Metaphorical extension of *may* and *must* into the epistemic domain

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1. Introduction

Although the metaphorical extension of the root modal meanings into the epistemic domain is a fascinating topic on its own, this paper has been motivated by more general considerations. My main area of interest is what Langacker’s (1987, 1991) cognitive theory calls *epistemic grounding*, defined as a category that relates (the linguistic expression of) a process or a thing (a verb [clause] or a noun) to the situation of its use: speaker/hearer knowledge, and time and place of utterance (the latter being subsumed under the term *ground*).

In Langacker’s theory, epistemic grounding is established by the tense-modal complex. For reasons discussed in detail in Langacker (1991: 240–249), summarized and criticized in Pelyvás (1996: 165–184), grounding in that system can only be established (apart from *tense*) by the modal auxiliaries, both deontic and epistemic.

One facet of the argumentation given in Pelyvás (1996) is that this analysis does not capture the considerable differences between root (deontic) and epistemic meanings, which are due to *subjectification* in the epistemic meaning, a property of the grounding predication (compare also for Sanders–Spooren 1997: 96–108). In fact, Langacker’s version, largely based on Sweetser’s (1990) treatment of the metaphorical extension of the modal meanings into the epistemic domain, leaves

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1 A preliminary version of this paper was presented at the 4th Conference of the European Society for the Study of English in Debrecen, September, 1997. I wish to express gratitude to Professor Antonio Barcelona and to an unidentified reader of the preliminary version, who, with their remarks contributed a lot to the formulation of this version. I am of course only responsible for all the views presented here.

2 Since the grounding predication, owing to its origins in the reference-point construction, profiles the grounded head (the structure to be grounded), and since a grounded predication (on the clause level) profiles a process, the grounded head itself must profile a process. In Langacker’s system a non-finite form profiles an atemporal relationship rather than a process. As a consequence, the grounded head cannot be non-finite. The only form (in English) that is neither clearly non-finite nor clearly finite is the bare infinitive, and only modals are followed by that form.
hardly any room at all for distinguishing the two kinds of meanings (Langacker 1991: 270–271).

Part of the solution to the problems inherent in Langacker’s treatment of grounding might result from a reconsideration of Sweetser’s system that it relies on. The main point to be considered appears to be whether extension is really as straightforward as is suggested there.

The idea of treating modal meanings in terms of metaphorical extension is intuitively appealing, since in several languages, many of which are totally unrelated (e.g. English and Hungarian3), the same set of modal auxiliaries can express both deontic and epistemic meanings, with the latter often felt to be a “superimposition on” or “reinterpretation of” the original deontic (or root) meanings.

Some of Sweetser’s analyses, however, prove to be erroneous. Pelyvás (1994: 19–29, 1996: 127–133) reports major problems in her analysis of may. In this paper I will give a brief overview of the relevant aspects of that analysis and its critique, and will attempt to point out similar difficulties with, and propose a new analysis for, must.

2. A critical survey of Sweetser’s analysis of may

2.1 Sweetser’s analysis

In her analysis of the modal meanings, Sweetser uses Tálmay’s idea of force dynamics, which describes situations (and meanings) in terms of forces and barriers.

For may, Sweetser suggests an image-schematic structure with a potential barrier that could prevent the occurrence of the situation in question but is not imposed:

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   +
  /  
/    
  

This schema, Sweetser argues, describes root (deontic) may, a lexical item pertaining to the socio-physical domain, and can be extended without difficulty to describe the epistemic meaning. As a result,

1. In both the sociophysical and the epistemic worlds, *nothing prevents* the occurrence of whatever is modally marked with *may*; the chain of events is not obstructed.

2. In both the sociophysical and epistemic worlds, there is some background understanding that if things were different, something *could* obstruct the chain of events. For example, permission or other sociophysical conditions could change; and added premises might make the reasoner reach a different conclusion (Sweetser 1990: 60).

In the extension, however, some properties of the source domain will be eliminated owing to the differences between the source and the target (cf. a more detailed discussion of the Invariance Hypothesis below). In Sweetser’s view, such properties will include:
- the exact nature of the forces
- the exact nature of the barrier.

In the sociophysical world, the nature of the forces and the kinds of authority may vary: there is an important difference between external and internal forces, etc., which largely accounts for the differences between modals pertaining to that domain, e.g. the differences between *must* and *ought* on the one hand, and *must* and *have to* on the other (Sweetser 1990: 61).

In the epistemic domain, however, “… only premises count as forces or barriers. The only kind of event is a logical conclusion (or the verification of a theory); and it even has to be the speaker’s own conclusion, because the force-dynamic structure of other people’s reasoning is not readily accessible to us” (Sweetser 1990: 67).

The deontic meaning is paraphrased by Sweetser as

(1) John may go
   “John is not barred (by my or some other) authority (in the sociophysical world) from going”

Metaphorical extension into the epistemic domain will then give:

(2) John may be there
   “I am not barred by my premises from the conclusion that John is there”

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*Sweetser (1990) discusses *have to* among the modal auxiliaries.

*In what follows we will argue that in addition to the ones mentioned here, other factors, not included in Sweetser’s description of the root domain, will also have to be reinterpreted.*
2.2 Problems with Sweetser’s analysis

Sweetser’s version of metaphorical extension does not seem to describe epistemic may at all, for reasons connected with her description of the source domain, reinterpretation of its elements in the target domain, and her choice of the exact source of the extension. The problems encountered are as follows:

- The definition of the barrier does not appear to support the meaning of deontic may: 1 alone describes an epistemically unqualified statement, 2 a hypothetical one, 1 and 2 together seem to describe a situation that is true (but not necessarily true): something is, but could be otherwise–again an epistemically unqualified statement. It appears that 2 cannot change 1’s essential properties and can be regarded as superfluous.

- Because of the difference in the scopes of negation in the deontic and epistemic meanings of may (¬ may vs. may ¬), one barrier alone cannot describe epistemic may (not). The crucial difference is that whereas deontic may and may not are contradictory, their epistemic counterparts can be entertained together. We seem to require a system of two barriers: one for may, the other for may not, both lifted (or imposed?) simultaneously, to account for the fact that (3) and (4) can be entertained simultaneously:

(3) He may be there
(4) He may not be there

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Since I discuss Sweetser’s analysis in detail elsewhere, I will only concentrate here on issues that are directly relevant to the case of must. This is an improved and updated version of (Pelyvás 1996: 121–133) but will not be concerned with all the issues discussed there.

The relationship of 1 and 2 is discussed in Pelyvás (1996: 130) in terms of the necessity and possibility operators in modal logic (relying on Karttunen (1972)). In a system of modal logic, whatever is true is also necessarily true. A simple “unmodalized” statement, incidentally characterized by Karttunen (1972: 4) as requiring the properties Sweetser assigns to statements involving epistemic may, does not seem to have a place in such a system.
Both (3) and (4) require the simultaneous lifting of both barriers, as (3a) and (4a) suggest. Imposing one barrier ((3b) and (4b)) does not seem to describe anything excluding the remote possibility that someone should want to describe the “unmodalized” sentences *He is there* or *He is not there* in this roundabout way. Imposing both barriers (as in (5)) leads to a contradiction and cannot be interpreted at all.

- In the extension from the deontic to the epistemic domain *doer and speaker roles are confused*: the *speaker* of the deontic domain assumes the *doer* role in the epistemic domain and the original *speaker* role is taken by factors that are more or less external to the speaker (or have to be viewed as such by the “logic” of the analysis): premises that lead to a conclusion. This should not be happening since, I would like to maintain, in metaphorical extension of this particular kind, *important structural relationships should be preserved*.

The Invariance Hypothesis (Lakoff 1990, 1993; Brugman 1990, Sanders–Spooren 1997, Kövecses [in this volume]) states that “all the image-schematic structure of the source domain that is consistent with the image-schematic structure of the target is mapped onto the target” (Kövecses [in this volume]: [5]). One peculiarity of mapping from the socio-physical domain (root meanings) to the epistemic domain is that the domains involved are vastly different, as Sweetser
herself observes (cf. 2.1.). Since the more concrete characteristics of the source domain (cf. 2.3.) cannot be mapped onto the target, it is essential that the remaining participants and relationships remain constant, i.e. if a participant can be mapped onto the target, the mapping should not change radically its relationships to other elements of the (target) situation (sources are mapped onto sources, targets onto targets, etc.).

In the metaphorical extension of the modal meanings the speaker/conceptualizer role appears to be such a constant, even though its concrete nature is changed somewhat by what Langacker (1987: 128–131; 1991: 215–217) calls subjectification. In this process, certain elements of a situation that have been interpreted objectively are reinterpreted subjectively (are related to the speaker as conceptualizer rather than to any other (objective) element of the situation.

In (6a) the interpretation of the phrase across the table is independent of the observer, in (6b) it is clearly not. For this reason, the situation in (6b) is seen as more subjective (and the role of the conceptualizer in it is more objective).

In the deontic meaning of may, the permission giver (typically the speaker) is part of the objective scene, whereas the conceptualizer of the epistemic meaning (necessarily the speaker) is not. This also changes somewhat the speaker’s relationship to other participants (cf. Sanders–Spooren 1997: 103–104).

If speaker becomes doer in the extension, and his original role is taken by a component not present in the root meaning, then, arguably, all conceived “similarity” between the source and the target is lost and the extension cannot be valid. We will return to this problem in 2.3 and 3.2, in connection with the proposed alternative analyses of both may and must.

• Diachronic evidence strongly suggests that the deontic sense appeared later than the epistemic sense in the case of may, cf. Traugott (1989: 36), which makes extension from that source at least doubtful.

(6) a. An insect crawled across the table
   b. A famous movie star sat across the table

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8 This is not simply a case of speaker–doer identity, a reading not excluded by the preliminary version of this paper. As both Barcelona and the unnamed reviewer note, this alone would not violate the Invariance Hypothesis. One could even argue, cf. Pelyvás (1996: 150, 166), that identity in such sentences as I may change my mind could facilitate the development of the epistemic meaning. But, since the epistemic meaning developed before the deontic one in the case of may, the case is not so simple—cf. 2.3.
2.3 An alternative analysis for *may*

In order to overcome the problems listed in 2.2, Pelyvás (1994, 1996) proposes a system in which
- *counteracting forces* of different relative strengths rather than rigid barriers are used;
- both the epistemic and the deontic meanings are extensions of a (now extinct) *ability* meaning of *may* ['be strong enough'].

In the *ability* meaning (Figure 1) the only participant that is highlighted (part of the immediate scope or objective scene (OS)) and so can be endowed with strength is the *doer*, although it is clear that his/her strength is relative to counteracting forces (seen as relatively weak) that must also be regarded as part of the overall scope: the *doer* is strong enough to perform some (typically *purposeful*) action (the latter factor is absent from Sweetser’s analysis). The only role of the speaker/conceptualizer in this situation is that of the ground (cf. Langacker’s (1987, 1991) epistemic grounding), a role that would be present in the same form in any clause. For this reason such meanings are often not considered to be truly modal at all.

![Diagram of the ability meaning](attachment:image1.png)

Figure 1. *may* – ability

In the “prototypical” deontic meaning (Figure 2) the *doer* *intends* to perform *purposeful activity* (both factors, although clearly part of the deontic sense of *may*, are absent from Sweetser’s treatment) and the counterforces take shape in the form of the “permission giver” (typically the speaker). The latter becomes part of the objective scene (cf. Sanders–Spooren 1997: 97).

We can safely assume that the appearance of the *speaker* in the immediate scope of the predication (OS) (apart from his “normal” role as conceptualizer out of the
scope of the predication) is a crucial factor in the development of deontic modal meanings in English.9

One innovation of Pelyvás (1996) is the argument that in the deontic sense the speaker (the typical “permission giver”) is not strong enough or does not find it necessary to mobilize a force that is strong enough to prevent the action from taking place → the doer is relatively strong and the permission giver is relatively weak (relinquishes authority).10

![Figure 2. Deontic may](image)

In the epistemic sense (Figure 3), which also derives from the ability meaning, subjectification has occurred (for a detailed description of the process, compare Langacker 1987: 128–131; 1991: 215–220). The overall effect of the process is the inclusion of the speaker/conceptualizer (the ground) directly (rather than through

9 This point deserves further consideration that could lead to the formulation of a theory of deontic grounding.

10 It can and has indeed been argued that permission givers are typically strong, or else the speech act could not be successfully performed. We can accept this as mostly true (but bear in mind cases of concessive may in such sentences as All right, he may be a criminal, but he has always been honest with me, where may clearly indicates surrender in an argument and can be argued to bear some epistemic overtones as well) and emphasize the speaker’s deliberate relinquishing authority in situations where (s)he does not find it important (or even desirable) to oppose the doer’s deliberate action, thereby putting himself/herself in a weak position. Permission does not force the doer to perform the action; its source can be viewed as relatively weak in this respect as well. In any case, since we propose to derive epistemic may from the ability meaning where strength can only be attributed to the doer, the deontic meaning is not crucial to the argument.
correspondence, as in the deontic meaning, cf. Figure 2) into the scope of the predication. The relevant relationship now holds between the speaker (conceptualizer) and the situation as a whole. The same relative weakness that was present as an unspecified counterforce in the ability sense (and also reappears at a later date as a force typically associated with the speaker in the deontic sense) now prevents the speaker from becoming fully epistemically committed (cf. Lyons 1995: 254) as to the situation described.

The doer is no longer highlighted in the epistemic sense (strength or intention do not play a role and the counterforce has no relation directly to him/her). This is an aspect of the source domain that would not be compatible with the target domain. The situation epistemically qualified by may need not be a deliberate action, can be in the progressive and even anterior to the ground. This is further evidence in favour of the view that the speaker cannot simply assume the doer’s role.

In this analysis
• because of the (relatively weak) counterforce, the sentence containing epistemic may is not equivalent to an unqualified statement as Sweetser’s analysis would predict;
• the different scopes of negation can be explained. Epistemic may and may not can be entertained together because negation occurs within the situation that is alone within the objective scene (OS) and does not affect the relationship of the counterforce to any participant of the situation, whereas it makes the speaker (part of OS) strong in the deontic sense;
• the speaker’s role remains constant, which means that structural relationships are preserved and invariance criteria are satisfied.

We cannot go here into the details of how Langacker’s notion of subjectification plays an essential role in the emergence of the grounding predication, which gives
epistemic modals a function that Langacker considers to be unique in the grammatical system of English. The details are described in Langacker (1991: Chapters 5–6) and in Pelyvás (1996: Chapter 9).

3. An analysis of *must*

3.1 Talmy’s and Sweetser’s suggestions

Talmy’s original proposal for *must* is a set of barriers restricting one’s domain of action to a single act:

![Diagram](https://example.com/)

Sweetser abandons this in favor of a compelling force directing the subject towards an act:

![Diagram](https://example.com/)

Since cognitive grammar allows for the possibility of structuring the same situation in different ways (cf. the subjectivity of different Idealized Cognitive Models), there is nothing intrinsically wrong in postulating that both formulations are equally valid. It can indeed be argued that Talmy’s formulation describes the situation from the doer’s (imposee’s) point of view:

(7) I must go there at midnight (*I have no alternatives*),

whereas Sweetser’s from the speaker’s (imposer’s) point of view:

(8) You must go there at midnight (*I insist that you do*)

Sweetser then states that the *deontic* meaning can be paraphrased as

(8a) “*The direct force (of my authority) compels you to go there at midnight*”. 
which, according to her, can be extended into the epistemic domain as

(9) John must be mad

(9a) “The available (direct) evidence compels me to the conclusion that John is mad”

3.2 Problems with Talmy’s and Sweetser’s suggestions

Many of the problems encountered with may appear to be repeated here in a similar form:

- Sweetser’s solution again confuses speaker and doer roles: the speaker of the deontic meaning again becomes the doer of the epistemic one, with its former slot occupied by “available direct evidence”: structural relationships do not appear to be preserved.

Owing to the great differences between the root (deontic in this case) and epistemic domains, which, similarly to the example of may, result in the loss of most of the concrete properties of the participants (obligation, purposeful activity, posteriority etc.), the permanence of the speaker role alone and of its relationship to slightly changing but recognizable aspects of the situation appear to be the only factors that hold the metaphor together.

It is also worth mentioning at this point that any such rearrangement of participants would make transitional stages between root and epistemic readings impossible (at least without surface subject–doer identity). It would be impossible to read both meanings into one form without confusion. The example of concessive may has been mentioned, and the partially epistemic meaning of should is also an obvious case in point. The sentence They should all be dead by now, although mostly epistemic, carries definite undertones of a deontic nature.

Such a rearrangement, if it took place, would be likely to involve a rearrangement of syntactic structure as well (symbolicity). The doer appears as subject in the deontic sentence: the same might be expected of the speaker/doer in the epistemic context. In subjectification of the first type (Langacker 1991: 269–273), when the speaker/conceptualizer appears as a reference point (a temporary participant), this happens in the form of a complex clause11 with the speaker appearing as the subject of a cognitive matrix predicate, as in I think that John is an idiot rather than directly becoming the subject of the epistemically qualified clause.

It can be argued that the notion of compulsion that appears to be present in both the deontic and epistemic sense should suffice as a basis for the metaphoric transfer. It is not obvious to me that compulsion is present in the epistemic meaning unless prediction should be considered as such (cf. the alternative to be suggested in 3.3.2). In Sweetser’s version the presence of compulsion in the epistemic sense depends on the dubious move “speaker replaces doer”, since one can hardly compel third order entities to be true (disregarding the further complications that the permissibility of anteriority would introduce).

- The relationship of negated and non-negated forms is less straightforward with must than it was with may, where only the scope of negation changed in the transfer. The negation of the lexical item must only occurs in the deontic sense (alongside with need not, which is traditionally regarded as a negative counterpart to deontic must). In the epistemic sense another alternative, cannot is used.

There are nevertheless two factors that may justify involving negation in the analysis. One is the example of may, where it provides important evidence against Sweetser’s analysis and in favor of the alternative proposed. The other is the more general consideration that in studying the extension of grammatical rather than “purely” lexical meanings, disregarding obvious aspects of that grammaticality – negation, grammatical structure, relation of a modal to other elements of the modal scale or to unmodalized statements, which makes this study relevant in the wider perspective outlined in 1– would deprive the analyzer of important tools and might render the analysis haphazard, vague or, ultimately, even vacuous.

In the deontic sense, both Talmy’s and Sweetser’s schemas appear to have some problems with the external negation of must.

In Talmy’s system external negation (need not) can be described as lifting all barriers. In my judgment this leads to an unmodalized statement, if not to deontic may, with which it is logically compatible. Need not would, nevertheless, not be used to grant permission, which suggests a flaw in the analysis. (Internal negation (must not) could be all barriers lifted, only one left imposed in Talmy’s system, which makes it in effect identical with Sweetser’s deontic may not, an acceptable solution provided that that analysis is correct.)

In Sweetser’s system need not can be described as removing the compelling force from behind the action, which clearly leaves us with the unacceptable conclusion that it is equivalent to an unmodalized statement. (Internal negation could be seen as a compelling force working against the action, which is in good correspondence with our suggested alternative analysis for deontic may.)

Sweetser’s paraphrase of epistemic must would suggest that it requires internal negation: “The available (direct) evidence compels me to the conclusion that John is not mad”. The existing form, cannot, however, expresses external negation.

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12 This observation comes from the unidentified reviewer of the preliminary version.
Sweetser’s original paraphrases of affirmative *must* (in both senses) suggest that *must* is stronger than the “unmodalized” statement, which is clearly not the case. Being compelled to do so is no guarantee that the doer (or imposee) will carry out the action, just as prohibition is no guarantee that the action will not take place. On the epistemic scale, *must* is weaker than the “unmodalized” statement, although its analysis in terms of possible worlds would predict the opposite (*Np = true in all possible worlds*, cf. Karttunen (1972), Pelyvás (1996), see also Note 7). All this evidence suggests that neither schema describes deontic *must* satisfactorily, and, necessarily, neither can serve in its present form as a basis for metaphorical extension into the epistemic domain.

3.3 An alternative analysis for *must*

3.3.1 A new force in the deontic sense

I will now suggest that there is one element missing from both Talmy’s and Sweetser’s conceptual schemas. I will initially call that element, which is to play an important role in metaphorical extension as well, the doer’s reluctance to perform the action. This factor, which, being a force, could be easily incorporated into Sweetser’s schema, is briefly mentioned in her analysis but is not taken into consideration in its formulation.¹³

Deontic *must* typically appears only in dynamic situations marked as agentive (deliberate action). Whenever a deviation occurs, a reinterpretation becomes necessary, as in (10) and (11):

(10)  You must live there the rest of your life  
≈ You are not permitted to move [deliberate action]

(11)  You must be really tall to be able to pick those apples

In (11) the generic reinterpretation of the personal pronoun takes place. When that is not possible, the meaning can only be epistemic, as in (12):

(12)  You must be really tall to have been able to pick those apples  
[said to someone the speaker has never actually seen]

¹³ It is difficult to see how it could be incorporated into Talmy’s system, which may be a sign of the superiority of Sweetser’s version.
That the doer’s reluctance is a significant factor in the deontic meaning of *must* is known from experience—sometimes the presence of an obligation makes one reluctant to do something that one would otherwise gladly do. It also plays a crucial role in the linguistic analysis of the difference between *must* and *should*. *Should* is generally regarded as the more polite form, but the source of politeness is usually left unexplained or is simply attributed to its originally being a preterite/non-actual form. I would like to argue, in particular, that the difference is in the different degrees of compliance expected of the addressee (doer), i.e. the different degrees to which his/her reluctance or non-compliance is permitted to play a role. (The essence of politeness is leaving options open to your partner.)

Compare the sentences in (13):

(13)  

a. You must leave now  
b. You should/ought to leave now

<table>
<thead>
<tr>
<th>Necessity</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) (MUST)</td>
<td>+</td>
</tr>
<tr>
<td>b) (SHOULD/OWUGHT)</td>
<td>+</td>
</tr>
</tbody>
</table>

Necessity (Speaker)  
Doer’s intention  
((non-)compliance)

Since inclusion of the new force representing the doer’s reluctance only makes sense in Sweetser’s model (as it contains only forces), from now on we shall only consider this version. After modification, the rough schema for deontic *must* will be as follows:

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**Diagram**

- **DOER’s reluctance to perform**
- **Speaker’s intention**
- **Action (purposeful)**
The existence of this counterforce explains why deontic *must* is not equivalent to or even stronger than an “unmodalized” statement. It must also be borne in mind that the exact nature and strength of this force is not typically known to the speaker (imposer), a fact that may be seen as the first step in the direction of the epistemic meaning.

The more detailed schema that makes a distinction between scope and immediate scope (objective scene) and also includes the speaker/conceptualizer is given in Figure 4:

![Figure 4. Deontic must](image_url)

The speaker/conceptualizer is again present in a dual role. One is that of the ground, a role that the speaker will take in any clause (cf. 2.3) and is out of the scope of the predication. Similarly to deontic *may*, the speaker also appears as one of the participants (the imposer) in the on-stage relationship (OS) between him and the doer of the purposeful action. This identity is again established through correspondence—which may turn out to be an essential factor in English deontic modals, and perhaps only the prototypical case in Dutch where the imposer can not only be different from the conceptualizer in the deontic sense of *moet* (‘must’), but can actually appear in the sentence as a prepositional phrase, as in (14)

(14)  Jan   moet    van      Klaas     thuishijven  
     ‘Jan must [by order of Klaas] stay at home’

This example is taken from Sanders–Spooren (1997: 97). It is interesting to note that this option does not appear to be available in the epistemic sense, which can
be taken to be evidence that the two roles in that meaning are not separate and speaker involvement is established by means other than correspondence.

3.3.2 Extension of the modified schema into the epistemic domain

Similarly to *may*, the extension of *must* from the sociophysical to the epistemic domain is accompanied by subjectification.

Owing to the great differences between the source and the target domain (cf. 3.2), we argue that it is the forces and interrelationships between these forces that will carry the metaphor.

The objective relationship (one within OS) that used to hold between speaker (through correspondence) and doer is now reinterpreted along the subjective axis (cf. Langacker 1991: 216) and is thus turned into a relationship directly between the speaker as conceptualizer and the situation as a whole.

As with epistemic *may*, the doer loses any role other than the one he has in the embedded situation (of any kind) that replaces the purposeful activity of the deontic sense. His reluctance to perform the act is an aspect of the source that is incompatible with the target domain. Even if the on-stage situation is purposeful action, the doer does not have any obligation in it and, similarly to epistemic *may*, anteriority and progressive forms are possible.

The force that used to represent the doer’s reluctance is now reinterpreted as forces of unknown reality that may make the speaker’s assessment of the situation imprecise: forces that are unknown to him/her and may ultimately result in a deviation from his prediction of reality (cf. Langacker 1991: 240–249).

The force representing the speaker’s intention in the deontic sense now becomes a force rather similar in nature: the force of the speaker’s epistemic commitment:

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14 In 3.3.1. we argued that the (degree of the) doer’s reluctance is largely unknown to the imposer in the deontic sense, which in good correspondence with the proposed reinterpretation.

It can still be argued, as the unidentified reviewer of the preliminary version does, that forces of unknown reality do not necessarily work against, and might even confirm the speaker’s assessment of the situation.

There is one major objection to this: even if they do, the speaker/conceptualizer is unaware of this and an unknown factor is always a factor of indecision. One of the basic factors in limited resource processing is that the conceptualizer postulates the existence of at least some unknown factors that work against him/her. Factors of unknown reality that may confirm the judgment are thus going to be less ‘interesting’ than factors of known reality that do and than factors of unknown reality that may not. A speaker would not use epistemic *must* unless he believed that there were important factors of this kind (cf. the Gricean maxim of *quantity*).
his prediction of the likely course of events based on his assessment of known elements of the situation.

Extension into the epistemic domain for must can be summarized in the schema given in Figure 5:

![Figure 5. Epistemic must](image)

In this solution
- Speaker and doer roles are preserved as in the case of may;
- The irregularity of negation can be explained: what is negated with cannot in the epistemic sense is a relationship (between conceptualizer and the situation-as-a-whole) that was not highlighted at all (was out of scope) in the deontic sense. Negation is external relative to the situation highlighted in the objective scene.
- Owing to the counterforce that represents factors of unknown reality, the speaker’s epistemic commitment is weaker than in an unmodalized statement. There is no such counteracting force highlighted in a statement like John is mad.

4. Conclusion

The alternative analyses appear to me to give a more systematic account of the processes underlying the metaphorical extension of modal meanings into the epistemic domain than Sweetser’s (1990) version. The proposed alternatives suggest that the differences between root and epistemic meanings are greater than envisaged by Sweetser but can nevertheless be seen as metaphorical extension–of a rather peculiar kind. The nature of the differences are not only compatible with but can be seen as closely related to a modified version of Langacker’s notion of subjectification an epistemic grounding.
The essence of this modification is that the target epistemic domain is strongly subjectified through direct involvement of the speaker/conceptualizer in the scope of the predication, whereas the source (sociophysical) domain is only partially so (through correspondences between speaker/conceptualizer and participants more or less objectively construed in the objective scene). From the wider perspective of epistemic grounding this supports my hypothesis that root modals do not function as grounding predications. A root modal could be included in the situation that remains alone in OS with both epistemic modals—root modals can (and must) be epistemically grounded.

In the alternative analyses for the root meanings of both auxiliaries, a relatively weak counterforce was introduced into the situation, ultimately with an aim of preventing the schemas from becoming equivalent to unmodalized statements. The role of these counterforces in the extension can reveal significant aspects of the nature of the epistemic domain.

In the metaphorical extension of *may* this counterforce bears a crucial role: the speaker does not commit himself as to the factuality of the situation described (puts himself in a relatively weak position), which means that this force carries the full weight of the grounding predication.

In the extension of *must*, this force remains in the background: part of the scope of the predication but out of the objective scene: its function is to weaken somewhat the epistemic commitment of the speaker (the force of the grounding predication).

The difference can be seen to be a result of the fact that in *may* the force can be associated with the speaker and thus plays a crucial role in the epistemic sense which, owing to subjectification, highlights the speaker/conceptualizer (if only temporarily—cf. the role of *reference point constructions* in epistemic grounding, Langacker 1993: 24–26, Pelyvás 1996: 160–163). Association with the speaker may not be necessarily true of the *ability* sense, from which the epistemic meaning is extended in our proposal, but is certainly true of the deontic one, which, although a later development, could nevertheless play a significant role in the even later emergence of the contemporary strongly subjectified epistemic sense of *may* (cf. Traugott 1989: 41–43, Pelyvás 1996: 133–134). In *must* this force cannot be associated with the speaker and so remains secondary in the extension.

References

Brugman, Claudia

Karttunen, Lauri
Kálmán, C. György—Kálmán, László—Nádasdy, Ádám—Prószéky, Gábor
Kövecses, Zoltán
1998  “The scope of metaphor”, [in this volume]
Lakoff, George
Langacker, Ronald W.
Lyons, John
Pelyvás, Péter
Sanders, José—Spooren, Wilbert
Sweetser, Eve
1990  From Etymology to Pragmatics. Metaphorical and cultural aspects of semantic structure. Cambridge University Press.
Traugott, Elizabeth C.