered. The quest-tion is, then, what is the difference between the two epistemic readings, the epistemic reading of the (a)-sentences and the epistemic reading of the (b)-sentences?

Let us first examine the (b)-sentences. On the epistemic reading the sentence (13)(b) means that the proposition 'Peter is writing a letter' is compatible with what we know about the world, i.e. with the given epistemic background. In other words, the state-of-affairs described by the proposition 'Peter is writing a letter' is possible, it is not excluded by the given epistemic background. But other possibilities, too, exist. Peter may very well do something else. In general, there are several things which are compatible with a given epistemic background. Similar considerations hold for the sentences (14)(b) and (15)(b). (14)(b) means that it is possible that Peter is working in the room, that is, it is not excluded by the given epistemic background. But the speaker does not have any special reasons to believe that the proposition 'Peter is working in the room' is more likely to be true than any other proposition compatible with the epistemic background. Finally, (15)(b) means that on the basis of what we know about the world Peter may very well be a linguist but he may also be something else, say, a doctor, a mathematician, etc.

The interpretation of the (b)-sentences can thus be accounted for by means of the definition of epistemic possibility as given in (10)(a).

The interpretation of the (a)-sentences is quite different.
Notice that in the English equivalents of the Hungarian sentences
the modal -hat/-het has been rendered by 'must' rather than by
'may'. The modal 'must' , however, should be taken here to mean
something like 'it is very likely the case that'; it is the in-
ferential 'must' and not the expression of epistemic necessity.
The meaning of (13)(a) can be paraphrased in the following manner.
The speaker has certain reasons to believe that the most likely
thing which Peter may be doing just now is letter-writing. When
uttering (13)(a) one cannot go on saying 'but he may very well do
something else' since (13)(a) expresses the only proposition for
which the speaker has some evidence. The interpretations of the
sentences (14)(a) and (15)(a) are quite similar. On the basis of
what he knows about the world, the speaker draws the conclusion
that Peter is working in the room and that Peter is a linguist.

Notice, by the way, that the (a)-sentences have neutral
word order whereas the word order of the (b)-sentences is marked.

Next, consider the modalized versions of (2)(b)-(c):

(16)(a)   Péter Évának irhatta meg a levelet.

           lit. Peter Eve-dat. write-may-Past-Pers.suf. perf.pref.

                                        the letter-acc.

           'Peter must have written the letter to Eve'

(b)   Péter a levelet irhatta meg Évának.

           'Peter must have written the letter to Eve'

(c)   Péter irhatta meg a levelet Évának.

           'Peter must have written the letter to Eve'

In these sentences the focus position is occupied by a constituent
which normally does not stand there.   : it must be

moved there from its neutral,position. All these sentences have

an interpretation which is quite parallel to the interpretation

of the (a)-sentences above. The interpretation corresponding to

the interpretation of the (b)-sentences can only be rendered by

a sentence such as

(17)   Péter megírhatta a levelet Évának.

which reflects a neutral word order.

For the simplicity of exposition let us call the epistemic

interpretation of the (a)-sentences <u>subjective epistemic possibilit</u>

and that of the (b)-sentences <u>objective epistemic possibility</u>.[7] As

we saw above, objective epistemic possibility can be accounted for

in terms of epistemic logic, (10)(a) is an adequate definition for

this modality. But what about subjective epistemic possibility?

The sentences expressing subjective epistemic possibility have

two properties in common: (i) they all contain a focus with

the property of exhaustive listing and (ii) they all contain the

suffix -<u>hat</u>/-<u>het</u> which expresses possibility, i.e. compatibility

with a given epistemic background. In view of these properties

one might be tempted to derive the meaning of the (a)-sentences,

i.e. to account for subjective epistemic possibility in the follow-

ing manner. The proposition <u>Peter levelet ír</u> 'Peter is writing

a letter' is compatible with the given epistemic background because

of the suffix -<u>hat</u>/-<u>het</u> in (13)(a). On the other hand, because of

the property of exhaustive listing associated with the focus in

(13)(a) the proposition <u>Péter levelet ír</u> is the only one that is

compatible with the given epistemic background. In other words,

the proposition <u>Péter levelet ír</u> is not only compatible with the

epistemic background but is also follows from it. To be sure, this

account seems to be rather attractive for various reasons. First

of all, it would explain the use of 'must' in the English equivalents of the Hungarian sentences expressing subjective epistemic possibility. Furthermore, we would have a unified account of modality in terms of the notions of compatibility and consequence. Subjective epistemic possibility would differ from objective epistemic possibility only with respect to exhaustive listing. Exhaustive listing does not enter into play in the case of objective epistemic possibility whereas it contributes to the meaning of sentences expressing subjective epistemic possibility. Unfortunately, however, this account has some serious flaws as we shall see presently.

We have already noted that the 'must' in the English equivalents of the Hungarian sentences expressing subjective epistemic possibility is not the 'must' of objective epistemic necessity. For this 'must', neither the equivalence (11)(b) nor the implication (12) holds. It seems to be stronger in some sense than objective epistemic 'may' but at the same time it is weaker than objective epistemic 'must'. The first solution to this problem which might come to one's mind is to define a notion of relative modality by refining the theoretical apparatus which we already have at our disposal. It goes without saying that possibility and necessity could also be a matter of degree. (Kratzer 1982) However, although a notion of relative modality will certainly be needed in any adequate account of modality, it will not do in the case at hand. The difference between, say, the objective epistemic 'must' and the subjective epistemic 'must' is not just a matter of degree as we shall see immediately.

One might also think of weakening the background. Evidently, speakers draw their conclusions not only on the basis of firm

knowledge but also on the basis of assumptions, beliefs, etc. Let us call such a background weak epistemic background. One might now argue that the subjective epistemic 'must' expresses the fact that a proposition follows from a weak background. Notice, however, that the notion of consequence cannot be the same here as in the case of objective epistemic 'must'. What we need   is a notion of 'practical inference' rather than that of logical consequence. It is quite clear that we often (if not mostly) draw conclusions on the basis of weak epistemic backgrounds.and therefore, any adequate account of modal reasoning has to take into consideration practical inferences as well. Unfortunately, however, the difference between the two 'must's' is not a question of background. Before further elaborating on this point, an important remark seems to be at place.

Some sentences seem to be ambiguous between the subjective and the objective epistemic reading. Consider

(18)(a)   Péter <u>találkozhatott</u> Évával.

     lit. Peter meet-poss.-Past-Pers.suf. Eve-with

         'Peter must have met Eve'

     or   'Peter could meet Eve'

(b)   Péter <u>megírhatta</u> a levelet.

     lit. Peter perf.pref.-write-poss.-Past-Pers.suf. the

            letter-acc.

         'Peter must have written the letter'

     or   'Peter could write the letter'

(c)   Péter <u>ebédelhet</u>.

     lit.   Peter dine-poss.

         'Peter must be eating lunch'

     or   'Peter may be eating lunch'

13.

In these sentences the verb is focussed. In the case of prefixed verbs, stress will automatically be shifted on the prefix. As we saw above, in all,such cases the modal sentences are interpreted as expressing objective epistemic possibility. At the same time, however, these sentences may also have the other interpretation, though in this case there is a tendency to pronounce the sentences with a different intonation pattern but this need not be so.In any case, the ambiguity exhibited by such sentences as (18)(a)-(c) calls for an explanation.

It has been observed by several scholars that there is a marked tendency to interpret English 'must', if stressed, as expressing objective epistemic necessity. Karin Aijmer, for example, puts this in the following way:"it always seems to be the case that the 'Grundbedeutung' can be preserved when must is stressed, however." (Aijmer 1980:130) What she calls 'Grundbedeutung' is the objective epistemic reading of 'must'. Thus, there seems to be a tendency to interpret the sentence (19)(a) as expressing objective epistemic necessity, in contrast to (19)(b) where the subjective reading prevails.

(19)(a)   Petr must be in the kitchen.

   (b)   Petr must be in the kitchen.

Apparently, these sentences have two different intonation contours as well. The situation is similar in German:

(2o)(a)   Petr muß in der Küche sein.

   (b)   Petr muß in der Küche sein.

Now, in Hungarian possibility is expressed by a suffix. Suffixes, normally, cannot be stressed: stress always falls on the first syllable of the word, however long it may be. One might therefore claim that the verb in (18)(a)-(c) gets stressed on two different

accounts. One gets the first reading (=objective epistemic possibility)if one wants to put special emphasis on the expression of possibility and the second reading (=subjective epistemic possibility) if the verb is focussed. This explanation seems to be fairly plausible and, I think, it is basically correct.

The ambiguity discussed above appears only in cases when the sentence has neutral word order. In such cases the verb carries the main stress. In sentences (18)(a)-(c) 'normal' main stress overlaps with 'focus' stress. Sentences such as (13)(b)-(15)(b) can never be ambiguous in this sense. In these sentences the 'normal' bearer of main stress is the reduced complement. Reduced complements precede the verb in neutral word order, in (13)(b)-(15)(b) on the other hand, they follow the verb.

The structural differences between subjective and objective epistemic possibility should be fairly clear by now. Hungarian draws a systematic distinction between these two readings. However, subjective epistemic possibility is still an intuitive term which calls for explication. In particular, we have to show that the difference between the two modalities is not a difference in degree but that the two have radically different roles in the semantics of modalities.

4.Notice first that subjective and objective epistemic possibility have different paraphrases. For example, (13)(b), but not (13)(a), can be paraphrased by (21)(b) (for convenience's sake I repeat here the sentence (13)(a) under (21)(a)):

(21)(a)   Péter irhat levelet.

                           'Peter may be writing a letter'

       (b)   Lehetséges, hogy Péter levelet ir.

                           'It is possible that Peter is writing a letter'

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Both (21)(a) and (b) are description of reality and it is meaningful
to ask whether such a description is true or false (given an appro-
priate epistemic logic). The sentence (13)(a), on the other hand,
(repeated here under (22)(a)) can only be paraphrased by modal sen-
tential adverbials.

(22)(a)   Péter _levelet_ írhat.

                 'Peter must be writing a letter'

   (b)   Péter talán _levelet_ ír.

                 'Perhaps, Peter is writing a letter'

   (c)   Péter valószinüleg _levelet_ ír.

                 'Peter is probably writing a letter'

   (d)   Péter biztosan _levelet_ ír.

                 'Peter is surely writing a letter'

(22)(b)-(d) are all close paraphrases of (22)(a) but none of them
is completely synonymous with it. This is very often the case
with sentence adverbials. Adverbials such as talán 'perhaps',
valószinüleg 'probably' and biztosan 'surely, certainly' express
speaker attitudes, they do not belong to the propositional part
of the sentence, that is, they are not part of the description of
the world. They rather express the speaker's attitude towards a
certain state-of-affairs. Speaker attitudes are not asserted, they
are indicated or expressed. Thus, sentences (22)(b)-(d) consist
of a propositional content ('Peter is writing a letter') and an
expression of the speaker's attitude towards the state-of-affairs
expressed by the propositional content at hand. Consequently, the
question whether such sentences represent a true or a false propo-
sition cannot be asked. It is impossible to account for (22)(b)-
(d) in purely truth-functional terms. Speaker attitudes, in general

can neither be questioned nor negated. The sentences (23)(a)-(c)
are all bad.

(23)(a)   +Nem igaz, hogy Péter talán levelet ir.

                 'It is not true that perhaps Peter is writing

                 a letter'

    (b)   +Nem igaz, hogy Péter valószinüleg levelet ir.

                 'It is not true that Peter is probably writing

                 a letter.'

    (c)   +Nem igaz, hogy Péter biztosan levelet ir.

                 'It is not true that Peter is surely writing

                 a letter'

In these sentences negation has the widest scope, i.e. the modals
are included in the scope of negation.' On the other hand, it does
not come as a sur-
prise that sentences in which negation is included in the scope of
the modal operator are quite alright. Consider

(24)(a)   Péter talán nem levelet ir.

                 'Perhaps, Peter is not writing a letter'

    (b)   Péter valószinüleg nem levelet ir.

                 'Peter is probably not writing a letter'

    (c)   Péter biztosan nem levelet ir.

                 'Peter is surely not writing a letter'

Similar considerations hold true for questions as well: modal ad-
verbials cannot be included in the scope of the question operator
but, of course, questions can be 'modalized'. ⁿᵒ/

        Let us now return to (22)(a). Intuitively, as pointed out
above, this sentence is related to the sentences (22)(b)-(d). One
could thus claim that this sentence is not a descriptive statement
about the world either. It expresses, similarly to the sentences

which contain modal adverbials, the speaker's attitude. Consider

(25)(a)   +Nem igaz, hogy Péter <u>levelet</u> irhat.

           '   'It is not true that Peter must be writing a

                   letter'

(b)   +Péter <u>levelet</u> irhat?

                   'Must Peter be writing a letter'

Neither (25)(a) nor (25)(b) are possible sentences in Hungarian.
The same holds for all the other cases of subjective epistemic
possibility discussed above. We may thus conclude that sentences
expressing subjective epistemic possibility can neither be negated
nor questioned. And, again, at least negation is possible if it
is included in the scope of the modal:

(26)   Péter nem <u>levelet</u> irhat.

                   'Peter maynnot be writing a letter (he must be

                   writing something else)'

Thus, the modal operator that brings about the subjective epistemic
reading must have the wider scope.

     Notice, incidentally, that modal adverbials can easily be
combined with objective epistemic possibility (in the case of
subjective epistemic possibility such combinations are not excluded
either but the sentences sound slightly redundant). For example,

(27)(a)   Péter talán <u>irhat</u> levelet.

                   'Perhaps, Peter may be writing a letter'

(b)   Péter bizonyára <u>irhat</u> levelet.

                   'No doubt, Peter may be writing a letter'

In these sentences we have to do with two modal operators. The
operator that brings about the objective epistemic reading is in-
cluded in the scope of the operator that expresses various (modal)

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speaker attitudes.

Negation, question-formation, etc. are propositional operators; they map propositions onto propositions. The modal operators of modal logic (epistemic operator, deontic operator, etc.), too, are propositional operators. Modal adverbials and subjective epistemic possibility, on the other hand, express attitudinal operators. Such operators evaluate propositions. The propositions thus evaluated are no longer propositions, they are no longer descriptions of the world and they can no longer be accounted for in terms of truth conditions.

It is generally true that propositional operators can easily stand in the scope of attitudinal operators but the reverse does not hold: attitudinal operators can never be included in the scope of a propositional operator.

The above general rule explains why sentences containing an attitudinal operator (modal or other) cannot be negated, questioned, focussed, contrasted, coordinated, etc. That is, none of the propositional operators is applicable.

In sum, then, the essential difference between objective epistemic possibility and subjective epistemic possibility cannot be a matter of degree. Objective epistemic possibility is a propositional operator. If such an operator is applied to a proposition we get another proposition which can be accounted for truth-functionally. On the other hand, subjective epistemic possibility is an attitudinal operator. It turns a proposition into a subjectively evaluated proposition. Such a proposition is no longer a description of the world, it does not make any sense to ask whether it is true or false.

5. The picture I have been drawing of epistemic possibility in Hungarian cannot be complete without a discussion of epistemic necessity, however cursory it may be.

As already pointed out, 'must' is expressed in Hungarian by means of the modal auxiliary kell. In contrast to the expression of possibility, kell is a verb and not a suffix. Consider the following sentences:

(28) (a)   Péternek a konyhában kell lennie.

lit. Peter-dat, the kitchen-in must be-Pers.suf.

'Peter must be in the kitchen'

(b)   Péternek könyvet kell olvasnia.

lit. Peter-dat. book-acc. must read-Pers.suf.

'Peter must be reading a book'

(c)   Péternek Évával kellett találkoznia.

lit. Peter-dat. Eve-with must-Past meet-Pers.suf.

'Peter must have met Eve'

Let us disregard again the nonepistemic readings of these sentences. Such readings are possible here in spite of the fact that the focus of the sentence is on a constituent different from the verb. Moreover , focus does not disambiguate these sentences with respect to the two epistemic interpretations either. The sentences (28)(a)-(c) can be interpreted in both ways: either as expressions of objective epistemic necessity or of subjective epistemic necessity. However, as soon as kell is moved into a higher clause, only the objective epistemic reading will be possible: [11]

(29) (a)   Kell, hogy Péter a konyhában legyen.

'It is necessary that Peter be in the kitchen'

(b)   Kell, hogy Péter könyvet olvasson.

'It is necessary that Peter be reading a book'

(c)   In some cases it is possible to get the objective epis-
temic reading by putting extra stress on the modal auxiliary. For
example,

(30)   Péternek kellett Évával találkoznia.

                          'It was necessary that Peter met Eve'

This sentence can no longer be interpreted as expressing subjective
epistemic necessity.

The speaker's commitment in the case of subjective epistemic
kell is only slightly stronger (if at all) than in the case of
subjective epistemic -hat/-het. It goes without saying that the
relationship between subjective epistemic kell and subjective epis-
temic -hat/-het cannot be expressed in terms of the equivalences
(11)(a)-(b). This follows already from the impossibility of nega-
tion. Furthermore, the implication (12) does not hold either for
the subjective epistemic kell. There is no 'epistemic space' for
which (31)(a) would imply the truth of (31)(b):

(31)(a)   Péternek könyvet kell olvasnia.

                          'Peter must be reading a book'

(b)   Péter könyvet olvas.

                          'Peter is reading a book'

We saw above that the objective epistemic reading of kell
can be made apparent in two ways: either by putting extra stress
on kell (this is the device used in many unrelated languages) or
by moving kell into a higher clause. Notice that the subjective
epistemic reading of kell, too, can be made explicit. In (32)(a)-
(c) the sentences (28)(a)-(c) are modified by a believe-clause.

(32)(a)   Azt hiszem, Péternek a konyhában kell lennie.

                          'I think, Peter must be in the kitchen'

21.

(b)   Azt hiszem, Péternek _köpyvet_ kell olvasnia.

           'I think, Peter must be reading a book'

(c)   Azt hiszem, Péternek _Évával_ kellett találkoznia.

           'I think, Peter must have met Eve'

For quite obvious reasons these sentences can only be interpreted
as expressing subjective epistemic necessity. [2]

In sum, then, we may conclude that if _kell_ is focussed
(stressed), the sentence in question cannot be interpreted as
expressing subjective epistemic necessity. But focus on a consti-
tuent different from _kell_ does not make the sentence disambiguous.
6. Though we may have a relatively clear picture of subjective
epistemic possibility and necessity _by now_ we have not answered the ques-
tion as yet how this modality can be accounted for. In this con-
cluding section I am going to sketch a possible solution to the
problem.

As we saw, objective epistemic possibility and objective epist-
temic necessity can be accountedinfor in epistemic logic. The modal
sentences in which they occur are descriptions of the world, hence
it is reasonable to assign them truth-values. Thus, the proposition
Peter may be reading a book is true just in case the proposition
Peter is reading a book is compatible with the background B and
the proposition _Peter must be reading a book_ is true just in case
the proposition _Peter is reading a book_ follows from the background
B. In general

(33)(a)   p is true iff p is compatible with B.

    (b)   p is true iff p follows from B.

So far so good. But how should modal attitudes be accounted for?
It should be sufficiently clear by now that they are not truth-func —

tional,consequently means other than truth-conditions are called
for.

Modal attitudes express qualifications in terms of the speak-
er's commitment to the possibility of a certain state-of-affairs.
Apparently, a modal attitude need not express the _real_ beliefs of
the speaker: he may express a stronger commitment to the possibility
of a certain state-of-affairs than he has evidence for, or, alter-
natively, he may express a weaker commitment. This is something which
can be accounted for by means of the sincerity condition (34) and
the conversational postulate (35):

(34)   Sincerity Condition: Do not express ATT(modal) if
            you do not have sufficiently enough evidence for it.
(35)   Sonversational Postulate: Express ATT(modal) that
            indicates the strôngest commitment for which you
            have evidence.

ATT(modal) denotes any given modal attitude.

The semantic structure of sentences which contain linguistic
expressions of ATT(modal) consists of two main parts: (i) the
proposition p and (ii) ATT(modal). Schematically:.

(36)   sem = (ATT(modal), p)

In truth-functional semantics one assigns denotata to propositions.
One way to account for (36) would be to do essentially the same
thing, only the denotata would be different. Notice first that the
modal attitudes discussed have all to do with possibility (including
kell 'must'), none of them qualifies necessity. This seems to be
the general rule: in Hungarian there is not a single expression
of modal attitude which would be related to necessity. They all
express degrees and kinds of possibility. Add the speaker would

only use expressions of ATT(modal) if he knows that p is possible.
It seems thus reasonable to assign p in (36) the state-of-affairs
expressed by the proposition 'p is possible'. The first part of
(36), ATT(modal), can be interpreted as the indication of the speak-
er's commitment to 'p is possible'. However, semantically, subjective
epistemic possibility does not simply mean possibility, as we saw
above. The semantic meaning of subjective epistemic sentences derives
from the interplay of possibility and focus (i.e. exhaustive listing).
In other cases of ATT(modal), of course, this need not be so. Thus,
we may formulate for subjective epistemic -hat/-het and kell the
following 'denotation-conditions':[13]/

(37)(a)   p is compatible with B, (=possibility)

   (b)   p is the only proposition compatible

                      with B (=exhaustive listing)

   (c)   the speaker indicates that he has a certain

                      evidence with respect to the possibility of

                      p.

To indicate a commitment should be taken to mean 'to express a
commitment'. The commitment expressed need not correspond exactly
to the evidence the speaker has. The denonatum of ATT(modal) is
the corresponding modal attitude expressed. It should be made claer
that -hat/-het and kell reflect (are expressions of) two slightly
different modal attitudes but this fact has not been taken care of
in the formulation of (37)(c). This condition is anyhow rather vague
but I cannot offer anything more adequate at the moment.

One may claim that the conditions (37)(a)-(c) must be ful-
filled for (36) to have meaning.

This brings us to the end of our discussion of the inter-

relationship between focus and modality in Hungarian. I hope to
have been able to show that focus plays a decisive role in dis-
tinsguishing two radically different epistemic readings: the read-
ing in which a modal propositional operator is involved and the
reading in which an attitudinal operator is at stake. This dis-
tinction is certainly not a privilege of Hungarian: it is drawn in
many languages. What is special about Hungarian is the interplay
between the positionally (syntactically) defined focus and modality.[14]

25.

Notes

1./ There is a steadily growing literature on the topic-focus structure of Hungarian. In the present context, however, it is sufficient to refer to E.Kiss 1981.

2./ I am speaking of constituents within the verb phrase, of course. The topic of the sentence, too, precedes the verb.

3./ Cf., for example, E.Kiss 1981.

4./ In general, sentence stress is carried by the main verb in Hungarian. This means that in (6)(c), for example , the verb _irta_ will receive (noncontrastive) main stress whereas in (6)(b) it will receive contrastive (emphatic, focus) stress.

5./ For a detailed discussion of the semantics of 'exhaustive listing' cf. Szabolcsi 1981.

6./ I have discussed the semantics of the possibility suffix in more detail elsewhere. Cf. Kiefer 1982.

7./ This terminology comes from John Lyons. He points out that "In principle, two kinds of epistemic modality can be distinguished: objective and subjective." (Lyons 1977:797) It should be made clear, however, that my use of the relevant terms is somewhat more specific since it refers to the two different uses of the possibility suffix -_hat_/-_het_ and the auxiliary _kell_ 'must' only.

8./ That sentence adverbials express speaker attitudes has been argued for quite convincingly in Lang 1979.

9./ For a more detailed discussion of speaker attitudes cf. Lang 1983.

1o./ It is an interesting fact about Hungarian that there is a close correspondence between the order of operators and their respective scopes. Let be O_i and O_j two operators. Furthermore, let

us assume that both precede the verb and that O_i precedes O_j. It will follow then that O_i has wider scope than O_j. Cf. E.Kiss 1984 for the details.

11./ Sentences such as (29)(a)-(b) can easily be negated, questioned, etc.,i.e. they are propositions.

12./ Notice that azt hiszem 'I think' , too, is an attitudinal operator. Objective epistemic necessity (and, as a matter of fact, also objective epistemic necessity) is not compatible with beliefs since this modality is a matter of knowledge. In contrast to (32)(a)-(c) a sentence such as

        Tudom, hogy Péternek a konyhában kell lennie.

        'I know that Peter must be in the kitchen'

can only express objective epistemic necessity.

13./ In the case of statements denotation conditions are equivalent with truth-conditions. Something like denotation conditions has also been discussed in Lang 1983:331 (Lang speaks of 'Erfüllungs-bedingungen').

14./ This paper is part of a more comprehensive study on epistemic modality in natural language. Cf. Kiefer (forthcoming).

27.

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