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## On the Emergence of the Epistemic Use of *Must*<sup>1</sup>

### Abstract

This corpus-based study of the emergence of epistemic *must* in English aims to reassess Sweetser's (1990) account of the conceptual and historical links between root and epistemic meanings and defends an alternative view of the category of epistemic qualification. After discussing the problems posed by the metaphorical hypothesis, it proposes a frame-based account of modality and of the various meanings of *must* in the light of which the historical data is re-examined. It is then suggested that the problems with Sweetser's analysis spring from the commonly-held view that epistemic meanings are conceptually derived from root ones. The hypothesis is formulated that epistemic qualification, unlike root modality, does not pertain to the schematic system of force-dynamics and that there is no conceptual basis for postulating a general semantic category (known as modality) subsuming root and epistemic meanings. The rise of epistemic *must* is explained by the fact that root meanings are underpinned by complex conceptual frames which, beside their core force-dynamic structure, also contain components that pertain to epistemicity and which, in certain contexts, become so prominent that they take over the primary root interpretation.

### 1. Introduction

This case-study of the emergence of epistemic *must* aims to reassess Sweetser's seminal work (1990) on the conceptual and historical links between root and epistemic meanings. Sweetser's use of metaphor to explain both the evolution of the English modals and the conceptual relationships between the two categories has often been criticised (cf. Hopper & Traugott 1993; Bybee et al. 1994; Pelyvàs 1996, 2000, 2006;

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<sup>1</sup> I wish to thank the two anonymous reviewers for their insightful comments on the first version of this paper. Any remaining errors are mine.

Diewald 1999; Lampert & Lampert 2000; Goossens 1999, 2000; Traugott & Dascher 2002, *inter alia*). Yet, her account of epistemicity in terms of force dynamics is still widely endorsed – at least partially – in the field of cognitive linguistics (cf. Achard 1998; Talmy 2000; Mortelmans 2001; Langacker 2002; Radden & Dirven 2007, *inter alia*).

Beside theoretical objections, a number of critiques have also been levelled at Sweetser's (1990) description on account of its empirical inadequacy (see, in particular, Pelyvàs 1996; Goossens 1999, 2000 and Traugott & Dascher 2002). Although some scholars (cf. Goossens 1999 and Traugott & Dascher 2002) have since provided accounts of the emergence of epistemic *must* based on more solid diachronic evidence, the absence of consensus on the origin of this use suggests that the debate is not over.

Based on a fine-grained analysis of *must* in a sample of dramatic texts from the 17th to the end of the 19th century, this study therefore proposes an alternative account of the historical shift from the root to the epistemic uses of *must* as well as new insights into the category of epistemic qualification. It demonstrates that the data do not corroborate Sweetser's metaphorical hypothesis and suggests that the rise of epistemic *must* was permitted by a shift in the distribution of attention (cf. Talmy 2007) within the semantic frame (or script) underlying root meanings. Building on various frame-based approaches (Fillmore 1982; Lakoff 1987; Langacker 1991; Furmaniak 2010), it claims that root *must* refers to a complex conceptual frame which, from the start, contained an epistemic judgement concerning the occurrence of the modalised state of affairs and that, in certain contexts, this backgrounded epistemic position became foregrounded and conventionalised into a separate sense of the modal.

This hypothesis lends credence to the view held by Lampert & Lampert (2000) and Nuyts (2001) that epistemic qualification is better analysed as a semantic category distinct from root modality.

The first section reassesses Sweetser's hypothesis in the light of the recent literature. The second part describes the methodology used in this study. The results of the corpus-analysis are then given which add weight to the arguments against Sweetser's theory and lead to an alternative characterisation of epistemicity. In the final section, it is shown that this new analysis provides an account of the emergence of epistemic *must* that is consistent with the historical data.

## 2. Discussion of the metaphorical hypothesis (Sweetser 1990)

### 2.1 Sweetser's (1990) account

Drawing on Talmy's analysis (1988) of root modality, Sweetser (1990) suggests that the epistemic uses of modals derive from the extension of force-dynamic values pertaining to the socio-physical domain to the epistemic domain. She argues that

[p]ast historical changes in this domain, then, were shaped by a general semantic linkage which probably has inherent psycholinguistic motivation. [...] Thus we view our reasoning processes as being subject to compulsions, obligations, and other modalities, just as our real-world actions are subject to modalities of the same sort. (1990: 50)

For instance, she claims (ibid.: 61) that (1), where *must* has its deontic meaning, can be paraphrased as (2), while (3), where the modal is epistemic, should be glossed as (4).

- (1) *You must come home by ten. (Mom said so.)*
- (2) *The direct force (of Mom's authority) compels you to come home by ten.*
- (3) *You must have been home last night.*
- (4) *The available (direct) evidence compels me to the conclusion that you were home.*

In (3), the necessity bears neither on the state of affairs denoted by the VP, as in (1), nor, for that matter, on an event pertaining to the socio-physical world, but on the speaker's reasoning. According to Sweetser (ibid.), the speaker is construed as being compelled, by the available evidence, to conclude that the state of affairs holds. The main claim, then, of what can be called the metaphorical hypothesis, is that the English modals construe epistemic modality in terms of semantic schemas that primarily apply to (the cognizer's representation of) entities belonging to the socio-physical world and which are mapped onto entities of the mental world.

## 2.2 Arguments against the metaphorical hypothesis

Attractive as it may be, the metaphorical hypothesis has been challenged in the recent literature.

From a historical perspective, first, Traugott & Dascher (2002: 111) have questioned the role of metaphor as a factor of linguistic change. Instead, they have argued that the main mechanism of change is metonymic in nature and consists in the strengthening of pragmatic inferences in certain contexts. In a similar vein, Goossens (1999, 2000) has suggested that semantic changes originate in gradual shifts of uses.

Another problem, noted by Langacker (1991) and Pelyvàs (1996), is that the metaphorical hypothesis only applies to a handful of modals, namely, *must*, *have to* and *may*,<sup>2</sup> while the epistemic uses of *will*, *would*, *might*, *should* and *ought to* cannot be accounted for in those terms. Neither does it apply, in fact, to the class of epistemic adjectives, adverbs and verbs, most of which exhibit no link whatsoever with the system of force dynamics. In that respect, the hypothesis fails to provide a unitary description of the grammatical class of the English modals and of the semantic category of epistemic qualification. Nor does it explain the near-synonymy of (5) and (6).

(5) *He must be mad!*

(6) *He is probably mad!*

Other scholars (cf. Lampert & Lampert 2000; Nuyts 2001) express some doubts concerning the close conceptual link between root and epistemic qualifications that is implied by the metaphorical hypothesis and suggest that epistemic qualification is best treated as an independent semantic category. They argue that epistemicity exhibits properties that are inconsistent with the metaphorical hypothesis. Among these is the gradability of epistemic expressions (e.g. *very likely/probable/probably* or *may/might well*<sup>3</sup>), a property which, Westney (1986) and Nuyts (2001) have remarked, is not shared by root expressions (e.g. *\*very obligatory/*

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<sup>2</sup> In fact, Pelyvàs (ibid.) also questions the validity of Sweetser's account of the rise of epistemic *may*, which, he suggests, derives not from the sense of "permission" but from a now extinct sense of "ability".

<sup>3</sup> Palmer (1990: 68) argues that the role of *well* is to "strengthen the possibility" expressed by the modal.

*permitted*). If epistemic meanings were just metaphorical extensions of root meanings, Pelyvàs (1996, 2000, 2006) argues, they should preserve the conceptual structure of the latter. Even if there is some truth in this argument (epistemic expressions do tend to be scalar, unlike root expressions), it could be objected that gradability is more a property of expressions (and of the type of construals they encode) than of the semantic category itself. After all, with the exceptions of *well* and *just* (cf. Palmer 1990: 68), epistemic modals are seldom qualified, while root modals sometimes are (e.g. *you must really/absolutely see that film!*). However that may be, even though the question of scalarity does not totally undermine the metaphorical hypothesis, it is an issue that it fails to address.

Sweetser's claims are mainly based on historical evidence but she also invokes crosslinguistic arguments, underlining "an evident crosslinguistic tendency for lexical items to be ambiguous between those two sets of senses" (1990: 49). However, this commonly-held view is disconfirmed by the findings of van der Auwera & Ammann (2005) who show that polyfunctionality (i.e. the capacity for a modal expression to have both a root and an epistemic meaning) is not the rule across languages. Of the 241 languages they have examined, 51% do not have polyfunctional expressions.<sup>4</sup>

The last theoretical argument against the metaphorical hypothesis has to do with the informal paraphrase (4) used by Sweetser to make explicit the underlying semantic structure of epistemic *must*. Although her analysis is meant as an improvement to Tregidgo's (1982), it is in fact liable to the same kind of criticism. Tregidgo argues that the difference between the root and epistemic senses of modals can be explained by a change of predicate in the underlying semantic representation of the sentence. Thus, while root *must* can be formalised as (7), where the agent (Y) is compelled by the deontic source (X) to cause the state of affairs (ab), epistemic *must* has the semantic structure in (8), where the speaker (Y) is compelled by the evidence (X) to state that the situation (ab) holds.

(7) Root *must*: a must b = X DEMAND Y – Y CAUSE ab

(8) Epistemic *must*: a must b = X DEMAND Y – Y STATE ab

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<sup>4</sup> This, of course, does not prevent speakers of these languages from conveying epistemic judgements.

The problem posed by this analysis – and rightly observed by Sweetser – is that nothing forces the speaker to actually *state* that the proposition is true. Stating is indeed a voluntary act and there is little sense of deciding in sentences with epistemic *must*. But in fact, much the same objection can be raised against Sweetser’s paraphrase in (4). In (3), nothing compels the speaker to actually conclude that the state of affairs holds. *Concluding*, like *stating*, conveys a sense of decision which is absent from (3). As a matter of fact, even in strict truth-conditional terms,<sup>5</sup> (3) is not equivalent to (9).

(9) *I must conclude that you were home last night.*

Given the list of arguments against the metaphorical hypothesis, it seems justified to reassess it in the light of a more thorough investigation of the historical data.

### 3. Methodology

Insofar as Sweetser’s argument rests mainly on her own interpretation of the historical evolution of the English modals, I re-examine her conclusions in the light of a sample of English texts ranging from the 17th to the end of the 19th century (cf. appendix for details about the corpus). This is all the more necessary as Sweetser’s analysis does not seem to be based on a thorough and fine-grained corpus-analysis, while Goossens (1999, 2000) and Traugott & Dascher (2002) disagree as to the origin of the epistemic use of *must*.

My corpus is composed of dramatic texts by English-born authors dated from 1600 to 1899, the period during which the epistemic use of *must* is thought to have emerged (according to the *OED* and Goossens 1999). Each century is divided into five spans of 20 years so that each century is evenly covered. Each 20-year period contains two texts of equivalent size (15,000 words  $\pm$  5%) by two different authors of the same generation (i.e. aged between 21 and 40 on year 1 of the period<sup>6</sup>).

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<sup>5</sup> As underlined by Langacker (1991: 273), Sweetser’s glosses “are obviously not intended as serious paraphrases”. In particular, they are not meant to account for the specific construals underlying the uses of modal auxiliaries. Yet, as glosses, they are expected to be at least truth-conditionally equivalent to the sentences they paraphrase.

<sup>6</sup> This parameter guarantees that any author whose lifetime spans over two or more periods appears in one period only.

Thanks to the AntConc 3.2.1 software, all the occurrences of *must* in the corpus were extracted. Interrogative and negative forms were excluded because, as is well known (cf. Palmer 1990), *must* is never epistemic in the interrogative and rarely so in the negative (until recently, at least). The remaining 954 occurrences were sorted out according to their meanings.

#### 4. Back to the data

In this section, I first present a brief overview of the literature on the origin of the epistemic use of *must*. I then describe the theoretical framework I work with and the semantic classification I use for *must*.

##### 4.1 On the origin of the epistemic use of *must*

There is no consensus in the literature as regards the source of the epistemic use of *must* and the date of its emergence.

According to Sweetser (1990), epistemic *must* comes from the sense of “obligation”, while Goossens (1999) claims that two parallel paths may have been involved and therefore proposes two different sources: the deontic interpretation (“obligation”) and a meaning he calls “inferable necessity” or “objective inference” where “*must* expresses an inference which is not defeasible” (1999: 196). For Traugott & Dascher (2002), the modal’s epistemic use was derived from a meaning of “general necessity”, which they however fail to define precisely.

As for the first occurrences of this use, the dates range from the end of the 14th century (cf. Visser 1966) to the middle of the 17th century, according to *The Oxford English Dictionary*. Traugott & Dascher (ibid.) suggest that there were already instances of epistemic *must* in Old English (5th to 12th century) but that they were rare, ambiguous and that they always expressed objective epistemic modality. The unambiguous occurrences of epistemic *must* they found in Middle English (13th–14th centuries) were also of the objective type. They date the use of *must* as an expression of subjective<sup>7</sup> epistemic modality to the 16th and 17th centuries, one century earlier than Goossens (1999).

One reason for this lack of consensus is that scholars use different semantic categories which, moreover, are not always clearly defined.

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<sup>7</sup> As we shall see, subjectivity for Traugott and colleagues is concerned with the expression of textual and expressive meanings (cf. Traugott 1989: 35).

Before embarking on the analysis of the data, I therefore find it important to precisely characterise the various meanings I shall be referring to as well as the theoretical framework on which this semantic typology is based.

## 4.2 Theoretical background

According to Talmy (1988, 2000), concepts that are connected to causation and root modality are generated by the schematic system of force dynamics. Deontic obligation, for instance, corresponds to the following scenario: an antagonist (the speaker in (10)) wants the event denoted by the modalised clause to occur and exerts some pressure (which can be physical, social or psychological) on the agonist (denoted by the subject) to get him/her to act accordingly. The agonist however has an opposite tendency – which results in an opposition of forces whose outcome (called the Resultant) is the realisation or non-realisation of the event.

- (10) Sus.: *Settle here! — oh, dear me, how happy I am. [...]*  
 Chas.: *Yes, we shall be so happy.*  
 Sus.: *Oh, quite: only you must promise me, now, you won't flirt with the girls, nor dance with Sally and Mary at our village dance.*  
 Chas.: *No, no, with none but you.* (Beazley, 1826)<sup>8</sup>

Nevertheless, this basic force-dynamic configuration is nothing more than a blueprint which fails to fully characterise the various meanings and shades of meaning that root *must* can convey (cf. Antinucci & Parisi 1971; Lakoff 1972; Larreya 1984).

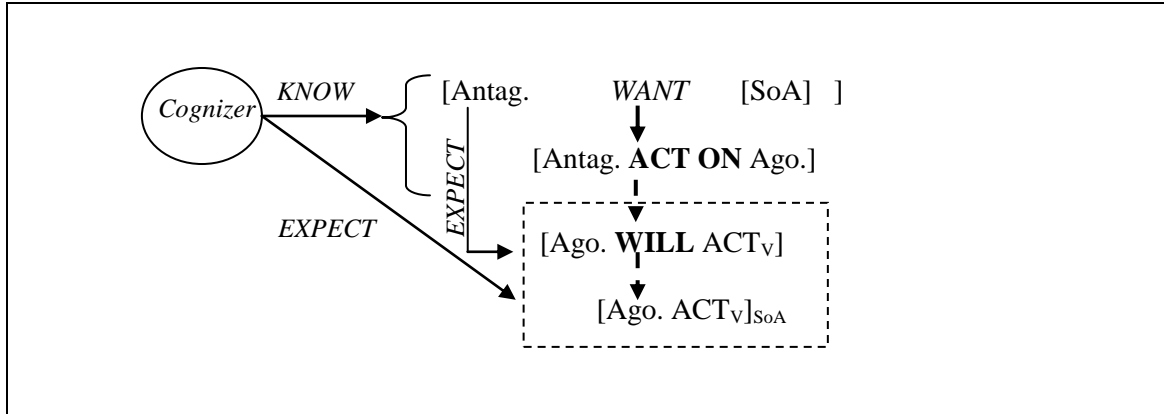
In order to capture the rich semantics of root modality, I therefore propose that any given modal meaning (such as “obligation”) is underpinned by a much more complex conceptual structure or frame (cf. Fillmore 1982; Lakoff 1987) whose components (whether they are explicit or not) are key to characterising the concept fully. As figure 1 suggests, there is more to the sense of “obligation” than a force-dynamic opposition between two participants with opposite tendencies (a simplified version of the frame is given here<sup>9</sup>).

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<sup>8</sup> The source of the example (author and date) is indicated in parentheses.

<sup>9</sup> For a fuller account of the “obligation” script, see Furmaniak (2010).





**Figure 1.** Frame for deontic obligation

Two types of components are at work within this frame (or script<sup>10</sup>). Those that are related to force dynamics (in bold), which constitute the core of the frame, and those more peripheral elements which do not pertain to force dynamics but to what Talmy (2000, 2007) calls “cognitive state”<sup>11</sup> (in italics). The force-dynamic part, which I assume to be structured as a causal chain, reads as follows (from top to bottom): The antagonist wants the state of affairs denoted by the sentence (noted “SoA”) to take place and therefore exerts some pressure (noted “ACT ON”) on the agonist. This hypothetically (hence the dashed arrows and box) causes the agonist to agree<sup>12</sup> to act in the manner described by the verb (noted “ACT<sub>V</sub>”) and from this compliance normally results the state of affairs.

As for the schematic system of cognitive state, a distinction must be made between the interior of the conceptualised scene (where the antagonist is conceived as wanting as well as expecting the event to occur) and its exterior where the cognizer – who is often but not necessarily identical with the speaker<sup>13</sup> – is presented as being aware of the force-

<sup>10</sup> The notion of *script* is due to Schank & Abelson (1977) and is used for a frame with a sequence of events.

<sup>11</sup> This schematic system generates notions like intention, evidentiality and, of course, epistemic qualification (Talmy 2000).

<sup>12</sup> On the reason why the agonist’s agreement is a force-dynamic notion, unlike the antagonist’s act of wanting, see Furmaniak (2010).

<sup>13</sup> It is useful to distinguish the speaker – the “actual person physically producing an utterance” (Brisard 2006: 48) – from the cognizer (or conceptualizer) who “refers to the instance that defines the (conceptual) viewpoint or perspective on a given scene” (ibid.). Although the speaker’s viewpoint is usually adopted (one of the exceptions being

dynamic situation and as expecting the event to happen. That the realisation of the state of affairs is the expected outcome of its necessary character is crucial for what comes next and has already been noted by Traugott (1989) and Radden & Dirven (2007). As pointed out by Traugott (*ibid.*: 50), the fact that *You must go* entails that the speaker expects that the event will take place is evidenced by the oddness of (11).

(11) ? *He must go but maybe he won't.*

I only differ from Traugott in that she sees this judgement as a pragmatic inference, whereas I argue that it is an essential component of the concept of “obligation” and of other types of root necessity. This is supported by the fact that if the event is not expected to take place, *should* or *be supposed to* is used instead of *must*. In that respect, I follow Brisard (2006) who considers that

[s]uch associations may have greater or lesser degrees of prominence, depending on things like frequency and context, and thus they may vary in the necessity with which they are felt to accompany the use of a particular item. But that is no reason to call them pragmatic, if pragmatics is the study of particular meaning effects related to a speaker's intentional, strategic behavior. (Brisard 2006: 63)

### 4.3 The meanings of *must*

I agree with Sweetser (1990) that the three root meanings of *must* which I distinguish refer to force-dynamic situations in the socio-physical world: an antagonist exerts some pressure on the agonist, which normally results in the occurrence of the state of affairs. In order to clearly differentiate these three uses, two parameters will be considered:

(i) The desirability of the modalised state of affairs. As shown by Larreya (1984), Pelyvàs (2000) and Cotte (2003), volition is indeed one of the main criteria for distinguishing between different modal meanings.

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sentences in free indirect speech), it is not rare for a sentence to involve other viewpoints and thus other cognizers. For example, in *John believes that Mary is mad*, the fact that John holds a given belief is viewed from the speaker's perspective but the viewpoint from which Mary's possible madness is envisaged is that of John.

(ii) The nature of the agonist and whether s/he (or it)<sup>14</sup> is explicit or not. Within a cognitive framework, the formal realisation of a sentence (e.g. whether the agonist is expressed or not) reflects the construal of the scene represented and therefore affects meaning.

### 4.3.1 “Obligation”

The sense of “obligation” is exemplified by (12–14). The source of the obligation can be deontic, as in (12), circumstantial, as in (13), or dynamic, as in (14) (cf. Huddleston & Pullum 2002: 181–185).

(12) *You must behave yourself, dear.*

(13) *In order to walk you must first get up and make your first steps.*

(14) *He must do that kind of things!*

As the subject of the sentence, the agonist is explicitly presented as coerced by the antagonist into acting in the way described by the VP. The necessary action can be desirable *per se* (because the antagonist wants it to happen, as in (12)), or as desirable relative to some purpose,<sup>15</sup> as in (13). Example (14) is a special case of “obligation” which can be called “compulsion”. It is a kind of “obligation” because the agonist is explicitly staged as a potential agent while the event is understood to be demanded by the antagonist. What sets this use apart is that the antagonist is a part of the agonist himself/herself (cf. Talmy’s theory of “Divided self” (2000: 431–432)). Example (14) may indeed be glossed as (15).

(15) *He can’t help doing that kind of things.*

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<sup>14</sup> As we shall see, the roles of agonist and antagonist can be filled by inanimate and even abstract entities.

<sup>15</sup> This use, usually referred to as the anankastic conditional, has been extensively studied in formal semantics (cf. von Wright 1963; Sæbø 2001; von Stechow et al. 2006, *inter alia*). On the basis of this body of works, I consider that even though the initial cause of the necessity may be a physical law, this type of sentences crucially involves a mediating – albeit hypothetical – desire to reach the goal expressed by the infinitival clause and, consequently, to accomplish the necessary action. In other words, these sentences mean that if the goal is desirable, so is the modalised state of affairs, since it is a necessary condition for the accomplishment of the goal.

### 4.3.2 “(Wide-scope) necessity”<sup>16</sup>

When the modal expresses “wide-scope necessity”, as in (16–18), the modalised state of affairs can be either an event or a state.

- (16) Dap.: *Shall I not have it with me?*  
 Sub.: *O, good sir! There must a world of ceremonies pass;*  
*You **must** be bath'd and fumigated first:*  
*Besides the queen of Fairy does not rise*  
*Till it be noon.* (Jonson, 1610)

- (17) *I must and will have a kiss to give my wine a zest.* (Gay, 1728)

- (18) *You must be 18 to enter.*

As in the previous case, the state of affairs is desirable because some entity wants it to take place, as in (16–17), or it is desirable relative to some purpose, as in (18). However, this use differs from the sense of “obligation” in that the subject does not refer to the agonist. Even when an agent can be retrieved – as in (17), from which it is possible to infer *You must and will give me a kiss* – the fact that s/he is obliged to carry out the described action is backgrounded. The focus is therefore on the necessary character of the situation as a whole.

Although in most cases, as in (16–17), the agonist is simply “demoted” (cf. Talmy 2000: 442) but retrievable, the state of affairs is sometimes presented as necessary without implicating any agentivity. A case in point is example (18), which conveys no sense of pressure on the subject (or an unexpressed agonist) to act in a given way. Yet, although (18) might be thought to exemplify a different use of the modal, it appears, in fact, that it owes its specificity to the meaning of the VP, which refers to a property that cannot be acquired through a voluntary act.<sup>17</sup> With more prototypical states, however, sentences are always open to the implication that the realisation of the necessary condition requires that an (implicit) agonist act in the appropriate way. Example (19), for instance, gives rise to the inference that it is the stage director’s responsibility to arrange the scene so as to make it open.

<sup>16</sup> I use the term “wide-scope modality” after Depraetere & Reed (2011).

<sup>17</sup> Part of the same class are VPs such as *be tall, be small, be white, have blue eyes*, etc.

- (19) *Curtain rises upon the Exterior of a Country Inn, "The Red Lion," R.; back of scene to be sufficiently open to show a considerable portion of the Village and a Country Road, which appears and disappears winding among thick clumps of trees; [...] the entire arrangement of scene **must** be very open, sunny, and picturesque, giving an idea of rural beauty and seclusion.* (Phillips, 1862)

### 4.3.3 "Inevitability"

When it expresses the sense of "inevitability", as in (20), the modal indicates that the state of affairs is bound to occur because it is part of the normal course of events. This use differs from the previous ones in that the state of affairs does not appear desirable. In fact, the opposite implication is often conveyed, as is clear from (20).

- (20) *A few hours more, and she will be lost to me for ever. And shall I remain to witness the happiness which **must** destroy mine? No, no – my determination is fixed. This letter to my old Colonel will secure Frederick promotion. I will dispatch it, and depart without again seeing Cecilia.* (Beazley, 1821)

In such sentences, the subject is not conceived as compelled to act in a specific way and therefore does not refer to the agonist. Neither is there an unexpressed agent who could be seen as under obligation to cause the described state of affairs. On the contrary, the event is assumed to be beyond human agency – hence the nuance of fatality – and to be caused by some unidentified force (which can be fate, circumstances or natural laws). Since neither the agonist nor the antagonist correspond to human entities, the force-dynamic pattern takes on a more abstract form, which can be accounted for in terms of Langacker's "Dynamic Evolutionary Model" (1991: 275).

My claim is that the force-dynamic configuration that has just been described still pertains to the socio-physical world but that instead of involving entities belonging to the world, it concerns the world itself – or, more accurately, the cognizer's representation of it. Here, I follow Langacker's distinction between the world, a "stable framework within which situations arise and events unfold" (*ibid.*), and what happens within it. According to him, "there is an essential force-dynamic aspect to our representation of [the world's] structure, which we see as constraining and influencing the events that unfold within it" (276). In other words, the world at a given moment is conceived as making some events possible, others impossible and others still, necessary. In the conceptual structure

underlying the meaning of “inevitability”, the antagonist is therefore equated with the world at a given time while the agonist corresponds to evolving reality at some subsequent time, which is constrained into conforming to the situation denoted by the proposition. However, I wish to challenge Langacker’s (2002: 336) assumption that the modal in sentences like (21) – and he would probably analyse (20) in the same way – expresses an epistemic meaning.

(21) *The way things are going, we should finish by noon.*

I do not deny that in (20) and (21) the state of affairs is under the scope of an epistemic judgement. As we have seen, root *must* implies that the speaker expects the necessary state of affairs to hold. But I claim that if Langacker’s account of (21) and my analysis of (20) along the same lines are correct, then, these sentences are essentially about a force-dynamic situation holding in the socio-physical world, which, in my view, is a defining feature of root modality.

#### 4.3.4 “(Strong) probability”

In the use illustrated by (22), *must* conveys a high degree of probability which is inferred from available evidence (cf. Palmer 1990: 54). In this example, the speaker’s inference is explicitly based on the fact that his master “scrambled, neck or nothing, into this infernal place”.

(22) *Oh dear! I am half mad; my master **must** be quite mad, or he'd never have scrambled, neck or nothing, into this infernal place. I'm sure I caught a glance of him but an instant since.* (Fitzball, 1827)

With this use, we leave the domain of root modality and, I argue, of force dynamics, to enter the realm of epistemic qualification, which is concerned with the cognizer’s evaluation “of the likelihood of the state of affairs” (Nuyts 2001: xvi).

Having thus characterised the four main uses of *must*, I now present and discuss the results of the corpus-analysis with particular emphasis on the rise of epistemic *must* and on the conceptual link between root and epistemic meanings.

#### 4.4 Results of the corpus-analysis

Table 1 gives the distribution in absolute and relative values of the different uses of *must* in the 17th, 18th and 19th centuries. It shows that the epistemic meaning increased significantly over the period. Starting as a minor use in the 17th century (2.2% of all examples), it then expanded significantly in the 18th century, to reach the proportion of 16.4% in the 19th century. Over the same period, the sense of “inevitability” declined in inverse proportion to the epistemic use.<sup>18</sup>

**Table 1.** Evolution of the uses of *must* (1600–1899)

	Obligation		Necessity		Inevitability		Epistemic		Indeterminate	
	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.
1600–99	170	46.1%	87	23.6%	65	17.6%	8	2.2%	38	10.6%
1700–99	154	46.7%	89	27%	22	6.7%	46	13.9%	12	5.8%
1800–99	143	53.4%	48	17.9%	13	4.9%	44	16.4%	15	7.5%

Let us now consider the case of *must* followed by the perfect infinitive,<sup>19</sup> as illustrated by (23).

(23) *Pray, tell me, Sir! You must have lost your wits or all sense of shame. How could you think of giving Lucetta such a sum? A thousand pounds!* (King, 1763)

As the construction is known to be highly compatible with the epistemic reading of the modal (cf. Palmer 1990; Bybee et al. 1994, among others), there is a possibility that it played a role in the emergence of the sense of “probability”. Evidence of this is found in table 2 which shows that the construction developed in the 18th century (with, from the start, a high proportion of epistemic meanings), that is, in the very same period that saw the sharp increase of epistemic uses (cf. table 1).

<sup>18</sup> The reasons for this decline are not totally clear at this stage and will be the object of some future research. It is perhaps significant that the two meanings whose frequencies decreased in the 19th century (namely: “necessity” and “inevitability”) are those in which the speaker’s role is minimal – in the sense that s/he is construed as an external observer of a force-dynamic situation. However, to back up the claim that the increase of the speaker’s role is (one of) the determining factor(s), it must be shown that, within the sense of “obligation”, there was a similar decrease of occurrences in which the speaker was *not* the deontic source.

<sup>19</sup> The corpus contains no occurrence of *must* followed by the progressive form.

**Table 2.** Evolution of the uses of *must* followed by the perfect infinitive (1600–1899)

	Total	Necessity		Inevitability		Epistemic		Indeterminate	
		Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.
1600–99	1	1	100%	0	0%	0	0%	0	0%
1700–99	17	1	5.9%	5	29.4%	8	47.1%	3	17.6%
1800–99	10	0	0%	1	10%	9	90%	0	0%

As reported in tables 1 and 2, there are a number of examples whose meanings were found indeterminate, that is, instances where two or more readings of the modal were possible (and compatible<sup>20</sup>). The relevance of such cases for diachronic studies is now well-known (cf. Hopper & Traugott 1993; Goossens 1999; Heine 2002; Traugott 2006, *inter alia*), insofar as they provide the “transitional uses” or “bridges” showing “what the precise basis for the development may have been” (Goossens 1999: 196). Of special interest to us, therefore, are those examples in which the epistemic sense of *must* co-exists with another interpretation.

Interestingly, while indeterminacy affects all the uses of the modal, the epistemic meaning only combines with the sense of “inevitability”. This partially confirms Goossens’ (1999, 2000) finding and deals a serious blow at the metaphorical hypothesis, since the agent/speaker mapping that was crucial to it turns out not be supported by the data. The indeterminacy between those two meanings is illustrated by (24–25).

(24) *But I must explain to you, Sir, that my risibility, just now, was excited by the remembrance of the stately tribe that have stalked thro' life, in that mansion. I'll be bound that not a soul of them, from generation to generation, was ever detected in any thing beyond a simper. Well! Rest them – merry, I was going to say – but that is impossible – they must be grand and melancholy, even in Paradise.* (Holman, 1811)

(25) *After placing the proctors at the table in the parlour, and supplying them with necessaries for the work, I was going up the back stairs to my own apartment the garret, when, bless my eyes! What should I see but your uncle. A scream testified my surprise, and my immediately running from him must have increased his. I believe he will follow me if he can muster so much strength.* (King, 1763)

Although Goossens (*ibid.*) recognises the sense he calls “objective inference” – which is analogous to the meaning I refer to as “inevitability”

<sup>20</sup> I distinguish “indeterminacy” thus defined from “ambiguity” which refers to the possibility for an expression to convey two conflicting interpretations.



– as the main source of the epistemic meaning, he also suggests that the deontic use may have played a role in the rise of epistemic *must*, arguing that verbs that “can be taken to be both non-controlled or controlled (or at least controllable)” (1999: 199) – e.g. *remember*, *know* and, occasionally, *be* – provide another type of transitional context. I find this debatable for two reasons. First, these are clearly not cases of indeterminacy but of ambiguity—which, I would suggest, is a consequence and not a cause of semantic change. Although it is true that *You must know p* can be interpreted either as *I have to tell you that p* (deontic) or as *You probably know p* (epistemic), these are radically different and *incompatible* interpretations (why should I have to tell you *p* if I think that you already know *p*?) which are therefore hard to regard as metonymic bridges. Indeed, Goossens himself defines transitional contexts as “contexts in which the two interpretations are simultaneously relevant” (ibid., 195–196). Second, it is usually possible to disambiguate the modal by taking the wider context into account. In (26), for instance, although *You must know the first thing I did* is potentially ambiguous,<sup>21</sup> the context leaves no doubt that the deontic reading is the intended one.

- (26) Buckthorn.: *At what [were you surprised], Mrs. Matron!*  
 Posset.: *Why, Sir, as I was chafing the Ladies' temples (as I was telling you) – but you must know the first thing I did, was to hold a looking-glass to their mouths.* (Bacon, 1757)

The data therefore adds weight to the critique of the metaphorical hypothesis developed in the first section, and it is therefore justified to look for an alternative account of the epistemic category and of the conceptual and historical links between root and epistemic meanings.

## 5. Redefining epistemicity

The main inconsistencies in Sweetser's (1990) theory stem from the premise that epistemicity is conceptually derived from root modality. Most of the aforementioned problems disappear if this postulate is abandoned and if root modality and epistemic qualification are taken as two independent semantic categories.

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<sup>21</sup> Although this point is hard to prove, I suspect that the ambiguity perceived in cases like (26) may be due to hindsight bias.

Following Lampert & Lampert (2000) and Talmy (2007),<sup>22</sup> I make the hypothesis that root values pertain to the schematic system of force dynamics while epistemic meanings are generated by the schematic system of “cognitive states and processes”, which includes the structural representation of volition and intention, expectation and affect, and perspective and attention” (Talmy 2007: 267), in other words, notions which are concerned with the cognizer’s attitude towards the state of affairs. That epistemic qualification belongs to this set of attitudinal categories<sup>23</sup> is clear from the way it is usually defined in the literature. For instance, Palmer (2001: 8) considers that “with epistemic modality speakers express their judgements about the factual status of the proposition”, while for Nuyts (2006: 6), it “concerns an indication of the estimation, typically, but not necessarily, by the speaker, of the chances that the state of affairs expressed in the clause applies in the world”.

Note that, as Nuyts rightly observes, epistemic judgements do not always emanate from the speaker: it is not rare for a sentence to convey another cognizer’s epistemic judgement on a state of affairs (e.g. *Mary thinks that John is mad* expresses Mary’s belief that John is mad).

What I would suggest, however, is that any utterance conveys the stance (or attitude) of a cognizer who is, by default, equated with the speaker. While this attitude is often epistemic (e.g. *I believe/know/suspect that...*), it may also have to do with the speaker’s desire to have the state of affairs realised, as in (27).<sup>24</sup>

(27) *Go to bed now!*

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<sup>22</sup> Although Talmy (2000: 443) seems to endorse Sweetser’s extension of the force-dynamic analysis to the epistemic domain, in his more recent work (cf. Talmy 2007), he seems to have taken his distance from the metaphorical hypothesis.

<sup>23</sup> Nuyts (2006) argues that deontic modality is also an attitudinal category. It cannot be denied that it does contain an attitudinal component inasmuch as the antagonist and the cognizer are presented as respectively wanting and expecting the state of affairs to hold (see the obligation-script in figure 1). Yet, deontic meanings differ from epistemic meanings in that they involve a force-dynamic component that is central to their underlying conceptual structures.

<sup>24</sup> Radden & Dirven (2007: 236) call this attitude “directive”. I believe the term is too “hearer-oriented” to cover all cases where the speaker wants the situation to hold (e.g. optative sentences). “Volitional attitude” might be more fitting but this question cannot be handled in the limits set to this paper.

In examples such as (27) and (28), the speaker's attitude is conveyed explicitly. The imperative construction and the embedding clause (*I believe*) encode the speaker's will and his/her epistemic judgement, respectively.

(28) *I believe that Peter is here.*

In many cases, however, it is left implicit, and my claim is that, in such examples, the default epistemic stance I KNOW THAT is inferable (on the basis of Grice's (1975) Maxim of Quality). (29), for instance, implies (30).

(29) *Peter is here.*

(30) *I know that Peter is here.*

This idea of course is not a new one. The hypothesis that there exists an implicit embedding clause expressing the speaker's stance can be traced back to Austin's Speech-acts theory (1962) and, in the field of syntax, to Ross (1970), in what is known as the performative hypothesis. Hare's neustic and tropic components (1970), taken up by Lyons (1977), share the same background assumption. My analysis differs from these authors' however in that what, after Hare (*ibid.*), I shall call the "neustic component", refers to the speaker's mental attitude (that is, whether s/he knows, believes or wants the state of affairs to hold) and not to the act accomplished by the utterance (i.e. its illocutionary force). In the cognitive framework within which I am working, this neustic component has to be an element of the conceptual content that is communicated by – or, at least, inferable from – the sentence. It can in no way be a speech-act, since, by definition, speech-acts are not part of what utterances *say* but are descriptions of what they *do*.<sup>25</sup>

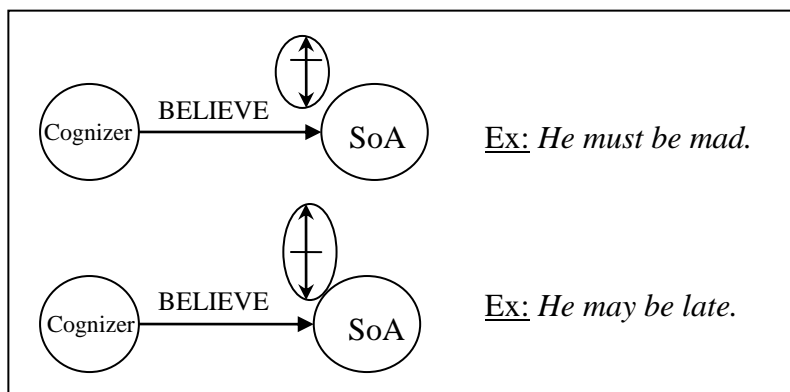
Note that the above analysis of the epistemic category gets rid of the problems plaguing Sweetser's theory.

First, it permits us to account for the gradability of epistemic evaluation. I KNOW THAT corresponds to the highest degree of the scale while I DO NOT KNOW IF marks its lowest point. There is an indefinite number of positions between those two extremes which can be coded by such expressions as *I believe*, *I suspect*, *I strongly believe*, *I have a hunch*

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<sup>25</sup> But see Brisard (2006) for an in-depth and insightful treatment of the issue.

*that, the odds are that, etc.* Figure 2 illustrates the conceptual structures I propose for the epistemic modals *must* and *may*.



**Figure 2.** Semantic structures underlying the epistemic uses of *must* and *may*

The cognizer, who, with modals, is typically equated with the speaker, is represented by a circle on the left. The horizontal arrows stand for his/her epistemic judgement (BELIEVE), which is directed at the mental image of the state of affairs (SoA), in the circle on the right. The vertical double arrows represent the cognizer's degree of belief in the truth of the proposition. It is obviously different for *must* and *may*.

Second, the problem posed by the near-synonymy of (5) and (6) – repeated as (31) and (32) – vanishes once we stop maintaining that (31) has a force-dynamic component.

(31) *He must be mad!*

(32) *He is probably mad.*

Since neither (31) nor (32) refer to force-dynamic situations, they can be analysed along the same lines as expressions of the speaker's strong belief in the truth of the proposition. Although this cannot be elaborated on for lack of space, I suggest that the modal auxiliary and the epistemic adverb differ in at least two respects. First, they present the epistemic evaluation from two different perspectives (cf. Westney 1986): (31) refers to the state of belief of the speaker/cognizer relative to the state of affairs (*X more or less believes that p*) while (32) describes the degree of likelihood of the state of affairs (*p is more or less likely*).

Second, as pointed out by Radden & Dirven (2007: 241), unlike the modal adverb, the modal auxiliary “informs the hearer that the assessment is exclusively or largely the speaker’s”. The epistemic assessment can therefore be described as “maximally subjective” (ibid.) in (31), whereas it is more objective in (32). Note that the terms “subjective” and “objective” are here used in the technical sense defined by Langacker who considers that

the entity construed subjectively is implicit and hence non salient – to use the theatre metaphor, it remains offstage in the audience – whereas the objectively construed entity is salient by virtue of being placed onstage as the explicit focus of attention. (Langacker 2002: 316)<sup>26</sup>

A maximally objective construal of the speaker’s epistemic stance may therefore be found in (33) where the use of the first person pronoun puts the speaker onstage and thus objectivises him/her.

(33) *I think that he is mad.*

Cognitive verbs in the first person, modal adverbs and modal auxiliaries therefore express the speaker’s epistemic attitude with increasing degrees of subjectivity.

Note however that, if modal auxiliaries, as grounding predications (Langacker 1991), indicate, by default, the speaker’s stance, they can, in certain contexts, express another cognizer’s epistemic evaluation of the state of affairs. (34) illustrates.

(34) *John thinks you must have broken the vase.*

## **6. An alternative account of the emergence of the epistemic use of *must***

While this analysis of epistemic qualification overcomes most of the theoretical objections that were raised against the metaphorical hypothesis in the first section, its ability to account for the rise of epistemic *must* will constitute the acid test.

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<sup>26</sup> This account of subjectivity contrasts sharply with Traugott’s (1989) who considers that “subjectification implies an *increase* in the coding of speaker involvement or, in other words, an externalization of the speaker” (Brisard 2006: 57).

## 6.1 Hypothesis

As we have seen, in all utterances, the speaker's attitude is conveyed explicitly or implicitly. When it is not explicitly coded, I have suggested that the default epistemic position I KNOW THAT can be inferred. Thus, when they are used descriptively (cf. Nuyts 2001), root modals fall under the scope of an epistemic judgement which can be explicit, as in (35), or implicit, as in (36), paraphrased as (37).

(35) *I know/I guess that John must come.*

(36) *John must come.*

(37) *I know that John is obliged to come.*

In order to account for the emergence of the epistemic use of *must*, I make the following hypothesis. In certain contexts (which will be described in further details), the focus of attention shifted from the force-dynamic situation (i.e. the existence of the necessity) to the state of affairs proper. This logically resulted in the foregrounding<sup>27</sup> of the speaker's attitude towards the state of affairs and in the backgrounding of the default epistemic judgement (I KNOW THAT) concerning the force-dynamic situation. Indeed, in (36), the implicit epistemic judgement I KNOW THAT bears on the existence of the necessity and not on the event itself. This is evidenced by the fact that (36) does not entail (38).

(38) *I know that John will come.*

The question arises, then, of what the “new” epistemic stance is and where it comes from. As will be remembered, it has been shown that, in its root uses, *must* implies that the cognizer expects the necessary state of affairs to

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<sup>27</sup> Note that Talmy's (2000; 2007) term “foregrounding” and Langacker's (1991) term “profiling” are not used interchangeably. Talmy's (2007: 272) distinction is a useful one: the *foregrounding* of a semantic component of a frame consists in placing it in “the foreground of the hearer's attention” (ibid.: 269) thus making it more salient, while “profiling” “refer[s] to the foregrounding of one portion of the set in a morpheme's direct reference” (ibid.: 272).

occur. This was captured by the inclusion of the epistemic predicate EXPECT<sup>28</sup> as a backgrounded element of the frame (see figure 1).

My claim, therefore, is that, in transitional contexts, this formerly backgrounded epistemic attitude became more salient and started to co-exist in the foreground of attention with the former default epistemic judgement I KNOW THAT. Ultimately, it gained in prominence and became the only epistemic stance. The result was an utterly different conceptual structure and thus an independent meaning of the modal.

## 6.2 From “inevitability” to “probability”: a step-by-step evolution

As we have seen in section 3.4, the conventionalisation of the epistemic use of *must* went through two stages. These stages are commonly referred to as<sup>29</sup>

(i) *Bridging or transitional contexts*. These are contexts which make the two interpretations equally relevant. In the case of *must*, they are even complementary, since the speaker’s knowledge of the existence of the necessity (i.e. the force-dynamic situation) can serve as the evidential source for the epistemic judgement on the state of affairs. This semantic relatedness can be formulated as *I believe that the state of affairs holds because I know that it is inevitable*. Example (39) is an illustration of this.

(39) *My daughter is at present engag’d in a way, that to her must be more agreeable than entertaining either you or me.* (Cobb, 1788)

(ii) *Switch contexts*. These contexts exclude the initial meaning. In the case of epistemic *must*, this corresponds to sentences where the evidential source of the epistemic judgement is no longer the speaker’s awareness of a force-dynamic situation but his/her observation of some consequence of that state of affairs (noted q) from which s/he infers that it (has) probably occurred or is occurring, as illustrated in example (40).

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<sup>28</sup> It might be objected that EXPECT and BELIEVE are not fully equivalent, but although they differ in terms of temporality (the former bears on a future event, the latter on a past or present state of affairs), they refer to the same kind of epistemic judgement.

<sup>29</sup> Cf. Heine 2002, for instance.

(40) *Pray, tell me, Sir! You must have lost your wits or all senses of shame. How could you think of giving Lucetta such a sum?* (King, 1768)

To summarise, the emergence of the epistemic use of *must* followed the following cline:

- (i) I know that circumstances make the state of affairs inevitable.
- (ii) I believe that the state of affairs holds/held because (i).
- (iii) I believe that the state of affairs holds/held because I know that q holds and that q is a consequence of the state of affairs.

Stage (i) corresponds to the source-meaning of “inevitability”, (ii) to cases of indeterminacy between “inevitability” and “probability” (or bridging contexts) and (iii) to the conventionalised epistemic use of *must* (or switch contexts).

### 6.3 More on transitional contexts

In order to better understand the circumstances that led to this semantic change, it is useful to characterise bridging contexts more precisely by examining the cases of indeterminacy in the corpus.

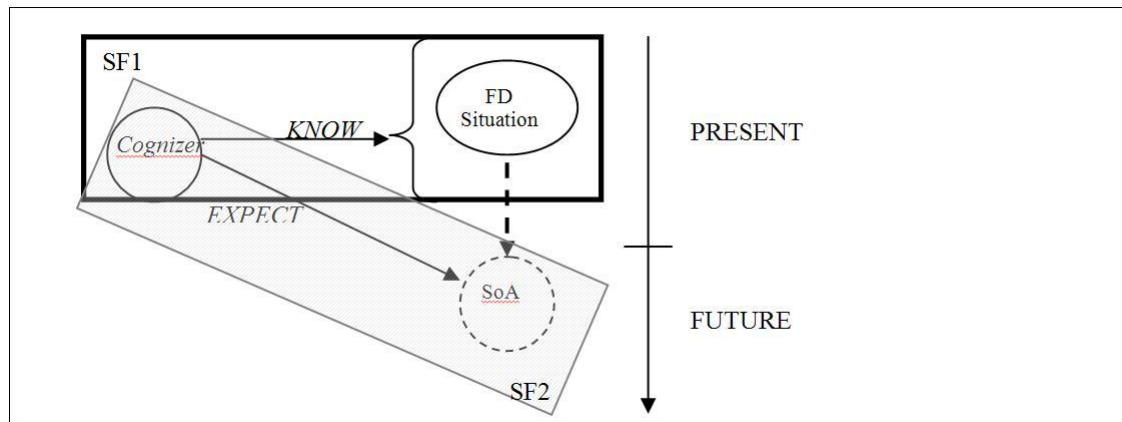
It is striking that 83% of the instances of indeterminacy between “inevitability” and “probability” contain a state verb (mainly *be*) and that 67% of these sentences are generic. These two parameters are examined in turn.

#### 6.3.1 Imperfectives

It is well-known (cf. Palmer 1990: 53) that epistemic *must* mainly occurs with state verbs. By contrast, when it expresses “inevitability”, the modal is typically followed by an event verb. It may be surmised, then, that the extension of this use to state verbs contributed to the strengthening of the sense of “probability”.

The rationale behind this evolution can be explained as follows. The preceding account of the sense of “inevitability” postulates two sub-frames (SF1 and SF2 in figure 3), one of which (SF2) was originally backgrounded and gradually gained in salience.





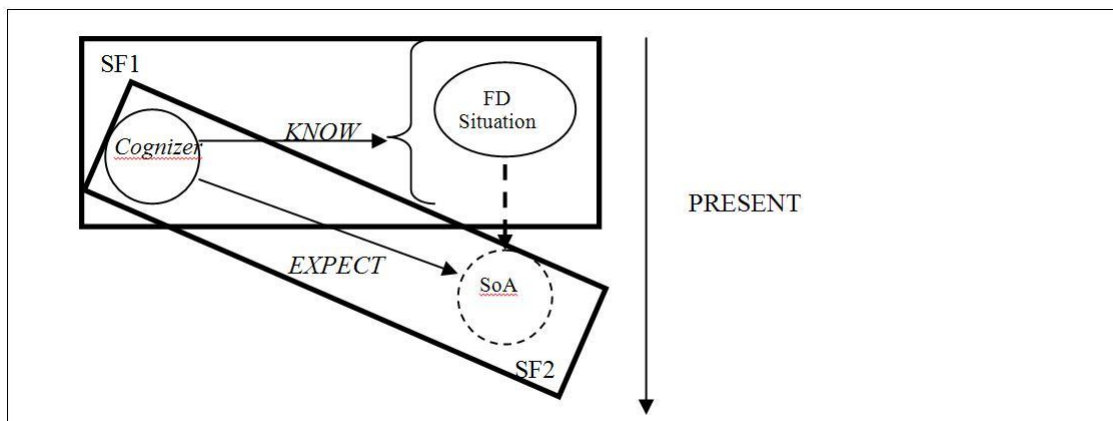
**Figure 3.** Conceptual structure for the sense of “inevitability”

With event verbs (which typically designate perfective processes), the “necessary” state of affairs (SoA) is located in the future<sup>30</sup>, whereas the force-dynamic situation (noted “FD situation” and paraphrasable as “the world acts on evolving reality”) belongs to the present. Thus, while the two epistemic judgements (I KNOW THAT and I EXPECT THAT) are located in the present (the point of reference from which the speaker-cognizer assesses the likelihood of the states of affairs<sup>31</sup>), they are directed at scenes situated in different temporal frames. *With perfectives, then, the temporal coincidence between the two sub-frames is minimal.*

On the contrary, the flexible temporal profile of imperfective processes (typically expressed by state verbs) “can always be made to coincide precisely with the time of speaking” (Langacker 1987: 259), so that both the force-dynamic situation and the modalised state of affairs can belong to the same (present) time-frame. Thus, *with imperfectives, the temporal coincidence between the two sub-frames is maximal.* This temporal realignment, I suggest, increased the conceptual contiguity between the two sub-frames and reduced the semantic difference between the two interpretations, thereby favouring cases of semantic indeterminacy where the two sub-frames were equally relevant and salient (see figure 4).

<sup>30</sup> As pointed out by Langacker (1987: 254), perfectives cannot be coincidental with the moment of speaking.

<sup>31</sup> The neustic component is necessarily coincidental to the time of speaking.



**Figure 4.** Conceptual structure for cases of indeterminacy (bridging contexts)

There are two reasons why this conceptual realignment affected the sense of “inevitability” and not other root senses. First, as we have seen, the sense of “inevitability” is the most abstract of the root meanings and the lightest in terms of conceptual content.<sup>32</sup> This minimizes the semantic differences between the two interpretations and facilitates indeterminacy. Second, and more importantly, the meaning of “inevitability” differs from other root meanings in that the necessary state of affairs is not presented as desirable (cf. *supra*), which makes it compatible not only with future events but also with present and past states of affairs, that is, with both perfectives and imperfectives.<sup>33</sup>

Note that the observed results concerning *must* followed by the perfect infinitive (see section 3, table 2) are fully consistent with this account. As evidenced by (41), the sense of “inevitability”<sup>34</sup> could already combine with the perfect construction, just as it could combine with a state verb.

- (41) *Brief as you please – you shall have the trials in epitome – I am an excellent fellow at shortening. And so, in the first place, there was Aaron an old Jew, you must certainly have taken notice of an old greazy fellow upon the 'Change, with a*

<sup>32</sup> The underlying semantic frame indeed makes no reference to a deontic source that wants the state of affairs to hold or to a purpose relative to which it is necessary.

<sup>33</sup> Root *must* occurs mainly with event verbs and when it combines with a state verb (as in *You must be kind*), the process is, so to speak, perfectivized so as to denote an activity located in the future.

<sup>34</sup> Example (41) clearly means ‘You cannot not have taken notice of the fellow’ and not ‘You have probably taken notice of the fellow’.

*SHYLOCK FACE* – who is said to have raised an immense fortune by stock-jobbing and lottery-tickets – he is one that is adjudged to be *DEPARTED THIS LIFE*, I assure you. (Bacon, 1757)

My contention is that, just like state verbs, the perfect infinitive makes the modalised situation coincide with the time of reference, thereby causing the temporal coincidence of the two sub-frames. This may seem paradoxical insofar as, traditionally, the perfect infinitive is assumed to locate the state of affairs denoted by the past participle in the past or, at least, prior to the time of reference. Yet, as noted by Langacker (1991: 222–223), if the function of the past participle is indeed to indicate the anteriority (relative to the reference-point) of the situation described by the main verb, the auxiliary *have* construes the whole scene (i.e. the current relevance of the past situation) as coincidental with the time of reference and should therefore be analysed as an imperfective process.

### 6.3.2 Genericity

The fact that many of the sentences exhibiting indeterminacy are generic is also relevant and can also be seen, I argue, as a factor of temporal (and conceptual) realignment. As noted by Traugott (2006: 113), genericity is “another contributor to the indeterminacy, since present as well as future temporality is implied”. Indeed, generic sentences also present the force-dynamic situation and the necessary state of affairs as part of the same temporal frame, which makes them conceptually contiguous and, consequently, equally likely to be foregrounded.

## 6.4 Towards switch contexts

The evolution from bridging contexts to switch contexts must have been gradual and it is likely that to a stage where the two interpretations were equally salient succeeded a stage where the epistemic interpretation became more and more prominent while the original interpretation gradually fell into the background of attention to be viewed as nothing more than the evidential source for the newly foregrounded epistemic judgement (cf. stage (ii) above).

The ultimate development of this evolution (which corresponds to switch contexts) was the complete erosion of the meaning of “inevitability” (i.e. of the force-dynamic component) and the autonomisation of the sense

of “probability”. At that stage, the judgement of probability ceased to be based on the (cognizer’s knowledge of the) existence of a force-dynamic situation and the reason for the state of affairs’ strong likelihood (i.e. the basis of the speaker’s inferential reasoning) was often made explicit. Example (42) is an illustration of this.

(42) *No, thank ye, Mr. Capias; but you must be doing pretty well too, I always see Mr. Wormwood employed.* (Beazley, 1826)

The reference to an evidential source other than the existence of a force-dynamic situation (the underlined segment in (42)) reflects the fact that the underlying semantic structure bears no trace of the initial force-dynamic component and that the epistemic reading has become the only interpretation available.

## 6.5 Subjectification

This study would be incomplete without a consideration of subjectification, a process that has been largely discussed in the field of historical linguistics and to which Traugott (1989), Langacker (1991, 2002) and Goossens (2000) explicitly relate the extension of root meanings to epistemic uses.

The problem is that Langacker and Traugott (followed by Goossens) use the term in different ways which Brisard (2006) has shown to be incompatible. Thus, for Traugott (1989: 31), subjectification is the process by which meanings “become increasingly situated in the speaker’s belief or attitude toward the proposition”, while, as we have seen in section 4, Langacker uses the term in a more technical sense to refer to the “attenuation of the speaker’s prominence within a given scene” (Brisard 2006: 57).

It is not clear to me whether what I have described as a shift of attention to a backgrounded epistemic judgement should be analysed as resulting in a more subjectified construal in Langacker’s sense. As a grounding predication, *must* – whether it be deontic or epistemic – is more “subjective” than, say, a modal periphrasis like *have to*, to the extent that although it is formally – and thus conceptually – related to the Ground, it leaves it unprofiled (cf. Langacker 1991: 270–271). I feel that calling epistemic *must* more “subjectified” than root *must* (on the ground that, as Langacker (ibid.: 274) says “[t]he speaker is involved (...) as the person responsible for assessing the likelihood of reality evolving in a certain

way”) betrays a slight terminological move from Langacker’s technical definition of subjectivity towards Traugott’s use of the term.

In order not to add to the terminological confusion, I would rather say, following Sweetser (op. cit.), that root and epistemic meanings pertain to different domains (without of course endorsing the idea of a metaphorical link between the two): the socio-physical world and the mental world, respectively. Thus, the force-dynamic situation to which a root expression refers is conceptualised as part of the socio-physical world (there is something in the external world that makes the state of affairs necessary) while an epistemic expression refers to the cognizer’s degree of confidence in the reality of the state of affairs.

The reason why epistemic *must* may seem more “subjective” (in Traugott’s sense, this time) is that the shift of attention described above was accompanied by a shift of the reference of the modal to the neustic component. With the force-dynamic situation (and the default epistemic attitude towards it) gradually fading out, the reference of the modal had to be redirected to another part of the frame. The formerly backgrounded epistemic judgement (I EXPECT/BELIEVE THAT) then logically came to replace the default judgement (I KNOW THAT) and therefore took the place of the neustic component. However, in the absence of a specific linguistic form to refer to the neustic component, we have seen that the default epistemic stance is inferred. This explains why the reference of *must*, whose original reference<sup>35</sup> had fallen out of the picture, naturally (because of its grounding function) came to be reallocated to the neustic component.

## 7. Conclusion

We have seen that it is possible to account for the emergence of the epistemic use of *must* without relying on Sweetser’s metaphorical hypothesis and even without positing that the categories of root modality and of epistemic qualification are subsumed by one unified semantic category.

The principal claim of this paper is that the various meanings of an expression (e.g. “obligation”, “necessity”, “inevitability”) are underpinned

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<sup>35</sup> Note that if *must* does not refer *directly* to the force-dynamic situation (in its root meaning) or to the epistemic judgement (in its epistemic reading) – as only the state of affairs is profiled, it does refer to them *indirectly*, i.e. schematically.

by complex semantic networks (or frames) and that certain contexts permit the foregrounding of some components of the frame which, until then, had been backgrounded.

I therefore take seriously the claim that there may not be such a thing as a unified semantic category of modality subsuming root and epistemic meanings. Although this hypothesis challenges the commonly accepted view that the two categories should be semantically related, its supporters (Lampert & Lampert 2000; Nuyts 2001) have advanced a number of theoretical and empirical arguments that are worthy of consideration. Moreover, as Nuyts suggests, breaking the traditional unity of modality may help gain a better understanding both of epistemicity itself and of its interaction with other categories such as aspect or evidentiality. This area of investigation, in fact, can be considered to be among the most promising directions for future research in the study of TAME categories.

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## APPENDIX

## Sources of data

Period	Date	Author	Title	Number of words	Source
1600–1699	1610–11	Shakespeare	<i>The Tempest</i>	14420	Gutenberg Project <sup>36</sup>
	1610	Jonson	<i>Alchemist</i>	15730	Gutenberg Project
	1629	Brome	<i>The Northern Lasse</i>	15609	EProseD <sup>37</sup>
	1633	Ford	<i>'Tis Pity She's a Whore</i>	15711	eBooks@Adelaide <sup>38</sup>
	1640	Habington	<i>The Queen of Arragon</i>	15690	EEBO <sup>39</sup>
	1649	D'Avenant	<i>Love and honour</i>	15649	EProseD
	1663	Dryden	<i>Wild Gallant &amp; others</i>	15698	Gutenberg Project
	1666	Caryll	<i>The English princess</i>	15468	EEBO
	1681	Shadwell	<i>The Lancashire-Witches</i>	15488	EProseD
1700–1799	1686	D'Urfey	<i>The Banditti</i>	15577	Gutenberg Project
	1705	Motteux	<i>Farewel Folly</i>	15413	EProseD
	1709	Centlivre	<i>The Busie Body</i>	15501	Gutenberg Project
	1722–32	Carey	<i>The Disappointment ; The Honest Yorkshire-Man ; Hanging and Marriage</i>	15186	EProseD
	1728	Gay	<i>The beggar's Opera</i>	15629	Gutenberg Project
	1753	Moore	<i>The Gamester</i>	15122	Gutenberg Project
	1757	Bacon	<i>The Insignificants</i>	14558	EProseD
	1763–70	Foote	<i>The Lame Lover ; The Mayor of Garret</i>	15519	EProseD
	1763–68	King	<i>Wit's Last Stake ; Love at First Sight</i>	14637	EProseD
1800–1899	1788–94	Cobb	<i>The Doctor and the Apothecary ; The Cherokee</i>	15098	EProseD
	1790	Pratt	<i>The New Cosmetic ; Fire and Frost</i>	15281	EProseD
	1808	Reynolds	<i>The Free Knights</i>	14938	EProseD
	1811	Holman	<i>The Gazette Extraordinary</i>	15254	EProseD
	1821–26	Beazley	<i>The Lottery Ticket, and the Lawyer's Clerk ; Love's Dream</i>	14979	EProseD
	1824–27	Fitzball	<i>The Flying Dutchman ; The Floating Beacon</i>	15190	EProseD
	1854	Thackeray	<i>Wolves and the Lamb</i>	15455	Gutenberg Project
	1856	Bayle Bernard	<i>The Evil Genius</i>	14814	EProseD
	1862	Watts Phillips	<i>Camilla's husband</i>	14901	EProseD
1800–1899	1866	Marston	<i>The Favourite of Fortune</i>	15330	EProseD
	1890	Grundy	<i>A Pair of Spectacles</i>	15354	EProseD
	1895	Wilde	<i>The Importance of Being Earnest</i>	15738	Gutenberg Project

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<sup>36</sup> Available online at <http://www.gutenberg.org>

<sup>37</sup> Available online at <http://www.lettrs.indiana.edu/eprosed>

<sup>38</sup> Available online at <http://ebooks.adelaide.edu.au>

<sup>39</sup> Available online at <http://eebo.chadwyck.com/home>