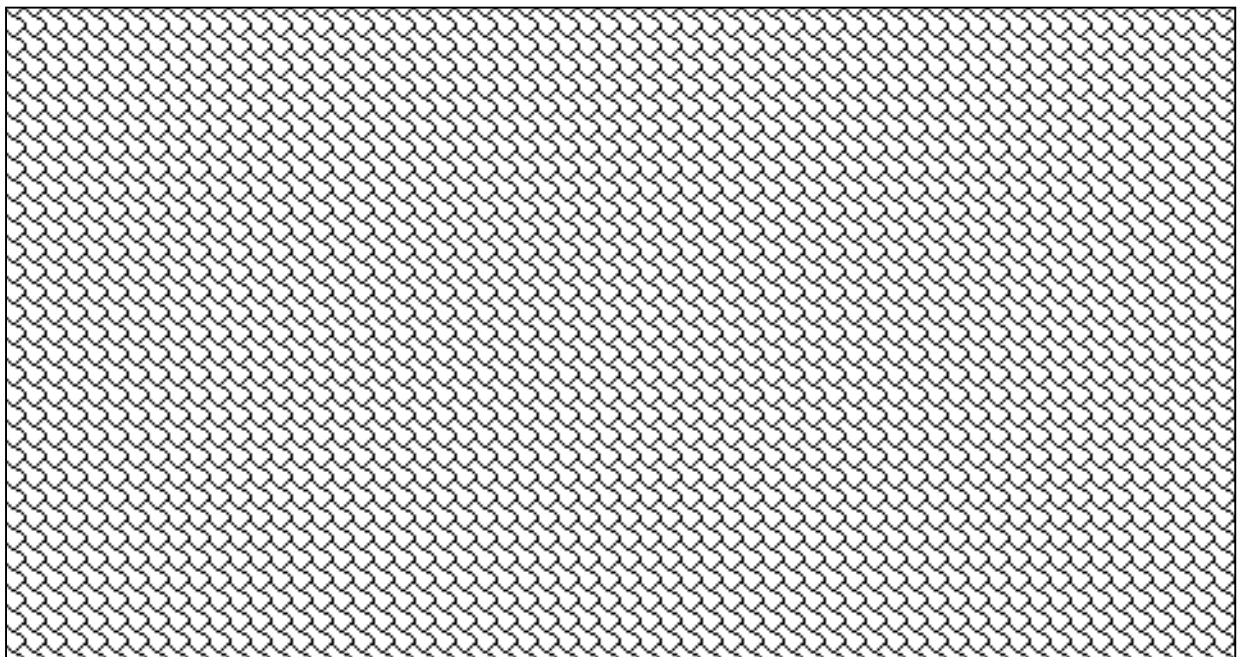# Norwegian modals

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Doctor Artium**

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1   Introduction

1.1   Subject

The subject of this dissertation is Norwegian *modal verbs*, *modal auxiliaries* or, if one prefers, simply *modals*. The term *modals* will be employed in this dissertation, since this term, unlike the other two, is not inherently encumbered with theoretical assumptions about the categorical status of these linguistic elements.

There exists a comprehensive literature on modal verbs in Germanic languages. This literature covers a vast array of topics associated with these verbs, and as it seems, the debate never fades. Some of the topics of this debate have been around, literally, for centuries (cf. e.g. Öhlschläger 1989:19 ff and the references therein); reinvented, rephrased and reinvoked by every new generation of linguists and philosophers. It follows that no contemporary work on Germanic modals can claim with any hope of credibility to cover all and every facet of this debate; at best, one may strive to shed some light on certain selected aspects of this discussion. My specific selection of topics for scrutiny is influenced by a number of factors, but most of all, I have selected topics that I myself find interesting.

Thus, the two main topics of this dissertation is the *argument structure* of Norwegian modals and their possible *insertion points* in a syntactic structure. The argument structure of Norwegian modals is the topic of chapter 4, whereas the possible insertion points of modals is the subject of chapter 5. However, the discussion of such insertion points is highly related to the question of how modals interact semantically with some major syntactico-semantic categories in a sentence structure as regards e.g. possible readings of a modal and the relative scope between modals and the aforementioned syntactico-semantic categories. Hence, chapter 5 is called *How modals interact with other categories*.

Capters 2 and 3 constitute the preliminaries to the discussion in chapters 4 and 5. Chapter 2 examines the morphological, semantic and syntactic properties of Norwegian modals; the chapter concludes with a summary and a revised inventory of the entire class of modals in Norwegian. Chapter 3 contains a survey of 11 recent analyses of modals, with Roberts (1985) and Vikner (1988) as the earliest of the proposals and Roberts and Roussou (2000) as the most recent paper. With the exception of Picallo's (1990) paper, which deals with Romance modals, the accounts in this survey concentrate on modals in Germanic languages.

Chapter 1

A summary of what I consider to be the main achievements of the present work constitutes the last chapter, chapter 6. In this chapter, I sum up some important empricial findings, some important generalizations and some theoretical innovations of this dissertation. Thus, it is a summary of the summaries presented at the end of the previous chapters.

One important question in the literature on modals it whether or not modals belong to a syntactic category different from lexical verbs, e.g. whether modals are auxiliaries or ordinary lexical verbs. A second, related question is whether the set of modals belong to two different categories, e.g. whether a subset of modals are best described as main verbs, whereas the complementary set of modals belong to the category of auxiliaries. An often invoked candidate for a demarcation line between two categorial types of modals is the *root* vs. *epistemic* distinction, i.e. the two distinct readings that modals typically display; cf. (1)

(1)

Jon må være på kontoret.
Jon must be in office-DEF
'Jon must be in his office.'

(I)   Jon is obligated to be in his office (root reading).
(II)   It must be the case that Jon is in his office (epistemic reading).

These two readings (i.e. root vs. epistemic) of what seems to be the same linguistic element have been claimed to have a range of differing formal properties; e.g. Ross (1969), Lødrup (1996a), Dyvik (1999).

My examination of morphological, semantic and syntactic properties of Norwegian modals in chapter 2 supports the assumption that the inventory of Norwegian modals contains modal main verbs as well as modal auxiliaries. However, the demaraction line does not follow the root vs. epistemic distinction. Instead, there exists a small group of Norwegian modals (best represented by *kunne* 'can' and *ville* 'want-to') that take proper arguments (i.e. DP/CP) as direct objects and pattern with lexical verbs as regards a range of syntactic properties (e.g. *do*-replacement, passive and imperative formation). These modals are best described as *modal main verbs*. The class of *modal auxiliaries*, on the other hand, contains epistemic modals, deontic root modals and dispositional root modals, where each subtype has certain syntactic and especially a range of semantic properties that pertain to them. However, there is no conclusive evidence that these subtypes belong to different categories syntactically, since the differences that exist between them seem to be explainable on semantic grounds.

Differences between the group of root modals and the group of epistemic modals that do amount to valid generalizations, according to my findings, are the following.

(2)

        a. root modals, but not epistemic modals, can be construed as two-place relations.
        b. root modals, but not epistemic modals, accept a pseudoclefted complement.
        c. root modals, but not epistemic modals, take non-verbal small clause complements.

The property listed as (2)b follows from the property listed in (2)a, as shown in section 4.2. The remaining properties follow from the assumption that epistemic modals target the truth-value of their embedded proposition; or rather, of their embedded *assertion*. It is argued in section 5.4.3 that an assertion is a proposition with a truth-value. A proposition may consitute an assertion just in case this proposition is explicitly temporally anchored, and a proposition is explicitly temporally anchored only when it contains a verb. Thus, non-verbal small clauses do not in and by themselves give rise to a truth-value, and therefore, they are not felicitous as the complement of an epistemic modal (cf. section 5.4.3. for a more detailed account). Likewise, since epistemic modals take one argument only, notably the embedded assertion, they can never be construed as two-place relations, unlike root modals (cf. e.g. section 2.2.2). Hence, in my opinion, it is possible to describe the formal differences between root and epistemic modals as a consequence of the semantic properties of these linguistic elements.

In this dissertation, the question of the possibly different categorial status of root and epistemic modals is explicitly addressed on a few occasions only. Nevertheless, the question is saliently present throughout the entire discussion. First and foremost, the question is relevant when I address alleged formal differences between root and epistemic modals and show that the majority of these alleged differences do not amount to sound generalizations. For instance, there exist a range of claims regarding the argument-taking properties of root vs. epistemic modals; these are addressed and (mostly) rejected in section 4.1. Furthermore, the finiteness requirement claimed to pertain to epistemic modals and not root modals is addressed and rejected in section 5.4.3. Likewise, the claim made by numerous authors that a modal preceding an aspectual always gets an epistemic reading is addressed and rejected in section 5.2.

Secondly, the semantic description of modals in section 4.6 requires an explicit choice between the two alternatives; i.e. whether the root and epistemic reading of any given modal should be described as two different uses of one separate lexeme, or alternatively, if these two readings are best described as two different entries in the lexicon.

1.2 The framework

The general framework of this dissertation is the (Chomskyan, generativist) Principle- and Parameters Theory as discussed in Chomsky (1981, 1986a, 1986b, 1995a, 2000, 2001). No presentation of the general Principles and Parameters Theory (the P&P framework) is given in this dissertation. Readers unfamiliar with this theory may consult works like van Riemsdijk and Williams (1986), Haegeman (1991) or Radford (1997). More specific theoretical assumptions will be discussed at relevant places in the following chapters.

A fundamental assumption of this research program is that the language capacity constitutes an autonomous component in the human brain, specific to all and only humans and part of the human genetic endowment. This designated component is often referred to as "Universal Grammar". Cf. Chomsky (1980:187):

> What many linguists call "universal grammar" may be regarded as a theory of innate mechanisms, an underlying biological matrix that provides a framework within which the growth of language proceeds. [...] Proposed principles of universal grammar may be regarded as an abstract partial specification of the genetic program that enables the child to interpret certain events as linguistic experience and to construct a system of rules and principles on the basis of this experience.

However, the principles and generalizations proposed in this dissertation is not formulated so as to refer to this "biological matrix" of language learning, though they should be translatable *in principle* into a language which refers directly to such biological phenomena. Moreover, the hypothesis of inateness has not played any part in the formulation of the principles and generalizations presented here; cf. Newmeyer (1998: 89):

> To read the critical literature, one would think that there is some logical connection between the generativist research program and the need to posit a set of purely syntactic innate universals - a distasteful conclusion for so many. But innateness is a conclusion, not an assumption, and plays no role in the *formulation* of the principles. In other words, the question of the adequacy of such principles is independent of the question of where they 'come from'. If somebody were able to show that they could be learned inductively, then well and good. The generative research program would not have to budge one centimeter.

Furthermore, it is no goal of this disseration to employ an extensive formalism to express generalizations that can be formulated just as accurately without employing any formalism at all. This is a conscious choice, as I agree with Jackendoff (1997: 4) that

> [...] an excessive preoccupation with formal technology can overwhelm the search for genuine insight into language; and a theory's choice of formalism can set up [...] barriers to communication with researchers in other frameworks.

I do of course agree that the formalization of certain generalizations serves a useful purpose; to quote Jackendoff once more (op.cit.):

> At a more methodological level, formalization permits one to be more abstract, rigorous, and compact in stating and examining one's claims and assumptions. And, as Chomsky stressed in a much-quoted passage from *Syntactic Structures,* a formalization uncovers consequences, good or bad, that one might not otherwise have noticed.

I had the opportunity to experience the validity of the latter claim a number of times throughout my work on this dissertation.

However, there is a certain tradition within the Principles and Parameters framework for what Jackendoff thinks is an excessive preoccupation with formal technology, and I might add, theoretical ontology. Sometimes one is left with the impression that moulding the theory is more important than explaining and accounting for the linguistic data. Harris (1993:11) states that

> Noam Chomsky, in particular, says flatly and often that he has very little concern for language in and of itself; never has, never will. His driving concern is with mental structure, and language is the most revealing tool he has for getting at the mind. Most linguists these days follow Chomsky's lead here.

This is not the case for the present proposal. I readily and straightforwardly confess that I harbour a fascination for languge and linguistic data, and I select specific bits and pieces of the Principles and Parameters Theory with the explicit aim to account for these data. Of course, this does not amount to rejecting the hypothesis that language reflects mental structures and cognitive capacities; instead, I find this hypothesis to be most credible.

Newmeyer (1998:7) describes the field of linguistics as follows:

> There are [...] two broad orientations in the field [...]. One orientation sees as a central task for linguists characterizing the formal relationships among grammatical elements independently of any characterization of the semantic and pragmatic properties of those elements. The other orientation rejects that task on the grounds that the function of conveying meaning (in its broadest sense) has so affected grammatical form that it is senseless to compartmentalize it. It is the former orientation, of course, that I have been referring to as 'formalist' and the latter as 'functionalist'.

I have quoted a number of 'functionalist' proposals in this dissertation. One important reason is that there exists a comprehensive literature on modals within this orientation. This is not too surprising, since modals constitute a class of linguistic elements which could be said to illustrate the functionalist fundamental assumption in that their formal properties cannot be characterized independently of their semantic (and in part, pragmatic) properties; e.g

independently of their root vs. epistemic reading. Another important reason for my reading and quoting a number of functionalist proposals is that I have discovered here the same fascination and respect for linguistic data that I recongnize as my own. However, in my view, data are interesting and fascinating only in so far as they support or contradict specific hypotheses and proposed generalizations; or, alternatively, in so far as they may trigger a line of thought that would lead to the formulation of new hypotheses and generalizations.

My choice of framework signals that my perspective in this dissertation will be a comparative one. A large bulk of the works quoted in the text represents research conducted on languages other than Norwegian. Thus, modal auxiliaries, modal particles and inflectional mood from various languages constitute important evidence and a background against which I investigate Norwegian modals. However, this dissertation does not concentrate on formulating specific possible parameters e.g. within the Germanic languages bearing on the behavior of modals in various languages. This is not to say that e.g. the theory of Tense-chains developed in chapter 5 does not carry over to other Germanic languages. The theory of Tense-Chains is simply not tested on other Germanic languages. Thus, first and foremost, this is an investigation of *Norwegian* modals.

1.3 The data

The data employed and quoted in this dissertation come from a number of sources. Most of all, I have found data in books, newspapers, TV and Radio; also, by shamelessly eavesdropping to other people's conversations on any possible occasion, e.g. on the bus. Some of my most surprising and unexpected observations have been made by means of these sources. To mention just one example, the discovery of the surprising interpretational patterns of modals and negation depending on the relative position of the subject (elaborated on in section 5.5) was triggered by a sentence uttered in a news program on TV. I started thinking about this sentence and I soon realized that it was ambigous. Next, I started playing around with the data, changing the word order, employing a weak pronoun subject instead of a full lexical DP subject and turning the sentence into an embedded sentence. My next step was to test my judgments against those of a number of informants. Normally, any set of data would be presented to at least six or seven informants. Where grammaticality judgments differed greatly, I would ask more informants. The informants in questions range from linguists via highly educated informants such as teachers (and one journalist) to people with no linguistic training whatsoever.

My claims about English; German and Icelandic data are made on the basis of the grammaticality judgments and intuitions of native speakers of the respective languages. In most cases, I have tested specific hypotheses by means of such grammaticality judgments, which means that I have presented native speakers with a number of sentences which typically all illustrate a certain phenomenon. These sentences have typically not been provided with contexts, nor have I tried to hide in any way what specific property I am looking for.

In addition to my consulting informants to test specific hypotheses, I have utilized language resources on the internet. I would like to mention especially one search program that I have used e.g. to test hypotheses on co-occurrence facts of Norwegian modals, notably the program *søk i norske tekster med IMS CWB* at the University of Bergen. This is a corpus containing approximately 14 million Norwegian words; mainly texts from newspapers. I found this program to be very useful.

Evidently, my own intuitions and grammaticality judgments have played a significant part in this dissertation, especially when I have translated sentences from other languages into Norwegian to investigate whether or not a certain generalization holds for Norwegian. However, even in many other cases, my own grammaticality judgments constitute the basis for specific hypotheses. I would like to say, though, that I do not, in any part of this dissertation, present hypotheses that rest *solely* on my own grammaticality judgments. Thus, this dissertation draws on a number of empirical sources beyond my own intuitions about the Norwegian language.

2   A theory-neutral description of Norwegian modals

In this chapter I will describe the morphological, semantic and syntactic properties of Norwegian modals in a theory-neutral way. I am of course aware that the ideal aim of a theory-neutral description can never be reached in practice, since any non-trivial description of linguistic elements inevitably employs at least terms and basic premises that are inherently encumbered with a set of theoretical assumptions. What I will try to achieve, though, is to avoid any commitment to a specific formalism or framework that would impede the accessibility of the insights that I present.

As a first approximation, I define the class of modals extensionally, with the following five members (cf. e.g. Faarlund et al. 1997: 527):

(1)

burde 'should'	*skulle* 'will'
kunne 'can'	*ville* 'want-to/will[1]'
måtte 'must'	

These modals have root readings and epistemic readings. We look to Platzack (1979:44) for a working definition of the terms *root* and *epistemic*[2].

> The epistemic sense [...] qualifies the truth value of the sentence containing the modal; the root sense [...] expresses necessity, obligation, permission, volition, or ability on behalf of an agent which usually, but not necessarily, is expressed by the [...] subject of the sentence.

To illustrate, the sentence in (2) is ambiguous between a root reading; i.e. an obligation reading paraphrased in I and an epistemic reading where the modal qualifies the truth value of the sentence, paraphrased in II:

(2)

Jon må være på kontoret.
'Jon must be in his office.'
I. Jon is obligated to be in his office (root reading)
II. It must be the case that Jon is in his office (epistemic reading)

In subsections 2.1 through 2.3 we consider the morphological, semantic and syntactic properties of Norwegian modals. We start out by considering properties that serve to distinguish modals from other verbs, before we consider which properties that apply to a subset of modals only. Our findings are summarized at the end of each subsection.

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[1] The former is the root reading, while the latter is the epistemic reading.
[2] The term *root* as opposed to epistemic was coined by Hofmann (1976).

In section 2.4 we summarize and systematize our observations. Based on our findings, we examine what characterizes the set of Norwegian modals (section 2.4.1). Furthermore, we consider three potential new candidates for the class of modals (section 2.4.2). In section 2.4.3 we revise our inventory of Norwegian modals according to our findings. The chapter concludes with a table of Norwegian modals and their prototypical readings.

2.1 Morphologial characteristics

In English grammars, modals are characterized as morphologically distinguished from other verbs by the property of having no -*s* forms for their 3. person singular present tense (e.g. Palmer 1986:33). Their German counterparts behave much in the same way, as the lack of explicit agreement marking in 1. and 3. person singular present tense indicative is one morphological characteristic specific to modals (cf. e.g. Öhlscläger 1989:4[3]). Modals lack agreement marking in Norwegian as well. However, this lack of agreement is not specific to modals, since Norwegian lacks subject-verb agreement altogether, with any type of verb[4]. But there exists one morphological property that separates modals from almost any other verb[5] in Norwegian. Modals are "preterite-present" verbs[6].

"Preterite-present" is the term used to describe the vocal shift pattern of a group of Germanic verbs of which modals constitute the major part. The term alludes to the fact that their "present forms […] are traceable to strong preterites even though their meaning is clearly present" (Bybee et. al 1994:77)[7]. Although this is a property of a specific diachronic language development that is not likely to have any bearing on the way synchronic internalized language is organized in a specific language user[8], one might quite justifiably claim that the

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[3] The two other exlusively morphological features mentioned by Öhlschläger (1989:4) for German modals are
i) the stem vocal changes from indicative present singular and indicative present plural
ii) the stem vocal changes from infinitve to indicative preterite.
None of these characteristics apply to Norwegian modals.

[4] In Nynorsk and some non-standard dialects, the passive participle may have agreement markers displaying a gender (i.e.neuter (N) vs. non-neuter (NN)) and number distinction:
(i) Han vart skoten /Ho vart skoten/ Dyret vart skote/Dyra vart skotne
    He was shot-NN/She was shot-NN/ The animal (neut) was shot-N/The animals (plural) were shot-PL

[5] The single non-modal preterite present verb in contemporary Norwegian Bokmål is *vite* 'know'.

[6] Cf. Faarlund et al. (1997:526). There is, however, an inconsitency in this work concerning the verb *burde* 'ought-to': Cf. p. 485, where *burde* is listed as a weak verb, class 2b, and p. 526, where it is stated that *burde* is a preterite-presentic verb.

[7] The claim that the present form of these verbs is the original preterite form, is found in many descriptions of Germanic modals, e.g. Faarlund (1991:63), Faarlund, Lie & Vannebo (1997:491) for Norwegian; Öhlschläger (1989:4, fn. 7) for German; Bybee et al. (1994:77-78) for Germanic.

[8] Andrew Carnie's review of Newmeyer (1998) *Language Form and Language Function* on Linguist List January 15th (2000) launched a long and heated debate between 'formalists' and 'functionalists' on questions like this one, as well as other important and interesting issues. The trigger for this debate was the following statement:

more tangible *consequences* of this diachronic shift in the paradigm of modals *synchronically* set them apart from other verbs (particularly strong verbs[9]) in the speaker's internalised vocabulary[10]. In Norwegian, some of these consequences are the following:

(3)

    (a)   These verbs lack the ending *-er/-r* in the present tense.
    (b)   The stem vocal changes from infinitive to present tense.
    (c)   The stem vocal does not change from infinitive to past tense.

This gives the paradigm in (4) for Norwegian modals. I have provided an ordinary strong verb *drikke* (drink) for comparison:

(4)

Infinitive	Present	Preterite	Perfect	
burde	*bør*	*burde*	*burdet*	'should'
kunne	*kan*	*kunne*	*kunnet*	'can'
måtte	*må*	*måtte*	*måttet*	'must'
skulle	*skal*	*skulle*	*skullet*	'will'
ville	*vil*	*ville*	*villet*	'want-to/will'
drikke	*drikker*	*drakk*	*drukket*	'drink'

Paradigm for modals vs. strong verb *drikke*.

"Perhaps it is my MIT training showing through and blinding me to the obvious, but I simply fail to see how it is at all possible that a two-year old child has direct access to diachronic influences like OE word order or the great vowel shift. As far as I can tell, without time-machines or university degrees, infants only have access to what they hear spoken around them, which makes this approach psychologically incoherent." Objections to this paragraph appeared e.g. on January 21st and 23rd respectively; Pavel Oratro: "No functionalist makes the absurd claim that children practice a form of mental time-travel (though didn't Chomsky and Halle sort-of say this in _Sound Pattern of English_?). What they do say is that language isn't fixed at the age of two. It keeps on changing. That means that the processes that cause language change are also functional in the language facilities of individual speakers. So the grammar of a speaker of a language exhibits diachronic change through his life." Debra Ziegeler: "While a Child's acquisitional paths of grammatical development may not coincide with complete accuracy with the paths of diachronic development of a grammatical item, the motivation for the development in either case may be similarly built on the pragmatic forces which mechanise the process of grammaticalisation, and create latent grammatical material out of existing lexical items. There is no question of the individual 'accessing' the diachronic developments[...]. The coincide of ontogenic grammaticalisation with diachronic grammaticalisation is not a factor of individual awareness; the parallels exist merely because the processes are similar, and the similarity appears to be created by similar levels of pragmatic inferencing with different contexts."

[9] Modals are different from weak verbs in any case, since weak verbs have no vocal shift while most modals do, just like strong verbs.

[10] Lightfoot (1974:237) lists as one of the prerequisites for the categorical shift of "pre-modals" (belonging to the category of verbs into modals (belonging to the category of aux) that these verbs were an morphologically identifiable class of verbs: "One can only assume that it was an accident that in this inflexional class [i.e..preterito-presents] only the pre-modals survived. It does seem remarkable that almost all the pre-modals did have past forms with present meanings and that modern 'past tense' modals (should, would, could and, historically must) generally have present sense. On the other hand, it does not seem possible to define a class of modals (and therefore of preterite-presents) on semantic grounds, and furthermore preterite-presents in different languages encompass a very wide range of verbs semantically ('hate', 'know', 'grant', 'be able', 'think', 'need' etc.). However, the crucial effect of the loss of the non-pre-modal present-preterites was that the pre-modals (including the now uncommon mun) became an identifiable class of verbs, with the unique characteristic that they did not have a fricative suffix for the 3rd person singular."

As can be readily observed, (3)a does not apply to *burde*, but in this case, -r belongs to the stem and does not signal an inflectional suffix. Furthermore, (3)b does not apply to *måtte*, 'must' and *ville* 'want-to'. With this exception, the properties listed in (3) are morphological characteristics of modals in contemporary Norwegian.

However, modals are not the only verbs that are preterite-presents in Norwegian. The non-modal verb *vite* 'know', is a preterite-present verb too[11] (cf. Faarlund et al. 1997: 491).

Unlike modern English modals, Norwegian modals have non-finite forms as well as finite forms. That is, Norwegian modals have a close to full formal paradigm of finite and non-finite forms. There are three gaps in this paradigm; notably, Norwegian modals lack present participles, and most modals lack imperatives and passives. Whereas these features are sometimes considered morphological properties of modals (cf. Öhlschläger 1989:59 fn 10; Palmer 1986: 33), there is some evidence that these gaps in the formal paradigm could and should be given a syntactic and/or semantic explanation. However, since these questions concern the range of forms a Norwegian modal employs, they nevertheless defend their place in a discussion of morphological properties of Norwegian modals, even if the *explanation* for the lack of these forms are semantic, syntactic or pragmatic.

Lødrup (1996:fn 5) notes that modals do not employ present participles:

[Modals[12]] lack present participles. In Norwegian, present participles are adjectives. The conditions for deriving them are not absolutely clear. However, the main rule seems to be that they can only be derived from verbs that take one syntactic argument (Sveen 1990:IV.3).

If this is correct, it is reasonable to consider the lack of present participles to be a syntactic property of modals. As implied by the quote from Lødrup (1996), not only modals lack present participles in Norwegian, e.g. weather-verbs (like *snø* 'snow') typically lack these forms as well.

Although modals do not in general passivize, there are two modals that may undergo passive, notably *kunne* 'can' and *ville* 'want-to' (data from Lødrup 1996):

(5)

    a. Leksen må kunnes i morgen.
      The lesson must can-PASSIVE tomorrow
      'You should know your lesson by tomorrow.'

---

[11] Also, the modal *ville* 'want-to' is historically not a present-preterite verb; cf. Faarlund et al. (1997: 491).

[12] Lødrup specifically adresses *root* modals in this quote, but the same property applies to epistemic modals.

   b. Dette må ikke bare ønskes, det må villes.
      This must not only wish-PASSIVE, it must will-PASSIVE
      'You must not only wish this, you must want it.'

Thus, there are at least certain members of the class of modals that passivize.

   The lack of imperative with modals is often described as being due to a semantic (e.g Faarlund et al. 1997: 590; Öhlshcläger 1989:59) or a pragmatic constraint, belonging to the language user's knowledge of the world and stemming from an incompatibility of the lexical meaning of a modal and the task performed by an imperative form. This suggests that the lack of imperative with most modals is due not to a deprived morphological paradigm, but rather to a semantic incompatibility of the lexical content of the modal with the communicative function of the imperative.

   However, one of the Norwegian modals may occur with an imperative, notably *kunne,* 'know', which seems to have a lexical specification compatible with the task performed by the imperative form, cf (6):

(6)

   Kunn dette diktet til i morgen!
   ' know this poem by tomorrow!'

Thus, at least one modal occurs in an imperative form, which means that not even this property separates all modals from other verbs.

   No context, however farfetched, will allow for an imperative that at the same time allows for an epistemic reading of the modal:

(7)

A: Jeg vil ikke akseptere konklusjonen, med mindre det viser seg at Jon kan være tyven.
B: #Kunn være tyven da, Jon!

A: 'I will not accept this conclusion, unless it turns out that Jon may be the thief.'
B: #'May be the thief then, Jon!'

That is, although the semantics of the modal *kunne* on a root reading allows the modal to occur in the imperative, the imperative is unacceptable with an epistemic reading of the modal.

   It was stated above that modals display a close to full paradigm of non-finite and finite forms. While this is true for root modals, this is more questionable with epistemic modals. It has been claimed (e.g. Plank 1984) that epistemic modals occur in finite forms only, whereas no finiteness-requirement applies to root modals. However, epistemic modals too occur in

non-finite forms in Norwegian, cf. (8) from Faarlund et al. (1997: 578), where the epistemic 'hear-say' reading is the natural reading:

(8)

    a. De påstås å skulle ha reist.
     they claim-PASSIVE to shall-INFINITIVE have left
    'They are claimed to be supposed to have left.'

    b. De ble påstått å skulle ha reist.
     they were claim-PASSIVE to shall-INFINITIVE have left
    'They were claimed to be supposed to have left.'

Furthermore, Dyvik (1999) claims that the perfect (or past) participle is reserved for root modals:

> [...]In the previous examples epistemic modals are never complements. Examples where they are seem possible, but then only as a complement of another epistemic modal [...]. From these syntactic facts it follows that epistemic modals only occur in finite forms (present and past tense) and the infinitive, while the past participle is reserved for the root modals.

While this is a sound generalization for the standard dialects of Norwegian (i.e. *Bokmål* and *Nynorsk*), it does not apply to several non-standard dialects. In the northern and western dialects[13], there is no restriction ruling out the epistemic reading of a modal in the past participle, cf. (9).

(9)

    a. Han har måtta arbeidd med det i heile natt.
     He has must-PERFECT work-PERFECT on it all night
    'He must have worked on it all night.'

    b. Hu har kunna vorre her og forre igjen.
     She has can-PERFECT be-PERFECT here and leave-PERFECT again
    'She might have been here and left again.'

Summing up so far, what serves to morphologically distinguish modals from most other verbs in Norwegian is that modals are preterite-present verbs, which means that they lack the ending *-er/-r* in the present tense, their stem vocal (normally) changes from infinitive to present tense, and their stem vocal does not change from infinitive to past tense. However,

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[13] Some speakers of dialects close to the Norwegian standard *bokmål* have informed me that this restriction seem to be lacking in numerous speakers in their dialects, as well. Cf. also Vikner (1988:7) for the same type of data from Danish; e.g. *Han har skullet bo i Århus* 'He has been said to live in Århus'.

this property does not separate modals from all other verbs, since the verb *vite* 'know' is preterite-present as well.

Modals lack present participles, but so do a number of other verbs, e.g. weather-verbs. Certain modals marginally occur in the passive (i.e. *kunne* 'know' and *ville* 'want-to'), and the imperative (*kunne* 'know'). Thus, neither of these properties separate all modals from all other verbs. However, I will ask the reader to note that the modal *kunne* 'can' is the only modal which is compatible with the imperative, and the two modals *kunne* 'can' and *ville* 'want-to' are the only two modals that may undergo passive. These idiosyncracies of the modals *kunne* and *ville* will be important to our investigation later on.

Furthermore, the finiteness requirement on epistemic modals claimed by Plank (1984) to pertain to ("probably all") Germanic languages does not hold for epistemic modals in Norwegian (cf. (8) above). Finally, the generalization presented by Dyvik (1999) that epistemic modals do not employ a perfect participle holds for standard dialects of Norwegian, but not for a number of non-standard dialects; cf. the examples in (9).

2.2   Semantic characteristics

In this section, I want to examine whether there exists any semantic properties that serve to distinguish Norwegian modals from (most) other verbs. As a preliminary to this investigation, I will address the debate considering the semantic properties of modals in other languages. This discussion is the subject of section 2.2.1. Section 2.2.2 investigates semantic properties of the individual Norwegian modals in the light of the aforementioned discussion.

2.2.1   A discussion of semantic properties of modals

In the literature on the semantic and syntactic status of Germanic modals, a much debated question has been whether modals should be considered main verbs or auxiliaries. According to Öhlschläger (1989:19 ff), this is a question which (for the German modals at least) is rooted back in the 17th century (cf. e.g. Bödiker 1690:82,109). Within this debate, one main line of argument raises the question whether modals contribute any lexical meaning at all, or if their contribution is exlusively grammatical; cf. Öhlschläger (1989:56):

> ...the view, that auxiliaries - or more general, non-main verbs - unlike main verbs, supposedly have no lexical meaning, only grammatical meaning; that they have no independent semantic value of their own. Applied to modals, this view is expressed as

the idea that the semantic function of modals is conceived to be "the modification of the content of another verb".[14]

Öhlschläger himself rejects the idea that modals as a class lack lexical semantic content, and in my opinion, rightfully so. However, one might claim, like numerous authors have done, that there exists a semantic continuum ranging from epistemic modals, expressing the speaker's commitment to the truth of the embedded proposition (Palmer 1986:51) and displaying the least "lexical content", to *dynamic* modals, expressing the ability and disposition of an individual, notably the subject referent (the term *dynamic* is due to von Wright 1951); the latter are taken to have the richest lexical content among modals, Cf. Öhlschläger's (1989:50) discussion of Plank (1981:59):

> ...that among modals there exists a hierarchy of modality types, that display their distance from autonomous lexical main verbs, where epistemic modality show the strongest tendency towards auxiliary status, while dynamic modality possess more of a lexical autonomy[15].

The question of the possible auxiliary status of modals (or alternatively, some modals) will be thoroughly examined in section 2.4.1. For the moment, I want to express my opinion that the status of a lingustic element as "auxiliary" or "main verb" should be determined by distributional and formal criteria, not by the linguist's intuitions about degree of lexical semantic content.

Considering how extremely difficult it seems to be to isolate 'an area of meaning' encompassing all modals, the core inventory of modals in different languages is surprisingly similar from a semantic point of view. This also pertains to so-called *semi-modals* (Picallo 1990) and *quasi-modals*[16] (Hopper and Traugott 1993:48; Plank 1984:320) in various languages; their semantic similarity to what is traditionally conceived as modals is usually an author's main argument for employing these and similar terms. Even so, the 'modal domain of meaning' is typically extremely hard to formulate. One reason for this is obviously that "necessity, obligation, permission, volition, ability and likelihood" hardly constitute what is

---

[14] ..die Auffassung, nach der sich Hilfsverben - bzw. allgemeiner: Nichtvollverben - dadurch von Vollverben unterscheiden, dass sie keine lexikalische, sonern nur grammatische Bedeutung besässen, dass sie keinen semantischen Eigenwert hätten. Bezogen auf die Modalverben äussert sich diese Auffassung meist darin, dass es als ihre semantishe Funktion angesehen wird, dass sie "den Inhalt eines anderen Verbs modifizieren" (Duden-Grammatik 1959; 1984:94)[...]

[15] Dass es bei den Modalverben eine Hiearchie von Modalitätstypen" gebe "die ihre Entfernung von autonomen lexikalischen Vollverben" abbilde, wobei die "epistemische Modalität die stärkste Auxiliarisierungstendenz" aufweise, während die dynamische Modalität noch am ehesten an der "lexikalischen Autonomie"teilhabe.

[16] These terms are employed for verbs and compounds that have some, but not all properties pertaining to 'proper modals' in a given language. E.g. *have to* is often considered a 'quasi-modal' in English.

intuitively conceived as one coherent conceptual-semantic field. The challenge, to employ Bybee's (1985:191) words, is to "define the general conceptual domain covered by the category" of modals. Lightfoot (1974:237) seems highly pessimistic as regards the potential success of such a mission:

> [I]t does not seem possible to define a class of modals [...] on semantic grounds[...].

Nevertheless, several attempts have been made to find a conceptual domain common to both root and epistemic modals.

The methodological path often chosen by authors in such a mission is to focus on some (possibly prototypical) subset of the entire class; a subset that could be argued to share a conceptual domain. The subset of modals that presents itself as particularly inviting to this type of investigation are the modals denoting a point on a scale from necessity/obligation, e.g. *must*, to possibility/permission, e.g. *may*. It seems relatively easier to describe a common semantic domain that would cover *deontic* (term due to Mally 1926) modals and their epistemic counterparts, as opposed to the *dynamic* (von Wright 1951) or *dispositional* (the term is ascribed to Klooster 1986 by Barbiers 1995[17]) modals like *can, will* and their epistemic counterparts. In such approaches, *deontic* is taken to denote "modality which is concerned with the necessity or possiblility of acts performed by morally responsible agents" (Lyons 1977:823, von Wright 1951) and *epistemic* could be taken to denote the necessity or possibility of situations in the real world, according to the speaker's knowledge. Cf. for instance Chung and Timberlake (1985:246 ff.).

> There is considerable parallelism between the epistemic and deontic modes. Both can be described in terms of alternative worlds[...]. As a morphosyntactic realization of this parallelism, modal auxiliaries in many languages, notably English, often have both epistemic and deontic senses [...]. The crucial difference between the two, then, is that the epistemic mode deals with a set of alternative worlds at a given time [the alternative worlds are those that could exist instead of the given world], while the deontic mode deals with a set of alternative worlds that develop out of a given world and time [i.e. alternative futures of a given world].

Within the 'functionalist'[18] literature, the common domain of meaning for deontic and

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[17] However, Öhlschläger (1986:fn.53) refers to Wunderlich (1981b:116) for the term "dispositionell" describing one of the uses of *können* 'can': "innere Dispositionen einer Person...als deren Fähigkeiten gelten". This appears to be the same term as Klooster's (1986).

[18] I adopt this term from Newmeyer (1998:7), who describes the field of linguistics this way: There are [...] two broad orientations in the field[...]. One orientation sees as a central task for linguists characterizing the formal relationships among grammatical elements independently of any characterization of the semantic and pragmatic properties of those elements. The other orientation rejects that task on the grounds that the function of conveying meaning (in its broadest sense) has so affected grammatical form that it is senseless to compartmentalize it. It is the former orientation, of course, that I have been referring to as 'formalist' and the latter as 'functionalist'.

epistemic modals is often believed to hinge on the fact that epistemic uses of modals derive diachronically from the use of their deontic counterparts; cf. Bybee et al. (1994:195):

> It is clear that the epistemic senses develop later than, and out of, the agent-oriented senses. In fact, for the English modals, where the case is best documented, the epistemic uses do not become common until quite late. Horn 1972, Steele 1975, and Coates 1983 all point out that the force of the epistemic sense expressed by a modal is directly related to the force of the agent-oriented sense from which it derives. Horn further points out that the strength of the modal meaning in both domains is scalar:

agent-oriented:		**epistemic:**	
strong obligation	gives	inferred certainty	(*must*)
weak obligation	gives	probability	(*should*)
ability	gives	possibility	(*may*)

Notice that a subset of modals is picked out, a subset of deontic modals and their epistemic counterparts that in some sense belongs to the same conceptual domain, ranging from necessity to possibility.

However, there are authors who opt for specific semantic criteria for demarcating the *whole* category of modals from other verbs. Here Thráinsson and Vikner (1995: 53):

> [W]e propose the following tentative "definition" of modal verbs:
> Modal verbs are verbs that can have both an epistemic and a root modal sense.

Even to maintain this rather basic description[19], one will have to use the term *epistemic* in a somewhat wide sense to encompass all of the non-root readings of Norwegian modals, since at least one of the Norwegian modals; notably *skulle* 'shall' seems to belong to the system of *evidential* modality rather than *epistemic* (cf. Palmer 1986 for *skulle'*s German counterpart *sollen*). While epistemic modality is taken to deal with the speaker's knowledge and beliefs, evidential modality deals with what kind of evidence the speaker has for assuming the truth of the proposition (cf. e.g. Palmer 1986:20). On its non-root reading *skulle* denotes 'hear-say', which is typically considered one type of evidential modality. It is not uncommon, however, to extend the term *epistemic* in this way; cf. e.g. Palmer (1986; discussing Lyons 1977):

> Epistemic modality [...] is concerned with matters of knowledge, belief (p 793) [or] opinion rather than fact (681-2).

Hence, the term *epistemic* has one wide sense (encompassing *evidential*) and one narrow sense (excluding *evidential*). In what follows, we will employ this term in a wide sense, unless it is explicitly stated that the narrow term is intended.

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[19] Note that this is not employed as a defining property of modals in all proposals; e.g. Picallo (1990) lists as

2.2.2 The semantic properties of Norwegian modals

In what follows, we adopt the tentative "definition" from Thráinsson and Vikner (1995) as a description of Norwegian modals as well, since the five modals that we listed at the beginning of this chapter all exhibit this 'dual reading' property, i.e. they can have both root and epistemic readings (as mentioned already at the beginning of this chapter). The semantic property that applies to all modals in Norwegian as opposed to most other verbs[20] thus regards their ability to take on two different senses; one that "qualifies the truth value of the sentence containing the modal" and one that "expresses necessity, obligation, permission, volition, or ability on behalf of an agent" (Platzack 1979:44). I have listed examples of these two different senses for each modal in (10) below.

(10)

burde	Jon bør være på kontoret.
	'Jon should be in his office.
	It is likely that Jon is in his office (Epistemic).
	Jon has a weak obligation to be in his office (Root).
kunne	Jon kan være på kontoret.
	'Jon may be in his office.'
	It is possible that Jon is in his office (Epistemic).
	Jon is allowed to be in his office (Root).
måtte	Jon må være på kontoret.
	'Jon must be in his office.'
	It must be the case that Jon is in his office (Epistemic).
	Jon is obligated to be in his office (Root).
skulle	Jon skal være på kontoret.
	'Jon is supposed to be in his office.'
	Somebody says that Jon is in his office (Epistemic/Evidential).
	Jon is required (by some authority) to be in his office (Root).
ville	Jon vil være på kontoret.
	'Jon will/wants to be in his office.'
	It will be the case that Jon is in his office (Epistemic/Prediction).
	Jon wants to be in his office (Root).

This list solely that all Norwegian modals each display two distinct readings; the root sense on one hand and the epistemic sense on the other.

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modals several verbs that have only one of these readings.

[20] Note that there exist other verbal compounds that give rise to root and epistemic senses; e.g. *være nødt til,*

However, it is possible and desirable to make more fine-grained distictions between the various readings of Norwegian modals. As a first approximation, let us display the various readings of Norwegian modals in a figure like the following.

(11)
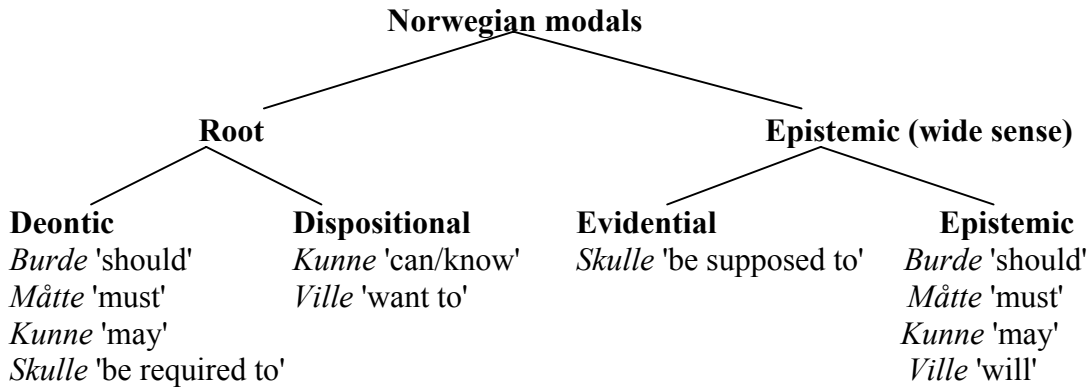
Note that the modal *kunne* is listed with two different root senses; one deontic (denoting permission) and one dipositional (denoting the subject's mental and physical abilities), i.e. *kunne* is at least three-ways ambiguous between one epistemic and two root readings. This will be an important point later on.

To repeat, *deontic* modality is taken to deal with "modality which is concerned with the necessity or possiblility of acts performed by morally responsible agents" (Lyons 1977:823). *Dispositional* is used instead of the more common term *dynamic*; as the name suggests, *dispositional* refers to the specific abilities, capacities or tendencies of a subject (cf. e.g. Barbiers 1995:142). *Evidential* refers to a system of modality where the speaker indicates what kind of evidence he has for assuming the truth of a proposition, in the case of *skulle* the type of evidence is 'hear-say'. Finally, *epistemic* is used both in a wide and a narrow sense, the wide sense encompassing *evidential* as well as 'proper' epistemic senses[21] concerned with the speaker's knowledge and beliefs.

It has often been assumed in the literature on modals that the root senses denote *two-place* semantic relations, whereas the epistemic senses denote one-place relations. That is, on the root reading of e.g. *must* "there is such a role as someone who must something" (Vikner 1988:14), hence there seems to exist a predication or Theta-relation between the subject

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'need to'.

[21] One should perhaps single out a third branch under the (wide term) epistemic senses. The epistemic reading of *ville* is one of prediction; a sense that may be said to fall outside the scope of *epistemic*, which deals with the speaker's knowledge and beliefs. There may also be reason to treat *ville* in its non-root reading as simply a tense particle denoting future, in which case it might not belong to the proper modals at all. This question will be addressed in section 5.3.3.2.

referent and the modal, unlike what is the case on the epistemic reading, where the intuition is that there exists no such relation between the two. Cf. e.g. Dyvik (1999:4):

> Every modal can be interpreted either as a one-place epistemic modal or as a two-place root modal. Under the epistemic interpretations the subject referent is not an argument of the modal, which only takes the entire proposition as an argument [...]. Under the root interpretation the subject referent is an argument of the modal.

While this generalization may be said to hold for epistemic vs. *dispositional* root modals, the statement is not entirely true for the deontic root senses. As pointed out by numerous authors (e.g. Huddleston 1974[22], Newmeyer 1975, Pullum and Wilson 1977, Brennan 1993, Wurmbrand 1999), deontic root modals may very well have so-called *proposition-scope* readings where the root modal seems to 'take the entire proposition as an argument'. Cf. Feldman (1986:179):

> Sometimes, instead of saying that a certain person ought to do a certain thing, we may say that a certain state of affairs ought to be, or ought to occur [...]. The ought-to-do involves a relation between an agent and a state of affairs. The ought-to-be involves a property of a state of affairs.

The latter sense, i.e. 'ought-to-be' is sometimes referred to as the *non-directed* (cf. e.g. Barbiers 1995) root reading, since the obligation or permission is not directed towards the subject referent. That is, it is not the subject who has an obligation or permission to do something. Examples of such readings are the data in (12).

(12)

    a.   Jon skal dø.
            'Jon must die.' (# Jon has an obligation to die)

    b.   Skilpadden bør være i badekaret.
            'The turtle should stay in the bath tub.' (#The turtle has an obligation)

    c.   Det må komme minst femti mennesker for at festen skal lønne seg.
            'At least fifty people must show up for the party to pay off.'
            (# There are fifty people and each has an obligation to come)

    d.   Det kan komme ti gjester i fødselsdagen din. (permissive; i.e.deontic)
            'There may come ten guests to your birthday (party).'
            (# There are ten guests and each has the permission to come)

---

[22] Huddleston concludes that there are only two modals that lack a proposition-scope reading, *dare* and volitional *will*. However, Pullum and Wilson (1977) quote the following attested example to suggest that even *dare* may be used 'intransitively': *Inflation is a problem which dare not be neglected.*

The dispositional root modals, on the other hand, resist a proposition-scope reading, so it seems fair to say that they always denote two-place relations, cf. (13). Notice that while (12) d is perfectly acceptable on the permissive reading (belonging to the deontic senses), it cannot be forced into a proposition-scope reading in the 'ability' (i.e. dispositional) sense, see (13) b:

(13)

    a.   Det vil komme en mann hit i morgen.
            'There wants to come a man here tomorrow.' (#root reading)

    b.   Det kan komme ti gjester i fødselsdagen din.
            'There can come ten guests to your party.' (#dispositional)
            (# There are able to come ten guests)

The proposition-scope or non-directed readings of deontic modals contrast with the *directed deontic* readings, which may be construed as two-place relations, just like dispositional modals.

(14)

    a.   Jeg må være på kontoret i hele dag.
            'I must stay in my office all day.'
            (I have an obligation to stay in my office all day)

    b.   Du skal rydde på rommet ditt.
            'You must clean your room.'
            (You have an obligation to clean your room)

    c.   Hun bør gjøre leksene før hun går på kino.
            'She should do her homework before going to the movies.'
            (She has an obligation to do her homework ...)

Although the one-place vs. two-place relation hence cannot be maintained as a dichotomy between root modals on one side and epistemic modals on the other, it is still the case that *epistemic* modals can never be construed as a relation between the subject and the embedded proposition, whereas the *dispositional* root modals always encode such a relation. Deontic root modals are ambiguous between two possible readings; one 'ought to do' reading and one 'ought to be' reading. Hence, our findings suggest that epistemic modals are always one-place predicates, dispositional root modals are always two-place predicates, whereas deontic root modals are ambiguous between a one-place predicate and a two-place predicate construal; (cf. also Brennan 1993, Barbiers 1995[23]). This is illustrated below.

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[23] I should mention here that Barbiers considers dispositional senses to be available for most modals in Dutch. I believe that this might be said for Norwegian modals as well, where e.g. *måtte* 'must' is construed as an urge or

(15)

Readings available for Norwegian modals:

Dispositional: Two-place (property of individual)

Root reading

Two-place (directed deontic)

Modals

Deontic

One-place (non-directed deontic)

Epistemic reading: —————— One-place (proposition-scope)
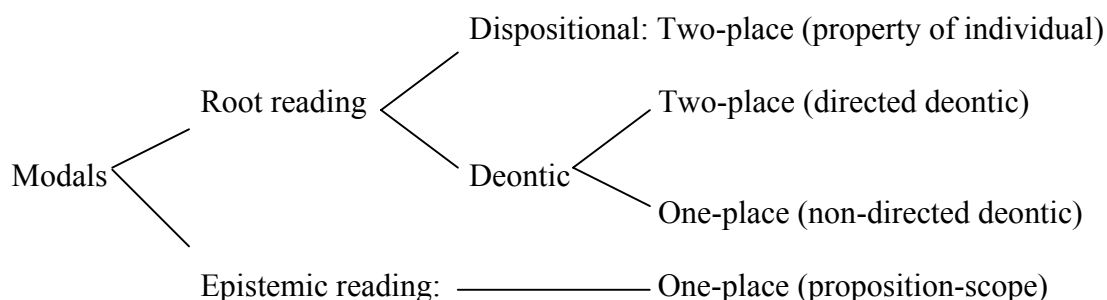
This illustration sums up some important semantic characteristics of Norwegian modals. The main distinction between modals and (most) other verbs is that all modals have both root readings and epistemic readings. In the literature, it has often been assumed that root modals denote two-place relations whereas epistemic modals denote one-place predicates. We have seen that this is not entirely correct. Although epistemic modals always have proposition-scope (or one-place predicate readings) and dispositional modals are always two-place relations, any deontic modal may be construed as either a one-place (non directed deontic) or a two-place (directed deontic) predicate.

2.3 Syntactic characteristics

While modals in contemporary English have a range of syntactic properties that are characteristic of that specific category, Norwegian and other Scandinavian modals, like their counterparts in German and earlier stages of English[24], share many of their properties with ordinary lexical verbs. Thus, Jackendoff (1972:100 ff.) observes the following for contemporary English modals:

> Consider the differences. Modals do not undergo number agreement, though all verbs do. Modals do not occur together, and they do not appear in gerunds and infinitives [...]. Modals also differ from all main verbs but *be* and some uses of *have* in that they undergo subject-aux inversion, precede *not,* and block *do*-support [...]. Thus we can treat modals as verbs only if we are willing to concede that they represent a remarkable coincidence of a large number of purely syntactic aberrations.

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need of the subject. However, I will reserve the term *dispositional* for *kunne* and *ville.*

[24] Evidently, modals in earlier stages of English were a lot like German and Norwegian ones, cf. e.g. Lightfoot (1974:241), who claims that there was " a whole series of changes taking place in the sixteenth century..." (a) The old pre-modals could no longer appear in infinitive constructions[...] (b) The old pre-modals could no longer

Jackendoff (1972) thus proposes that English modals do not belong to the category of lexical verbs. Instead, he suggests that modals are auxiliaries in modern English.

However, even the advocates of this hypothesis (cf. e.g. Lightfoot 1974, Jackendoff 1972) admit that although modals in contemporary English beyond doubt should be considered auxiliaries and not lexical verbs, this issue is a lot more unsettled for modals in Old and Middle English and contemporary German (Jackendoff 1972:100). Some authors propose explicitly that modals are auxiliaries in contemporary English only, while modals are to be considered main verbs in Old and Middle English and in German (Jackendoff 1972, Lightfoot 1974, Roberts 1985). Since Norwegian and other Scandinavian modals resemble their German and Old/Middle English counterparts in many respects, these authors would presumably categorize Scandinavian modals as main verbs and not as auxiliaries.

To state some observable syntactic differences between modals in modern English and Norwegian, the contemporary Standard English[25] ban against co-occurence of modals does not hold for their Scandinavian or German counterparts, although there are certain restrictions for this co-occurence even in these languages (cf. e.g Thrainsson and Vikner 1995); cf. (16)a. Furthermore, in English, provided a modal is at all present, it will always be the leftmost verb in any verbal sequence, since English modals do not occur in non-finite forms. Mainland Scandinavian modals, although frequently found in this leftmost position, may in addition occur as complements of e.g. aspectual auxiliaries, cf. (16)b, as well as embedded under lexical verbs, cf. (16)c.

(16)

    a. Det må kunne finnes en løsning.
      there must canINF findPASS a solution
    'It must be possible to find a solution.'

    a. Ofrene hadde måttet flykte.
      victimsDEF had mustPERF flee
    'The victims had had to flee.'

    b. Jon antas å måtte være morderen.
      Jon presumePASS to mustINF be killerDEF
    'Jon is presumed to have to be the killer.'

---

occur with -ing affixes [...]. (c) As from the mid-sixth century there could only be one modal in any clause[...]. (d) The old pre-modals could no longer occur with have and an -en affix." See also Denison (1993: chapter 11).
[25] There exist English dialects where co-occurrence is allowed, cf. e.g. Denison (1993:294) but only for a limited set of constructions, and only for specific combinations of specific modals. Cf. also Thráinsson and Vikner (1995:72) for some differences between double modal constructions in English dialects and those found in Scandinavian.

 The difference w.r.t. these two properties between Mainland Scandinavian and German on one side and English on the other entails that the distribution of English modals is much more restricted than the distribution of their Norwegian and German counterparts. A modern English sentence may contain at most one proper modal[26], and the modal is always the leftmost verb. A Norwegian or German[27] sentence may contain pairs or clusters of proper modals, and a modal may or may not be the leftmost verb.

2.3.1 Complements of Norwegian modals

There do however exist certain syntactic differences between modals and (most) other verbs even in Norwegian. First of all, we will consider the complement-taking properties of Norwegian modals. Norwegian modals take infinitival complements, perfect complements, small clause complements, and pseudoclefted complements. The latter two apply to root modals only. In addition, the two dispositional root modals take CP or DP complements. Specifically, the modal *kunne* 'can' takes DP complements, whereas *ville* 'want-to' takes CP complements; i.e. finite clauses headed by the complementizer *at* 'that'. We will address the latter property of the two dispositional modals in section 2.3.2. Here, we consider the remainder of the list above.

Norwegian modals take bare infinitival complements, whereas most other verbs taking infintival complements require the presence of the infinitival marker *å* 'to'[28].

(17)

    a.   Jon bør (*å) være på kontoret.
                'Jon should be in his office.'

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[26] Obviously, English sentences may express the same content as their Norwegian and German counterparts, by means of lexical combinations semantically corresponding to modals, such as *have to, be to, be able to* etc. By many authors within the functionalist tradition, such combinations are considered (quasi-) modals as well; cf. e.g. Hopper and Traugott (1993:143).

[27] An extreme example from German is the following (Thanks to Herbert Pütz for this example):
    i)Wer können soll muss wollen dürfen.
     who canINF shall must wantINF mayINF
     'He who is expected to be able, must be allowed to have a will'

[28] According to Thráinsson and Vikner (1995:67), this is true for Danish modals as well, but not for all Icelandic modals: "[...] some of the Icelandic modals take complements with the infinitival *að* whereas Danish modals take bare infinitives." German modals take bare infinitivals (i.e., without the infinitival marker *zu*) cf. Öhlschläger (1989:4). These apparent differences between Norwegian, Danish and German on one side and Icelandic on the other may very well boil down to a question of definition, as the ability to take bare infinitival complements is frequently used as a demarcation line for 'proper modals' in the literature on modals in Mainland Scandinavian languages as well as German. Although there are other candidates aspiring to a categorical status as modals based solely on semantic properties and communicative function (e.g. *være nødt til å* 'be obligated to'*, ha å* 'have to'), these combinations are simply not considered proper modals, exactly because they fail to take bare infinitival complements.

b.   Marit kan (*å) svømme[29].
'Marit can/may swim/be swimming.'

c.   Pasienten må (*å) behandles forsiktig.
'The patient must be treated carefully.'

d.   Begge skal (*å) reise i morgen.
'Both (of them) are supposed to leave tomorrow.'

e.   Myndighetene vil (*å) rive huset.
'The authorities want to/will demolish the house.'

The fact that modals take bare infinitival complements sets them apart from almost any other lexical verb[30]. On the other hand, since the property of taking bare verbal complements is a property that modals share with perfect auxiliaries, this property is frequently invoked as an argument in defence of the hypothesis that modals are auxiliaries even in Norwegian. The data in (17) are all ambiguous between a root reading and an epistemic reading, although most of them are more natural in a root reading. Given a context, though, it is possible to force an epistemic reading of any of the sentences in (17).

Modals in Norwegian may also take verbal complements morphologically marked as perfect (i.e. perfect participles), as shown by the data in (18).

(18)

a.   Jon burde (ha) vært på kontoret.
'Jon should (have) been in his office.'

b.   Marit kunne (ha) svømt.
'Marit could (have) swum.'

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[29] In fact, the presence of the infinitive marker is allowed in certain Norwegian non-standard dialects for this specific construction, for the modal *kunne* in the 'ability' sense. For these particular dialects, the presence vs. absence of the infinitival marker *å* disambiguates the modal *kunne; +å* gives the modal an unambigous reading as habilitative, while the absence of this marker gives a 'permission' reading. In my own dialect (Trøndersk) as well as northern dialects, *skulle* is also found with infinitivals +*å* :

(i)   Skull   dokker   å fesk*?*
         shall-PRET you-PLUR to fish
         'Were you going fishing?'

(ii)   Skull   dokker   fesk*?*
         shall-PRET you-PLUR fish
         'Were you going to fish?'

Again, the presence vs. absence of the infinitival marker *å* disambiguates the construction; this time not the modal itself,but its complement, in that the presence of the marker gives the complement a progressive reading, while a complement lacking this marker lacks the progressive aspect.

[30] But cf. Johannessen (1998: 87) for various other Norwegian verbs that may take bare infinitival complements when they occur with negation word *ikke* 'not'. Also, perception verbs, *la* 'let' and *be* 'ask' that may take ACI small clause complements, but then with a visible small clause subject different from the matrix subject, e.g. *Marit så Jon bade* 'Marit saw Jon take a bath'.

　　c.　Pasienten måtte (ha) blitt behandlet straks.
　　　　'The patient had to (have) been treated immidiately.'

　　d.　Begge skulle (ha) reist i morgen.
　　　　'Both (of them) should (have) left tomorrow.'

　　e.　Myndighetene ville (ha) revet huset.
　　　　'The authorities would (have) demolished the house.'

In each of the sentences in (18), a perfective verb *ha,* 'have', or *være,* 'be', may be inserted between the modal and the perfect complement, thus numerous authors have considered this phenomenon to be best described as the workings of a phonological reduction, causing the phenomenon to be known by the term "*ha*-stryking", i.e. '*ha*-deletion/*ha*-omission', cf. e.g. Nordgård and Åfarli (1990:100).

　　One reason to assume that there is an underlying, phonologically omitted perfective verb in these instances is exactly the fact that modals normally take infinitival complements, while the perfect participle should normally be licenced by a perfective verb. Moreover, several authors have claimed that the reading of the sentence remains the same, with or without *ha*, cf. e.g. Faarlund et al. (1997:526) [31]. However, Taraldsen (1984) claims that this is not correct. Note that a prerequisite for *ha*-omission is that the modal has preterite morphology; a modal in the present tense disallows a perfect participle complement. Taraldsen observes that *ha*-omission is only licit on a counterfactual reading of the modal; whenever the preterite marking signals 'past', not counterfactuality[32], *ha*-omission is illicit, cf. (19):

(19)

　　a. Han krevde at vi skulle *(ha) gjort det innen mandag.
　　　 'He required that we should have done it by Monday.'

Thus, the reading of a modal with a perfect participle complement is always a counterfactual reading in Norwegian. Furthermore, the readings in (18) are counterfactual readings of root modals; except for (18)e, which may have an epistemic reading. We return to these constructions in chapter 5, section 5.3.3.3.

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[31] See Wiklund (1998) for a different wiev. In Swedish, the phenomenon *ha*-deletion affects a wider range of constructions than in Norwegian; Wiklund (1998:14): "A tensed auxiliary *ha* can always be ommitted in subordinate clauses in Swedish, whereas an untensed *ha* can be omitted if preceded by a modal verb in past tense [...] Footnote 10: Tensed *ha* can never be omitted in Norwegian (see Taraldsen 1984). In Swedish it may also occasionally be omitted in raising contexts (see Hedlund 1992)."

Unlike their contemporary English counterparts[33] and like their German and Dutch counterparts[34], Norwegian modals may take non-verbal complements, particularly adverbs or preposition phrases denoting directional locatives and resultatives[35], cf. (20). Notice that this property applies to root modals only, as epistemic readings are definitely unavailable in these constructions (cf. chapter 5, section 5.4.3 for a possible explanation for this fact).

(20)

    a.   Marit bør hjem.
            Marit ought-to home
            'Marit should go home.'

    b.   Jon må på skolen.
            Jon must to school
            'Jon must go to school.'

    c.   Greina skal av[36].
            The branch must off
            'The branch must be cut off/in two.'

    d.   Alle vil tilbake tidlig.
            All want-to back early
            'Everyone wants to get back early.'

    e.   Jeg kan ikke på kino likevel.
            I can not to cinema anyway
            'I cannot go to the cinema anyway.'

According to my own intuitions, these constructions are OK with all modals; however, not all speakers allow all modals in these constructions. All speakers allow *måtte*, *skulle* og *ville*, but some speakers do not allow *burde*[37], and some speakers do not allow *kunne*. Non-standard

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[32] Cf. e.g. Faarlund et al (1997: 575 ff; 587 ff) for the 'modal' uses of preterite in Norwegian, which is particularly frequent with modals. Fretheim (1977) discusses the 'modal' use of plus perfect in Norwegian.

[33] Denison (1993: 305): " Modal+directional adverbial is often used in Germanic languages as if a verb of motion is to be understood. The usage is virtually dead in Present-day English (consider proverbial *murder will out,* or with non-modal WANT the Am[erican] E[nglish] *Bugsy wants out*) but was common in earlier periods."

[34] Of the languages Dutch, German and Norwegian, Dutch allows a greater range of complements than do German and Norwegian, cf. Barbiers (1999): "I discuss Dutch data only. The construction also exists in German and Afrikaans, but with more restrictions on the complement of the modal: these languages allow only a subset of the complements that can occur with a modal in Dutch." Barbiers does not elaborate on the nature of the differing restrictions. However, I will mention that one difference is the fact that Dutch accepts adjectival small clause complements. This is unacceptable in Norwegian, and, I believe, German.

[35] Faarlund et al. (1997: 527, 582) refer to this phenomenon as reduction, too. The idea is that there exists a deleted verb of movement in these constructions, which is tantamount to saying that the complement is in fact verbal after all. We will return to this question in section 3.2.7 (i.e. in Barbiers' proposals).

[36] This sentence is ambigous between two readings: a) The branch must be detached; b) The branch must be cut in two.

[37] One reason why *burde* is disallowed by many speakers is probably that Modal + non-verbal complement

dialects (specially in the western and northern part of Norway) tend to be more liberal than standard dialects in the latter respect.

Finally, Thrainsson and Vikner (1995) claim that pseudocleft constructions serve to distinguish root modals from epistemic modals in Scandinavian languages, as root modals allow their complement to be pseudoclefted, whereas epistemic modals do not, cf.(21).

(21)

a. Det eneste du skal, er å legge deg.
'The only thing you will (do), is to get to bed (root reading)'.

b. *Det eneste Jon skal, er å ha stjålet en bil.
' The only thing Jon is supposed to, is to have stolen a car (epistemic reading).'

c. Det Jon må, er å være hyggelig.
'What Jon must, is to be nice (root reading).'

d. *Det Jon må, er å være morderen.
'What Jon must, is to be the killer (epistemic reading).'

In fact, Thrainsson and Vikner's (1995) generalization is inaccurate. Root modals accept a pseudoclefted complement provided they have a 'two-place' reading (cf.section 2.2.2 above). In constructions where a proposition-scope reading of the root modal is the natural reading, they reject a pseudoclefted complement, just like epistemic modals:

(22)

a. *Det en kvinne bør, er å bli vår neste statsminister.
 it   a woman should, is to be our next prime minister.
(Intended: 'What should happen is that a woman becomes our next prime minister.')

b. *Det apene ikke må, er å mates av besøkende.
 it   the monkeys not must, is to feed-PASSIVE by visitors
(Intended: 'What must not take place is that the monkeys are fed by visitors.')

These facts are accounted for in section 4.2. Now, we turn to modals in tag questions and elliptic constructions.

2.3.2 Modals and tags

English modals are characterized by what Huddleston (1976:333) dub the NICE properties, alluding to the observation that modals take part in syntactic processes where an ordinary

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typically occurs in oral contexts. *Burde*, on the other hand, does not belong to the active vocabulary of many speakers of non-standard dialects.

lexical verb would require the assistance of a semantically devoid *do*, the phenomenon known as *'do*-support' (cf. also the quote from Jackendoff 1972:100 above). These properties are illustrated in (23) and quoted from Palmer (1986:90-91):

(23)

Negative:	I can't go	vs	He doesn't go
Inversion:	Must I come?	vs	Does he go?
'Code':	He can swim and so can she	vs	He goes and so does she
Emphatic affirmation:	He *will* be there	vs	He *does* go

It has sometimes been claimed in the literature on English modals that what has become known as the NICE properties does not apply equally to root and epistemic modals. More specifically, epistemic modals have been claimed to be unavailable in interrogative sentences and topicalized constructions, both of which require subject-auxiliary inversion in English, cf. e.g. (24); data from Brennan (1997). However, as noted e.g. by Jackendoff (1972), although epistemic modals typically resist subject-auxiliary inversion, this is not an absolute constraint, cf.(25); (25)b is taken from Brennan, op.cit. Correspondingly, Jackendoff claims, this should be considered a semantic restriction, not a syntactic constraint.

(24)

    a. Must Carrie leave?
    b. Only three people may Mary see.

(25)

    a. OK, so John is a thief. Must he therefore be a murderer?
    b. Few people must your father have seen, and fewer saw him.

Recall that Norwegian modals behave no differently from other verbs as regards subject-verb inversion, but the availability of epistemic readings in interrogative or topicalized constructions seem to be governed by the same semantic restrictions in Norwegian as in English; i.e. epistemic readings are typically marginal in such constructions, although they are by no means ruled out.

Norwegian modals behave no differently than other verbs as regards negation, inversion or emphatic affirmation. Thus, only "code", is relevant in distinguishing Norwegian modals from lexical verbs. Lexical verbs are replaced by the proverb *gjøre* 'do' in elliptical constructions, cf. (26)a, while modals are repeated, cf. (26)b. I.e. in this respect, Norwegian modals follow the English pattern. Notice also that in this respect, Norwegian modals behave like Norwegian aspectual auxiliaries, e.g. *ha* 'have', which are also repeated in these constructions, cf.(26)c.

(26)

a. Marit svømmer og det **svømmer/gjør* Jon også.
Marit swims and that swims/does Jon too
'Marit swims and so does Jon.'

b. Marit skal svømme og det *skal/*gjør* Jon også.
Marit shall swim and that shall/does Jon too
'Marit is going to swim and so is Jon.'

c. Marit har svømt og det *har/*gjør* Jon også. [38]
Marit has swum and that has/does Jon too
'Marit has swum and so has Jon.'

A phenomenon closely related to "code" is "tag questions"; hence it is not very surprising that modals depart from lexical verbs also in these constructions, cf. (27). Note that once again, modals pattern with aspectuals.

(27)

a. Jon går i butikken, **går/gjør* han ikke det?
Jon goes in store-DEF, goes/does he not that
'Jon goes to the store, doesn't he?'

b. Jon må gå i butikken, *må/*gjør* han ikke det?
Jon must go in store-DEF, must/does he not that
John must go to the market, mustn't he?

c. Jon har gått i butikken, *har/*gjør* han ikke det?
Jon has gone in store-DEF, has/does he not that
John has gone to the market, hasn't he?

Again, in the tag question, the lexical verb occurring in the matrix clause cannot be repeated; it must be replaced by the pro-verb *gjøre;* cf. (27)a. Modals and aspectuals, on the other

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[38] In (26)a, the pro-form *det* must pertain to the whole VP, including the verb, for the pro-verb *gjøre* 'do' to be required. If the proform pertains to only the direct obejct, for instance, one may repeat the lexical verb:
    (i)   Marit spiser pannekaker og det gjør/spiser Jon også.
           Marit eats pancakes an that does/eats Jon too.
           'Marit eats pancakes and so does Jon'
In these cases, however, the lexical verb may just as well be replaced by another lexical verb:
           Marit spiser pannekaker og det liker Jon også.
           Marit eats pancakes and that likes Jon too
           'Marit eats pancakes and Jon likes them, too'
The important thing to notice here is that in one case *det* (that) refers to the whole VP [eats pancakes] while in the other case, it refers to the direct object [pancakes] only.
    Likewise, in(26)c, the sentence *Marit har svømt og det gjør Jon også* 'Marit has swum as so does Jon' is possible if the intention is that Jon is *presently* engaged in the activity of swimming, whereas Marit was formerly engaged in tis activity. However, the relevant meaning here is that 'Marit has swum and Jon has swum'. On this reading, the aspectual *ha* cannot be replaced by *gjøre.*

hand, may, and in fact, must be repeated in the tag, in the sense that they may not be replaced by the proverb *gjøre,* as shown in (27)b.

The German counterpart of *do-so*-ellipsis, VP-pronominalization[39], or rather its unavailability for epistemic modals, was one of Ross' (1969) main arguments for postulating two different argument structures for root and epistemic modals. Although this may be correct for German (see Öhlscläger 1989:47), in Norwegian this kind of ellipsis, which resembles the German VP-pronominalization, is typically available for both root and epistemic modals. VP-pronominalization of the complement of root and epistemic modals in Norwegian is examined and discussed in Lødrup (1994)[40], the data in (28)a and b are from Lødrup (1994:2). Note also that aspectuals allow for this type of ellipsis; cf. (28)c.

(28)

    a. Kan du strikke? Ja, jeg kan det.
     can you knit? Yes, I can that
    'Do you know how to knit? Yes, I do.'

    b. Kan bussen ha kommet nå? Nei, den kan ikke det.
      can the bus have come now? No it can not that
      'May the bus have arrived already? No it may not.'

    c. Har bussen kommet nå? Nei, den har ikke det.
      has the bus come now? No it has not that
      'Has the bus arrived already? No it hasn't.'

Likewise, in tag questions, there seems to be little difference between root modals and epistemic modals, as tag questions are available and felicitous with both types of modals, and the restriction on *gjøre* 'do'-replacement holds for epistemic as well as most root modals. That is, the modal is not replaced by *gjøre* in tags, unlike lexical verbs. Instead, the modal is repeated in the tag, and this applies to root modals and epistemic modals alike.

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[39] Ross himself referred to this phenomenon as S-deletion.
[40] See also Vikner (1988: 10-11) and Thrainsson and Vikner (1995:61): "...it is usually possible in Danish to get a topicaized object-like *det* 'it, that' with epistemic modal verbs, although it is much worse when it is not topicalized [...]:
    Han vil være hjemme hele dagen.
     'He will be home all day.
    Det vil hun desuden også.
    that will she actually too; 'so will she, actually'."

(29)

      a.   Han skal være en hyggelig fyr, skal han ikke det?
             he shall be a nice chap, shall he not that
             'He is supposed to be a nice chap, isn't he?' (epistemic)

      b.   Marit må være kommet hjem nå, må hun ikke det?
             Marit must be come home now, must she not that
             'Marit must have come home (by) now, mustn't she?' (epistemic)

      c.   Du bør vel dra nå, bør du ikke det?
             you should well go now, should you not that
             'You should probably leave now, shouldn't you?' (root)

      d.   Hun kan gå på kino, kan hun ikke det?
             she can go to movie can she not that
             ' She may go to the movies, may she not?' (root)

However, there are two Norwegian root modals that allow for replacement by proverb *gjøre* 'do' in tags[41]. These are the two root modals listed as *dispositional* in 2.2.2 above, *ville* 'want-to' and *kunne* 'can/know'; the latter on the 'mental ablility' reading, cf. (30).

(30)

      a.   Du vil at han skal komme, vil/gjør du ikke det?
             you will that he comes, will/do you not that
             'You want him to come, don't you?'

      b.   Du kan fransk/nasjonalsangen, kan/gjør du ikke det?
             you can French/the national anthem, can/do you not that
             'You speak French/know the national anthem, don't you?'

These two modals are special in other respects as well. For instance, these are the only two Norwegian modals that may take proper arguments (i.e. DP or CP) as complements, as seen in (30) above. Crucially, the proper argument complement is a *prerequisite* for *gjøre*-replacement to be licit. Note that when these modals take infinitival complements, *gjøre*-replacement is impossible, and the modal must once again be repeated:

(31)

      a.   Du vil komme, vil/*gjør du ikke det?
             you want come, want/do you not that
             'You want to come, don't you?

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[41]Not all speakers of Norwegian accept this kind of replacement, however; typically, speakers of non-standard dialects of Norwegian are more 'liberal' than speakers of standard dialects in this respect. To complicate matters even further, some speakers accept *gjøre*-replacement with *ville,* but not with *kunne.*

> b.   Du kan snakke Fransk, kan/*gjør du ikke?
> you can speak French, can/do you not
> 'You can speak french, can't you?

Recall also that these are the only two modals, root or epistemic, that passivize in Norwegian, albeit marginally. The data (originally from Lødrup 1996) are repeated here for convenience as (32):

(32)

> a. Leksen må kunnes i morgen.
> The lesson must can-PASSIVE tomorrow
> 'You should know your lesson by tomorrow.'

> b. Dette må ikke bare ønskes, det må villes.
> This must not only wish-PASSIVE, it must will-PASSIVE
> 'You must not only wish this, you must want it.'

Importantly, only in those cases where these two modals behave in a manner reminicent of ordinary transitive verbs, with an agentive subject and a nominal or clausal direct object, may they undergo passivization (Öhlschläger 1989:59, footnote 12 makes a similar remark about German modals). With a bare infinitival complement, passivization is unacceptable. Adding the infinitival marker *å* makes the construction slightly better, but it is still dramatically worse than the sentences in (32)); cf. (33).

(33)

> a. * (??Å) sykle må kunnes i morgen.
> to ride a bike must can-PASSIVE tomorrow
> 'One must know how to ride a bike tomorrow.'

> b. * (??Å) bli danser må ikke bare ønskes, det må villes.
> to become dancer must not only wish-PASSIVE, it must will-PASSIVE
> ' One must not only wish to become a dancer, one must want it.'

Furthermore, recall that the modal *kunne* 'can' may occur in the imperative, but crucially, only when it takes a DP complement; cf. (34)a. When it takes an infinitive complement, the imperative becomes impossible; cf. (34)b:

(34)

> a. Kunn dette diktet til imorgen!
> know this poem by tomorrow
> '(You must) Know this poem by tomorrow!'

      b. *Kunn sykle til imorgen!
        know ride-a-bicycle by tomorrow
       '(You must) Know how to ride a bicycle by tomorrow!

That is, *kunne* and *ville* accept *gjøre*-replacement, like lexical verbs, exactly when they take proper (DP/CP) arguments as complements[42]. Secondly, they may passivize, like lexical verbs, exactly when they take proper arguments as complements. Thirdly, the modal *kunne* occurs in the imperative exactly when it takes a proper argument DP as a complement. Crucially, when these modals take infinitival complements, they pattern with the other modals, not with lexical verbs, in all these respects.

      Thus, at this point, we have two possibilities. Either we are dealing with two pairs of homonyms *kunne* 'can' and *ville* 'want-to', where the versions that accept *gjøre*-replacement, passivize and occur in the imperative are in fact lexical transitive verbs. In addition, they have another version that is grouped with the other modals and with perfect auxiliaries. Or, alternatively, we are dealing with two modals that display radically different behavior depending on their complement. I find the latter possibility extremely unlikely and I will discard it here. Thus, we are left with the assumption that the root modals *kunne* and *ville* have main verb versions. This is exactly what I will propose.

      Roberts and Roussou (2000) state that "Ščur (1968) (cited in Plank 1984) points out dialectal examples where *can* and *will* survive as lexical verbs [...]". Evidently, this is the case even in Norwegian. The Norwegian cognates of *can* and *will*; i.e. *kunne* and *ville,* display main verb-like behavior exactly when they take a proper argument, that is, exactly when they function like ordinary transitive verbs. The reason for this, I claim, is that they are in fact ordinary transitive verbs.

      Thus, I want to assume that the modals *kunne* and *ville* come in main verb versions, which accept *gjøre*-replacement, passivize, and w.r.t. *kunne,* occur in the imperative. It is implied by this statement that I consider the second version of *kunne* and *ville*, which take infinitival complements and pattern with other modals and perfect auxiliaries, as non-main verbs; hence, as modal *auxiliaries*.

      Since the "tags-test" has proven useful to separate a main verb version of *kunne* and *ville* from an auxiliary version, I propose that this test can be utilized to determine the status of modals with non-verbal small clause complements as well. It has sometimes been argued (cf. Barbiers 1995) that the modal in these constructions must be a main verb, since there is

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[42] I should mention that not all speakers allow for *gjøre*-replacement in the case of *kunne.*

no other verbal predicate of which the modal may be an auxiliary. However, the *gjøre*-replacement test shows that the modal in these constructions is in fact an auxiliary as well:

(35)

    a. Jon må hjem, må/*gjør han ikke det?
      Jon must home, must/does he not that
     'Jon must go home, mustn't he?'

    b. Marit vil på kino, vil/*gjør hun ikke det?
      Marit wants to movie, wants she not that
     'Marit wants to go to the movies, doesn't she?'

This means that a Norwegian modal auxiliary accepts non-verbal small clause complements in addition to verbal complements. The tags-test, supported by the passive and imperative data, shows that there exist modal main verbs in addition to modal auxiliaries. Furthermore, the same test shows that modals with non-verbal small clause complements are auxiliaries, even though there is no main verb to which they could be an auxiliary. Norwegian grammar does evidently not distinguish categorically between modals with non-verbal small clause complements and modals with infinitival comeplements, judging from the *gjøre*-replacement test. However, whenever a modal *kunne* or *ville* occurs with a DP/CP complement, Norwegian grammar recognizes the modal as a transitive main verb instead of a modal auxiliary.

    A note of caution is in order. With ordinary lexical verbs, *gjøre*-replacement is obligatory. This is not the case with the main verb versions of *kunne* and *ville,* since even when they function as main verbs, *gjøre*-replacement is not obligatory. I have no explanation for this fact. Nevertheless, the passive and imperative data lend strong support to the hypothesis that there exist modal main verbs i Norwegian.

2.3.3 *Summing up our findings so far*

Summing up the syntactic properties of Norwegian modals that we have examined in this section, we find that these properties can be collected into three different bundles. There are properties that apply to all modals (whereof some do not apply to most other verbs), there are properties that apply to root modals only, and there are properties that apply to the modal main verbs *kunne* 'can' and *ville* 'want-to' only.

Syntactic properties of Norwegian modals:

Pertaining to all modals:

> a. Modals resist replacement by the pro-verb *gjøre* in elliptical constructions like "do-so" constructions and tag-questions (exception: main verb modals *kunne* and *ville*) However, modals accept VP-pronominalization of their infinitival complement.

> b. Modals take bare infinitival complements (without the infinitival marker *å*[43]).

> c. Modals with preterite morphology take perfect complements on a counterfactual reading.

> d. Modals lack present participles.

Pertaining to root modals but not to epistemic modals:

> e. Root modals take small clause adverbial directional locatives as complements.

> f. The complement of a root modal may be pseudoclefted if it has a directed deontic reading.

Pertaining to modal main verbs *kunne* and *ville* only:

> h. *kunne* and *ville* take proper arguments as complements (*kunne:*DP; *ville*:CP)

> g. *kunne* and *ville* accept replacement of proverb *gjøre* 'do' in elipsis.

> i. *kunne* and *ville* may marginally passivize (and *kunne* occurs in the imperative).

2.4   Summary and revised inventory

2.4.1   Examining our results

Although Norwegian and other Scandinavian modals are not as different from other (or lexical) verbs as their English counterparts, there exist certain properties that apply to modals and not to (most) other Norwegian verbs. Summing up the morphological, semantic and syntactic characteristics of Norwegian modals, what serves to morphologically distinguish modals from most other verbs in Norwegian is that modals are preterite-present verbs. Only one (main verb) modal employs an imperative form. Root modals are more comfortable with

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[43] There exist constructions where this marker is obligatory even for a "complement of a modal", notably pseudoclefts, that constitute an exception to this generalization:

> (i)   Det du skal, er å legge deg.   'What you should (do), is to get to bed'
> (ii) Noe du virkelig kan, er å strikke.   'Something you really can (do), is to knit'

nonfinite forms, although there exist infinitival epistemic modals, as well as epistemic readings of perfect participle modals (in non-standard dialects). As the major semantic characteristic of Norwegian modals, we listed that all modals have both root readings and epistemic readings.

As regards other semantic, as well as syntactic properties of Norwegian modals, we have seen that there are several properties that apply to some modals and not to others. This awareness is crucial. Without an accurate semantic and syntactic description, important premises for our analysis would be merely conjectures. Several works on modals are flawed by the author's tendency to support his or her analysis by invoking some property found with some modals only, with the implicit or explicit assumption that this property carries over to all modals. As an important example we could mention that it has often been assumed that root modals denote two-place relations whereas epistemic modals denote one-place predicates. We have seen that this is not correct. Although epistemic modals always have one-place predicate readings and dispositional modals are always two-place relations, any deontic modal may be construed as either a one-place or a two-place predicate. Likewise, there are several syntactic properties that apply to some modals only.

As a result of our investigation so far, we may sum up the semantic and syntactic characteristics of Norwegian modals in a figure like the following (note that main verb modals have no present participle either, although this is suggested by the figure):

Semantics ➝ Syntax: ↓	Two-place reading only	Two-place reading only	Two-place & one-place reading	One-place reading only
Imperative; Accepts do-replacement; Takes proper arguments; Passivizes	***kunne* main** *kunne* main *ville* main			
Takes Advp/PP complements; Accepts pseudo-clefted complement;		**Dispositional root:** *kunne*ABILITY *ville*	**Deontic root:** *burde kunne måtte skulle*	
Takes bare infinitival complements; Modal_PRET takes perfect complement; Lacks present participle;				**Epistemic** *burde kunne måtte skulle ville*

At this point, let us review the landscape of Norwegian modals once more. So far, we have reached the conclusion that there exist main verb modals and modal auxiliaries. Furthermore, among the modal auxiliaries, we have epistemic (encompassing epistemic and evidential) modals, and root modals, encompassing deontic and dispositional modals. This gives us a picture like the following:

(36)

```
                        Norwegian modals
                       /               \
          Modal main verbs            Modal auxiliaries
          Kunne 'know'               /                \
          Ville 'want-to'          Root            Epistemic (wide sense)
                                  /    \           /              \
                          Deontic   Dispositional   Evidential      Epistemic
                          Burde 'should'   Kunne 'can/know'   Skulle 'be supposed to'   Burde 'should'
                          Måtte 'must'⁴⁴   Ville 'want to'                              Måtte 'must'
                          Kunne 'may'                                                   Kunne 'may'
                          Skulle 'be required to'                                       Ville 'will'
```
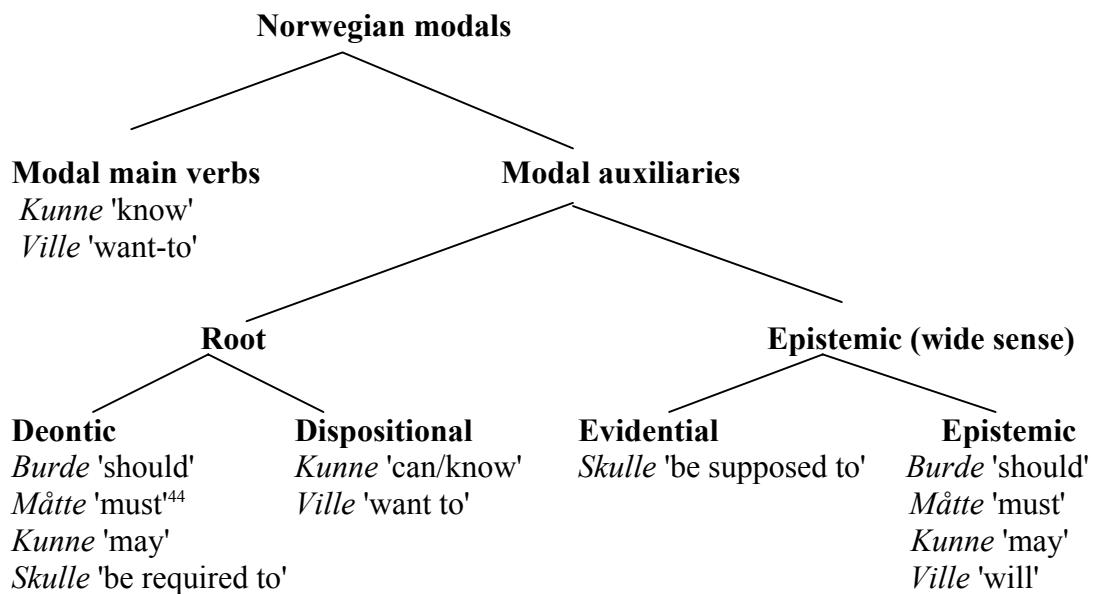
2.4.2 Three potential candidates

There are three verbs that keep popping up as possible 'modal candidates' in my investigation of Norwegian modals. These verbs are *få* 'get', *behøve* 'need', and *trenge* 'need'. We will consider each of these candidates. Note that the latter two have very similar properties.

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[44] One use of *måtte* that has not been mentioned at all in this investigation, is the 'hypothetical' use, where *måtte* is used like a subjunctive marker; e.g. *...de situasjoner som måtte oppstå* 'those situations that might occur', *...når det måtte bli aktuelt* 'when it turns out to be due; i.e. in due time' , *...den som måtte ha noe å innvende,* 'those who might want to object'. This use of this modal is mentioned in Faarlund, Lie and Vannebo (1997: 603) as somewhat rare, but in fact, I have noticed that politicians use it quite frequently. This specific reading of *måtte* expresses potentiality or possibillity, and it is tempting to compare this situation to the situation in Danish, where there are two different uses of *måtte*. The Danish modal *måtte* notably displays two distinct (root) readings; one denoting permission and one denoting obligation (cf. Vikner 1988:5); the version denoting permission does not have an epistemic reading. However, the 'potential' reading of the Norwegian modal *måtte* is confined to constructions like the ones mentioned; where *måtte* seems to work shift as a subjunctive, and it never denotes permission. Falk and Torp ([1903-06] 1992:491) describes the meaning of potentiality as a third, distinct meaning in old Norse, in addition to permission (which is retained in Danish) and necessity; which is a later development than 'permission'. They further describe the potentiality reading as lost; a claim that needs to be modified, since this reading is certainly retained in 'subjunctive' surroundings. On the other hand, one may agree that it is a relict, as it needs exactly these surroundings to give the reading of potentiality.

Få is mentioned in Faarlund et al. (1997:528) as a verb with 'clearly a modal meaning' (cf. also Lødrup, 1996:fn. 2). It seems to belong to the deontic modals semantically (see van der Auwera, 1999 for the Swedish modal *få*), in that it frequently expresses permission, and in general, *få* is interchangeable with permissive *kunne* 'can'. Like the 'proper' modals, it lacks a present participle (*fående), it takes bare infinitival complements (cf.(37) a), and it may take a perfect participle as a complement (cf. (37)b). Moreover, like all root modals, it accepts a pseudoclefted complement (c), and it may take an AdvP/PP complement (d). It also has the core properties of main verb modals, in that it passivizes (e), takes proper arguments (f), and accepts *do*-replacement; the latter most readily when it has a proper argument complement, like the main verb modals. It allows for a two-place predicate reading (a) as well as a one-place predicate reading (g), like the deontic modals. Finally, it employs the imperative (h). In short, it seems to have nearly all properties of main verb modals and modal auxiliaries.

(37)

a. Fikk du gå på kino?
  got you go to cinema
  'Did you get to go to the movies?'

b. Jeg fikk skiftet olje på bilen[45].
  I got changed oil on car-DEF
  'I had an oil change on my car.'

c. Det eneste Jon får, er å gjøre lekser.
  the only-thing Jon gets, is to do his homework
  ' The only thing Jon gets to do, is his homework.'

d. Han fikk ut i verden for å lære (from Faarlund et al 1997).
  he got out in world-DEF to learn
  'He got to travel around the world to learn.'

e. Billetter fås ved inngangen.
  tickets get-PASSIVE at the entrance
  ' One can get tickets at the entrance.'

f. Marit får ikke kake/kjøre, får/gjør hun?
  Marit get not cake/drive, get/does she
  'Marit doesn't get cake/to drive, does she?'

---

[45] Although this is not mentioned in Faarlund et al. (1997), *få* is actually somewhat different from modals in this particular respect. Remember that modals must have preterite morphology to take a perfect participle as a complement. Not so for *få,* cf. (i)

(i)   Jeg får skiftet olje på bilen.
        'I am getting an oil change in my car'

g. Det får komme ti gjester i fødselsdagen din.
   there get come ten guests in birthdayDEF your
   'There may come ten guests to your birthday.'

h. Få deg en jobb!
   get you a job
   'Get yourself a job!'

However, it is a well-known fact among Norwegian lingusts that *få* is used in so many different meanings in Norwegian that it would be surprising if at least one of the uses did not turn up with the 'right' property in each case, which amounts to saying that the data in (37) are best described as a display of several different, homonymous verbs with varying properties. Thus, there exists an ordinary transitive verb *få* meaning 'receive' ((37) e and the first reading of f), an 'active' verb *få* meaning roughly 'achieve, manage to' (one possible reading of (37)b, also, (37)h), a non-active verb *få* ((37) b and d) meaning that the event denoted by the complement VP takes place to the advantage or disadvantage of the subject (cf. Lødrup 1996b), in addition to the *få* that resembles the deontic modal *kunne,* meaning 'be allowed' (which is the reading of (37) a, c, g and the second reading of f).

Obviously, the fact that the form *få* corresponds to a range of different verbs is not in and by itself enough to dismiss it from the class of modals. However, there is another major flaw jeopardizing the candidacy of *få* as a modal, notably that it seems impossible to get epistemic readings with this verb[46]. Now, since we have listed this as an important semantic feature of modals - in fact, the only property distinguishing all modals from other verbs - I am reluctant to count *få* among the proper modals; in fact too reluctant to admit to *få* membership in the class of Norwegian modals.

The next two candidates that should be examined are *behøve* and *trenge,* both mean 'need' (mentioned in Faarlund et al. 1997:600; Thráinsson and Vikner 1995:54 mention Danish *behøve*; van der Auwera 1999:11 mentions Danish *behøve*, Dutch *hoeven* and German *brauchen*). These two verbs have some interesting properties. For starters, they evidently have very differing properties, depending on whether or not they are used in combination with negation *ikke* 'not'. The non-negated use have less auxiliary-like or modal-like properties. For instance, this is very striking when it comes to possible one-place or two-place readings, as

---

[46] One possible exception is (i):
(i)   Det får bli deg som blir vår neste statsminister.
It get become you who become our next prime minister
'I guess you should be our nexct prime minister'
However, my intuition is that this is still a permissive reading. And anyhow, this is the only construction where I

the negated version may have one-place (i.e. non-directed deontic) readings as well as two-place (directed deontic) readings, while the non-negated version has only the latter, cf. (38).

(38)

    a. Du trenger/behøver ikke (å) pakke den inn.
      you need   not pack it in
      'You need not wrap it/There is no need to wrap it.'

    b. Du trenger/behøver * (å) pakke den inn[47].
      you need   to pack it in
      'You need to wrap it/ #It is necessary to wrap it.'

The difference between the negated and non-negated version of *behøve/trenge* is also striking in their ability to take bare infinitival complements, as the negated version optionally takes bare infinitivals or infinitivals with the infinitival marker *å*, while the non-negated version takes only the latter, cf. (38) (see also Johannessen, 1998:87). Perfect participle complements are dubious with both negated and non-negated versions; likewise, AdvP/PP complements are marginal in standard dialects, but OK in some non-standard dialects. For the latter property there is once again a difference. Though AdvP/PP complements are unacceptable for both the negated and the non-negated versions in the standard dialects of Norwegian, the difference is striking as regards the *degree* of acceptability (cf. (39)a vs. b). Again, the negated version is definitely better than the non-negated version; i.e. the negated version displays more of a modal-like behavior. Both versions accept *do*-replacement, unlike the deontic modals, but the negated version seems more ready to allow for repetition in tags (c vs. d). Both versions take proper arguments as complements (e), both versions accept pseudoclefted complements (f), both versions may marginally passivize (g). Note that in all these uses, non-negated *behøve* sounds more archaic than non-negated *trenge* for most Norwegian speakers. Both negated and non-negated versions are equally good or bad as present participles, since *trenge* does employ a present participle, whereas *behøve* does not (*trengende, *behøvende*).

(39)

    a. ?Du behøver/trenger ikke på skolen i dag.
      you need   not to school today
      'You need not go to school today.'

---

have found anything resembling an epistemic reading of this verb.
[47] Actually, although *behøve* is quite fine in its negated version, many speakers would never use it in its non-negated version at all, since it has a very archaic ring to it. *Trenge* on the other hand seems quite fine in both versions, negated or non-negated.

b. * Du behøver/trenger på skolen i dag.
   you need   to school today
   'You need to go to school today.'

c. Jon trenger/behøver ikke (å) spise først, gjør/trenger/behøver han vel?
   Jon need   not (to) eat first, does/need he well (=disc.particle)
   'Jon need not eat first, does he?'

d. Jon trenger/behøver å spise først, gjør/trenger/??behøver han ikke?
   Jon needs   to eat first, does   needs   he not
   'Jon needs to eat first, doesn't he?'

e. Du trenger/behøver (ikke) denne sprøyten.
   you need   (not) this injection
   'You (don't) need this injection.'

f. Det eneste Jon (ikke) trenger/behøver, er denne sprøyten.
   the only   Jon (not) need   is this injection
   'The only thing Jon (doesn't) need(s) is this injection.'

g. Det trengs/?behøves (ikke) mer lys her.
   there   need-PASSIVE more light here
   'We need more light here.'

In short, the negated versions of *trenge/behøve* definitely show more modal-like behavior than their non-negated counterparts, although they seem dubious as regards some of the syntactic properties associated with modals. The final and perhaps crucial reason to dismiss non-negated *trenge/behøve* as possible modals is that they do not have any epistemic reading, unlike their negated versions, cf. (40).

(40)

a. Jon trenger/behøver ikke (å) være morderen.
   ' Jon need not be the killer (epistemic/root reading OK).'

b. Jon trenger/behøver å være morderen.
   'Jon needs to be the killer (i.e. non-epistemic reading only).'

Summing up, there are two good reasons in the semantic domain to support the hypothesis that *trenger ikke/behøver ikke* 'need not' are modals. Firstly, they have both root readings and epistemic readings (which is a crucial feature separating modals from other verbs), and secondly, they have both one-place (non directed deontic) and two-place (directed deontic) readings. The syntactic property that first and foremost supports the candidacy of these two verbs as modals is their ability to take bare infinitivals. The *gjøre*-replacement facts and the

ability to take AdvP/PP complements seem less clearcut, but as we have seen, even here negated *trenge/behøve* makes a much stronger case than its non-negated counterpart[48].

As mentioned above, negated *trenge/behøve* are able to take proper arguments, they may passivize, and they accept *do*-replacement, like their non-negated versions. In the investigation of Norwegian modals above, we pointed out that these are properties normally associated with transitive verbs, and that modals with proper argument complements therefore should be considered transitive lexical verbs. Does that mean that negated *trenge/behøve* should be considered transitive lexical verbs too? Not exclusively. Remember that non-negated *trenge/behøve* have all the properties of lexical transitive verbs. There is of course no reason to believe that there exists a ban against negating these two transitive verbs, and that the transitive verb properties should not carry over to the negated version. Thus, exactly the main verb version of negated *trenge/behøve* obligatorily has the two-place reading, e.g. when negated *trenge/behøve* take proper arguments as complements, the two-place reading is the only possible reading. But in addition, the negated version of *trenge/behøve* has aquired certain modal-like or, if one prefers, auxiliary-like properties, like e.g. the epistemic reading, which is of course unavailable in those instances where negated *trenge/behøve* function as transitive verbs (in the passive or when taking proper arguments).

There exists yet another, more global reason to count the auxiliary-like version of *trenger ikke/behøver ikke* as modals. This is the fact that many languages, i.e. Germanic, Romance, other Indo-European languages as well as non-Indo-European languages, employ a similar negated modal. Öhlschläger (1989:3) gives a list of authors that have treated (*nicht*) *brauchen* as a modal in German, and Roberts and Roussou (2000) claim in fn. 4 that "[M]odal *need* is a negative polarity item in present-day English".

Furthermore, van der Wouden (1996) examines the properties of the 'Negative Polarity Items' German *brauchen*, Dutch *hoeven* and English *need*, while van der Auwera (1999) studies 'negative modals' across a wide range of languages. Particularly van der Wouden (1996) investigates the striking fact that in a lot of these languages, the 'negative modal' displays a range of semantic and syntactic properties different from their non-negated counterpart, such as lack of agreement, the ability to take bare infinitival complements, and/or specific readings.

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[48] Faarlund et al. (1997) and Thrainnson and Vikner (1995) fail to observe that there are important differences between the negated and the non-negated version of *behøve* (*trenge*), although all their examples employ the negated version only. Faarlund et al. (1997) is in part sharply criticized by Johannessen (1998) for not observing the obvious rule that negation is what triggers the possibilty to omit the infinitival marker *å*.

The 'functionalist' as well as the 'formal semantic' explanation for the development of such negative modals is that there is in some sense a gap in the paradigm for deontic modals. The reason for this is that the combination of *måtte* 'must' (and other modals denoting something like 'necessity') with negation renders the scopal relation between the modal and the negation ambigous:

(41)

> Marit må ikke gå ut.
> 'Marit must not go outside.'
>
> I. What Marit <u>must</u> do is [not [go out]]].   ¬p
> II. It is <u>not </u>the case that Marit [must[go out]].   ¬ p

In many languages, the latter sense may be expressed by a specialized negative polarity item meaning something like *need.*

All in all, in my opinion, *trenger ikke/behøver ikke* makes a much stronger case for modal status than the first candidate, *få.* This is the case in spite of the fact that *få* seems to have nearly all syntactic properties associated with all types of root modals. Its major shortcoming, however, is that it does not allow for an epistemic reading, unlike *trenger ikke/behøver ikke.* I will opt for the solution that the latter two should in fact be considered true modals in Norwegian, although they lack certain properties that are normally associated with modals. They belong to the deontic modals in their root reading, and their epistemic reading is, informally[49]: It is not the case that [it must be true that [p]]. In addition, these two modals have 'lexical dublets', that are simply the negated transitive verbs *trenge* and *behøve.* This complicates the picture a great deal, but for the purpose of accuracy, we include *trenger ikke/behøver ikke* in our investigation as well.

2.4.3 Revised inventory

At this point, we revise our inventory so as to include the two new members of the class of Norwegian modals. Hence, the following picture of Norwegian modals is equal to the figure in (36) in all relevant resepects, except that we have added the two new members *trenger ikke* and *behøver ikke* in the deontic domain and the epistemic domain. For the sake of exposition and clarification, we have also added their lexical *Doppelgänger* in the set of main verb modals. However, the only reason for counting *trenge* and *behøve* as 'modal main verbs' is the

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[49] Cf. section 4.6 for a fuller description of the semantics of these modals.

fact that they have modal auxiliary versions; or rather, the negated versions of these two main verbs have deontic root counterparts.

(42)

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                          Norwegian modals


Modal main verbs                        Modal auxiliaries
Kunne 'know'
Ville 'want-to'
Trenge'need'
Behøve 'need'         Root                              Epistemic (wide sense)


        Deontic           Dispositional      Evidential              Epistemic
        Burde 'should'    Kunne 'can/know'   Skulle 'be supposed to'  Burde 'should'
        Måtte 'must'      Ville 'want to'                              Måtte 'must'
        Kunne 'may'                                                    Kunne 'may'
        Skulle 'be required to'                                        Ville 'will'
        Ikke trenge 'need not'                                         Ikke trenge 'need not'
        Ikke behøve 'need not'                                         Ikke behøve 'need not'
```

Of these modals, one might quite justifiably claim that the main verb modals should be left out of the remainder of the investigation, since they are not modal auxiliaries. However, since so many authors have argued for specific analyses based on the properties of two of these modals, notably *kunne* and *ville,* it is important to be aware of their position in this picture. Thus, we will include them in our inventory of Norwegian modals even in what follows.

3   A Survey of recent proposals

3.1   Some central notions

As mentioned in the introduction (section 1.1), the literature on modals covers a wide range of topics. In the following survey of recent proposals, I will focus on two questions in particular. Firstly; whether or not the author suggest that modals assign a *semantic role* to their subjects, and secondly, whether or not the author proposes a specific (base generated) *insertion site* for the modal. As a preliminary to this discussion, I address the two notions *theta role* (θ–role) and *functional projection*, two theoretical constructions within the Principles and Parameters Theory (the P&P framework) that have proven themselves to be particularly important within the literature on modals.

3.1.1   Theta roles

Most of the works quoted in the following survey of recent literature on modals is conducted within the P&P framework. In this literature, a much debated question has been the argument structure and the theta-properties of modals; specifically: Do modals assign theta-roles or not? Hence, an important issue is how to understand the term *theta-role* (θ–role), since our conception of this term will influence on how we may choose to answer this question. Unfortunately, most authors investigating the possible θ–properties of modals never address explicitly the semantic nature of the theta-roles potentially present in modal constructions, but I will present here some widely held assumptions that serve as an implicit background for most of the proposals in this survey.

For linguists studying the relation between verbs and their arguments, a crucial question has always been whether or not it is possible to make semantic generalizations about (NP/DP) arguments occurring in the same position of different verbs, e.g. if there exists anything like prototypical subjects (e.g. *agent*) or prototypical objects (e.g. *patient*), displaying specific properties that might be attributed to the subject-*position* and the object-*position* respectively. A much quoted hypothesis on this topic within the P&P framework is Baker's (1988) Uniformity of Theta Assignment Hypothesis (UTAH), which proposes a one-to-one relation between syntactic configurations and semantic roles. A more recent, non-Chomskyan, approach to this question, an approach known as *Construction Grammar* (cf. e.g. Goldberg 1995), represents what might be seen as one extreme of the continuum of views on

this question, in that it argues that proto-properties of specific argument positions stem from the mental existence of so-called (*argument structure*) *constructions*; i.e. "form-meaning correspondences that exist independently of particular verbs. That is, [...] constructions themselves carry meaning, independently of the words in the sentence. (p.1)" Within such an approach, the verb itself is seen as an element that might *enrich* the construction, but it is not the verb that is primarily responsible for the given proto-properties (or thematic properties) of specific argument positions in a specific construction, since the the semantic properties of any position in a given construction will be (to a large extent) predetermined.

At the other extreme in the aforementioned continuum of views, we find works like Marantz (1984), who argues for *Individual Thematic Roles* (term due to Dowty 1991); i.e. that the thematic (i.e. semantic) roles assigned by a specific verb is unique to that particular verb; cf. e.g. Marantz (1984:31):

> [...] each semantic role assigner may, in principle, assign a unique role or a unique set of roles. For example, although their logical objects are both things acted upon so that they move, *throw* and *push* need not assign precisely the same semantic role; that is, the throwee and pushee roles may be distinct[1].

A recent work dealing with argument structure and thematic roles is Arad (1998). In her survey of various theories of lexical specification, she states the following (p. 21):

> The term *thematic relations* is introduced by Gruber (1965) to refer to the interpretation of NP arguments. These relations include, primarily, a *theme*, that is the NP which is understood as going through some motion (hence the term thematic relations), as well as *agent, location, goal, source* (among others). Further developments of these relations are in Fillmore (1968)[2] and Jackendoff (1972).

Arad herself choses to deal with theta-roles in aspectual terms. She concludes that there exist syntactically encoded theta-roles, but roles of a more abstract kind than what has often been assumed (p.59):

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[1] Marantz does not entirely dismiss terms such as 'agent' and 'theme', as he still sees them as "semantic role classes". However, these classes are not linked to positions such as the subject or direct object position (p. 31): "Nevertheless, although semantic role assigners may assign their own unique roles, there are, apparently, linguistically significant classes of semantic roles. I consider terms like 'agent' and 'theme' as naming such classes. On this view there is no reason to exclude a given semantic role, say that role assigned by *swim down the river*, from being both an agent and a theme, that is, from belonging to more than one semantic class." And he continues in footnote 6: "Alternatively, these terms may be seen as naming features of semantic roles. For example, the logical subject of *run* in *Elmer ran away from the rabid porcupine* might be [+agent], since *Elmer* is an active participant of the running, and [+theme], since *Elmer* undergoes a change of state (from a position near the rabid porcupine to a position farther away).

[2] Goldberg (1995:6 ff) states that "Construction Grammar has grown largely out of work on frame semantics Fillmore (1975,1977,1982, 1985)[...]"; the basic tenet of Construction Grammar is developed in Fillmore and Kay (1993), Fillmore, Kay and O'Connor (1988), Lakoff (1987), Brugman (1988), and Lambrecht (1994).

Aspect, or event structure, is that part of a verb's meaning which is relevant for its interface with syntax. Thematic roles are best characterized in aspectual terms. Building on Dowty's two proto-roles, I will take the proto-agent role to be an *Originator* of an event, and the proto-patient to be a *Measurer* of an event. Some part of the mening of a verb, in particular, the part which is related to its event structure, is given by the syntax in which the verb is projected. Syntactic positions themselves are associated with some aspectual interpretation which is assigned to arguments by virtue of occupying that position[3].

Within the literature on modals in the Chomskyan framework, authors typically remain silent on the *specific* theta-role potentially assigned by a modal. This is a practice not restricted to works on modals; it is quite common to invoke the term *theta-role* (or θ–role) without ever going into the specific role (agent, patient, experiencer etc.) one has in mind. In fact, it is not necessarily seen as part of θ-theory itself to address this type of question, cf. e.g. Culicover (1997:21):

The θ–roles assigned by a given lexical item form part of the lexical entry of that item in the Lexicon. [...] The question of what these θ–roles are, how they differ from one another, and what the possible θ–roles are is not generally taken to be the responsibility of θ–theory in a narrow sense. The function of θ–theory is to explain the syntax of θ–roles, that is, to explain how syntactic structure determines the assignment of θ–roles to particular constituents of the sentence. For example, θ–theory seeks to show how the object θ–role of a verb is assigned to the direct object, without accounting for the fact that the object θ–role of one verb (say *arrest*) is different from that of another verb (say *resemble*).

Two core ingredients of theta-theory within the Government and Binding (GB)-variety of the P&P framework are the two principles known as *the Projection Principle* and the *Theta-criterion* (Chomsky 1981: 29,36). Since several of the proposals included in the survey are cast in a GB-version of P&P, I state these two principles below to facilitate a better understanding of the analyses described[4]:

The Projection principle:
Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

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[3] Arad investigates what types of theta-roles that are relevant for syntactic realization, e.g. (p 261): "Experiencers have no relevance for syntactic realization. [...] any argument can be interpreted as an experiencer under certain circumstances. (p. 225): [m]aking reference to the "experiencer" in the theta-grid is misleading. (p 124): ...we did not come across any evidence which indicates that agents and causers are in different structural positions. I suggest that we should distinguish not between agents and causers as such, but between predicates selecting for an agent and predicates which allow a causer."
[4] The Theta-criterion is retained in the Minimalist Program version of P&P, although the Projection Principle (and the level of D-structure) is by and large abandoned; cf. Chomsky (1995a:188-189).
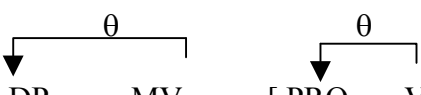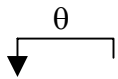
The Theta-criterion:

> Each argument bears one and only one θ–role, and each θ–role is assigned to one and only one argument.

The projection principle simply states that (subcategorized) θ-roles cannot disappear or be added during the course of a syntactic derivation. The theta-criterion (or θ-criterion) states that the relationship between arguments and theta-roles is 1:1. Particularly the latter principle, the theta-criterion, has proven to be an important issue within the recent literature on modals.

Within this literature, it is a widely held assumption that root modals, as opposed to epistemic modals, display a θ-relation to their subject; i.e. that the root modal, perhaps obligatorily, assigns a semantic role to its subject. E.g. in the sentence *John must stay in his office* there is a 'must-relation' between the complement *stay in his office* and the subject *John,* such that *John* is the one who *must something.* Since the complement lexical verb or predicate (in this case, *stay in his office*) is taken to assign a theta role to this subject as well, one has to come up with some kind of story to avoid violating the aforementioned θ-criterion, i.e. to avoid a situation where the one argument *John* receives two theta-roles. A much preferred approach of this kind is to analyze root modals as control verbs, whereas epistemic modals are analysed as rasing verbs. This is meant to capture the intuition that epistemic modals do not seem to assign a θ–role to their subject, a property attributed to raising verbs in general (cf. also the disussion on root modals as two-place predicates and epistemic modals as one-place predicates referred to in section 2.2.2). This can be illustrated as in (1) below.

(1)

a.　　 DP_{SUBJ}　 MV_{ROOT}　[PRO　　 V ...] = control verb

Jon　　　　må　　　　　　være på kontoret (obligation)
Jon　　　　must　　　　　be　in office-DEF
'John must stay in his office'

b.　　　 e　　　 MV_{EP}　　[DP_{SUBJ}　 V...]　= raising verb

Jon_I　　　 må　　　　 t_I　　　 være på kontoret (it must be the case that)
Jon　　　　 must　　　　　　 be in his office
'John must be in his office'

In the control structure, the base-generated subject of the modal obligatorily controls or gives reference to the PRO subject of the main verb. In the raising structure, the base-generated subject of the main verb raises to fill the subject position of the modal, but the relation between the modal and the subject in the latter case is purely a syntactic relation which does not signal an underlying semantic (θ-) relation.

We will subject this hypothesis to scrutiny in section 4.1. In the exposition of earlier proposals in section 3.2, we will look into how different authors position their analysis w.r.t. the 'control vs. raising' analysis of root and epistemic modals.

3.1.2 Functional projections

One might quite rightfully claim that one very central issue within P&P in the nineties has been the possible inventory of functional projections. Here Epstein et al. (1996:11 ff):

> A standard distinction exists in linguistic theory between contentful elements and functional elements. Word stems are contentful elements, whereas inflectional morphemes are functional elements. [...] In the Government and Binding framework, the distinction between contentful (or lexical) elements gradually took the following shape. Functional elements are generated as heads of independent phrasal projections. [...]The functional heads [...] consist of features associated with inflectional morphology.

The major 'piece de resistance' in a theory of functional projections has been the assumption that the inventory of functional categories and thereby the inventory of functional projections should be universal. Cinque (1999:52):

> If we ignore agreement and negation, the partial relative orders of functional heads for which there is overt evidence[...[5]] in different languages appear to be compatible with a single overall order. Thus, putting the partial relative orders of functional heads found into a single, more comprehensive, order seems to provide no contradiction, at least in a more careful examination. I take this to be significant, that is, nonaccidental. In the interpretation I suggest, this is so because the partial orders found overtly in different languages are subsequences of a single universal sequence of functional heads, present in all languages.

Numerous authors have disagreed with this hypothesis. An early protest is found in Iatridou (1990:552):

> The question that arises at that point is more general: are data from one language in favor of a functional projection sufficient for us to postulate that the same functional category exists in all languages? If the null hypothesis is that all languages are

---

[5] Cinque argues that this overt evidence is of one of the following four kinds: The order of "non-closing" (agglutinating) suffixes, the order of "closing" (inflectional) suffixes and auxiliaries, the order of functional particles, and the order of various combinations of these elements in mixed cases.

maximally alike, the answer is yes [...]. However, it unavoidably leads to an explosion of functional categories.

And such an "explosion" of functional categories has indeed taken place, cf. Cinque (1999:106)[6]:

> [T]he functional structure of the clause that we arrive at [...] is very rich; at first sight, outrageously rich:

> ***The universal hierarchy of clausal functional projection*** *(a second approximation)*
> [*frankly* Mood$_{speech\ act}$ [*fortunately* Mood$_{evaluative}$ [*allegedly* Mood$_{evidental}$
> [*probably* Mood$_{epistemic}$ [*once* T(Past) [*then* T(Future) [*perhaps* Mood$_{irrealis}$
> [*necessarily* Mod$_{necessity}$ [*possibly* Mod$_{possibility}$ [*usually* Asp$_{habitual}$
> [*again* Asp$_{repetitive\ (I)}$ [*often* Asp$_{frequentative\ (I)}$ [*intentionally* Mod$_{volitional}$
> [*quickly* Asp$_{celerative\ (I)}$ [*already* T(Anterior) [*no longer* Asp$_{terminative}$ [*still* Asp$_{continuative}$
> [*always* Asp$_{perfect\ (?)}$ [*just* Asp$_{retrospective}$ [*soon* Asp$_{proximative}$
> [*briefly* Asp$_{durative}$ [*characteristically*(?) Asp$_{generic/progressive}$ [*almost* Asp$_{prospective}$
> [*completetly* Asp$_{SgCompletive\ (I)}$ [*tutto* Asp$_{PlCompletive}$ [*well* Voice [*fast/early* Asp$_{celerative(II)}$ [*again* Asp$_{repetitive\ (II)}$ [*often* Asp$_{frequentative(II)}$ [*completetly* Asp$_{SgCompletive(II)}$

To maintain such a rich, hierarchally fixed inventory of functional projections, authors have come up with various ways of accounting for the fact that no language seems to overtly employ all functional heads in Cinque's list. Roberts and Roussou (2000):

> Let us notate a functional feature F that requires a PF-realisation [i.e. a phonological realisation] as F*. Parametrisation is seen as the random assignment of the diacritic * to features typically associated with functional heads. Where the diacritic is assigned to a feature, that feature, F*, must have a PF realisation. Again, * is assigned to F in the lexicon, following Borer's (1984) idea that parametric variation is a facet of the lexicon. The overall conception of the lexicon, then, is that it contains the following elements:

> a. Lexical items, specified as +/-V, +/-N, with PF and LF properties given.
> b. Substantive universals encoded as interpretable features of functional heads.
> c. * assigned in a language-particular fashion to (b).

> [...] Notice that under this view of variation there is no selection among the universal set of features. In other words, all languages have the same set of functional features; what varies is whether and how these features are realised in PF. This seems to be the null hypothesis and is in principle open to falsification, although Cinque's (1999) results suggests that the null hypothesis is correct. Thus there is no parametric variation in this respect.

---

[6] And still, this list leaves out some potential important functional heads menitoned elsewhere; p.(90): "All in all, there is some evidence that the different classes of root modal adverbs [...] enter into a systematic relation with the three distinct root modals isolated above, thus justifying the postulation of three distinct root modal projections, in the order: ...>Mod$_{volition}$ > Mod$_{obligation}$ > Mod$_{ability/permission}$..."

However, there are various ways in which authors have imagined this scenario. Say, e.g. that one would concede that 'there is no selection among the universal set of features'. One could still imagine that one overt element (e.g. a verb) could realize more than one functional head by means of insertion into one head and subsequent movement to another (e.g. Roberts and Roussou 2000). There is also another possible option where two or more features could be spelled out by the same head, cf. e.g. Bouchard (1995:388):

> [...] Tense in French is a strong morpheme, and so it licenses an independent syntactic node. The complex of features V+T occupies two nodes in syntax, one licensed by the features of T, one licensed by V. [...] Both the lower position of the V+T complex (the verbal position) and the higher position of the V+T complex (the Tense position) are licensed with respect to the semantic representation [...].In English, on the other hand, Tense is weak, so the V+T complex licenses only one node in syntax.

Thus, this would be an example of parametrization w.r.t. whether or not a certain Universal Feature F *licences a separate head H*. That is, either F is 'strong' and licences the projection of a separate functional head H, like Tense in French, according to Bouchard. Or, alternatively, F is 'weak' and must resort to being hosted by a head H which is licenced by some other F, as is the case for Tense in English, according to Bouchard, where Tense must be hosted by the head V licenced by the verb. In the latter case, F is a freeloader with no projection of its own, but it still is a universal feature, hence, it must be represented in the syntactic structure.

Furthermore, one might of course question the axiom that 'there is no selection among the universal set of features'. Here Åfarli (1995:140):

> There is a possibility that the functional structure of clauses is canonically given, such that all languages employ the same set of functional seeds [i.e. features]. I find this possiblity extremely unlikely and I leave it out of further consideration. The alternative possiblity is that the pool of possible functional seeds is universal, but that languages and even different clause types within a language actually employ a subset of seeds from this pool. In that case it is an empirical question whether a given seed is employed in some language or clause type.

Åfarli goes on to list two possible criteria that might constrain what is seen as empirical evidence for a functional projection:

> The empirical evidence for the number and kinds of functional seeds employed in a clause is possibly quite complex. Here, I will briefly discuss two simple criteria that may be relevant:
>
> (a) A clause type exhibits a functional morpheme, only if that clause type employs a corresponding functional seed (& projection).
>
> (b) A clause type exhibits a functional morpheme, if and only if that clause type employs a corresponding functional seed (& projection).

> (a) takes the presence of functional morphology as empirical evidence for the existence of a functional seed and projection, but it does not exclude the possibility that there exist functional seeds and projections without any morphological correlate. (b) excludes the latter possibility. (b) thus amounts to a kind of naive recoverability constraint to the effect that every functional seed, and in particular every covert functional seed, must somehow have a morphologically visible effect (which does not necessarily mean that the seed itsef is visible [...]).

Even within this type of approach, where each language selects from a pool of universal features, one could still maintain something along the lines of a universal hierarchy; here Thrainsson (1996:254[7]):

> Clausal architecture is determined by UG in the sense that UG defines a set of functional categories, $\{F_1, F_2, ... F_n\}$ that languages "select" from. For any functional categories F_i and F_j, the sequence will be uniform whenever they occur, i.e. if L_1 and L_2 each instantiate both F_i and F_j and F_i c-commands F_j in L_1, then F_i c-commands F_j in L_2.

And of course, the possibility exists that not all and every functional category or feature is subject to selection, cf. Epstein et al. (1996:fn 9):

> One way to think of this is to assume that a small number of inflectional features are present in all languages of the world, whereas a larger number may be relevant to specific languages only[8].

Thus, the locus of parametrization w.r.t. Functional Categories will be different, depending on which of these assumptions one assumes as premises for one's theory. For expository purposes, we will list some of the assumptions alluded to above.

(2)

> a. Functional Categories are not subject to selection. All languages employ all Functional Categories in all clause types.

> a'. Functional Categories are subject to selection. Not all languages employ all Functional categories in all clause types.

---

[7] This is Thrainsson's "weak version" of *The Structural Uniformity Hypothesis, (SUH)*. I would also like to mention that Thráinsson (1996: 257) presents another hypothesis, The Limited Diversion Hypothesis which allows for a) selection of only certain Functional categories in each language; b) variation between clause types within one and the same language w.r.t. which Functional Categories are employed; and c) variation from one language to another w.r.t. the dominance relations between the functional projections hosting the Functional Categories.

[8] The note continues: "What is syntactically universal, however, is the way the presence of inflectional features determines movement and word order." I would also like to mention that Thráinsson (1996: 257) presents another hypothesis, The Limited Diversion Hypothesis which allows for a) selection of only certain Functional categories in each language; b) variation between clause types within one and the same language w.r.t. which Functional Categories are employed; and c) variation from one language to another w.r.t. the dominance relations between the functional projections hosting the Functional Categories.

b. Each Functional Category licences the projection of a separate functional head H in a syntactic structure.

b'. Some Functional Categories do not licence the projection of a separate functional head H1 in a syntactic structure. Instead, they are hosted by some other head H2.

c. Not all Functional Categories are spelled out. Only those categories that are marked F* (+phonological realization) in the lexicon of a given language must be given a phonological realization.

d. An F* (i.e. an F which requires a phonologcial realization) may be satisfied in one out of two ways. Either there exists a designated morpheme (e.g. a Tense morpheme) which is inserted directly into this position (satisfaction via Merge[9]). Or, alternatively, there does not exist a designated morpheme, and some other element raises to spell out the feature F* (e.g. in languages without designated Tense morphemes).

For instance, if we choose the assumptions in (2)a', b', c and d as the premises of our theory, the locus of parametrization (i.e the source of variation between two different languages) may be any of the following (where F is an arbitrary Functional Category)[10]:

(3)

Possible parametrization:

a'. $[F]$ v $[\neg F]$[11]   Language L selects for F or not.

b'. $[F=H1]$ v $[H2_F]$ Language L selects for F as a separate head or F is hosted by some other head[12]

c. $[F^*]$ v $[\neg F^*]$ Language L selects for F as spelled out or not.

d. $[F^*_{Move}]$ v $[F^*_{Merge}]$ F* is satisfied via Move or Merge in L.

The reason we have been dwelling on the question of functional projections here is, as already suggested in Cique's thirty-something functional projections above, that several authors have

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[9] In fact, there is a certain discrepancy in employing the term *insertion* together with the term *Merge*. Insertion encodes that some element is placed into a pre-existing slot in a phrase marker. However, the opertation Merge takes a pair of syntactic objects (SO_1 and SO_2) and replaces them by a new combined syntactic object SO_{1-2} ; cf. e.g. Chomsky (1995: 226).

[10] The present proposal will follow Åfarli (1995), Thrainnson (1996) and others in assuming that functional categories are subject to selection; some functional features are possibly universal to all languages, while others are language specific. I will also follow Åfarli (1995) in assuming that what counts as evidence for the presence of a specific functional projection in a given clause type is a visible effect; e.g. a functional morpheme, a morphological effect, or change in word order as compared to the unmarked word order. Cf. e.g. section 5.5.2, where it is proposed that Norwegian main clauses employ a Functional Projection lacking in (some) embedded clauses. Here, word order facts and possible interpretation are the visible effects.

[11] The formalism employed here simply follows the lead of Roberts and Roussou (2000). However, it will not be employed anywhere else in this dissertation and plays no role to the analyses presented here.

tried to account for the properties of modals by means of postulating specific functional projections that modals may occupy; typically, the modal is seen as constituting or spelling out the head of a designated functional projection; a ModP of some kind. The various readings and other properties of specific modals is thus taken to be side effects of the specific slot occupied by the modal in a given sentence. Different authors have taken different views on the specific, possibly designated slot(s) where modals may occur. In what follows, we will go into some proposals bearing on this and other questions.

3.2   Some earlier proposals

In this survey of some earlier proposals, I will focus in particular on the two questions already alluded to in the discussion above; i.e. firstly, the author's view on the possible θ-properties of modals and by association, the author's implicit or explicit adoption or rejection of the "control vs. raising" analysis, and secondly, the author's assumptions w.r.t. the specific insertion site/slot/functional projection occupied by the modal in the sentence structure. Some of the proposals in this survey address the diachronic development of English modal auxiliaries, and one might very well wonder about the relevance of these works for Norwegian modals. As already mentioned in sections 2.1 and 2.3, modals in present-day English exhibit a number of properties that do not apply to their Norwegian counterparts. However, I have also mentioned that modals in earlier stages of English resembled Norwegian modals in many respects; i.e. they displayed a number of properties that are retained by contemporary Norwegian modals. Proposals investigating the diachronic development of English modals, highlighting the differences between Old/Middle English modals on one hand and present-day English modals on the other, may poentially give a number of insights into the underlying differences between contemporary Norwegian and English modals as well.

The proposals are not presented entirely in a chronological order. However, I have started out with the oldest proposal (Roberts 1985) before I present the analyses building on this proposal (Roberts 1993), Roberts and Roussou (2000). Cinque (1999) comes next, since this poposal shares many of the assumptions with Roberts and Roussou (2000). Then we look at another relatively old paper, notably Vikner (1988), before examining Thráinsson and

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[12] In this case, one could imagine that F itself is not *; i.e. F does not require a phonological realization, but it might be spelled out anyway, as a 'free rider', if the host head also contains a functional feature F_2 that is marked * ; i.e. requires a phonological realization.

Vikner (1995), who build (in part) on Vikner's (1988) proposal. For the remainder of the chapter, chronological order is respected with one exception; thus, Barbiers (1995, 1999) precedes Lødrup (1996); Dyvik (1999) and Wurmbrand (1999), whereas Picallo's (1990) proposal constitutes the final proposal because it deals with Romance, not Germanic modals.

3.2.1 Roberts (1985)

Roberts (1985) conducts an investigation of the diachronic development of English modals in a Government and Binding version of P&P. He argues that the differences between present-day English modals and their Middle English counterparts can be traced back to a shifted value of one specific parameter (p.56):

> Now imagine a parameter P with the potential values [+F] and [-F]. For concreteness, take P to be agreement systems and [+F] to morphological agreement, with [-F] therefore syntactic agreement.

This shift was due to a number of (independent) changes, perhaps most prominently (p. 46):

> The frequent occurence of periphrastic constructions involving modals and *do*, combined with the impoverishment of agreement inflection led to a change in the agreement system in the sixteenth century. The change was from a morphological agreement system to a syntactic system. In other words, V no longer moved into INFL in tensed clauses in order to be morphologically governed by an agreement affix [...]. Instead, V [was] being syntactically governed in its base position by some element in INFL, an auxiliary or abstract agreement features (AGR).

This shift is illustrated in the following way (adopted from Roberts' (34)):

(4)

a. Middle English:Af [an agreement affix]morphologically governs V [V moves into INFL]
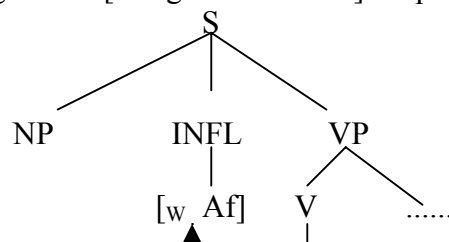
b. Modern English:[Abstract] AGR/Aux syntactically governs V[V does not move into INFL]
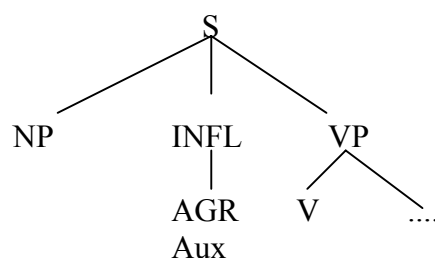
This shift is argued to be important to the specific characteristics of present-day English modals as compared to lexical verbs. Roberts argues that modals in Middle English were like all other verbs in that they were inserted in VP with the subsequent movement to INFL. But after the 16th century, modals were "reanalyzed as auxiliaries[13]" and came to be directly inserted into INFL. This shift had a range of consequences for the English modals. One important consequence was that modals lost their ability to assign proper ("main") θ−roles. This because of a condition on θ−role assignment (holding on S-structure) that Roberts proposes (Roberts' (17)):

(5)

> V assigns θ−roles iff V is governed.

Since INFL is an ungoverned position (p.30) in present-day English, as a result of the loss of morphological government, it follows that only modals, and not main verbs, can appear here. Main verbs assign θ−roles, and are thus confined to be inserted into the VP where they are governed by an auxiliary or an abstract AGR present in INFL. Modals, on the other hand, loose the ability to assign (main) θ−roles because they are banned from the VP. This proposal is not as circular as it may appear from this abstract, since Roberts supports his proposal with a range of empirical evidence; such as the apparent ability of (at least some) modals to assign θ−roles on earlier stages of English, the fact that Modern English modals, unlike their ancestors, lack infinite forms, and the observation that Modern English modals, unlike main verbs, precede negation; "assuming that negation and inversion are operations on INFL" (p.47).

Roberts finally introduces Zubizarreta's (1982) term *adjunct θ−role* to account for the "nature of the root/epistemic distinction in present-day English". Zubizarreta treat root modals essentially as modifiers, analogous to Jackendoff's (1972) agent-oriented adverbs. According to this account, both root modals and agent-oriented adverbs require an agent, i.e. they have a semantic argument (p.51):

> However, this argument is always the argument of some other predicate. So, given the θ−criterion, we are led to suppose that root modals and agent-oriented adverbs do not

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[13] Actually, Roberts states in fn 1 that he takes modals to be ordinary verbs. "The motive for proposing that modals are members of a separate category of auxiliaries, or are verbs marked [+Aux] is precisely the exeptional properties of modals compared to main verbs[...]." Roberts argues that these properties derive from the condition on modals to occur only in INFL, and that this condition allows us to continue to regard modals as verbs. Nevertheless, Roberts states several times that modals were reanalysed as auxiliaries. One should possibly take this formulation to be a metaphor alluding to the reanalysis of modals as base-generated in INFL.

assign θ–roles to their arguments. However, there is a modification relation between the root modal and the argument [...]. Zubizarreta captures this by proposing a different class of thematic relations: adjunct θ–roles. Adjunct θ–roles differ from 'main' θ–roles [...] in that they are not subject to the θ–criterion. So adjunct θ–roles can be assigned to some argument already bearing a θ–role. Also adjunct θ–role assignment is optional. [...] So root modals appear in ungoverned positions in present-day English and assign adjunct θ–roles to the agent argument in the clause in which they appear.

Although Roberts is somewhat vague on this point, he implicitly says that epistemic modals do not assign such adjunct θ–roles; that this is what constitutes the root/epistemic distinction. Roberts also assumes (p. 39) that Middel English (ME) modals did assign 'main' θ-roles to their subjects at least in some cases, as opposed to their modern English descendants.

W.r.t. the "control vs. raising" analysis, Roberts suggests (p. 37) that modals were raising verbs in Middle English:

Further plausibility is added to this idea by the fact that the equivalents of modals in a number of languages are raising verbs (e.g., most Germanic and Romance languages).

However, Roberts also provides examples that may be problematic to such an assumption, notably sentences with what later has become known as *quirky subjects*, i.e. "oblique Case-marked NPs associated with the subject of the complement clause" (p. 38). On the assumption that oblique Case is inherent, and that raising is motivated by the Case filter, there would be no need for the oblique NP to raise, thus, Roberts states, oblique Case-marked NPs are probably not raised, but base-generated as the subject of the modal, where it "controls the PRO subject of the complement"[14]. Hence, there is "the possibility that ME modals were raising verbs", However, "crucial evidence is lacking"[15].

What Roberts does not address, however, is why the oblique case marking of the modal co-varies with the case-requirements of the *embedded predicate* instead of the modal (which is the case at least in Modern Icelandic). It would be possible to find a theoretical solution to this. One might argue that the embedded subject, i.e. PRO, needs to be controlled by an argument bearing a case marking compatible with the case assigned by the embedded

---

[14] Note that exactly the type of data utilized by Roberts to indicate that some Middle English modals were control verbs (i.e. modals with quirky subjects) are used by Wurmbrand (1999) to argue that modals are raising verbs. This is a matter of theoretical development; i.e. the assumptions regarding the possible driving force of DP movement were quite different in the Government and Binding Theory than in The Minimalist Program. Cf. also fn 10 in section 4.1.

[15] Roberts also relate the theta-properties of modals to their increasing epistemic use; cf. p.34 The use of modals as functional substitutes for the moribund system of subjunctive inflections[...] meant that modals were interpreted as clausal operators specifying the mood of the clause, exactly like subjunctive inflections. Clausal operators do not assign θ–roles, and so modals could be construed as not assigning θ–roles.

predicate. This might very well be the case in spite of the crucial assumption that PRO itself is not assigned overt Case. However, Roberts (1985) does not address this question (neither is this question addressed in Roberts 1993) .

Moreover, there are certain theoretical problems with this account, and some of its predications are not borne out. One such case is pointed out by Roberts himself (p.31):

> Since [the stipulation that V assigns θ−roles iff V is governed] prevents auxiliaries from appearing in governed positions, we predict auxiliaries to be incompatible with agreement. This prediction is correct for modals, but incorrect for the aspectuals *have* and *be.* [...]For the purposes of this paper, we make the simplyfying assumption that aspectuals show inherent agreement, and so are in fact not governed by AGR.

This is not the only problem, however. Even if one makes the assumption above, the aspectual auxiliaries constitute a problem. They may appear in INFL because they assign no θ−roles (fn 8), but at the same time, Roberts is assuming that "INFL, like any other node, contains only one position" (p.47). Like Norwegian, English has sentences with modals preceding a perfect auxiliary (an aspectual), e.g. *John must have passed his exam (before going abroad).* So the obvious question would be, what is the position of the aspectual in this scenario? To clarify, look at Roberts' proposed structure for modern English once more:

(6)
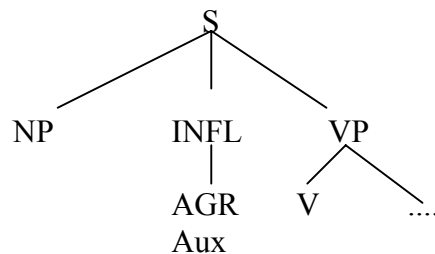
In the case of the string *John must have passed his exam,* the modal *must* occupies INFL. Now, either the aspectual must be part of INFL, which is impossible, since INFL contains only one position, which is occupied by the modal. Alternativly, the aspectual is part of the VP. In this case, it is not obvious that the aspectual would not be governed by the modal, and as such constitute a counterexample to the generalization that only verbs assigning θ−roles may be governed; recall that "V assigns θ−roles *iff* V is governed".

Another problem concerns the possible universality of this approach. Roberts proposes that "languages with "rich" agreement systems in fact lack AGR" (p.32), hence the possibility to employ "syntactic agreement" (p.32); which means that obligatory V-to-INFL movement of main verbs should apply to languages with "rich" agreement systems only.

However, it seems counterintuitive at best to describe the Mainland Scandinavian languages like Norwegian as a language with a "rich agreement system". As already mentioned in section 2.1, Norwegian lacks subject-verb agreement; in fact, in this respect it has even less agreement than English. And yet, Norwegian has V2, i.e. obligatory movement of the verb into INFL (V to-INFL) in the scenario presented here. That is, Norwegian exhibits V-to-INFL, a phenomenon which should be found in languges with "rich" agreements systems only, according to Roberts.

Furthermore, Norwegian modals have none of the effects that Roberts attributes to the obligatory insertion of modals into INFL, like e.g. the loss of non-finite forms. According to Roberts, the insertion of the modal into INFL should take place obligatorily in languages with poor agreement systems. But Norwegian modals show no signs of being directly inserted into INFL, in spite of its poor agreement system. Thus, it seems that Norwegian exhibits a number of properties associated by Roberts with languages of "rich" agreement systems, although it seems counterintuitive at best to describe Norwegian as a language with a "rich" agreement system.

3.2.2 Roberts (1993)

Although this proposal is reminicent of Roberts' (1985) proposal in important respects, this work also contains a comparison between NE (Modern English), ME (Middle English) and MSc (Mainland Scandinavian; i.e. Danish, Swedish and Norwegian) modals. Furthermore, the clausal architecture that Roberts proposes in this later work is much more complex than in the (1985) account, cf. (7) (Roberts' (68c), p. 280):

(7)
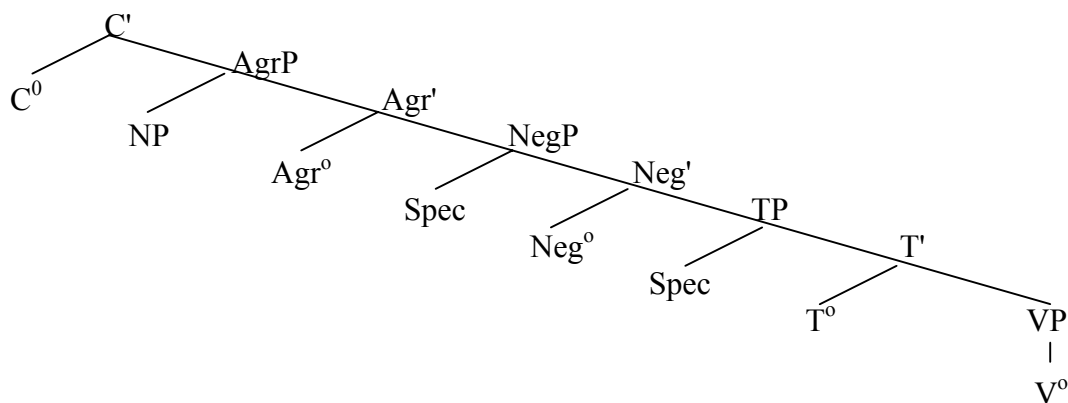
Still, the VP is the domain where (main) theta-roles are assigned, and some important differences between MSc/ME modals on one hand and NE modals on the other is the following (p.320):

> MSc modals are lexically inserted in V rather than in T. This analysis captures the similarity between MSc and ME, and the differences between both of these systems and NE.

Underlying this difference, Roberts claims, is a Diachronic Reanalysis that took place in the early 16th century (Roberts' (96)):

$$\text{NP}_i \; [_{T^o} \; \textit{do}/M_j \; T^{-1}] \; t_j \; [t_i \; VP] => NP \; [_{T^o} \; \textit{did}/M] \; VP^{16}$$

which states that English modals came to be inserted directly into T, whereas they earlier were inserted in V. The T^{-1} in the first square brackets is a functional head parasittic on the T-head in ME and MSc, spelling out an affix and forcing the verb to move to T. The reason MSc has retained this head, while NE lost it in the course of diachronic development, is that MSc languages never lost their infinitival endings, whereas English did (p. 320):

> This reanalysis [in English] was triggered by the loss of the infinitival affix, making T^o a possible site of lexical insertion of X^o -elements. In MSc, we find that an infinitival affix has been preserved, as the ending *-e/-a* e.g. Da. *køb-e* Nor. *kjøp-e*, Sw. *köp-a* ('buy'). That this is the infinitive ending can be seen by comparing the imperative forms, which are just the bare stems *køb, kjøp, köp* with the infinitive forms. So we take *-e/-a* to be a realization of T^{-1} in MSc.

So one of the problems from Roberts (1985), namely linking the particular behavior of modals to loss of agreement, is taken care of in this work (p. 320 ff)[17]:

> Given that [...] MSc has undergone a development parallel to English in losing its agreement system and in losing V-to-Agr, this in turn means that the D[iachronic] R[eanalysis] [...] must be independent of the loss of the agreement system and the loss of V-to-Agr. This conclusion is consistent with what we have said in this chapter, but inconsistent with the claims in Roberts (1985). [...] So we arrive at the following comparative picture of the development of English and of MSc:
>
> a. loss of agreement = loss of Agr^{-1}.
> b. Development of modals/*do* = loss of T^{-1}.
>
> ([...]a) holds for both English and MSc. ([...]b) holds only for English.

---

[16] I presume that *did* signals that *do* is inserted directly into T(ense), whereas *do* earlier were inserted in V and raised to T. Thus, the element inserted in T is necessarily tensed, whereas the element inserted in V could be construed as non-inflected, subsequently picking up the inflection residing in T.

[17] Cf. also p. 319: There are thus no grounds in MSc for assigning modals to a special syntactic position, in the way that there are in NE.

The other problem mentioned from Roberts (1985), the status of aspectuals, is also addressed in this work, in that Roberts suggests "that they are best treated as base-generated as heads of their own VPs" (p.312). Since theta-assignment is no longer explained in terms of government, the more acute problems with aspectuals seem to disappear on this account. However, the status of aspectuals remains somewhat unclear. If aspectuals constitute the head of their own VP, they still constitute a peculiar type of Vs, since they are the only V-heads that may move to Agr, just like modals (p. 312):

> As is well known, the NE aspectual auxiliaries *have* and *be* raise to Agr.

And still, they constitute an exeptional class of Vs since they do not assign theta-roles, whereas ordinary verbs do.

Roberts (1993:315) also addresses the possible syntactic differences between root and epistemic modals in ME; i.e. the control vs. raising-hypothesis (ME modals are dubbed *premodals*, a term adopted from Lightfoot 1974):

> Many cases of premodals are formally ambiguous between raising and control interpretations. It is plausible to identify root readings (ability, volition, obligation) with control and epistemic readings (necessity and possibility) with raising since in root readings the subject receives a theta-role (roughly experiencer) from the premodal, while in the epistemic reading it does not.

And the possible assignment of theta-roles still consitutes a difference between root and epistemic modals, in that root modals assign adjunct theta-roles (p.316), whereas this is not so for epistemic modals (p. 325):

> [...]epistemic [sic[18]] modality can be syntactically expressed either through assigning a theta-role or not. Since epistemic modality is an operator, where the theta-assignment option is not taken, the modal will occupy an operator position in syntax, typically T^o. The former choice gives rise to a raising verb; the latter to a modal auxiliary.

Still, the reader is left with the impression that Roberts (1993) has a somewhat rudimentary account for possible differences between root and epistemic modals in NE English. He does not go into the specific possible readings that he would classify as root on one hand and epistemic on the other, and the discriptions concerning these matters remain rather vague and somewhat unsatisfactory.

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[18] As it stands, this quote seems to me to be somewhat contradictory. Thus, to make sense, the first *epistemic* in this quote should probably be omitted.

3.2.3 Roberts and Roussou (2000)

Roberts and Roussou (2000) present an analysis of English modals that is once again a variation on the theme presented above. This analysis is cast in a framework adopting (as a possibility) Cinque's (1999) universal hierarchy of functional projections, although nothing in their analysis crucially hinges on this choice. Pre-16th-century examples containing a modal and a bare infinitive complement "must have had a biclausal structure [...given that...] infinitival complements contain T and main clauses feature V-to-T movement" (p. 11):

$[_{TP}$ Sone $[_{TP}$ hit mæi $[_{VP}$ t$_{mæi}$ $[_{TP}$ T $[_{VP}$ ilimpen]]]]] *soon it may happen*

Once again, the infinitival endings (*-en)* play an important part; now as "clear evidence for the lower T" (p. 14). The loss of these endings leads to the aquirer reanalysing the biclausal structure as a monoclausal structure, whereas the modals are grammaticalized as elements of T:

$[_{TP}$ Sone $[_{TP}$ hit mæi $[_{VP}$ ilimpen]]] *soon it may happen*

Then Roberts and Roussou (R&R) go on to "take into account the possibility of a richer functional structure". The relevant sub-structure of Cinque's universal hierarchy is the following:

$Mod_{epistemic}$ T (past) T (future) $Mood_{irrealis}$ $Mod_{Necessity}$ $Mod_{Possibility}$ Mod_{Root} [19]

R&R take the basic difference between lexical verbs and verbal functional heads to be the possession of argument structure, i.e. "merger directly into the functional system correlates with the absence of argument structure" (p. 17). However, the aforementioned "adjunct theta-role" might be expressed by "scopal properties of functional heads" (p.18). In either case, in ME, modals were inserted in one of the Mood/Mod positions below T, with subsequent movement to the highest T. After the reanalysis, they were merged higher in the structure, which "economises on movement steps, and so is preferred by the learner". This explains the absence of participle and infinitival forms with modals:

> Merging these modals directly rather "high" in the functional structure meant that certain properties that had to be licensed (or checked) by lower functional heads could not be licensed. In particular, below the lowest modal head are a series of aspectual

---

[19] But see section 3.2.4 where it is described that Cinque also argues for three more Mod heads; Mod $_{volition}$ > Mod $_{obligation}$ > Mod $_{ability/permission}$. R&R conflate these as Mod_{ROOT}.

heads [...]. It is plausible that participal morphology is licensed there[...]. We must also assume [...] that infinitival morphology is checked lower in the structure than the modal heads.

According to Warner (1993), epistemic interpretations of pre-modals emerge in ME. R&R interpret this as a further reanalysis of (some) pre-modals as being merged in the Mood$_{Epistemic}$ position. "If reanalysis is local [...], this might imply that a (pre)modal must have a root interpretation before it develops an epistemic interpretation (after which point the earlier root interpretation may be lost)" (p. 18). This high merger of modals imply that epistemic modals are "opaque to the usual past/non-past relation" (p. 19), as they are directly merged higher than T(past). In ME, this direct merger of modals were an option or "a tendency", but after the loss of relevant infinitival morphology, this merger became categorical. And the full syntactic effects of the reanalysis of modals were not apparent until after the loss of V-movement into the functional system, which made the modals stick out as a category distinct from verbs.

R&R also mention MSc modals in this account (p.19):

What we observe in many languages is evidence for grammaticalisation [direct merger into functional head instead of movement to the same head] of individual modals, although the existence of a morpho-syntactically distinct class of the NE type is not attested elsewhere in Germanic or Romance. The reason for this [...] is that all the Germanic and Romance languages have infinitival morphology and so the reanalysis [from biclausal to monoclausal structure] was not possible.

According to Vikner (1988), epistemic modals cannot be non-finite in Danish, and van Kemenade (1985) argues the same for Dutch. R&R take this as instances of the grammaticalization of certain modals on certain interpretations. To maintain this assumption for MSc, R&R need some kind of technical device (fn 7):

It may seem strange to propose that epistemic modals in Danish occupy a very high functional position like Mod$_{Epistemic}$ when the evidence is that all verbs, including modals, occupy just two positions in this language: The V2 position (presumably C) and what appears to [be] the base V-Position (see Vikner 1995 and the references given there). The problem really concerns associating the epistemic interpretation with the low position. This problem is just an instance of the general problem that arises in Mainland Scandinavian languages [...] of associating functional information (at the very least Tense) with the *in-situ* verb, and as such is not created by assuming the Cinque hierarchy. Whatever the technical device we postulate to associate tense with the *in-situ* verb (affix-hopping, chain-formation, LF-movement, etc.) can be exploited to associate an epistemic modal with its functional position.

This turns out to be a more profound problem, however. If modals surfacing in a "low" position could be associated with a "high" epistemic modal projection in this way, what would prevent the modal from being associated with any of the other intermediate Mod-positions?

One might expect that this would lead to multiple ambiguity in each sentence where a modal occurs. One might be able to restrict this type of association when it applies to the leftmost modal only, by stipulating that it occupies the head of a $Mod_{epistemic}$ projection. However, with the modal in situ, possibly within its own VP, any one of the intermediate Mod heads could associate its features with the modal. One would have to stipulate that only certain modals have "access" to certain ModPs. And one would still need auxiliary hypotheses to explain e.g. why one never gets epistemic readings from modals with Adv/PP complements, just to mention one example.

In my view, the attractive feature of this account (e.g. in comparison to Roberts 1993) boils down to the attempt to show the following (p. 1):

> [G]rammaticalisation-type changes follow a 'path', which is structurally defined along a hierarchy of functional categories in the clause structure.

Such "paths" have been assumed for decades to have some significance within the grammaticalisation literature, cf. e.g. Bybee et al. (1994:10), who claim that there are

> great similarities in grammaticalization paths across genetically and areally unrelated languages.

An account along these lines also allows for a gradual "leakage" of modals into the functional domain, where certain modals on certain stages are associated with more functional properties than some of other, contemporary modals. In short, this account allows for an individual history of each modal, where it is not (necessarily) expected that all changes happen to all modals at once; a picture that seems to be in accordance with the observable facts (cf. e.g. Plank 1984, Warner 1993).

My main objection to R&R's article is that it does not fully exploit the advantage of a possible individual account, since the treatment of modals comes across as sketchy and superficial, at some points straightforwardly confusing. For instance, I would have liked to see the history of one specific modal, (say *may*) with a full description of the exact insertion site(s) of this specific modal previous to any reanalysis or grammaticalization. Furthermore, I would like to see an outline of the possible diachronically intermediary positions proposed, and finally, the possible insertion sites of this modal (e.g. in $Mod_{epistemic}$ and possibly others) after the grammaticalization path has been completed. Unfortunately, there is no exposition or illustration of the possible diahronic development of one specific modal, which would have clarified the matters considerably.

Also, there seems to be a vagueness concerning the terms epistemic vs. root in this work, like in Roberts (1985, 1993), since what counts as an epistemic or a root reading of a modal is never explicitly addressed.

3.2.4 Cinque (1999)

As already mentioned in section 3.1.2, Cinque (1999) argues (p.52) that

> [...]the partial orders found overtly in different languages are subsequences of a single universal sequence of functional heads, present in all languages.

And not only is this universal sequence of functional heads present in all languages; this sequence is also present in all clause types of all these languages (preface):

> [...] Universal Grammar is often still assumed to allow a wide variation among languages in the *number* and *type* of functional projections that they admit and/or their realtive *order*. Moreover, it is often assumed that in a single language, different clause types may instantiate different sets of functional projections. Here I try to construct a plausibility argument against these assumptions, suggesting that no such variation is allowed by UG and that the same number, type and order (hierarchy) of functional projections holds across languages and clause types, despite apparent counterevidence.

The functional projections assumed to be accessible to modals is of particular interest to us here; these projections constitute a subset of the projections conceived as headed by *mood* or *modality* heads[20]. Moreover, other relevant clausal heads are *tense* and certain aspectual projections; specifically *perfect aspect* (since Norwegian *ha/være* 'have/be' arguably belongs to this type of aspect).

Considering the order of suffixes in Korean complex verbal forms and invoking Baker's (1985) Mirror Principle, Cinque proposes separate functional heads for evidential and epistemic modality. Moreover, taking Germanic double modal constructions as evidence, he proposes separate projections for epistemic and root modality (p. 54):

> Although this traditional semantic difference [i.e. root vs. epistemic] is generally not related to a difference in structure, some evidence exists that the two modals do not occupy the same position and that epistemic modals are higher than root modals. In double modal varieties of English, like Scots English [...] and in various American varieties [...], the first modal has an epistemic, and the second a root sense.

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[20] Cinque does separate between *mood* and *modality*, although the difference is in many cases virtually non-significant (p. 78): [...] the same category may be expressed via mood in one language and with a modal in another, thus suggesting a close link between the two. "Mood" is traditionally restricted to modal categories [...] *which are expressed in verbal morphology.* Modals instead are typically independent words (verbs, auxiliaries, or particles).

After examining a range of typological studies dealing with tense, modality and aspect, Cinque proposes the following order (we consider only the relevant sequence of Cinque's hierarchy here), still with "certain indeterminacies and arbitrary choices". Note that the sign > is employed by Cinque to encode precedence and scope; e.g. T (Past) > T (Future) means that T (Past) precedes and scopes over T (Future).

$Mood_{evidential}$ > $Mod_{epistemic}$ > T (Past) > T (Future) > $Mood_{irrealis}$ > $Asp_{perfect}$ > Mod_{root} > $Asp_{completive}$

But Cinque soon finds reason to refine the hierarchy above. Firstly, because "Root modals [...] comprise different semantic subclasses (volition, obligation, ability, permission)"; a question to which we will return below. Secondly, because there might be reason to separate *epistemic* modality from *alethic* modality:

> In logic, epistemic modality is sometimes contrasted with alethic modality [...]. The former is concerned with the speaker's deductions or opinions, the latter with *necessary* truths (i.e. propositions that are true in all possible worlds) and with *possible* truths (i.e. propositions that are *not necessarily false*, being true in at least one possible world).

Cinque recognizes the fact that although one can distinguish epistemic from alethic modality from a logical point of view, there is no reason to assume that these two modalities should differ structurally; he quotes Palmer (1986:11) who says that there is no formal grammatical distinction between the two in English ("and perhaps, in no other language either"). However, Cinque invokes some facts from English multiple modal varieties (pointed out by Brown 1992:75; Cinque's (2), p. 79), where *will* is taken to mark future, and *might* denotes 'pure possibility'; i.e. 'alethic possibility'. Since *epistemic* modality is proposed to be higher in the clausal structure than *future* (cf. the sequence above[21]), modality occupying a position lower than *future* could not be epistemic modality; thus, alethic modality cannot be subsumed by epistemic modality.

(8)

He'll might could do it for you (= 'he might be able in the future to do it for you')

Cinque also finds relevant support for this hypothesis in Danish (Cinque's (3)a), where the alethic modal *kunne,* but not the epistemic/evidential modal *skulle,* can be found following the modal *vil* marking future:

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[21] Cf also e.g. Cinque (1999:78): "Epistemic modals are located higher in clausal structure than root modals, in fact higher than T(Past)/T(Future) (and negation), apparently".

(9)

> Der vil let kunne gå noget galt.
> 'It will easily be possible that something goes wrong.'

> *Han vil skulle have læst bogen.
> 'He will be said to (must) have read the book.'

Furthermore, Cinque claims that in view of Italian data (Cinque's (4))

> [...] there is evidence for distinguishing a head of alethic possibility from a head of alethic necessity. The two can co-occur in the order "necessity" > "possibility" (though not the converse).

Cinque then goes on to consider root modals. These are, in contrast to epistemic and alethic modalities, strictly subject-oriented, as volition, obligation, ability and permission are properly attributed to an (animate) subject, he claims[22]. Although English does not provide a clear answer to the question of possible separate structural heads for each subclass of root modals, Italian data seem to suggest that these subclasses enter into a fixed relative scope among each other. Although it is difficult to decide in some cases, Cinque opts for the following strict (scope) hierarchy of modalities (Cinque's (12), p.81):

$$\text{Mod}_{epistemic} > \text{Mod}_{necessity} > \text{Mod}_{possibility} > \text{Mod}_{volition} > \text{Mod}_{obligation} > \text{Mod}_{ability/permission}$$

Ability and permission is here taken to be two different values of the same head, though "eventually this might prove simplistic". Cinque also admits that the evidence provided may, by itself, be insufficient to motivate five distinct modal heads, in addition to an epistemic one:

> However, the existence of different classes of AdvPs corresponding to the different modalities, and ordered in a similar fashion [...], can be taken as additional evidence for the hierarchy of modal heads in (12).

One should also notice that there is at least one more modality head and one tense head which are relevant to Germanic modals in addition to the ones mentioned above. The author suggests (p.85) that the head $\text{Mod}_{evidential}$ may be occupied by the Danish modal *skulle* and the German modal *sollen*, and by association then, the Norwegian modal *skulle*; all denoting 'hear-say' or in Cinque's terms, "quotative evidentiality". In addition, as we saw above, Cinque assumes the T(future) head to be able to host the English modal *will* and the Danish modal *vil.* This means that there are eight or possibly nine (if permission and ability do in fact belong to

---

[22] In fact, this is not the case. Although volition and possibly ability may be attributed to animate subjects only, obligation and permission may have proposition-scope readings with inanimate and even expletive subjects: *Denne døra skal alltid være låst* 'This door must always stay closed'; *Heisen kan ta opptil ti passasjerer* 'The elevator may/is able to take up to ten passangers' *Det må komme minst femti personer for at festen skal lønne seg* 'There must come at least fify people for the party to pay off'.

separate heads) functional heads that may be occupied by Germanic modals in Cinque's account.

Cinque's universal hierarchy has already been faced with many counterarguments. Firstly, I will just briefly mention one of the critics, notably Costa (1999). Costa argues against two of Cinque's most important claims; first, that adverbs are specifiers and second, that there exists a universal hierachy of Functional Projections that is always projected[23]. Armed with evidence from European Portugese, Costa shows that adverbs behave unlike specifiers and like adjuncts w.r.t. a range of constructions, e.g. cleft constructions. Furthermore, the adjunction of adverbs seem to be highly dependent on the existence of a lexical head (cf. also Costa 1998), i.e. the more verbs and auxiliaries there are in a given sentence, the higher the number of adverbs possible in this sentence. This is unexpected if there exists an underlying universal hierearchy of Functional Projections which is always projected – Cinque claims that the specifiers are available for insertion of an adverbial irrespective of the morphological realization of the functional head.

Moreover, as Costa notes, the number of adverbs should not be expected to rise in a sentence if adverbs are inserted in specifier positions. Afer all, subjects are inserted in specifier positions too, but you cannot normally multiply the number of subjects in a sentence just because you provide it with more auxiliaries. You can, however, multiply the number of adverbs if you add more auxiliaries. Thus, adverbs are subject to a restriction that does not hold for other specifiers, such as subjects.

It is also a problem for Cinque's hierarchy that adverbs display a mirror-effect when they are extraposed, e.g. as shown by Åfarli (1997) and Bowers (1993):

(10)

John (probably) will (quickly) learn French perfectly, (quickly), (probably).

This mirror-effect is expected on an account where adverbs are adjoined to an X'-level of syntactic projections, since the scope relations are preserved even when the adverb is extraposed, cf. (11), adopted from Bowers (1993):

---

[23] Cinque (1999:106): "[...] if each adverb class indeed corresponds to a different functional head, then, we have evidence that the entire array of functional heads (and projections) is available where there is no overt morphology corresponding to the heads, as the respective specifiers are available."

(11)
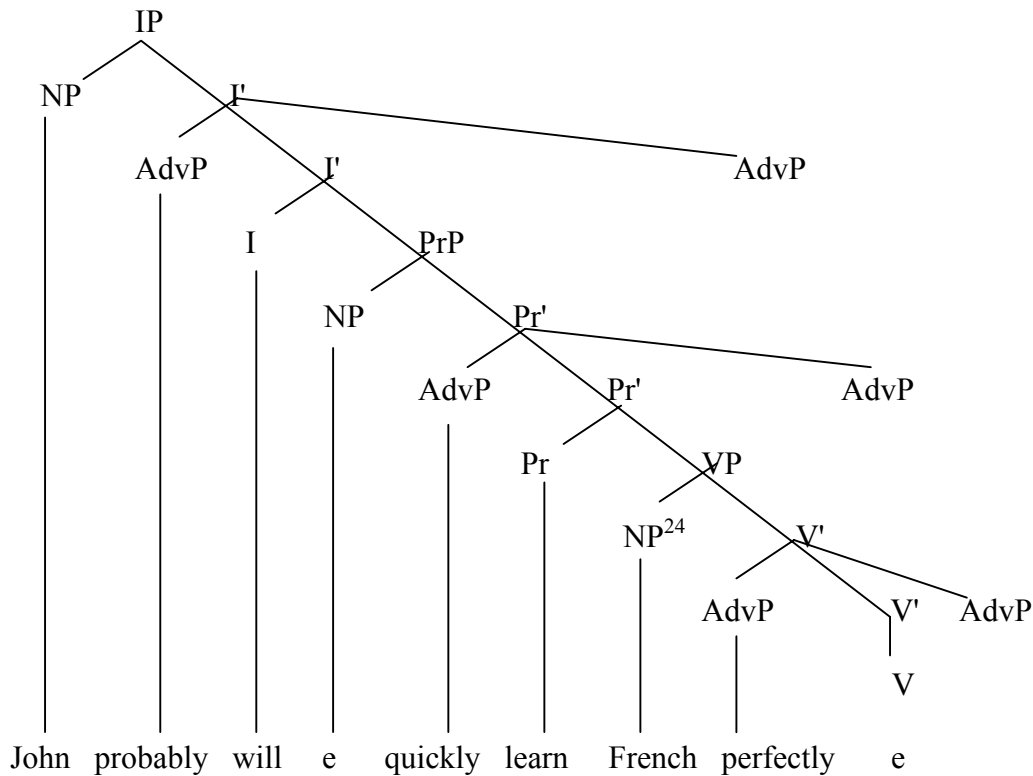
However, on Cinque's account, this mirror-effect is unexpected and hard to explain.

Moreover, if the universal hierarchy is always projected, it seems quite remarkable that e.g. small clauses seem to lack any phonetic realization of (most) functional heads typically associated with full clauses cross-linguistically; cf. e.g. Starke (1995:257) who mentions as one difference between full clauses and small clauses their

> [...] relative lack of morphology (functional heads are not realized in Small Clauses, except for C^0) [...]

Furthermore, Cinque's universal hierarchy seems to have difficulties with accounting for the Norwegian data mentioned in section 2.1, where we get epistemic readings of a modal following what seems to be an aspectual head:

(12)

> a. Han har måtta arbeidd med det i heile natt.
>   He has mustPERF workPERF on it all night
>   'He must have worked on it all night.'

> b. Hu har kunna vorre her og forre igjen.
>   She has canPERF bePERF here and leavePERF again
>   'She might have been here and left again.'

---

[24] Bowers assumes that Direct Objects are situated in <Spec, VP> whereas subjects are situated in <Spec, PrP>.

If we want to claim that these are alethic readings and not epistemic readings (which seems counterintuitive, at least for (12) a), there is no aspectual node that scopes over the projections of alethic modality, either. Even if we allow for the aspectual *ha* 'have' to occupy the T(past) head, we would get into trouble, since there is also similar data with the evidential modal *skulle,* cf. (13):

(13)

      a. Han har skulla vorre en sjarmør i sine yngre daga, har æ hørt.
         He has shallPERF bePERF a charmeur in his younger days, have I heard
         ' He is supposed to have been a prince charming in his youth, so I've heard.'

By Cinque's own statement, evidential modality, like epistemic modality, scopes over all tense (and aspectual) heads in the universal hierarchy. So the data seem to imply that even the vast number of projections suggested by Cinque (1999) is insufficient to account for data like (13), and that more projections would have to be added to provide explanations of such word orders.

3.2.5 Vikner (1988)

Vikner's analysis of modals emerges from an attempt to explain some peculiar restrictions on the co-occurrence of specific root modals like *ville* 'want-to' with "event-verbs" like *få* 'get' and *blive* 'become'.

(14)

      a. Hun vil ha/*få tre biler i 1990
         'She wants to get three cars in 1990'

      b. Hun vil være/*blive klog
         'She wants to become wise'

After making a first distinction between root and epistemic modals (quoting Platzack 1979) and listing some of the possible readings that should be considered root and epistemic respectively, Vikner goes on to make further distinctions within the domain of root modals. The distinction crucial to his analysis is the separation between deontic obligation modals (*ville, skulle, måtte* (obligation)*, burde*) and another group of root modals "consisting of all the others" (*måtte* (permission), *kunne* (permission), *kunne* (ability), *turde, gide*). Since the 'event-verbs' may appear with the latter group, but not with the deontic obligation modals, Vikner proposes that obligation root modals assign *an additional theta-role* to its subject. The

term additional theta-role is reminicent of Zubizarreta's (1982) term *adjunct theta role* (which is also mentioned in connection with Roberts' work quoted above). However, Vikner emphasizes that there are differences between Zubizarreta's notion of *adjunct theta-role* and his own *additional theta role* (p.12):

> This additional theta-role may be assigned to an argument that already has a theta-role, cf. the idea in Zubizarreta (1982:41,123) that theta-roles exist that are invisible for the theta-criterion. However, as opposed to Zubizarreta, I want to suggest that one additional theta-role may be assigned to each argument, BUT NOT TWO. The intuition is that two additional theta roles would give the argument too much "theta-burden", much like an argument cannot receive more than one normal theta-role, which again suggests that additional theta roles are not completely invisible to the theta-criterion. Thus one half of the theta-criterion seems to hold completely for additional theta-roles as they must be assigned to one and only one argument. The other half of the theta-criterion only holds halfway, as an argument may not receive more than one additional theta-role (in addition to a normal theta-role), but it may receive less than one additional theta-role.

The restriction that only one, and not two, additional theta-roles may be assigned to one and the same argument is essential to Vikner's explanation of the aforementioned co-occurence restrictions on these root modals and 'event-verbs' like *få* 'get' and *blive* 'become', since the assumption on which his entire analysis rests is that obligation root modals as well as these "event-verbs" each assign one additional theta-role. It follows that co-occurrence of obligation root modals and the event-verbs is banned, since the subject would end up with two additional theta-roles in such a sentence.

Following Zubizarreta's (1982) suggestion for French, Vikner analyzes all modals as raising verbs, i.e. he claims that they are *like* raising verbs, although there are certain differences between modals and raising verbs (fn. 8 p. 13):

> It should be noted that raising verbs and modals are different in important ways, e.g. in that raising verbs allow expletive subjects, and modals do not.

On the other hand, note that the obligation root modals at the same time are somewhat like control verbs in assigning a theta-role to their subjects, albeit an 'additional theta-role'.

Vikner also lists a range of differences between root modals (in general) and epistemic modals in this article. Epistemic modals do not occur in the perfect tense (examples where they do anyway, are analysed by Vikner as "misplaced tense" that really belongs to the main verb) whereas root modals do; epistemic modals cannot have PRO subjects whereas root

modals do[25]; epistemic modals do not occur in pseudo-clefts while root modals do; and epistemic modals cannot be embedded under root modals while the opposite is possible. Two epistemic modals or two root modals are both possible, but only if the latter modal is *kunne* 'can/may' for both types of modals[26].

Vikner admits that his analysis "admittedly is not based on strong independent evidence". I agree that this is a problem. Furthermore, his analysis employing additional theta-roles does not really explain even his core problem (the co-occurrence facts) very well, since Vikner needs a number of auxiliary assumptions and ad hoc hypotheses to make this work. For instance, s-passives embedded under a modal do not follow the distinctions that Vikner makes, which represents a problem, as pointed out by Vikner himself.

My major objection to this analysis is that the separation between obligation root modals and "all the others" seem arbitrary and not very well founded. For one thing, it is not obvious to me why *ville* 'want-to' belongs with the obligation root modals (since it denotes volition and not obligation). Furthermore, to ascribe a theta-assigning property (albeit an additional theta-role) to e.g. *måtte* 'must' and not to ability *kunne* 'can' seems arbitrary, if not straightforwardly counterintuitive, especially considering that ability-*kunne* is one of the

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[25] Vikner illustrates this claim by a range of sentences with infinitival markers and infinitive verbs, where the epistemic reading of the modal leads to ungrammaticality. However, it is not completely impossible to have epistemic modals in constructions like this in Norwegian:

    i) De ble påstått   å   skulle være reist.
        they claimPASS to be supposed to be gone
       'One claims that they are supposedly gone'

    ii) Dette antas   å ville få visse følger
        this presumePASS to will get certain consequences'
       'This will presumably have certain consequences'

    iii) Dette fryktes   å kunne bli et stort problem.
        this   fearPASS to may become a big problem
       'One fears that this may become a big problem'

Vikner claims that epistemic modals accept neither arbitrary PRO or non-arbitrary PRO. Although epistemic modals in Norwegian accept non-arbitrary PRO (cf. i-iii), they do not accept arbitrary PRO:

    iv) Det er tragisk å ville få slike følger (root OK; epistemic*)
        it   is tragic to will get such consequences

[26] *Kunne* is not among those root modals that assigns an additional theta-role, according to Vikner's analysis, so the combination [obligation root modal+ *kunne*] is expected to be allowed. However, this does not explain why *kunne* could not be the first of the two root modals, or why *turde/gide* (the other two non-obligation root modals) should be banned as the second modal in these constructions. Furthermore, Vikner mentions (fn. 7, p.15) that Jane Grimshaw has pointed out to him the fact that his analysis does not explain the co-occurence restrictions on *epistemic modals*, that by Vikner's own statement seem to be the subject to exactly the same restrictions as root modals w.r.t. combination possibilities.

(two) modals that have the most lexical-verb-like behaviour cross-linguistically, at least within the group of Germanic modals. In fact, this separation is conducted exactly to explain the co-occurence facts of the event verbs *få/blive* with some root modals that represents the data to be explained. Thus, one might claim that this analysis more or less amounts to restating these facts within a theoretical terminology, where the term *additional theta role* is a paraphrase for *co-occurrence. The way the term theta-role is normally employed, it seeks to capture what is conceived to be rooted in semantic relations between theta-assigners and arguments, although it may be syntactically encoded. An *additional theta role,* the way it is employed here, does not seem to have any such connotations.

3.2.6 Thráinsson and Vikner (1995)

By the authors own statement (first note), this paper is partially based on Thráinsson (1986) and Vikner (1988). The paper starts out by listing properties of modals in English and Scandinavian, and conclude that most of these properties seem to be language-specific, with the exception that modals in English as well as Scandinavian are characterized by the semantic property of having "modal meanings" of two kinds, notably (at least) one root and one epistemic sense. The authors go on to list what they conceive to be modals in Danish (Da) and Icelandic (Ic) respectively, with no claim that this list is exhaustive (Thráinsson and Vikner's (11)):

> **Danish modal verbs:** ville 'will', skulle 'shall', måtte 'must', kunne 'can', burde 'ought (to)', turde 'dare', behøve 'need'

> **Icelandic modal verbs:** munu 'will', skulu 'shall', mega 'may', vilja 'will', eiga 'ought (to)', hljóta 'must', kunna 'can', verða 'must', Þurfa 'need', ætla 'intend', geta 'can'

After listing some examples of various root and epistemic readings, Thráinsson and Vikner (T&V) consider some syntactic differences between epistemic and root modals. These syntactic differences are to a great extent traced back to the assumption (attributed to Ross 1969, Kiparsky 1970 and Perlmutter 1970) that root modals assign a theta-role to their subject, whereas epistemic modals do not, i.e. that epistemic modals pattern with raising verbs, while root modals pattern with control verbs. The obvious (as well as perhaps less obvious) syntactic consequences of this difference between root and epistemic modals may be summed up in a table like the following (T&V's claims; my table):

	Epistemic modals	Root modals
Take expletive subjects	yes	no
Take weather-*det/Það* 'it'	yes	no
Take idiom-chunk subjects	yes	no
Allow quirky subjects (Ic only)	yes	no
Allow pseudo-clefted complement	no	yes

The first three properties in this table are expected on the hypothesis that root modals do and epistemic modals do not assign a theta role to their subject, since expletives, weather-*it*, and idiom-chunk subjects are considered non-arguments; hence they would be expected with epistemic modals and raising verbs, but not with root modals and control verbs.

Quirky subjects, i.e. oblique case-marked NP subjects, have their case determined by the downstairs or embedded verb (which also assigns thematic role to it), and a raising verb has no influence on the case marking of a quirky subject appearing in its subject position. This indicates that epistemic modals are raising verbs in Icelandic, since epistemic modals accept quirky subjects; cf. (15), where the embedded verb *vanta* 'lack' takes an accusative subject. This quirky case is retained when the subject is raised. On the other hand, whenever verbs that take quirky subjects are embedded under a control verb, the case of the subject is nominative, as determined by the control verb, and not a quirky case. Cf. (15)b, where the matrix verb is a control verb *vonast* 'hope', and the embedded verb *vanta* 'lack' takes an accusative subject. In this structure, the quirky case cannot be retained (T&V's (31)a and (32)a):

(15)

a.   Harald vill oft vanta peninga.
          Harold (Acc) will frequently lack money
          'Harold frequently tends to lack money'; i.e. epistemic reading only

b.   Haraldur/*Harald vonast til að vanta ekki peninga.
          Harold (Nom/*Acc) hopes for to not lack money
          'Harold hopes not to lack money'

According to T&V, it does not seem possible to get the root sense at all when a verb that takes a quirky subject is embedded under a modal (p.60), whereas epistemic modals are fine with quirky subjects, cf. (15) a.

To explain the latter of the properties mentioned in the table above, T&V utilizes Burzio's generalization (Burzio 1986:178-179), which says that verbs that do not assign a

thematic role to their subjects are unable to assign structural Case. T&V proposes the structure in (16) a for pseudo-cleft sentences like the ones in (16) b (Da) and (16)c (Ic):

(16)

a.　　　X_i [$_{CP}$ (OP_i) (that) ... t_i ...] was Y

b.　　　Det eneste$_i$ [$_{CP}$ (som) Marie købte t_i] var klipfisk
　　　　the only　　　(that) Mary bought　was dried-fish
　　　　'The only thing mary bought was dried fish.'

c.　　　Það$_i$ [$_{CP}$ sem María keypti t_i] var harðfiskur.
　　　　it　　that Mary bought　was dried-fish
　　　　'What Mary bought was dried fish.'

Under the assumption that the trace t_i is a *wh*-trace that needs Case, T&V can explain why root modals, but not epistemic modals occur in pseudo-cleft constructions. Since root modals assign a theta-role to their subject, they also assign structural Case (by Burzio's generalization) in this case, to the *wh*-trace t_i. Epistemic modals do not assign a theta-role to their subject and hence do not assign structural Case, which is why they are banned from pseudo-cleft constructions.

One might be led to think that the evidence presented so far would prompt the authors to analyze all Scandinavian modals in a control- vs. raising model, since root modals seem to pattern with control verbs and epistemic modals with raising verbs. And indeed, this is the option chosen for Icelandic modals. However, Vikner's (1988) analysis of all Danish modals as raising verbs is kept even in this account, on the same basis as before; i.e. the co-occurrence restrictions on some root modals in Danish with the aforementioned event-verbs *få/blive* (cf. the previous section). Still, the authors maintain that ("at least some") root modals assign a thematic role to their subject, notably an additional theta role as in Vikner (1988). The crucial properties of additional thematic roles are listed as follows (T&V's (45)):

(17)

　　　a. No argument may have more than one additional theta-role.
　　　b. Each additional theta-role must be assigned to one and only one argument.
　　　c. An additional theta-role may be assigned to an argument that already has a theta-
　　　　role.

The first property maintains the account of the Danish co-occurrence facts (modals/event-verbs), while the latter ensures that Danish root modals cannot occur with non-thematic subjects (expletives, idiom-chunk subjects, weather-*it*).

What is gained by these different analyses for Icelandic and Danish modals is an account of the aforementioned co-occurrence facts for some root modals and *få/blive* in Danish, which is not relevant for Icelandic, at the expence of loss of one (admittedly quite forceful) generalization, namely the generalization that all Scandinavian root modals seem to be control verbs, whereas all Scandinavian epistemic verbs seem to be raising verbs.

T&V discuss the possibility of base-generating e.g. epistemic modals in Danish in I(nfl), as is "frequently assumed for English modal verbs" (p.73).

> The problem with such an anlysis is that modal verbs are just like other finite verbs in Danish in that they follow adverbials like the negation in embedded clauses, as illustrated in (77):

> (77)   ... at de ikke skal ville bygge et hus.
>   that they not shall want to build a house
>   '... that they shall not want to build a house.'

On the assumption that negation is adjoined to VP in Danish, and that Danish has no V-to-I movement in embedded clauses, data like T&V's (77) indicate that epistemic modals are base generated under V like other verbs. T&V choose not to go into the syntactic details of the insertion site of Icelandic modals.

In the last part of this paper, T&V consider restrictions on iterating modals in Danish and Icelandic. They note that "double modal constructions in Scandinavian are of a very different nature than those that can be found dialectally in English" (p. 72), illustrated by the inversion data in (18)a from Battistella (1992) and T&V's own data in b and c (T&V's (72)-(74)):

(18)

a.   You might could buy that at Bruno's
        *Might you could buy that at Bruno's?
        Could you might buy that at Bruno's?
        Might could you buy that at Bruno's?

b.   De skal ville bygge et hus.
        'They are said to want to build a house'
        Skal de ville bygge et hus?
        'Are they said to want to bulid a house?'
        * Ville de skal bygge et hus?
        * Skal ville de bygge et hus?

c.   Hann verður að kunna að synda.
     he must   to can   to swim
     'He has to be able to swim'
     Verður hann að kunna að synda?
     must he   to can   to swim
     'Does he have to be able to swim?'
     *Kunna hann verður að (að) synda?
     *Verður að kunna hann að synda?

As seen from the data in (18), in Scandinavian, only the first modal (and always the finite one) may precede the subject in yes/no questions. Battistella's data seem to indicate that the second modal, or both, but not only the first, precedes the subject in such questions in this English dialect[27].

Root modals embedded under root modals should be impossible in Danish, on account of the restriction on additional theta-roles: No more than one additional theta-role for each argument. According to T&V, this is by and large borne out, with the exception of the root modal *kunne* 'can', which seems to be able to appear embedded under other root modals[28]. The authors propose two possible accounts (by their own statement, none of them very satisfactory) of this exception. Either the root modal *kunne* does not assign an additional theta role, just like epistemic modals (which is the solution proposed in Vikner 1988). This is problematic, since *kunne* patterns with the other root modals as regards pseudo-clefts. Alternatively, *kunne* could be analyzed as a control verb (like Icelandic root modals). This solution has problems too, since T&V present evidence in fn. 27 that (at least) *kunne* is a raising verb. In Icelandic root modals combine much more freely, although it is not the case that anything goes. This is not unexpected, since there exist restrictions on "regular" control verbs as well.

There is no syntactic reason to expect restrictions on the combination on epistemic modals with other epistemic modals in Scandinavian in the picture painted here. However, there seem to exist such restrictions. In Danish it seems that epistemic + epistemic combinations are good only if the second modal is *kunne* 'may'. This is a total mystery under this analysis, as admitted by the authors. In Icelandic, there are fewer restrictions, but the

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[27]According to Roberts (1993:333), Battistella discusses double-modal constructions in some detail. The discussion in Roberts refers to "some dialects of American English in the Southern States of the USA".
[28] This generalization does not hold for Norwegian. Cf. e.g the following (authentic) example:
     i) Det er absurd at vi skal måtte gå til domstolene med dette.
        it is absurd that we shall must go to courtsDEF with this
        'It is absurd that we are supposed to be required to go to the court with this.'

modals *munu* 'will' and *skulu* 'shall' (in the epistemic reading) can never follow any auxiliary, including other modals[29]. The authors have no syntactic explanation for this either.

The combination epistemic + root does not seem to be subject to particular restrictions neither in Icelandic nor Danish, and the combination root + epistemic is always unacceptable (or so it seems). The latter assumption is given a semantic explanation (p. 78):

> Since epistemic modals predicate of a whole proposition whereas root modals predicate of one of the arguments (typically the subject) of a proposition, we would not expect root modals to be able to take scope over epistemic modals.

Some of my objections to the account proposed here are the same as my objections to Vikner (1988), although in this paper, the problems seem even more severe. In my view, the gain by analysing the Danish root modals as raising verbs that assign additional theta-roles seems simply too small to motivate the difference in analysis between Danish and Icelandic. In my view, the co-occurrence of some Danish root modals with the aforementioned event-verbs does not receive a satisfactory explanation in this account anyway (cf. my objections to Vikner 1988 in the previous section); thus, one should preferably seek some other explanation for these co-occurence facts. This would allow the authors to maintain the distinction across the Scandinavian languages that root modals are (like) control verbs whereas epistemic modals are (like) raising verbs. There is of course nothing wrong *in principle* with assuming two different structural types for Danish and Icelandic root modals, if the data convinces one to maintain such an hypothesis, but in my opinion, the data are simply not sufficiently convincing to force this difference.

However, a more serious objection to this analysis is that it makes a range of predictions that simply do not hold up against the observable empirical facts, at least not for Norwegian, and according to Vikner (p.c.), in fact neither for Danish. This concerns in particular the alleged theta-properties of the subject of root modals.

Recall that this analysis proposes that root modals, being (like) control verbs, assign a(n additional) theta role to their subject, unlike epistemic modals. This implies that only epistemic modals and *not* root modals, should be able to take non-argument subjects like expletives, weather-arguments and idiom-chunk subjects. As shown by the data in (19), this is simply not correct. Although what I have been calling *dispositional* root modals typically take theta subjects (but see (19) i), deontic root modals occur with all types of "non-

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[29] On page 79, T&V mention the possibility that the verbs *munu* and *skulu* developed epistemic sense earlier than the other modals, on the basis of examples of double modals in the Old Norse Sagas. Most of the examples of double modals in these texts seem to be a root modal embedded under the epistemic modals *munu* and *skulu*.

argument" subjects, contrary to T&V's claims (cf. also Brennan 1993 and Brennan 1997 for English data illustrating the same facts for English). (19)a-d exemplify root modals with expletive subjects, e - g are root modals with wheather-*it*, and h-i are root modals with idiom-chunk subjects. I should mention that some of these sentences are ambiguous between a root and an epistemic reading. However, the important fact is that all these sentences are grammatical on a root reading as well.

(19)

    a. Det skal bestandig være minst to voksne til stede.
     'There should always be at least two adults present.'

    b. Det må komme minst femti personer for at festen skal lønne seg.
      there must come at least fifty people for the party to pay off
     'At least fifty people must show up for the party to pay off.'

    c. Det bør bli forandringer m.h.t. denne praksisen.
     there should occur changes w.r.t. this (code of) practice
     'This code of practice ought to change.'

    d. Det kan være opptil fire patroner i hylsa pr. ladning
      'There may/can be up to four cartridges in the case in one load.'

    e. Nå bør det snart regne; gresset er så tørt.
     now should it soon rain; the grass is so dry
     ' It ought to rain soon; the grass is so dry.'

    f. Det kan ikke snø nå som vi er på landtur!
     'It cannot snow now that we are on a picnic!= negated permission'

    g. Det må blåse sterkere for at draken skal lette.
     'it must blow harder for the kite to fly'
     'It must be windier for the kite to fly.'

    h. M.h.t. Jon, så kan fanden ta ham (idiom: Fanden ta Jon!)
     ' As for John, the devil may take him = permission.'

    i. Nød kan lære naken kvinne å spinne (idiom: Nød lærer naken kvinne å spinne)
     'Need can teach naked woman to spin = ability'

If we want to maintain that control verbs obligatorily assign a theta-role, it follows that root modals cannot possibly be control verbs. The question remains whether we want to make the claim that control verbs always assign a theta-role. But in either case, one cannot maintain the analysis of T&V in face of the data presented in (19), since they show that root modals do in fact take non-argument subjects.

An observation that seems to hold, however, is that (some) root modals may occur with pseudo-clefted complements whereas epistemic modals do not. This seems to be a sound observation and a fact that calls for an explanation. This phenomenon is thoroughly investigated in section 4.2.

3.2.7 *Barbiers (1995, 1999)*

Barbiers (1999) is a short version of the analysis of modals that constitutes one chapter in Barbiers (1995). I will present these two works as one single analysis and, in the course of this presentation, comment on the points where there is a discrepancy between the (1999) article and the (1995) analysis.

Barbiers' point of departure is his presentation of four different kinds of interpretations possible with Dutch modals (1995:142):

(20)

Jan moet scaatsen
'John must skate'
I.   'John definitely wants to skate'   **dispositional**
II.   'John has the obligation to skate'   **directed deontic**
III.   'It is required that John skates'   **non-directed deontic**
IV.   'It must be the case that John is skating' **probability**

The dispositional interpretation denotes some force, tendency or capacity internal to a subject; the directed deontic interpretation denotes an obligation or permission which has an external source directed towards a subject (which means that the subject has this obligation or permission); the non-directed deontic interpretation also denotes permission, obligation or requirement, but one that is not directed to the subject of the sentence (i.e. the situation is required or permitted, but independent of the subject's actions or attitudes)[30], and finally, the probability interpretation involves a qualification of the truth value of the proposition expressed by the sentence, "i.e. an estimation of the degree of probability of a proposition" (p.145).

After arguing that these four interpretations are a result of real ambiguity and not merely vagueness, Barbiers describes the aforementioned interpretations as a result of "two parameters for modal interpretations" (1998:14), specifically [± subject-oriented] and [± (potential) polarity transition], where the latter refers to a negative and a positive stage of the event embedded under the modal, such that the negative stage holds at the speech time and is

required, possible, desirable or permitted at some point in the future. These two parameters yield the following possibilities (1995:149):

(21)

Classification of modal interpretations	[+ subject-oriented]	[¬ subject-oriented]
[+ polarity transition][31]	Dispositional/directed deontic	Non-directed deontic
[¬ polarity transition]	Sympathy/Antipathy[32]	Probability [epistemic]

Applying these parameters to the interpretations of (20) above, I and II involve subject-orientation, whereas III and IV do not, and I-III involve a polarity transition, unlike IV. This is to say that in interpretation I-III, the embedded proposition *John skate* is false at the time of utterance and required to be true some time in the future, whereas no such polarity transition is involved in the probability interpretation, since the speaker here expresses his belief that the embedded proposition is in fact true at the time of utterance. Barbiers continues:

> If the polarity interpretations involve a switch of truth value, we expect individual-level predicates to disambiguate modal sentences. Since an individul-level predicate expresses a permanent property of an entity, it disallows a switch of truth value: there are no stages in which the entity does not have the property. The expectation is correct: the sentence in (10) only has a probability interpretation.

> (10)   Jan moet een native speaker van het Vlaams zijn.
>   'John must be a native speaker of Flemish'

Whether or not a modal sentence is interpreted as involving a polarity transition is semantically and syntactically determined by the complement of the modal. To illustrate this claim, Barbiers utilizes one specific property of Dutch modals: the property of taking non-verbal complements.

The range of possible non-verbal complements of Dutch modals seems to be much wider than the possible non-verbal complements of Norwegian and German modals[33]. A

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[30] Notice that "the modal *willen* 'want' has no directed deontic interpretation.
[31] Both terms 'polarity transition' are modified by *potential* in the (1999) article.
[32] These terms (from the 1999 article) replace the terms *like-dislike relation* in the (1995) analysis and refers to the 'like-dislike' denotation of certain Dutch modals, e.g. *moeten, mogen*, e.g *Marie moet die jongen niet* 'Mary does not like that boy'

traditional way of accounting for these non-verbal complements of modals is to assume that a "silent infinitive" is present in all such cases. Barbiers (1999) presents several arguments against this assumption, e.g. that PF-deletion of the infinitive should not reduce the ambiguity of the modal, since a PF-deletion should not have any influence on the interpretation. However, a modal with a non-verbal complement can never be interpreted epistemically, unlike a corresponding sentence where the infinitive is present:

(22)

 a. Jan mag weggaan
  'John may go away'; root/epistemic both possible

 b. Jan mag weg
 'John may (go) away'; root reading OK/ epistemic reading *

Futhermore, agreement facts seem to indicate that there is no PF-deletion of the infinitive:

(23)

 a. Stiletto's mogen/*mag tegenwoordig niet meer
  'Switchblades are/*is not allowed anymore nowadays'

 b. [Stiletto's hebben] mag /*mogen tegenwordig niet meer
  'Having switchblades is/*are not allowed anymore nowadays'

But the strongest argument, in Barbiers' view, is that only constituents that denote a value on a scale from 0 to 1 can be the non-verbal complement of a modal. To exemplify, an adjective like *vol* 'full' may constitute the non-verbal complement of a modal because it denotes a property which either applies to an entity (1) or it does not (0); e.g. there is no notion *somewhat full.* On the other hand, there exist properties that do not denote such values on a scale from 0 to 1, instead, they denote much more gradual properties. For instance, it makes less sense to say that a person is either intelligent (1) or he is not intelligent (0); instead, we would perhaps want to characterize a person as *somewhat intelligent.* Thus, an adjective like *intelligent* would not fit as a complement of a modal, according to Barbiers' claims, since it does not denote a value on a bounded scale from 0 to 1.

  Now, if modals have these semantic requirements towards what appears to be their non-verbal complements, and if there existed a silent infinitive between the modal and the

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[33] Barbiers (1999:fn.1) mentions that German and Afrikaans have more restrictions on the complement of the modal than the corresponding Dutch constructions since these languages allow only a subset of the complements that can occur with a modal in Dutch. On my own account, I may add that one such restriction seems to be a restriction on possible category, in that Norwegian and German (at least to my knowledge) seem to disallow adjectival small clauses as complements, while permitting PP/AdvP resultative small clauses.

non-verbal complement, one would have to say that the modal imposes selectional requirements on the complement (the non-verbal constituent) of its complement (the silent infinitive).

Having argued that there is no silent infinitive in these contructions and that these comstructions that seem to be non-verbal complements are in fact *non-verbal*, Barbiers uses these non-verbal complements as an argument against the control vs. raising analysis. The argument goes as follows.

Using an "uncontroversial diagnostic" that small clause complements cannot be extraposed, Barbiers establishes that the non-verbal predicative complements of modals are indeed small clauses, cf. (24) (Barbiers' 1999: (14)):

(24)

        a. dat Jan morgen <naar Amsterdam> moet <*naar Amsterdam>
         'that John tomorrow to Amsterdam must to Amsterdam.'

        b. dat de brief morgen <in de prullenbak> mag <*in de prullenbak>
         'that the letter tomorrow into the trashcan may into the trashcan.'

If the bracketed constituents are small clauses complements, then the DPs *Jan* and *de brief* must be their subjects. Their subjects cannot be PRO, since a small clause complement cannot have PRO as its subject (cf. (25)a; Barbiers' 1999: 15a), so the subject must have raised from a position inside the small clause (cf. (25)b; op.cit. (15b)) :

(25)

        a. Jan drinkt [$_{SC}$ zich /*PRO ziek]
         'John drinks   SE   sick'

        b. Jan$_i$ moet [$_{PP}$ t$_i$ naar Amsterdam]
         'John must to Amsterdam'

Within a control vs. raising analysis of modals, the raising structure yields an epistemic interpretation. But modals with small clause complements only have root interpretations, never epistemic ones. The conclusion is that the control vs. raising anslysis cannot be correct.

As mentioned above, Barbiers claims that the non-verbal complement of a modal must denote a value on a scale from 0 to 1. If it does not, it is ungrammatical. Cf. e.g. (26):

(26)

        Deze fles moet vol
        'this bottle must full'

The value that the bottle has on the scale of empty (0) to full (1) is not 1 when the sentence is uttered and should become 1 at some point in the future. This is two essential properties of all root interpretations, Barbiers claims:

(i) the complement of the modal must denote a value on a bounded scale, and

(ii) this value is not the actual value at the moment T denoted by the modal.

This is why individual-level predicates are unacceptable as complements of root modals (cf. the quote above), since they denote a fixed property of the subject (which must have a constant reference as well, in order for the complement to count as an individual-level predicate). All non-verbal and verbal complements of Dutch root modals must denote a variable property, and a value on a bounded scale. The latter means that many stage-level predicates cannot constitute the complement of a modal either, if they do not denote such a value on a bounded scale (e.g. *ziek* 'sick' is out for this reason). In the case of infinitival complements, the bounded scale is provided by the infinitive itself, in its denotation as an event. The scale is simply a numerical scale from 0 to 1, counting the number of events. As a result, any verb can be the complement of a modal, since the infinitive always introduces a bounded scale.

Barbiers (1999:16) lists the following differences between epistemic and root interpretations:

(27)

Differences between epistemic and root interpretations

	Epistemic	**Root**
Potential polarity transition	no	yes
Scale of complement	false-true (or: no – yes)	0-1 (number of events)
Category of complement	verbal only	all categories
Definite complement	yes	no

Root modals involve a polarity transition such that the event embedded under the modal is false (0) at the moment of utterance and required/permitted/possible/desired to hold (1) at some point in the future. Epistemic modals involve no such polarity transition. Moreover, recall that Barbiers claims that any complement of any modal must denote a value on a bounded scale, or else it is ungrammatical. The "scale" of the complement in the case of epistemic modals is the scale ranging from true to false. The (verbal) complement of a root

modal introduces a numerical scale from 0 to 1, counting the number of events (i.e. ONE event).

Barbiers goes on to claim that epistemic modals take verbal complements only, whereas root modals take complements of all categories. We have seen examples where root modals take non-verbal small clause complements (APs and PPs). However, Barbiers' ambition is to account for all possible types of complement of all modals in his analysis; hence, he claims that modals taking DP arguments as complements should be accounted for by the same means. Thus, he lists examples where modals take DP arguments as complements:

(28)

  a. Jan moet een /*het vriendinnetje.
     Jan must a /the girl friend
     'Jan wants (to find) a girlfriend.'

  b. Jan moet het vriendinnetje niet/wel.
     Jan must the girl friend not/well
     'Jan does not like the girlfriend/Jan likes the girlfriend very much'

Note that whereas the construction in (28)a gives rise to a polarity-transition reading, i.e. it is an ordinary root modal construction (i.e. Jan does not have a girlfriend at present (0) but he wants to have one in the future (1)), (28)b exemplifies what Barbiers dubs the Sympathy/Antipathy interpretation (cf. the table in (21), repeated here for convenience as (29)):

(29)

Classification of modal interpretations	[+ subject-oriented]	[¬ subject-oriented]
[+ polarity transition][34]	Dispositional/directed deontic	Non-directed deontic
[¬ polarity transition]	Sympathy/Antipathy	Probability [epistemic]

There is no polarity transition in the case of (28)b involving a transition from a present situation to a future situation.

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[34] Both terms 'polarity transition' are modified by *potential* in the (1999) article.

Now, Barbiers envisages that the common property of the epistemic interpretation and the sympathy/antipathy interpretation, notably that neither of them give rise to a polarity transition, should be accounted for by the same means. Crucially, he points out the fact that whereas a definite noun phrase is unacceptable as the complement of a root modal, a definite noun phrase is acceptable in the sympathy/antipathy construction. Thus, he proposes that the definiteness of the complement is what rules out the polarity-transition interpretation in (28)b.

His next step is to propose that the complement of epistemic modals are in some sense definite as well, since the definiteness of the complement evidently is what rules out a polarity transition reading in the case of modals with nominal complements. Plausibly, Barbiers continues, the impossibility of a transition here has to do with the fact that *definite constituents have a fixed reference*. Hence, he proposes that definiteness and indefiniteness are properties that can be ascribed to verbal constituents as well as nominal constituents, encoded by functional projections that we normally think of as belonging to the functional layer of nominal constituents.

That is, root modals take indefinite verbal (as well as non-verbal) complements, IndPs, whereas epistemic modals take *definite* verbal complement DPs. Hence, the IndP ("Individuator Phrase") with the abstract head ONE is the verbal counterpart of an indefinite noun phrase, whereas the DP complement of an epistemic modal is the *verbal counterpart* of a definite noun phrase, headed by an abstract head D.

This abstract head D thus makes the verbal complement definite. Only an epistemic modal may have a definite verbal complement (although modals encoding sympathy/antipathy may take definite nominal complements), hence the presence of D in the modal's verbal complement inevitably gives the modal an epistemic interpretation. The reason for this, Barbiers claims, is that when the complement is definite, a polarity transition is impossible.

One further important property of D is that this head is what establishes the semantic relation between subject and event, identifying the subject as source, starting point, agent, or posessor of the event. Thus, this head can be employed to encode subject-orientedness of a modal as well, in that the modal's base position relative to this D head determines whether a semantic relation of subject-orientedness will be established between the subject and modal or not. Cf. (30); Barbiers' (1999:29):

(30)

a. **root**   b. **epistemic**

```
        DP                          ModP
      /    \                       /    \
 Subject    DP               Mod        DP
           /  \                        /   \
          D    ModP             Subject     DP
              /   \                        /   \
            Mod    IndP                   D     IndP
                  /   \                        /    \
                Ind    VP                    Ind     VP
```
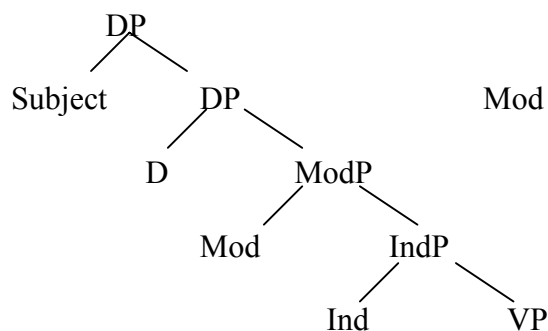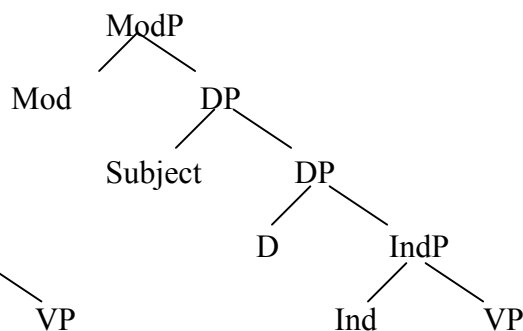
Given that D establishes the relation between the subject and the modal, it follows from the proposed structure that epistemic modals are never subject-oriented. Since epistemic modals are generated *above* the subject, and the D head is generated even lower than the subject, the abstract head D is prevented from establishing a relation between the epistemic modal and the subject.

Directed deontic interpreations and dispositional interpretations, on the other hand, are subject-oriented, a relation established by the D head, since the subject in this case is generated above D and the modal is generated below D. Now, what about non-directed deontic interpretations? According to Barbiers (1999:20), these may arise in two ways. (i) DP is entirely absent in these interpretations, or (ii) DP is present, but the subject reconstructs at LF into a position within the scope of the modal (e.g. <Spec,VP>). The ambiguity between a dispositional interpretation and a directed deontic interpretation is ascribed to the ambiguity (or rather the abstractness) of D; as D may encode 'source' as well as 'possessor'[35]: When the subject is taken to be the *source* of modality, we get the dispositional reading, but when the subject is taken to be the *possessor* of modality, we get the directed deontic reading.

The assumption that the complement of root modals is indefinite, whereas the complement of epistemic modals is definite, is supported by a range of arguments in Barbiers (1995:189 ff). He argues, for instance, that the complement of root modals behaves like indefinite noun phrases w.r.t. focus movement and constructions with the quantifier *wat* 'what

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[35] Barbiers (1995: 186): "The relations established by D are the other building blocks: the possibility of the [...] event is determined and the subject is the determiner. Since the notion of determiner is taken to subsume notions such as source, possessor, origin and so on, the subject [...] can be interpreted as the source of the possibility, which yields the ability interpretation, or as the possessor of the possibility, which yields the permission reading. The ambiguity between a dispositional and a directed deontic interpretation is thus ascribed to the ambiguity of, or rather the abstractness of D, just as in the case of *John's portrait,* where the semantic relations between *John* and *portrait* established by D can be interpreted as posessor, artist, source and so on."

an X!', whereas complements of epistemic modals, like definite noun phrases, are ungrammatical in these constructions (cf. (31); Barbiers 1995:(81)):

(31)

a.Een huis/*het huis dat Jan heeft!
a house/the house that John has
'John has an extraordinary house!'

b. Werken dat Jan kan!
  work that John can
' John is able to/allowed to work very hard
'It is permitted that John is working very hard'
'It is possible that John is working very hard'

c. Wat heeft Jan een boeken/* de boeken'
  what has John a books   the books
  'John has a whole lot of books'

d. Wat kan Jan schaatsen!
  what can John skate
  'John is a very good skater'
  # 'It is possible that John is skating'

Another piece of evidence for the structure in (30) is the nature of auxiliary selection in modal environments, according to Barbiers (1995:197). Following Kayne (1993), Barbiers considers selection of HAVE to involve incorporation of D into BE (i.e. BE is the primitive auxiliary, and HAVE is a derivative). Assuming that BE and D must be adjacent, i.e. DP must be the complement of BE for incorporation to be possible, the modal can be in two positions (irrelevant material omitted):

(32)

a.   BE   D Mod Ind -> HAVE Mod Ind -> Root
b.   Mod BE D   Ind -> Mod   HAVE Ind -> Epistemic

This indicates, according to Barbiers, that the modal is generated below D in the case of root modals, but above D in the case of epistemic modals, just like he proposes (cf. the structure in (30)). However, Barbiers comments (in 1995:fn 41) that the correspondence of the position of the modal relative to HAVE and the reading of the modal as root or epistemic is not perfect, since the order Mod AUX can also have the polarity interpretation, not only the epistemic interpretation[36].

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[36] On my own account, I might add that in my own dialect of Norwegian (cf. section 3.2.4), it is also possible to get epistemic readings of a modal following a perfect auxiliary.

Barbiers (1995,1999) thus assumes the same raising structure for all modals, and essentially, the same argument structure. The various readings are a result of the nature of the complement (denoting a value on a bounded scale, a possible polarity transition or not, i.e. indefinite or definite), and the base position of the modal; in particular relative to the abstract head D.

One obvious objection to a syntactico-sentric approach such as this one, is that the various underlying structures proposed for the different readings all may give rise to exactly the same string, i.e. sentence; e.g. the subject obviously raises to what seems to be the specifier position of an epistemic modal as well, without giving rise to any kind of subject-orientation, so this raising obviously must take place for some other reason. Furthermore, the apparatus requires a range of abstract, invisible heads that never seem to have any morphological realization. Also, the author invokes a somewhat cryptic notion of a "bounded scale", LF-reconstructions and covert movements to account for all the facts (cf. Barbiers 1995). Barbiers ambition to account for all types of modals with all kinds of complements, including DP/noun phrase complements, leads to the assumption that verbal constituents project functional heads that we normally associate only with nominal categories. As pointed out by Harley (1998), the latter speculations are "perhaps less successful". For one thing, it remains unexplained why the interpretation of the verb *moeten* 'must' denotes like/dislike with names/definite DPs rather than 'want/need', as it seems do denote with indefinites and verbal complements. One natural assumption to make is that we are dealing two different, but homonymous modals in these cases. For further counterarguments along these lines, cf. Harley (1998).

 Another problem is Barbiers' two essential claims about root interpretations, repeated here for convenience:

    (i) the complement of the modal must denote a value on a bounded scale, and

    (ii) this value is not the actual value at the moment T denoted by the modal.

For the latter of these two, one might object that although this principle seems to be accurate for non-verbal complements of root modals (for their Norwegian counterparts as well), this is obviously not correct for verbal complements, cf. e.g.

(33)

    a. Jon må være på kontoret.
     'Jon must stay in his office'

Barbiers claims that the embedded proposition *Jon være på kontoret* 'Jon be in his office' should be false at the time of utterance and required to be true at some point in the future. But it seems to me that (33) may perfectly well be uttered in a situation where Jon is already in his office, i.e. where the value "1" already obtains to the event. So there must be some temporal and/or other semantic differences between verbal and non-verbal complements.

Whatever the objections, Barbiers' approach represents an innovative perspective to modals and their various interpretations, although substantial parts of this analysis remain highly speculative and important aspects are 'left for future research'.

3.2.8 Lødrup (1996a)

Lødrup (1996a) addresses almost solely Norwegian data (except for one English and one German sentence), where modals constitute a significant part. This work hooks up to the discussion surrounding the categorical status of modals; i.e. whether they should be considered auxiliaries or not.

Lødrup's point of departure is two sets of syntactic criteria typically used to define auxiliaries, i.e. language-specific criteria and language-independent criteria. Language-specific criteria include word-order facts as well as possible governors and governees of the auxiliary. Language-independent criteria include the requirement that an auxiliary occurs with a main verb and the criterion that an auxiliary does not impose any semantic restrictions on its subject; the latter as a consequence of the fact that they have no independent subject position. This in fact amounts to saying that all auxiliaries are raising verbs (but not vice versa). Now, the problem Lødrup focusses on, is that in many languages, e.g. Norwegian, the two sets of criteria (the language-specific ones and the language-independent ones) pick out different groups of verbs. Modals are of specific interest here, since according to Lødrup, root modals are picked out by the language-specific criteria, but fail to meet the language-independent criteria, while epistemic modals meet both sets of criteria. I.e. epistemic modals are indeed raising verbs, but root modals are control verbs, according to this analysis, in the tradition stemming from Ross (1969).

As evidence for the appropriateness of this analysis for Nowegian modals, Lødrup presents data illustrating the difference in behaviour between root modals and epistemic modals in passive and impersonal constructions. Root modals have an independent subject position, Lødrup says, so the "well-known fact" that epistemic modals and root modals pattern

differently w.r.t. passive and impersonal constructions is expected. The following data are presented to support this claim (Lødrup's (5) and (6)):

(34)

       a. Maten vil bli servert snart.
        'The food will be served soon.'

       b. Det vil komme noen.
        there will come someone
        'Someone will come.'

The only reading available of the modal in these two sentences, is the epistemic reading (future/prediction); the root reading (volition) is not available[37]. This is indicative of a pattern where the root modal, being a control verb, has an independent subject position and therefore imposes specific selectional requirements onto the subject. The epistemic modal, lacking an independent subject position, is unable to impose such selectional requirements onto its subject, as expected from a true raising verb.

      As another interesting difference between root modals and epistemic modals, Lødrup says that root modals, unlike epistemic modals, are able to take "ordinary NP objects", i.e. what seems to be definite pro-forms substituting for the VP complement[38]. The modals in (35) all have root readings only.

(35)

       Dette kan/vil/skal/må/bør jeg ikke
       this can/will/shall/must/ought I not
       'I can't/won't/shouldn't/mustn't/ought not to do this.'

Also, root modals, unlike epistemic modals, may appear with adverbial complements:

(36)

       Jeg vil/skal ut
       I will/shall out
       'I want to go out/I am going out.'

Lødrup mentions as a possible snag to the analysis of root modals as control verbs the fact that root modals do not passivize, with the marginal exception of *kunne* and *ville*:

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[37] It is possible to ascribe a human-like quality to *maten* 'the food' in (34)a; i.e. it is possible to 'animate' the argument, as is often the case in poetry and metaphor. If the food is ascribed such human-like properties, it is of course possible to obtain the 'volition'-reading. We will not cosider such cases here.
[38] Lødrup himself claims that these are not elliptical constructions, but modals lacking a VP complement whatsoever.

(37)

      a. Leksen må kunnes i morgen.
        The lesson must can-PASSIVE tomorrow
        'You should know your lesson by tomorrow.'

      b. Dette må ikke bare ønskes, det må villes.
        This must not only wish-PASSIVE, it must will-PASSIVE
        'You must not only wish this, you must want it.'

As a possible explanation for the general ban against passivized root modals, Lødrup claims that most root modals take benefactive subjects, and that other Norwegian verbs with benefactive subjects seem marginal as passives too (examples are e.g. *ha* 'have', *få* 'get').

      Lødrup goes on to search for differences between auxiliaries and other raising verbs (since it seems obvious that not all raising verbs are auxiliaries). He lists two such differences, auxiliaries (here, epistemic modals) allow for their VP complement to undergo topicalization as well as pronominalization, while non-auxiliary raising verbs (illustrated by the raising verb *forekomme,* 'seem') do not (cf. (38); Lødrup's (13), (15), (17) and (19)).

(38)

      a.Regne kan det ikke.
       rain can it not
       'It couldn't be raining.'

      b. *Å spille golf forekommer han meg.
        to play golf seems he to me
        'He seems to me to play golf.'

      c. (Kan det regne?) Det kan det.
        (can it rain?) It can that
        ' Could it be raining? So it can.'

      d. (Kan Per sies å være lur?) *Han forekommer meg det[39].
        (can per say-PASSIVE to be smart?) he seems to me that
        '(Could one say that Per is smart?) He seems so to me.'

If the possiblity for VP-topicaltion and VP-pronominalisation should be considered criteria for auxiliaries, Lødrup says, we get some new auxiliaries, e.g. *pleie* 'use to', *behøve* 'need', *trenge* 'need'. These differ from the traditional auxiliaries by allowing the infinitival marker[40] and allowing the pro-form *gjøre* in tags.

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[39] One of my informants states that this sentence is OK according to his grammaticality judgments.
[40] *Trenge/behøve* both allow for the infinitival marker *å* to be omitted in their negated forms, cf. chapter 2.

Finally, Lødrup derives the auxiliary-like properties of root modals (the possiblity of taking bare infinitivals, for instance) from the fact that they have epistemic counterparts. This is because "aux-properties" of root modals are parasitic on epistemic modals. Lødrup supports his claim by facts regarding the Danish modal *turde* 'dare', where the epistemic reading has become archaic, and as a result, the root version now accepts infinitivals with the infinitival marker. "The parasite has lost its host" (p. 11). Likewise, in English, the main verb *have* seems to have certain auxiliary properties that must be parasitic, according to McCawley (1988:246).

This work presents some very interesting data and observations. In particular, I find it interesting that *behøve/trenge* 'need' seem to pattern with epistemic modals w.r.t. topicalization and pronominalization of their VP complements, and that root modals may take definite VP pro-forms (*dette,* this), unlike epistemic modals. But there are also some severe shortcomings in this account. What in particular flaws the analysis is that many crucial (alleged) properties of root modals are illustrated by *kunne* 'can' and *ville* 'only'. As discussed in chapter two, these two root modals have a range of properties that are specific to them and make them untypical root modals. For instance, to illustrate his crucial claim that root modals are control verbs in Norwegian, Lødrup provides data with the root modal *vil* 'want-to' in passive and impersonal constructions (cf. (34) above, repeated here for convenience):

(39)

    a. Maten vil bli servert snart.
     'The food will be served soon.'

    b. Det vil komme noen.
      there will come someone
      'Someone will come.'

Lødrup correctly claims that root readings of the modal are unavailable in these sentences (but cf. fn 37). However, what Lødrup fails to notice, is that root readings are fine with all other modals in these constructions; i.e. *ville* is in fact the only modal that behaves in this way, cf. (40).

(40)

    a. Maten må/ skal/ kan/ bør bli servert snart.
     Maten må/skal/kan/bør serveres snart
     ' The food must/ will/ may/ should be served soon.' (i.e. epistemic/root = both OK)

      b. Det må/ skal/ kan/ bør komme noen.
        there must/ will/ may/ should come someone
        'Someone must/ will/ may/ should come.' (i.e. epistemic/root = both OK)

Note that these sentences are ambiguous between an epistemic reading, which signals the degree of likelihood of the embedded proposition, and a root reading, which signals the necessity/intention/permission of the occurence of the event described by the embedded proposition. Crucially, a root reading is indeed possible with inanimate and expletive subjects.

Thus, one very substatial part of Lødrup's argument for Norwegian root modals as control verbs with independent subject positions is based on *one,* and one very untypical root modal, the modal *ville.* As seen in (40) above, his very own tests applied to all other root modals reveal that root modals must be raising verbs, too.

However, this does not diminish the importance of some of his other observations, e.g. that *behøve/trenge* 'need' seem to pattern with epistemic modals w.r.t. topicalization and pronominalization of their VP complements, and that root modals may take definite VP pro-forms (*dette* 'this'), unlike epistemic modals.

3.2.9 Dyvik (1999)

By the author's own statement (p.c), Dyvik (1999) is first and foremost an argument against the analysis of auxiliaries presented in Butt, Niño and Segond (1996). The latter work suggests that AUX categories should be analysed as functional categories just contributing tense and aspect features to the sentence, whereas traditional analyses within HPSG and LFG treat auxiliaries as elements similar to main verbs. Dyvik (1999) argues that the traditional analysis fares better w.r.t. capturing the linguistic facts about Norwegian modals and perfect auxiliaries, since Norwegian auxiliaries indeed seem to have the properties of complement-taking verbs as suggested by traditional LFG/HPSG analyses on the subject. He motivates his claim using a range of data, observations and generalizations concerning Norwegian modals and (other) auxiliaries.

Dyvik starts out noticing that although the semantic range of Norwegian modals is similar to those in English, French and German, there is a notable systematicity of alternatives in Norwegian:

> Every modal can be interpreted either as a one-place epistemic modal or as a two-place root modal. Under the epistemic interpretations the subject referent is not an argument of the modal, which only takes the entire proposition as an argument [...]. Under the root interpretation the subject referent is an argument of the modal.

Under the epistemic interpretation the modals meet the universal criterion of an auxiliary in that they impose no semantic restrictions on the subject; thus, if modals occur with formal (i.e. expletive) subjects, only the epistemic reading is possible. Dyvik furthermore points out that when a modal takes the perfect auxiliary as a complement, the reading of the modal is always epistemic (Dyvik's (10)).

(41)

> Han   vil/kan/må/skal   ha dreiet håndtaket.
> 'He   will/may/must/is said to have turned the lever.'

Norwegain modals can also be complements of the perfect auxiliary, but never in the epistemic sense:

(42)

> Han   har   villet/kunnet/måttet/skullet   dreie håndtaket.
> he   has   [want-to/can/must/shall]PERF   turn the-lever
> 'He   has   wanted/been able/ been obliged/had a duty to   turn the lever.'

It seems possible to construct examples where epistemic modals are complements of other epistemic modals, and most clearly before the perfect auxiliary *ha*:

(43)

> Han vil kunne ha reist   i morgen.
> he   will may have travelled tomorrow
> 'Tomorrow it will be the case that he may have gone away.'

From these syntactic facts, Dyvik says, it follows that epistemic modals can only occur in finite forms (present and past tense) and the infinitive, while the past participle is reserved for the root modals.

   Dyvik goes on to refer some main points from Lødrup (1996). Since Lødrup argues that epistemic modals should be considered raising verbs and root modals control verbs, it seems natural to assume that Lødrup also considers the epistemic and root varieties of Norwegian modals distinct lexemes (although, as Dyvik points out, Lødrup (1996) is not explicit on this point). This is an assumption that Dyvik is quite unwilling to adopt:

> [...] the analysis of epistemic and root modals as distinct lexemes would give rise to a puzzlingly systematic homonymy linking pairs of epistemic and root modals in Norwegian, a systematicity which would then be unaccounted for. The formal identity of all morphosyntactic forms which they both have, along with their obvious semantic relatedness, would appear accidental.

The solution that Dyvik suggests is to bring the epistemic and root meanings together by deriving the epistemic varieties from the root varieties by lexical rules, operating on semantic forms and XCOMP (complement-taking) constraints. For instance, one needs to state that the complements of root modals and the perfect auxiliary *ha* can only be root modals or main verbs and not epistemic modals or the auxiliary *ha* itself, while epistemic modals can take all kinds of complements. Each modal verb would have pairs of entries where the epistemic entry is derived or at least derivable from the entry of the corresponding root modal.

Since Dyvik's solution has XCOMP constraints as a crucial ingredient, it follows that Dyvik is less eager to do away with XCOMP-properties as possible constraints on modals and other auxiliaries, as proposed by Butt et al. (1996). Although, Dyvik says, it would no doubt be technically possible to provide an alternative analysis of the Norwegian constructions along the lines suggested by Butt et al.

On the positive side, this article contains observations and generalizations rarely found in works on modals, and the arguments that Dyvik presents against a "two distinct lexemes" hypothesis seem appealing. On the negative side, however, several of the generalizations stated in this work simply do not hold up against closer scrutiny. Among these generalizations is the claim that root modals are always two-place predicates (cf. quote above), a widespread assumption that we have already addressed and rejected in section 2.2.2. Secondly, the claim that only epistemic modals take expletive subjects is certainly not a sound generalization either; cf. section 3.2.6 for counterevidence to this claim.

An interesting observation is that the reading of the modal is *epistemic* when preceding a perfect auxiliary and *root* when following it. While the latter observation seems to hold for standard the dialects *Bokmål* and *Nynorsk* (although not for non-standard dialects) of Norwegian, the first observation is more problematic. It is true that the *default* reading of a modal preceding a perfect auxiliary will be the epistemic reading, all things being equal. However, it is relatively easy to force a root reading of any modal in such surroundings, if we provide the sentence with an additional purpose-clause or a temporal-adverbial clause denoting a point in the future, cf. (44).

(44)

    a. Pasienten skal ha blitt beviselig feilbehandlet for å ha krav på erstatning.
        ' The patient must provenly have been subject to malpractice in order to
           be entitled to a compensation'

    b. Du bør ha gjort ferdig leksene dine før du går på kino.
       ' You ought to have finished your homework before going to the movies'

    c. En student må ha ridd denne hesten for å bli opptatt i rideklubben.
       'A student must have ridden this horse in order to be admitted to the
         jockey club'

    d. Jeg må ha bestått denne prøven før neste semester.
       ' I must have passed this test by next term.'

Still, the observation that Norwegian modals preceding a perfect auxiliary have *epistemic* as their default reading, although this is not the only reading possible in these surrounding,s is very interesting, and should be investigated further. Thus, we will pursue this question thoroughly in chapter 5.

       To sum up, although Dyvik (1999) presents a range of rarely stated generalizations in this proposal, several of these generalizations turn out to be false. This means that although his analysis may offer a better account for modals and other auxiliaries than the approach of Butt, Niño and Segond (1996), the fact remains that Dyvik's analysis builds several dubious premises.

3.2.10 Wurmbrand (1999)

Wurmbrand's main objective in this article is to challenge the wide-spread control vs. raising analysis of Germanic modals, as it is exemplified e.g. in several of the works described above. In this mission she concentrates primarily on arguments provided by three empirical domains; a) evidence suggesting that the subject is selected solely by the lower (infinitival verb) predicate; b) scopal relations between the subject and the modal; and c) evidence suggesting that root modals do not assign theta-roles.

       Wurmbrand's first piece of evidence comes from *there*-insertion contexts that allow for root readings of the modal (Wurmbrand's (3) a-c):

(45)

    a. There may be singing but no dancing on my premises.
    b. There can be a party as long as it's not too loud.
    c. There must be a solution to this problem on my desk, tomorrow morning!

These examples strongly favour a raising analysis over a control analysis for root modals (just like for the epistemic ones), Wurmbrand claims. She goes on to provide examples from quirky-case marked subjects in Icelandic. Wurmbrand's analysis at this point explicitly go

against the generalizations made in Thrainnson and Vikner 1995 (cf. section 3.2.6 above) that only epistemic modals, and not root modals allow for quirky subjects, as she provides examples of root modals with quirky subjects (Wurmbrand's (7)):

(46)

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

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

The verb *líka* assigns Dative case to its subject, whereas the verb *vanta* assigns Accusative case to its subject, and this quirky case marking on the subject is retained when these verbs are embedded under root modals, as shown in (46). As argued by Thrainnson and Vikner (1995), only raising verbs and not control verbs allow for quirky case subjects in Icelandic[41], so constructions like these in fact provide another piece of evidence that root modals are raising verbs, Wurmbrand says. So her arguments follow Thrainnson and Vikner's arguments, only her conclusion is the exact opposite to the conclusion of Thrainnson and Vikner (1995). The disagreement between Wurmbrand (1999) on one side and Thrainsson and Vikner (1995) on the other of course stems from their explicitly stated view on the potential availability of root readings in constructions like the ones in (46). Thrainnson and Vikner reject the possiblity of root readings in these constructions (T&V pp. 59-60), whereas Wurmbrand's Icelandic informants assure her that root readings are possible, and that quirky case is essential for these cosntructions to be grammatical.

      Wurmbrand then turns to passive in modal constructions. First, she notes that the generalization about passive in German is that passive is possible only if the predicate has an underlying external argument (since unaccusative predicates cannot be passivized). This generalization extends to verbs that combine with infinitival complements; passive of control verbs (like *versuchen* 'try', *beschliessen* 'decide') is possible, but passive of raising verbs is ungrammatical. So if one assumes that all modals are raising verbs, the prohibition against passivization of modals follow straightforwardly. The second lesson to be learned from modals in passive constructions comes from modals with passive complements. Control

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[41] To be exact, what Thrainnson and Vikner claim is that verbs that take quirky subjects cannot very easily be embedded under control verbs at all, but whenever that is possible, the case of the subject of the control verb must be nominative, as determined by the control verb itself, and not quirky (p. 60).

contexts in general block passivization of the embedded infinitive, while raising verbs and, essentially, epistemic *and* root modals allow an embedded passive[42], cf. the data in (47) (Wurmbrand's (11)).

(47)

      a. The biscuits seem to have been finished by Paul
      b. *The bisquits tried/decided to be finished by Paul
      c. The biscuits may be finished by Paul.

The explanation for the ungrammaticality of (47) b is that control verbs like *try* and *decide* require an agentive external argument with which they establish a thematic relation, and the inanimate subject fails to meet this requirement. No such effect arises with raising verbs or, crucially, with epistemic *or* root modals. The similarity between root modals and (other) raising verbs in this respect once again suggests that root modals, like epistemic modals, are raising verbs, not control verbs.

      Invoking May (1977,1985), Wurmbrand states that control and raising verbs differ with respect to scope properties vis-a-vis their syntactic subjects, in that raising constructions but not control constructions allow an interpretation in which the subject takes narrow scope with respect to the matrix verb, cf. the possible readings of the raising predicate construction in (48) a vs. the single reading of the control predicate construction in (48) b (Wurmbrand's (14)):

(48)

      a. Someone from New York is likely to win in the lottery
        i) *There is somebody from N.Y. and he is likely to win in the lottery*
        ii) *It is likely that somebody from N.Y. will win in the lottery*

      b. Someone from New York tried/promised to win in the lottery
        There is somebody from N.Y. and he tried/promised to win in the lottery

Now, if modals (crucially root modals) are raising predicates, one would expect modal constructions to display the same scopal ambiguity as other raising predicates, where the subject may have wide scope or narrow scope with respect to the modal. Wurmbrand provides data which suggest that this is correct, cf. (49):

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[42] As pointed out to me by Lauri Carlson (p.c.), this could be seen as a consequence of the phenomenon described as Visser's Generalization, that an object NP with a following complement can always and only be passivized if that complement relates to the object; e.g *We persuaded Lisa to go/ Lisa was persuaded to go* vs. *We promised Lisa to go/*Lisa was promised to go*; Visser (1963 – 73, III:2.2118).

(49)

    a. Somebody from New York must have won in the lottery (epistemic)
     i) *There is somebody from N.Y. and he must have won in the lottery*
     ii) *It must be the case that somebody from N.Y. have won in the lottery*

    b. An Austrian must win the next race (in order for Austria to have the most gold
      medals; root reading)
     i) *There is an Austrian for whom it is necessary to win the next race*
     ii) *It is necessary that an Austrian (whoever it is) win the next race*

Many authors (cf. the references cited in Wurmbrand 1999) have argued that this scopal ambiguity in raising constructions is due to the availability of two subject positions in these constructions; the lower subject position of the embedded predicate (corresponding to the narrow-scope reading) and the upper subject position of the matrix predicate (corresponding to the wide-scope reading). In raising constructions the subject may be interpreted as occupying either of these positions, unlike in control constructions, where only one subject position is available. Whatever the theoretical assumptions, the similarity between modals – root as well as epistemic – and (other) raising predicates with respect to scopal ambiguity suggests once again that modals are raising verbs and not control verbs.

Finally, Wurmbrand challenges the assumption that root modals are able to assign theta roles in any construction, and suggests instead that the apparent thematic relation between a root modal and the subject in certain contexts is "purely contextual". To support this claim, she provides a range of data (where some are quoted from works by other authors) that clearly do not involve a thematic relation between the subject and the root modal, cf. (50):

(50)

    a. There can be a party as long as it is not too loud
    b. The biscuits may be finished by Paul   (Warner 1993)
    c. An opening hand must contain thirteen points   (Newmeyer 1975)
    d. Icicles may hang from the eavestroughs   (McGinnis 1993)
    e. The traitor must die
    f. The old man must fall down the stairs and it must look like an accident

Wurmbrand concludes by stating the following:

    All these properties are expected and straightforwardly accounted for if a subject in a
    modal construction starts out as an argument of the lower predicate - i.e. if a modal
    construction involve a raising structure rather than a control structure.

I have little to add or object to Wurmbrand's article, which I find to be thorough and convincing. However, not all of the arguments presented here extend to all Norwegian, other Mainland Scandinavian or German modals, since there exist root modals that behave in untypical ways. Specifically, many of the arguments presented here do not extend to the Norwegian *kunne* 'can' in its ability-reading and *ville* 'want-to'*;* neither do they extend to the German modals *wollen* 'want-to' and *mögen* 'would like' (cf. Öhlscläger 1989:129 ff., who analyzes these two root modals as control verbs but all other modals as raising verbs).

3.2.11 Picallo (1990)

As the works mentioned in this survey of recent analyses of modals have all focussed (most of them exclusively) on Germanic modals, I will include a work concentrating on Romance modals as the final work in this survey.

Picallo's (1990) main purpose in this article is to argue against the traditional analysis of modals as *restructuring* verbs (e.g. Rizzi 1978) where the structure Modal + V_{INF} is seen as a monosentential structure derived from an initial multiclausal structure (e.g. Burzio 1986). Picallo argues for instead an anlysis of modals where the construction Modal + V_{INF} is monosentential on every level of representation. In Picallo's analysis, epistemic modals are constituents of INFL, whereas root modals are VP adjuncts. He specifically argues against an analysis of epistemic modals as raising verbs and root modals as control verbs, at least for Catalan.

Picallo's point of departure is the ambiguity of a sentence like the following:

(51)

El lladre **pogué** entrar per la finestra.
 the thief could come in by the window
i) 'It is possible that the thief came in by the window.'
ii) 'The thief was able to come in by the window.'

This ambiguity, Picallo says, follows from the fact that this sentence may be assigned two distinct D-structure configurations. The modal may be generated in INFL and recieve an epistemic reading (51)i), in which it has scope over the entire clause, or it may be generated as an adjunct to VP and recieve a root reading (51)ii), in which it is interpreted as a subject-oriented secondary predicate. The two different structures are represented by (52)a and b respectively.

(52)

a: Epistemic reading   b: Root reading

```
        IP                                      IP
       /  \                                    /  \
      NP   I'                                 NP   I'
          /  \                                    /  \
         I⁰   VP                                 I⁰   VP₁
       ┌─────┐  / \                            ┌─────┐ /  \
       │Modal│(spec) V'                        │+Tns │Modal VP₂
       │+Tns │      |                          │+Agr │    /  \
       │+Agr │      V⁰                         └─────┘ (spec) V'
       └─────┘                                              |
                                                            V⁰
```
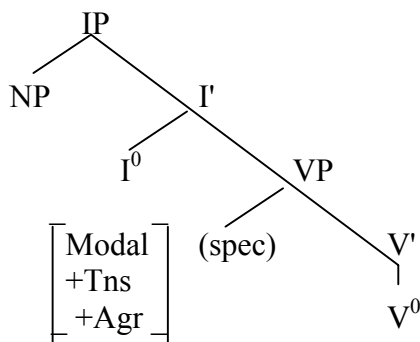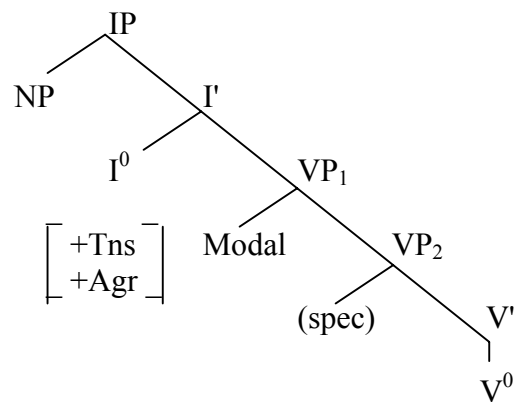
Picallo goes on to present evidence from various constructions to support his claims. First, he invokes the assumption that derived subjects in Romance cannot bind anaphoric clitics (Kayne 1975, Rizzi 1986). This amounts to saying that raising predicates disallow clitic climbing of anaphoric clitics. But sentences with epistemic modals and anaphoric clitics that have undergone climbing are always fully grammatical in Catalan and in the Romance languages in general, which makes Picallo conclude that epistemic modals cannot be raising predicates. Instead, these facts provide evidence for Picallo's own structure for epistemic modals (depicted in (52)a above), where the subject is base generated in <Spec,IP> as the external argument of the infinitive predicate. I.e. the subject of a sentence containing an epistemic modal is a non-derived subject, and thus able to bind an anaphoric clitic.

Picallo finds further evidence for this structure in the fact that epistemic modals cannot be preceded by auxiliaries. On the assumption that auxiliaries are VP constituents, this fact follows if epistemic modals are generated in INFL. On the other hand, root modals are VP constituents themselves (cf. (52)b above); thus nothing prevents them from being preceded by an auxiliary. Thus, in (53)a the modal has only the epistemic reading, whereas in (53)b, the modal has only the root reading (Picallo's (23)):

(53)

a. En Joan **pot haver** anat a Banyoles.
Joan may have gone to Banyoles.

b. En Joan **ha pogut** anar a Banyoles.
        has   could   go
  'Joan has been allowed to go to Banyoles'

Furthermore, whenever two modals occur in the same sentence, the first modal, but not both, may be interpreted as epistemic. This follows if epistemic modals are constituents of INFL (presumably because INFL has only one position, like in Roberts (1985) above). Thus the second modal in a two-modal sequence receives a root interpretation. Picallo also derives some temporal peculiarities of epistemic modals from their base position in INFL. Epistemic modals are always finite because the modal in the head of an untensed INFL is in a position to govern PRO, which must be ungoverned.

Although Picallo rejects the control vs. raising analysis for Catalan modals, he does assume that root modals assign theta-roles. So the theta-difference between root and epistemic modals amounts to the property of epistemic modals to projecting a subject position to which they do not assign a theta-role; a property that make them unique among predicates (verbal or adjectival). In contrast, root modals (and semi-modals) impose selectional requirements on the subject of the complex in which they appear, and thus they are theta-role assigners. This would be compatible with the hypothesis that root modals are obligatory-control predicates, but this is not the option chosen by Picallo. Obligatory control predicates constitute the main predicate of their own sentence, with the infinitive as the main predicate of an embedded sentence. But *en/ne*-cliticization (which reveals the thematic property of a predicate as ergative or non-ergative; as e.g. *en* (partitive clitic) is impossible with non-ergative verbs) depends on the properties of the infinitive verb, and is not influenced by the modal at all. Thus, Picallo analyses MV+Infinitive complexes as complex VPs. Theta-roles assigned by root modals are secondary theta-roles, only manifested by selectional restrictions. The infinitive is the primary predicate and determines e.g. the possibility of *en/ne*-cliticization and the availility of an arbitrary interpretation of *pro* (p.302), and these phenomena are unaffected by the modal.

However, Picallo also finds evidence that the (semi-)modal *voler* 'want-to' ("and a few other verbs") may function as a control main predicate in some instances; i.e. they double as primary predicates (in a structure of obligatory conrol) and as secondary predicates (as root modals). Again, clitic climbing is used as an important diagnostic.

Picallo's article is interesting in that it attacks the control vs. raising analysis from a different angle compared to the works we have examined so far. Likewise, it is intriguing that he reaches the exact opposite conclusion of e.g. Wurmbrand (1999): Whereas Wurmbrand concludes from her examination that all (Germanic) modals are raising verbs, Picallo concludes from his investigation that all (Romance) modals are non-raising verbs. This would

be really exciting generalizations if they hold up against observable facts, since modals seem to perform the same semantic tasks in Germanic and Romance (e.g. in their epistemic v.s root readings), and the inventory of modals is surprisingly similar as well (e.g. *poder* 'may/can', *deure* 'must' , *haver de* 'have to', *voler* 'want-to', *gosar* 'dare'). So why should the syntactic facts be so radically different?

Picallo states, for instance, that root modals obligatorily assign a theta-role and thus cannot take non-argument NPs as subjects. As we have seen in section 3.2.6, this is not true for Germanic modals. On the other hand, this has been frequently claimed for Germanic root modals as well (Lødrup 1996, Dyvik 1999, Thrainsson and Vikner 1995). So perhaps one should undertake a broader investigation of Romance modals before celebrating the exciting differences.

3.3 Modals and theta-roles

In the last few decades, a significant part of the discussion sorrounding the syntactic description of modals has revolved around the question of whether modals are theta-role assigners or not. This is not surprising, as this question is important to shed light on the structural properties of a modal as well – do modals pattern with raising verbs or with control verbs? Furthermore, if the complement of a modal could be considered a clausal argument, one might argue for a biclausal structure when modals are involved, whereas one otherwise might be inclined to treat modals as some kind of auxiliary or functional operator.

The question of the complement's possible status as an argument seems to be explicitly addressed much more rarely than the question of a modal's potential external theta-role, but it may be implicitly present in a number of control vs. raising analyses, in part because of the "PRO theorem" (Chomsky 1981, p. 191). The "PRO theorem" states that PRO must be ungoverned, unlike a trace t, which, on the other hand, must be governed. This means that a complement of a control verb, which does contain such a PRO subject, must contain a barrier to government by the verb selecting this complement. A raising verb, on the other hand, must crucially not contain such a barrier, to allow the trace of the moved subject to be governed by the verb.

One common way of encoding this difference within the GB version of P&P, is to assume that control verbs take CP complements whereas raising verbs take VP (or IP)

complements. If an author takes the modal to be an auxiliary, he will typically represent the modal as a raising verb taking a VP complement (cf. e.g. Roberts 1985, 1993)[43].

These differences normally correlate with the author's assumptions about the theta-assigning properties of the modal, such that the modal-as-control-verb will be a main predicate, assigning an external theta-role to its subject and an internal theta role to its CP complement, whereas the modal-as-auxiliary is considered a clausal operator with no theta-properties (cf. e.g. Roberts 1993; Picallo 1990).

As regards the possible external theta-role of a modal, there has been a general consensus among authors that epistemic modals never assign such theta roles. But for the root modals, the views expressed may be collected into three different groups. Firstly, there are authors that advocate the straightforward version of the control-vs. raising-analysis of modals, who implicitly or explicitly express the assumption that root modals assign an external theta-role to their subjects (e.g. Lødrup 1996, Dyvik 1999, Thrainsson and Vikner 1995 for Icelandic). Secondly, there are those authors who, more or less independently of an analysis of root modals as control or raising verbs, assume root modals to assign a particular type of theta-role; one that is irrelevant or invisible to the theta-criterion. This role is dubbed an *adjunct theta role* (Zubizarreta 1982; Roberts 1985,1993; Pollock 1989), an *additional theta-role* (Vikner 1988, Thrainsson and Vikner 1995 for Danish) or a *secondary theta-role* (Picallo 1990). This adjuct/additional/secondary theta-role is often claimed to manifest itself in that the root modal imposes selectional requirements on its subject, unlike (other) raising verbs. The third group of authors reject the control vs. raising analysis and argue that modals, crucially, even root modals, are raising verbs that assign no theta-roles (Pullum and Wilson 1977, Wurmbrand 1999). These authors ascribe the aforementioned "selectional requirements" on the modal's subject not to the semantic or syntactic specification of the root modal, but to pragmatics, such that these effects are purely contextually determined (e.g. Wurmbrand 1999)[44].

I will examine the argument structure of Norwegian modals in chapter 4. I argue that all three of the views mentioned above are insufficient to account for the various argument

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[43] Raising verbs are apparently able to take a range of complements. In ECM constructions they are in general assumed to take IP complements. In Norwegian, there seem to exist raising verbs (i.e. passive verbs) that take VP complements (complex passives) and some that take small clauses as complements as well, e.g.
(i) Jon framsto [t$_{Jon}$ som idiot].   (ii) Jon ble betraktet [t$_{Jon}$ som idiot].
   Jon appeared   as idiot   Jon was considered   as idiot
   'Jon appeared to be an idiot'   ' Jon was considered an idiot' (Cf. Eide 1998 for arguments).
[44] Barbiers (1995, 1999) does not fit into any of these three frames, since although Barbiers considers all modals to be raising verbs, his parameter [± Subject orientation] is in part syntactically encoded by the abstract head D.

structures of Norwegian modals. Hence, it will be argued that the inventory of Norwegian modals include main verbs, which are ordinary transitive verbs, control-type verbs (e.g. the dispositional modals), raising-type verbs (epistemic modals) and finally, raising verbs that are optional theta-assigners (root modals).

3.4   Insertion point of root vs. epistemic modals

As seen in the survey above, various authors have proposed that root and epistemic modals are inserted in different positions. This is particularly elaborated on in the proposal of Roberts and Roussou (2000) and Cinque (1999), where the former authors build on the proposal of the latter. Recall that Cinque's hierarchy ranges over as much as eight or possibly nine different positions where a modal may be inserted (the exact number of possible insertion positions is left undetermined in Cinque's proposal). It is the nature of the insertion slot of the modal (e.g. as $Mod_{epistemic}$ or $Mod_{volitional}$) which determines the reading of the modal.

Picallo (1990) and Barbiers (1995) also address the possible insertion slots for root and epistemic modals. Picallo argues that epistemic modals are inserted in INFL whereas root modals are adjouned to VP. Barbiers, on the other hand, argues that epistemic modals are inserted above whereas root modals are inserted below an abstract head D which is taken to encode subject-orientedness. Both authors support their findings with the observation that a modal (typically) gets an epistemic reading when preceding a perfect auxiliary and a root reading when following a perfect auxiliary. The latter observation is also made in Dyvik (1999).

The possible insertion slots of Norwegian modals is addressed in chapter 5, where I investigate the interaction of modals with aspectuals, tense and negation. My findings suggest that the only valid generalization is that epistemic modals always scope over root modals.

4   The argument structure of Norwegian modals

In this chapter, I will argue that most Norwegian modals are best described as raising verbs in their epistemic as well as in their root reading. First, I round up various arguments taken to support the control vs. raising analysis, i.e. the family of analyses where root modals are analysed as control verbs and epistemic modals are analysed as raising verbs, and show how these arguments fail to hold up against closer scrutiny (section 4.1). Instead, I show that epistemic *and* root modals pattern with raising verbs in (nearly) all relevant respects. There are two apparent exceptions to this generalization, notably the dispositional root modals *kunne* 'can' and *ville* 'want-to'. These two modals have main verb versions in which they take CP or DP complements, but even in their auxiliary versions they pattern with control verbs rather than raising verbs w.r.t. a number of properties; most importantly, their selectional requirements w.r.t. a potential subject and their lack of subject-predicate scope ambiguity. However, in certain constructions, notably where these modals take a small clause complement, these two verbs behave like raising verbs too[1]. On the other hand, all other root modals, which indeed do pattern with raising verbs w.r.t. the aforementioned selectional and scopal properties, display a control-verb-like behavior under certain circumstances. Specifically, the possible interpretations of modals in pseudocleft constructions suggest that even these modal raising verbs are construed as "control verbs" in these specific (i.e. pseudocleft) environments. Thus, the behavior of modals with a pseudoclefted or a small clause complement constitute an important part of this discussion (cf. section 4.2).

In section 4.3 we broaden our scope and look at 'reanalysis verbs' (Johnson 1985, Arad 1998); a group of verbs that seem to behave just like modals w.r.t. a range of properties. Examples of such verbs are e.g. *promise* and *threaten*. Like modals, they have proposition-scope readings as well as +θ readings and they behave like raising verbs on a certain reading. Moreover, just like modals, they behave like control verbs in pseudoclefts constructions.

To solve the apparent contradiction that modals (and reanalysis verbs) simultaneously show signs of being raising verbs as well as control verbs, I will exploit Hornstein (1998, 1999, 2000), who strives to reduce raising and control phenomena to the single phenomenon of raising (cf. section 4.4). On this background, modals (and reanalysis verbs) are construed

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[1] Admittedly, the modal *kunne* does not seem to take a small clause complement in standard dialects of Norwegian. However, in some non-standard dialects, like in German, *kunne* takes a directional small clause complement.

as *optional* θ-assigners; i.e. predicates that *optionally* assign a θ-role (section 4.5). Like Hornstein, I assume that the assignment of an external θ-role takes place in a spec-head configuration[2]. In a development of Hornstein's analysis, I suggest that this spec-head relation is established in overt syntax or not at all. Evidence to this effect is shown to exist in sentences containing modals with expletive subjects.

Furthermore, this spec-head relation is a necessary, but not a sufficient condition on assignment of the external θ-role from a modal to the subject. This is shown by the fact that proposition-scope (i.e. non-θ-) readings of the modal are possible even where a spec-head predication relation holds between the subject and the modal in overt syntax. I will argue that a proposition-scope reading of the modal involves interpreting a non-topmost link in a DP-chain; i.e. a proposition-scope reading (corresponding to "lowering" of the subject in May's 1985 terms) involves interpreting a DP-trace instead of the DP in the surface position:

[DP [modal [t$_{DP}$ [Main verb]]]]

Intriguingly, a lower subject position *must* be available for this "semantic lowering" of the subject to take place. Thus, where the lower subject-position is elided (like for instance in pseudocleft constructions), "lowering" is impossible, and the θ-reading of the modal is the only possible reading. The outcome of this discussion is the generalization that θ- vs- non-θ-readings of a modal are a result of *overt access* to subject positions; i.e. in *overt syntax*.

In section 4.6, I will suggest that we need a two-level semantics (in the spirit of Bierwisch and Lang 1989) to account for important uses and readings of modals. Whereas modals *may* be construed as one-place predicates on one semantic level (Semantic Form), taking solely the embedded proposition (i.e. the sentence minus the modal) as their argument, they are *always* two-place predicates on a second semantic level (Conceptual Structure). At the latter level, the source of modality (what has sometimes been called the *rule-giver*) constitutes the first argument and the embedded proposition constitutes the second argument.

Finally, I sum up the most important findings and an overview over the selectional requirements of Norwegian modals (section 4.7) Norwegian modals always take at least one argument; notably an internal propositional complement. In addition, they may assign a θ-role to their subjects. This subject is always raised from the embedded clause, since modals do not assign Case to an embedded subject (cf. also Nordgård and Åfarli 1990:101).

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[2] Hornstein assumes that theta-assignment takes place when the DP is merged with the theta-assigning predicate. Thus, Theta-roles may be assigned in e.g. head-complement configurations as well, but the most important

4.1 The "control versus raising" analysis

I will start out by rounding up some of the core arguments invoked by the advocates of the so-called "control versus raising" (CvR) analysis, where epistemic modals are analyzed as raising verbs, whereas root modals are analysed as control verbs. This is an anlysis whose tradition dates back to Ross (1969), and it still has numerous advocates (cf. the previous chapter). Although I have argued against some of the core arguments for this analysis in the previous chapter, this discussion was directed at the specific arguments expressed in the proposal under discussion; hence it may be difficult to construe the full picture. At this point, I will examine the various arguments taken to support the control vs. raising analysis and show that they do not hold up against a closer scrutiny of the empirical facts.

The crucial assumption of the control vs. raising analysis is that root modals are transitive (i.e. two-place) predicates whereas epistemic modals are intransitive[3] (i.e. one-place) predicates. That is, epistemic modals and root modals give rise to two different syntactic structures[4]:

(1)

a. **epistemic:**   b. **root:**

Epistemic modal:(__ ,θ <IP>)   Root modal: (θ <DP>, θ <IP>)

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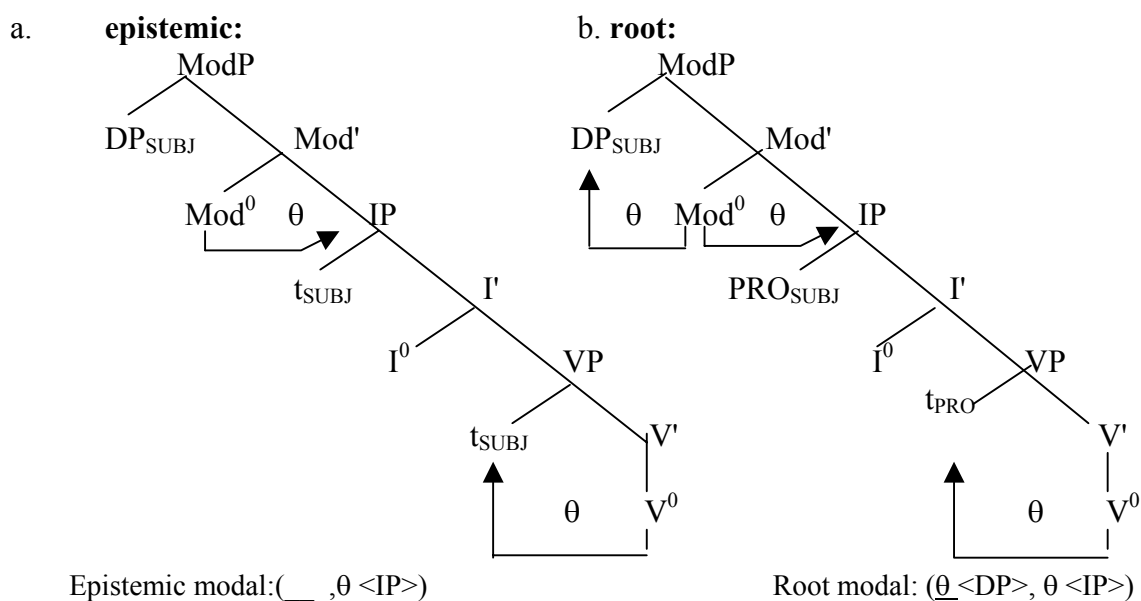
thematic role in the following discussion is the external Theta-role, and this role is assigned in a spec-head configuration.

[3] In Ross (1969), the term *intransitive* did in fact mean that the modal took no object. Instead, the proposition (which is treated as an embedded proposition here; i.e. IP) was taken to be the *subject* of the modal.

[4] There are a number of open questions here, e.g. why PRO and the subject-trace occur in the same structural position. At the moment, I want to gloss over these obvious questions, although I will mention that Stowell (1982) proposes that the nature of the two I(NFL) heads are different. Tensed I(NFL) assigns null case, unlike untensed I(NFL), hence, only tensed I(NFL) accepts a PRO subject. Furthermore, assume that I(INFL)[+ Tense] is a barrier to government, whereas I(NFL) [-Tense] is no barrier. Obviously, this is simply restating the facts, but still, this is one possible analysis that allows us to keep things simple for now.

This alleged difference between root and epistemic modals leads to a range of predictions; in particular predictions related to the putative selectional requirements on a potential subject imposed by the root modal, but also predictions concerning subject-modal scope ambiguity[5]. Some important predictions are as follows:

(2)

	Epistemic modals	Root modals
a. Allow expletive subjects	yes	no
b. Allow weather-*det/Það* 'it' subjects	yes	no
c. Allow idiom-chunk subjects	yes	no
d. Allow quirky subjects (Ic.)	yes	no
e. Allow passive compl. with inanimate subject	yes	no
f. Display subject-modal scope ambiguity	yes	no
g. Passivize	no	yes
h. Allow pseudoclefted complement	no	yes

Most of the predictions listed in (2) follow straightforwardly from the assumption that root modals are control verbs that assign an external (e.g. experiencer) θ-role; whereas epistemic modals are raising verbs that assign no external θ-role. Admittedly, some of the predictions listed rest on auxilary assumptions, but mostly of a kind that is in accordance with widespread hypotheses within the P&P theory; e.g. Burzio's Generalization (Burzio 1986) and the assumption that raising structures, as opposed to control structures, give rise to scopal ambiguities (cf. May 1977, 1985). In what follows, we will go into each of these predictions, consider what motivates them as predictions of the control vs. raising analysis, mention some of their advocates and observe how they hold up against empirical facts.

(2)a is expected on the assumption that expletive subjects are semantically empty, thus banned from θ postions. Since the subject position of a root modal is considered a θ– position in the CvR analysis, i.e. since the root modal obligatorily assigns a θ role like other control verbs, it follows that expletive subjects do not occur with root modals (cf. e.g. Vikner 1988[6], Thráinsson and Vikner 1995[7], Dyvik 1999). However, this prediction is not fulfilled, as seen by the data in (3). In all five cases, we have root readings of modals with expletive subjects.

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[5] The terms subject-predicate scope ambiguity and subject-modal scope ambiguity are employed as equal terms. In both cases, the ambiguity concerns whether or not the modal/matrix predicate takes scope over the subject.

[6] In fact, Vikner (1988:fn 6) claims that modals do not take expletive subjects at all.

[7] Recall from section 3.2.6 that Vikner (1988) and Thráinsson and Vikner (1995) assume that Danish modals are raising verbs. However, since (some) root modals are assumed to assign an 'additional theta-role' and this additional theta-role assignment is taken to be subject to certain restrictions (cf. Thráinsson and Vikner 1995:64), this analysis comes out with the same predictions as the mainstream control vs. raising analysis.

(3)

      a. Det skal bestandig være minst to voksne til stede.
        'There should always be at least two adults present.'

      b. Det må komme minst femti personer for at festen skal lønne seg.
        there must come at least fifty people for the party to pay off
        'At least fifty people must show up for the party to pay off.'

      c. Det bør bli forandringer m.h.t. denne praksisen.
        there should occur changes w.r.t. this (code of) practice
        'This code of practice ought to change.'

      d. Det kan være opptil fire patroner i hylsa pr. ladning.
        'There may/can be up to four cartridges in the case in one load.'

      e. Det behøver/trenger ikke være noen voksne til stede.
        'There need not be any adults present.'

There is in fact one modal that *does* fulfill the prediction; namely the modal *ville* 'want-to'. This modal rejects expletive subjects on a root reading, cf. (4) a. Furthermore, the modal *kunne* 'can' in its dispositional (i.e. 'ability') reading behaves the same way; cf. (4)b, although the permissive reading of *kunne* 'may' patterns with all other modals in that it accepts expletive subjects; cf. (3)d.

(4)

      a.   *Det vil komme en mann hit i morgen.
            'There wants to come a man here tomorrow (root reading).'

      b.   *Det kan komme ti gjester i fødselsdagen din.
            there can come ten guests to your birthday party
            'There are able to come ten guests (dispositional reading).'

Expletives are non-arguments and thus expected to be banned from θ-positions. The same applies to other non-arguments like 'weather-*it*' and idiom-chunk subjects[8], according to Thráinsson and Vikner (1995). Again, the expectation is borne out for *ville* 'want-to'; cf.(5), but clearly not for deontic root modals in Norwegian , cf (6):

(5)

      a.   Det vil snø snart.
            'It will/*wants to snow soon (i.e. epistemic = OK, root = *)'.

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[8] Note that on a metaphoric reading, where inanimate referents are ascribed a human-like quality, non-arguments like the idiom subject *nøden* 'the need' may be acceptable on a root reading of *ville* 'want-to'. We will discard such cases here. Thus, whenever I state e.g. that a modal takes animate/intentional subjects, I am abstracting away from metaphoric uses of this kind (cf. also fn. 15).

      b.   Nød vil lære naken kvinne å spinne (idiom: Nød lærer naken kvinne å spinne).
               'Need will/*wants to teach naked woman to spin (epistemic = OK, root = *).'

(6)

      a.   Nå bør det snart regne; gresset er så tørt.
               now should it soon rain; the grass is so dry
               ' It ought to rain soon; the grass is so dry.'

      b.   Det kan ikke snø nå som vi er på landtur!
    'It cannot snow now that we are on a picnic!(= negated permission)'

      c.   Det må blåse sterkere for at draken skal lette.
    'it must blow harder for the kite to fly'
               'It must be windier for the kite to fly.'

      d.   M.h.t. Jon, så kan fanden ta ham (idiom: Fanden ta Jon!)
               'As for John, the devil may take him (= permission).'

The dispositional modal *kunne* 'be-able-to' constitutes a special case, since it does in some instances accept idiom subjects (cf. (7)). In sentences with weather-*it* subjects, however, it is questionable whether the reading of the modal is a dispositional reading; instead, we get a reading that resembles the "quantificational" reading discussed in Carlson (1977) and Brennan (1993, 1996, 1997)[9]. This reading may be paraphrased 'it (sometimes) happens that p'.

(7)

      a.   Nød kan lære naken kvinne å spinne (idiom: Nød lærer naken kvinne å spinne)
               'Need can teach naked woman to spin (= ability).'

      b.   Det kan snø mye mer enn dette.
               'It can snow much more than this.'

Prediction d listed in (2) above states that only epistemic modals, not root modals, allow for quirky (i.e non-nominative) subjects (Thráinsson 1986, Thráinsson and Vikner 1995). The argument goes as follows: Root modals do not select for quirky subjects themselves. Like other control predicates, they select for nominative subjects. Epistemic modals, on the other hand, are raising predicates, and impose no selectional requirements onto their subjects. Thus, if a predicate that requires a quirky subject is embedded under an epistemic modal, the quirky subject may be raised to the subject position of the epistemic modal, retaining its quirky case.

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[9] The quantificational reading of modals has mostly been discussed in relation to generic statements, such as *a basketball player can be short,* which could be paraphrased 'there exist short basketball players' (cf. e.g. Brennan 1993: 96 ff). Brennan also lists a range of related readings under the term "quantificational", e.g. *Joan can be silly,* paraphrased 'Joan has a tendency to behave in a silly manner'.

No such raising can take place with root modals, since root modals are control structures; which implies that their subject position is occupied by a nominative subject[10].

However, Wurmbrand (1999) provides some data where root readings are possible although the subject is quirky:

(8)

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

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

Since root readings are indeed acceptable in these sentences, as claimed by Wurmbrand's Icelandic informants (and these judgements are confirmed by my own Icelandic informants), we have counterevidence to the prediction that quirky subjects are incompatible with root readings of modals. Thus, if quirky subjects are indeed ungrammatical in control structures, as claimed by e.g. Thráinsson and Vikner (1995)[11], this is yet another indication that at least some root modals are *not* control verbs, and that once again, some root modals pattern with raising verbs. Interestingly, according to my own Icelandic informants, the Icelandic counterparts to the Norwegian dispositional root modals *kunne* 'can' and *ville* 'want-to', i.e. *kunna* and *vilja,* reject a root reading when the subject is quirky, thus these two modals pattern once again with control verbs, not raising verbs[12]:

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[10] It is somewhat curious and a matter of theoretical development that Roberts (1985:38, 1993: 314) takes exactly the existence of 'quirky subject + modal' data as evidence (or rather an indication) that modals were control structures in middle English. That is: exactly the same type of data that Wurmbrand (1999) uses to argue that modals are raising verbs in modern Icelandic is used by Roberts to support the hypothesis that they are control verbs in Middle English. Roberts' (1985) argument goes as follows: Quirky subjects posess inherent Case. If so, there is no need and in fact no way for this subject to raise, as there is nothing to drive this movement. Thus, since the subject does indeed precede the modal, the explanation must be that the subject is base-generated as the subject of a modal, i.e. the modal must be a control verb. At this point in time, it was a widespread assumption within the P&P Theory that the subject's need (and later: Greed; Chomsky 1993) for Case was the only driving force behind DP movement. Later, this assumption was modified, as the Extended Projection Principle (the EPP) was introduced as another possible driving force for DP movement (cf. Chomsky 1993, Lasnik 1995). Roberts' (1993) argument for considering these data to instantiate control-structures is that they "could not be treated in terms of raising, since raising cannot place an NP in indirect object position (on the assumption that no operation of 'quirky raising' creating dative subjects exists; we assume that it does not since this would allow dative expletives, something we do not find)."

[11] It has been pointed out to me by Norbert Hornstein that Boškovic (1994) provides examples from Spanish where quirky subjects are possible in control (-like) structures with the cognate of *want*. Hornstein suggests that this variation may be due to a parametric difference between Spanish and Icelandic, since Spanish evidently allows for quirky subjects in control-type structures whereas Icelandic does not.

[12] I am indebted to Jóhannes Gísli Jónsson for providing me with these data, and to Jóhanna Barðdal for confirming the judgements.

(9)

     a. Haraldi /*Haraldur vill leiðast.
       HaraldDAT/HaraldNOM will borePASS
       'Harold has a tendency to be bored (epistemic reading only).'

     b. Haraldi /*Haraldur kann að leiðast.
       HaraldDAT/HaraldNOM may to borePASS
       'Harold may be bored (epistemic reading only).'

These two Icelandic modals take nominative subjects on a root reading, cf. (10). Note that a predicate which requires a quirky subject cannot be directly embedded under these root modals; we need to add the causative *láta sér* to the construction:

(10)

     a. Haraldur vill ekki láta sér leiðast
       HaraldNOM wants not let self bore-PASSIVE
       'Harald won't let himself be bored.'

     b. Haraldur kann ekki að láta sér leiðast
       HaraldNOM can not to let self bore-PASSIVE
       'Harald does not know how to be bored.'

This means that although (at least some) deontic root modals pattern with raising verbs w.r.t. quirky subjects in Icelandic, the Icelandic counterparts to the *dispositional* root modals pattern with control structures in not accepting quirky subjects.

     Prediction (2)e states that only epistemic modals are compatible with passive complements with inanimate subjects (see e.g. Lødrup 1996). Again, this claim stems from the alleged selectional requirements imposed onto the subject of a root modal. If root modals are control structures, they are expected to select for intentional subjects. This intentional subject would have to control the reference of the PRO subject of the embedded passive. Thus, if this embedded subject (PRO) is inanimate, there will be a semantic mismatch between the controller and the controllee[13]. On the other hand, if we evade the mismatch by providing the root modal with an inanimate subject, there ought to be a mismatch between this subject and the root modal, which, allegedly being a control verb, selects for intentional subjects. This mismatch is indeed manifested in various control structures, cf. (11)a. Notice, however, that no such anomaly arises with raising structures, examplified by (11) b. Crucially, no such anomaly or mismatch arises with modals either, cf. (11)c, which allows for

a root reading as well as an epistemic reading; data from Wurmbrand (1999)[14]. Notice in particular that even a root reading does not give rise to this mismatch effect, although such an effect would be expected if all root modals were control verbs.

(11)

> a. *The bisquits tried/decided to be finished by Paul
> b. The biscuits seem to have been finished by Paul
> c. The biscuits may be finished by Paul.

Most Norwegian root modals behave like the English *may* in this respect. They behave like raising structures, exhibiting no selectional requirements ruling out an inanimate subject.

(12)

> a. Maten må/ skal/ kan/ bør/behøver ikke/trenger ikke bli servert snart.
>
> b. Maten må/skal/kan/bør/behøver ikke/trenger ikke serveres snart (s-passive).
>   'The food must/ will/ may/ should/need not be served soon (epistemic/root = OK).'

However, the root modal *ville* 'want-to' does not follow this pattern. Again, *ville,* 'want-to', patterns with control structures and not with raising structures in that it does display this mismatch between an inanimate subject and the root modal; likewise, *kunne* 'can' in its dispositional reading is marginal and perhaps dubious in this construction, see (13).

(13)

> a. Maten vil bli servert snart[15].
>   'The food will/*wants to be served soon (epistemic OK; root=*).'
>
> b. Maten kan bli servert snart.
>   '*/??The food is able to be served soon.'

Prediction (2)f states that on the CvR analysis, subject-modal scope ambiguity is to be expected with epistemic modals but not with root modals (cf. also Wurmbrand 1999). This prediction rests on the observation (May 1977, 1985) that control structures and raising structures differ w.r.t. their respective scope properties vis-à-vis their syntactic subjects. Raising constructions but not control constructions allow for an interpretation in which the

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[13] An appropriate question would be how such a sentence could be expressed at all, since a PRO subject of a predicate embedded under a control predicate obligatorily gets its reference from the matrix subject if we have an instance of subject control; from the matrix object if we have object control.
[14] Wurmbrand states that these data are from Warner (1993) originally.
[15] Notice that it is always possible to get a non-anomalous reading of such sentences if we allow for 'animation' of inanimate referents, or metaphorical uses. Thus, if we apply the human property of wanting to something inanimate like 'the food', we may have a root reading of the modal here. However, these phenomena are discarded in discussions of selectional requirements involving semantic properties like [± human] or [± animate].

subject takes narrow scope with respect to the matrix verb, cf. the two readings of the raising structure in (14)a vs. the single reading of the control structure in (14)b (data from Wurmbrand 1999).

(14)

> a. Someone from New York is likely to win in the lottery.
>   i) *There is somebody from N.Y. and he is likely to win in the lottery.*
>   ii) *It is likely that somebody from N.Y. will win in the lottery.*
>
> b. Someone from New York tried/promised to win in the lottery.
>   *There is somebody from N.Y. and he tried/promised to win in the lottery.*

Unfortunately for the advocates of the CvR analysis, most root modals pattern once again with raising structures and not with control structures as they allow for both readings; see the data in (15).

(15)

> a. Noen søkere bør/kan/må/skal søke igjen.
>   'Some applicants should/may/must/will apply again.'
>   i) There are some applicants and they should/may/must/will apply again.
>   ii) It is preferred/allowed/necessary/intended that some applicants apply again.
>
> b. Noen søkere behøver ikke/trenger ikke søke igjen.
>   'Some applicants need not apply again.'
>   i) There are some applicants and they need not apply again.
>   ii) There is no need for some applicants to apply again.

But even here, the root reading of *ville,* 'want-to', sticks out and behaves like a control structure. The root modal *ville* is incompatible with a narrow scope reading of the modal, cf. (16). The same applies to the dispositional reading of *kunne* 'can'; cf (16)b:

(16)

> a. Noen søkere vil søke igjen.
>   'Some applicants want to apply again.'
>
> b. Noen søkere kan også søke til neste år.
>   'Some applicants are also able to apply next year.'

As noted e.g. by Lødrup (1996), if root modals are control structures, one might expect them to passivize, given that control verbs typically do. But Norwegian root modals do not passivize, as duely noted by Lødrup. The exception is once again constituted by the main verb version of the modal *ville* 'want-to', which marginally passivizes when it takes a CP complement, and the main verb version of *kunne* 'can', which may marginally passivize in

those instances where it takes a DP complement[16] (cf. also Öhlschläger 1989: 59-60 and fn 12 for German[17]). In addition, the main verb versions of the two new members of the class of modals, notably *trenger ikke/behøver ikke,* 'need not', are able to passivize. Let me emphasize that the passives in (17) are not the passive versions of the modal auxiliaries *kunne, ville* and *trenger ikke/behøver ikke*. Firstly, since there is no verbal or small clause complement[18], and secondly, because all four verbs accept *do*-replacement in their active version. This latter property applies to lexical, non-auxiliary verbs only (see section 2.3.2). Thus, the input to these passives is the main verb version of *kunne, ville* and *trenger/behøver ikke* 'need not'. The data (17) a and b are from Lødrup (1996), (17) c is my own[19].

(17)

   a. Leksen må kunnes i morgen.
      The lesson must can-PASSIVE tomorrow
      'You should know your lesson by tomorrow.'

   b. Dette må ikke bare ønskes, det må villes.
      This must not only wish-PASSIVE, it must will-PASSIVE
      'You must not only wish this, you must want it.'

   c. Medisinen trengs/behøves ikke lenger.
       medicine-DEF need-PASSIVE no longer
      'The medicine is no longer needed.'

The modal *auxiliaries*, then, do not passivize, unlike control verbs. Barbiers (1995:157 ff), claims that modals are statives, and that this is the explanation for their lack of passive versions:

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[16] Recall from section 2.3.2 that neither *ville* nor *kunne* may passivize when it takes a verbal complement:
   i) * (??Å) lese leksen må kunnes i morgen.
      to read the homework must can-PASSIVE tomorrow
      'One must be able to read one's homework tomorrow'

   ii) *(??Å) lære seg matematikk må ikke bare ønskes, det må villes.
       to teach oneself mathematics must not only wish-PASSIVE, it must want-PASSIVE
      'One must not only wish to learn mathematics, one must want it'

[17] The German cognates of *kunne* and *ville,* i.e *können* and *wollen* marginally passivize. In addition, a third modal may passivize in German; i..e. *mögen* 'like'. Öhlschläger mentions that these modals passivize only when their complements are non-infinitives (f.n. 12 p. 59).

[18] Recall that a modal taking an AdvP/PP complement belongs to the category of auxiliaries, as shown by the fact that they resist *gjøre* 'do'-replacement in tags, see section 2.3.2.

[19] Even ordinary control structures are in some cases much more comfortable with a non-verbal complement in their passive versions. Alternatively, the so-called complex passive substitutes for the construction [control verb-PASSIVE + Embedded infinitive].
   i) ?Det ble forsøkt å åpne døren -> Døren ble forsøkt åpnet
   ii) *Det håpes å gjenoppta forhandlingene -> Forhandlingene håpes gjenopptatt.

> [M]odal verbs behave identically to other stative transitive verbs with respect to standard transitivity tests[...]. As has long been known, [...] transitivity is not a sufficient condition for felicitious passivization of a verb. The verb must have a dynamic aspect. [...] Since modals and transitives select the auxiliary HAVE in the perfect, [...] there does not appear to be any reason to assign the modals [...] a syntactic status different from stative transitive verbs.

On the other hand, the fact that modals require *have* as their governor in the perfect does not automatically grant them membership in the class of transitive verbs. There exists, for instance in Norwegian, a range of predicates which, by relative consensus, are considered raising (i.e. unaccusative) verbs, among others *se ut til å* 'seem to', *framstå som* 'appear as', *vise seg* 'turn out', *forekomme meg* 'appear to-me'; verbs that nevertheless require *ha* 'have' as their governing auxiliary in the perfect[20]. In fact, even the passive, which on earlier stages of Norwegian used to require the auxiliary *være* 'be' in the perfect, accepts and by younger users, even prefers, *ha* 'have' as the auxiliary in modern Norwegian[21]. So there is in fact no reason to count modals among ordinary transitive verbs just because they select for *have* as their governor in the perfect; unaccusative raising verbs do the same. The raising constructions mentioned here also have in common with modal auxiliaries that they do not passivize.

At this point, let us summarize how the eight predictions of the CvR analysis (listed in (2) and repeated here for convenience) fares in this investigation..

(18)

	Epistemic modals	Root modals
a. Allow expletive subjects	yes	no
b. Allow weather-*det/Það* 'it' subjects	yes	no
c. Allow idiom-chunk subjects	yes	no
d. Allow quirky subjects (Ic only)	yes	no
e. Allow passive compl. with inanimate subject	yes	no
f. Display subject-modal scope ambiguity	yes	no
g. Passivize	no	yes
h. Allow pseudoclefted complement	no	yes

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[20] As for the latter verb, Vikner (1995:260) states that it selects for *være* 'be' rather then *ha* 'have' as an auxiliary in Danish. This seems to be one reason why Vikner assumes that this verb is 'ergative with two internal objects', whereas he believes *vise sig* to be transitive, with the "embedded CP" as one argument and *sig* as the other. Now, in Norwegian *forekomme meg* with *være* 'be' as an auxiliary sounds very archaic or straightforwardly ungrammatical. Furthermore, it is often assumed that in verbal constructions like *vise seg* 'turn out', the reflexive does not have the status of an argument, since it is not exchangable for any other DP, cf. e.g. Nordgård and Åfarli (1990:167-168).

[21] Also, in English the passive construction requires *have* to govern it in the perfect.

The last prediction, concerning pseudocleft constructions, needs some more space and will be treated separately in the next subsection. Before looking at pseudoclefts, however, let us sum up the results we have achieved so far.

Predictions a, b, and c are all predictions concerning the possibility to take non-argument subjects. The predictions of the CvR analysis is that epistemic modals do, whereas root modals do not take such non-argument subjects. However, we have seen that this is prediction is not borne out. Norwegian modals, epistemic *and* root, take non-argument subjects. The exception is the dispositional root modal *ville* 'want-to' and the dispositional version of *kunne* 'can/know'[22]. Wurmbrand (1999) presents counterevidence to the prediction listed as d; i.e. she presents data provided by Icelandic informants to show that root modals may occur with quirky subjects (the data are quoted here as (8)). But again, the dispositional modals constitute an exception. According to my own Icelandic informants, the Icelandic counterparts of the Norwegian *dispositional* modals behave like control verbs in not allowing for quirky subjects (cf. the data in (9)); the reading of these two modals is always epistemic when the subject is quirky. Prediction e is not fulfilled either; as we have seen, only the root modal *ville* 'want-to' and to a certain extent *kunne* 'be-able-to'[23] behave as expected by the CvR analysis, whereas all other root modals accept passive complements with inanimate subjects. Furthermore, all root modals except *ville* 'want-to' and the dispositional reading of *kunne* 'be-able-to' display the same subject-modal ambiguity that we find with epistemic modals and other raising predicates; and finally, no root modal auxiliary may passivize, unlike control verbs. We do find passives of verbs that look like modal auxiliaries, but recall that it is always the transitive, main verb version of the modal that is able to undergo passivization, with a DP or a CP complement functioning as an object. Furthermore, this is once again only relevant for the main verb version of *ville* 'want-to', dispositional *kunne* 'know' and *trenger/behøver ikke* 'need not'. This means that from the eight predictions of the CvR analysis listed in (2), we have at this point found compelling counterevidence to seven of them. The evidence points instead to an analysis of both epistemic and deontic root modals as raising predicates.

The obvious troublemakers for an 'all modals are raising verbs' analysis are the dispositional root modals *ville* 'want-to' and *kunne* 'be-able-to'. These two modals behave

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[22] Although *kunne* does sometimes accept idiom subjects; cf. the discussion of *kunne* above.
[23] The lexical verb version of *kunne* 'know' does not accept inanimate subjects either, although the question of a passive complement does not come into play here. The lexical verb *kunne* is a transitive verb denoting mental

more like control verbs w.r.t. the features we have investigated so far. Thus, so far, there is nothing to prevent us from analyzing the dispositional modals *kunne* and *ville* as control verbs. Notice, however, that their epistemic counterparts show every sign of being raising verbs. Thus, the control versus raising analysis seemingly fits the dispositonal modals like a glove; for these two modals, the control versus raising analysis yields all the right predictions[24]. This seems like a good reason to go ahead and adopt the basic assumptions of the control versus raising analysis for the dispositional root modals *kunne* and *ville*. However, there exist certain loose ends, which I will discuss in section 4.5. Let me also remind the reader once again that in addition to the epistemic raising versions and the root 'control-like' versions of these two verbs, there also exist non-auxiliary main verb versions of *kunne,* 'know (by heart)' *ville* 'want'[25]. The behavior of these main verbs has sometimes been utilized to support the control versus raising analysis, e.g. to illustrate that modals passivize, like other control verbs. This is clearly unfortunate, as the "modal main verbs" exhibit a range of non-auxiliary features and should be treated separately (cf. section 2.3.2 and 2.3.3). With this note of caution, the dispositional modals *kunne* and *ville* still fit nicely into the pattern expected by the control versus raising analysis.

For deontic root modals, however, the control versus raising anlysis cannot account for the empirical facts. The reason for this is that deontic root modals, like their epistemic counterparts, pattern with raising structures w.r.t. the properties listed in (2), not with control structures. The obvious conclusion to draw is that both epistemic and deontic root modals are in fact raising verbs; which amounts to saying that there is no control vs. raising opposition in the case of deontic modals and their epistemic counterparts. Finally, let us repeat the list of properties in (2), this time as a list of actual findings, not a list of predictions. For now, I leave out the latter prediction (prediction h) concerning pseudoclefted compelements of modals, since this issue will be investigated more thoroughly in the next subsection. We also include other raising verbs and control verbs in the table, to get the whole picture.

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ability, knowing (by heart). Thus it displays selectional requirements to its subject; as it demands animate subjects. Furthermore, it takes a DP complements or a bare infinitive as a direct object.

[24] Although there is one type of complements we have not mentioned in this discussion, notably small clause complements of modals. Barbiers (1995, 1999) provides evidence that these constructions are indeed raising structures, not control structures (cf. section xx.xx). The dispositional modal *ville* 'want-to' takes small clause directional complements; e.g. *Ola vil hjem* 'Ola wants (to go) home' whereas the dispositional modal *kunne* 'can' does not in standard dialects of Norwegian. However, in my own dialect, *kunne* takes small clause complements, e.g. *Du kan ikke på skolen når du er syk* 'You cannot (go) to school when you are ill', and the same is the case for German, e.g. *Können Sie selber ins Auto?* 'Can you by-yourself (get) into the car?; i.e. Are you able to get into the car by yourself?'. Thanks to Herbert Pütz for providing me with this latter example.

(19)

	Raising verbs, epistemic modals & deontic root modals:	Control verbs & dispositional root modals:
a. Allow expletive subjects	yes	no
b. Allow weather-*det* 'it' subjects	yes	no
c. Allow idiom-chunk subjects	yes	no[26]
d. Allow quirky subjects (Ic.)	yes	no
e. Allow passive compl. with inanimate subject	yes	no
f. Display subject-modal scope ambiguity	yes	no
g. Passivize	no	yes/no[27]

The table shows that deontic root modals pattern with epistemic modals and other raising verbs w.r.t. the properties under discussion, whereas dispositional root modals pattern with control verbs, except that dispositional modals do not passivize, unlike control verbs. This means that the control vs. raising analysis gives the right result for the dispositional modals. As mentioned in the previous chapter, advocates of this analysis typically illustrate their analysis with exactly the two modals *kunne* and *ville*, with the implicit or explicit assumption that the analysis carries over to all other root modals. But the control versus raising analysis does not fit the deontic root modals in Norwegian, and obviously, neither their counterparts in English (cf. Wurmbrand 1999), German (Öhlscläger 1986) or Icelandic (Wurmbrand 1999, the discussion above). Deontic root modals in Norwegian show every sign of being raising verbs, just like their epistemic counterparts; in all relevant respects they exhibit raising verb behavior. That is, up to the point where we start looking at modals in pseudocleft constructions.

4.2 Modals in pseudoclefts

First, let us repeat the latter of the predictions listed in (2). This prediction states that only root modals and not epistemic modals accept a pseudoclefted complement; cf. the difference between the epistemic modal in (20)a, which rejects a pseudoclefted complement, and the

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[25]*Trenger/behøver ikke* 'need not' also have main verb versions. For these two, their auxiliary counterparts belong to the group of deontic, thus raising modals.

[26] Recall that *kunne* does sometimes accept an idiom-chunk subject.

[27] It is the main verb version of the dispositional root modals that passivizes. The auxiliary version, with a verbal complement, does not. Also, the main verbs *trenger ikke/behøver ikke* passivize. These two have deontic root counterparts, not dispositional root counterparts.

root modal in (20)b, which accepts a pseudoclefted complement. Both sentences are taken from Thráinsson and Vikner (1995: 61).

(20)

      a. *Det hun kan er at have sovet over sig. (Danish)
         it   she can is to have slept over self
        (Intended meaning: 'What is possible is that she has overslept.')

      b. En av de ting han ikke kan er at svømme. (Danish)
        one of the things he not can is to swim
        'One of the things he cannot (do) is to swim.'

Thráinsson and Vikner (1995) suggest that this difference is expected on the control vs. raising analysis if it is augmented with the auxiliary assumption that the trace of a moved constituent within the relative clause needs Case. According to the authors, this is a *wh*-trace, and by "standard assumption (op.cit. p.62)", *wh*-traces need Case. The structure proposed for the relative clause is as follows (Thráinsson and Vikner 1995:62):

(21)

      X_i [$_{CP}$ (op$_i$) (that) ... t_i ...] was Y

For the sake of clarity, let us translate the relative clause part of this structure into a tree-structure, which comes out as follows:

(22)

          it   (that) she may
      'What   she may   (do/have done)...'
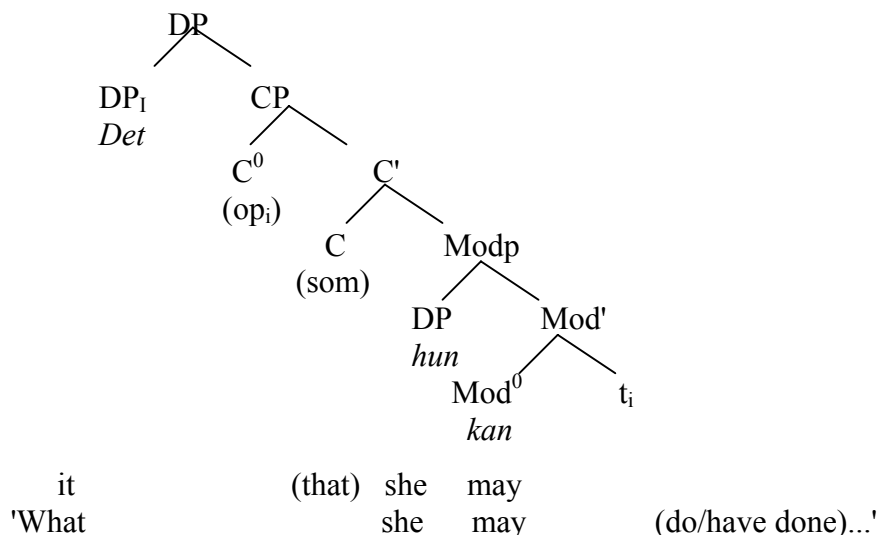
It is the trace t_i within the relative clause CP that needs to be assigned Case by a governing verb, according to this proposal. The authors go on to account for the generalization that only root modals accept a pseudoclefted complement by invoking Burzio's Generalization, which

states that only verbs which assign an external θ-role to a subject assign Case to their complements. Root modals allegedly do assign an external θ-role to a subject and thus do assign case to their complement; here, to the (wh-)trace of the the moved constituent (i.e. the operator "op"). In contrast, epistemic modals are raising verbs, hence they pattern with unaccusatives. That is, these verbs do *not* assign an external θ-role to a subject and thus do not assign case to their complements; hence the (*wh-*) trace in the complement position of an epistemic modal within the relative clause could not be licenced, and the structure is illformed. Thráinsson and Vikner's (1995) account of modals in pseudoclefts hence rests on four basic assumptions. The first crucial assumption is the validity of Burzio's Generalization, that the Case-assigning properties of the modal is dependent on its θ-assigning properties. The second crucial assumption is that only a root modal, not an epistemic modal, assigns an external θ-role and hence Case to its complement. The third assumption is that the movement inside the relative clause is a subtype of *wh*-movement, and the fourth assumption is that *wh*-traces need case.

We need to dwell for a moment on the latter assumption. It *is* indeed a "standard assumption" within Government and Binding Theory that *wh*-traces need Case (cf. e.g. Jaeggli 1980[28], Chomsky 1981:175). But it is an often ignored restriction on this assumption that it does not apply to all types of *wh*-traces. *Wh*-traces in Case positions, i.e. argument positions, are admittedly assumed to be assigned Case. But *wh*-traces, by assumption, are found in non-argument positions as well, e.g. adjunct positions or A-bar positions. So when the questioned constituent is e.g. an adverbial in an adjunct position, the Case requirement does not apply to the *wh*-trace, since the case requirement applies to DP-type (i.e. argument-type) *Wh*-traces only.

Now, the question is whether or not the trace within the relative clause could be construed as an argument-type *wh*-trace. In those instances where the operator 'op' pertains to the complement of a control verb, this seems defendable. Control verbs are taken to assign two θ-roles, one external and one internal, the latter of some clausal category like IP or CP. The argument receiving the internal θ-role may be questioned (i.e. undergo *wh*-movement), and the resulting *wh*-trace presumably does need (or at least, is assigned) Case, sitting in the position of an internal argument of a governing verb. Root modals, as opposed to epistemic

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[28] Jaeggli proposed that Case-marked (*wh-*) traces block *wanna*-contraction

modals, seemingly behave on a par with control verbs in *wh*-constructions; their complement may undergo *wh*-movement, cf. (23).

(23)

  a. Hva$_i$ prøvde$_j$ Jon t$_j$ t$_i$?
    what tried Jon
    'What did John try?'

  b. Hva$_i$ måtte/skulle/ville$_j$ Jon t$_j$ t$_i$?
    what [must/should/want]+past Jon
    'What did John have to/intend to/want to (do)?'

Notice that an epistemic reading is unavailable of the modals in (23) b. This fact at first glance lends support to Thráinsson and Vikner's story that Burzio's generalization is the relevant factor in accounting for modals in pseudoclefts, and that the difference between root modals and epistemic modals in pseudoclefts is due to the *wh*-trace's need for Case. However, if it were true that even a *wh*-trace in the complement position of a raising verb needs Case, one would expect that e.g. perfect auxiliaries and other raising verbs would behave differently from control verbs w.r.t. *wh*-movement in general. By assumption, perfect auxiliaries and other raising verbs do not assign an external θ-role to their subjects and thus do not assign Case to their complement. Thus, if *wh*-traces need Case irrespective of the nature of the governing verb, the complement of an auxiliary or a raising verb should be unable to undergo *wh*-movement in any type of sentence. But in fact, given a context, the complement of perfect auxiliaries and certain other raising verbs are not excluded from undegoing *wh*-movement. This type of movement is marginal, but not ungrammatical, cf. (24):

(24)

  a. A: Jon har faktisk solgt bilen hennes uten hennes samtykke.
      Jon has actually sold car-DEF her   without her consent
      'John has actually sold her car without her consent'

    B : ?HVA har han, sa du?![29] [30]
      what has he said you
      'What did you say he has (done)?'

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[29] Note that although it is marginally possible for the complement of the perfect auxiliary to undergo *wh*-movement, it cannot undergo pseudocleft, as will be discussed below.

[30] An appropriate question here is whether the representation of the *wh*-movement corresponds to e.g. i) or ii):
    i) Hva$_I$ har$_K$ han$_J$ t$_K$ [t$_J$ [t$_I$]]   (leaving the subject trace behind)
    ii) Hva$_I$ har$_K$ han$_J$ t$_K$ [t$_I$]   (subject trace part of *wh*-constiutent)
If i) were the right representation, it would be incorrect to say that it is the *complement* of the perfect aspectual which undergoes *wh*-moverment. However, I want to argue below for a structure which is even simpler than i).

b. A: Bilen ser ut til å være en eneste rusthaug.
   car-DEF seems to be one single pile-of-rust
   'The car seems to be one big pile of rust'.'

B : ?HVA ser den ut til , sa du?!
   what seems it out to said you
   'What did you say it seems?'

Since the *wh*-trace is licenced in these constructions, there are two possibilities. Either the *wh*-trace of the questioned constituent in (24) is of the non-argument type; i.e. the type that does not need Case, since the verb governing the trace does not assign Case. Or one might imagine that the governing verb exhibits extraordinary Case-assigning properties in *wh*-constructions only. The point is that this *wh*-movement is possible, whether or not the *wh*-trace needs and/or receives Case. Thus, *wh*-movement of the complement of certain raising verbs is possible in matrix clauses. And since *wh*-movement of the complement of a perfect auxiliary or a raising verb is possible in matrix clauses, why should it be illicit in relative clauses? The conclusion is that it cannot be correct that the Case requirement of the *wh*-trace is what restricts the behavior of modals in pseudoclefts.

One might of course invoke special properties of the operator "op" in relative clauses[31] and claim that the trace of this operator must receive Case. That would amount to saying that *wh*-movement within a relative clause is subject to different restrictions than *wh*-movement in matrix clauses. But this would be an entirely different question. The conclusion must be that the Case requirements of *wh*-traces in and by itself is *not* enough to account for the patterns observed with modals and their pseudoclefted complements. These patterns are quite complex; in fact, much more complex than the dichothomy presented in Thráinsson and Vikner (1995). In order to reach an explanation for the behavior of modals in pseudoclefts, we need to look at these patterns in more detail.

Although Thráinsson and Vikner do not investigate other raising or control structures in pseudoclefts, it seems to be a sound generalization that raising verbs are typically ungrammatical in the constructions discussed here, whereas control verbs in contrast accept a

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[31] In fact, there seems to exist something like a definitness-effect in Norwegian relative clauses; as far as I know, this is a novel observation. For instance, unaccusative verbs with expletive subjects are illicit in relative clauses, e.g. *Jeg traff en mann som det kom forbi på veien her*; lit.'I met a man who there came passing on this road'. Note also that the corresponding main non-relative is fine: *Det kom en mann forbi på veien her* 'There passed a man on this road'. In relative clauses one must employ the structure without the expletive; *Jeg traff en mann som kom forbi på veien her* 'I met a man who passed on this road' However, this effect seems to exist in other types of *wh*-movement as well, e.g. * *Hva skjedde det?* 'What happened-there?' but *Det skjedde en ulykke.* 'There happened an accident'.

pseudoclefted complement, cf. the raising structures in (25)a and b versus the control structures in (25) c and d:

(25)

a. *Det Jon viste seg, var å være inkompetent.
     it   Jon showed self, was to be incompetent
(Intended: 'What John turned out to be, was incompetent.')

b. * Det Marit antas, er å være uærlig.
     it   Marit suppose-PASS, is to be dishonest
 (Intended: 'What Marit is supposed to be, is dishonest.')

c. Det Jon prøvde, var å være ærlig.
it   Jon tried, was to be honest
'What John tried, was to be honest.'

d. Det Marit håpet, var å få snakke med ham.
it   Marit hoped, was to get talk to him
'What Marit hoped (for), was to get to talk to him.'

For now, let us assume that the generalization holds, that raising verbs are illicit in these constructions whereas control verbs are OK. Since Thráinsson and Vikner analyze root modals on a par with control structures, whereas epistemic modals are analysed as raising verbs, the prediction of their analysis would be that root modals accept, whereas epistemic modals reject a pseudoclefted complement.

The predictions on the present approach are somewhat different. I do agree that epistemic modals are best analyzed as raising verbs. Thus, if raising verbs are always illicit in these constructions, epistemic modals ought to reject a pseudoclefted complement (which they do). However, in contrast to the approach in Thráinsson and Vikner (1995), the picture emerging in the present work points to a radical split within the group of root modals, with dispositional modal on one side and deontic modals on the other. This picture affects the predictions concerning root modals in pseudoclefts. In the picture outlined in the present investigation, the expectation would be that only *dispositional* root modals ought to accept a pseudoclefted complement, since they are the only root modals that pattern with control verbs (in most relevant respects). This means that the data in (20), where the dispositional modal *kunne* 'be-able-to' is licit in this construction whereas its epistemic reading is impossible, is just what we would expect even on the present approach. We would also expect the other dispositional modal, *ville* 'want-to', to accept a pseudoclefted complement. This expectation is fulfilled; cf. (26).

(26)

     Det Jon vil, er å kjøpe bilen.
      it Jon wants, is to buy car-DEF
      'What John wants, is to buy the car.'

An epistemic reading is unavailable for (26), just as an epistemic reading is always unavailable for a modal with a pseudoclefted complement (as duely noted by Thráinsson and Vikner 1995). Epistemic modals pattern with raising verbs, and if raising verbs are (typically) ungrammatical in these constructions, this is just what we would expect. Dispositional modals pattern with control verbs, hence, ought to accept a pseudoclefted complement.

However, the predictions concerning *deontic* modals are quite another matter. From what we have seen so far, we would expect that deontic root modals are just as reluctant to accept a pseudoclefted complement as epistemic modals are. Deontic root modals pattern with raising verbs (in most relevant respects; cf. above), just like epistemic modals, and if raising verbs are indeed ungrammatical in these constructions, then deontic root modals ought to reject a pseudoclefted complement as well. But this prediction is *not* borne out, cf. the data in (27):

(27)

    a. Det Marit må, er å snakke med ham.
      it Marit must is to talk to him
      'What Marit must (do), is to talk to him.'

    b. Det du skal, er å pusse tennene.
      it you shall is to brush teeth-DEF
     'What you will (do), is to brush your teeth.'

    c. Det vi alle bør, er å tenke gode tanker.
      it we all should, is to think good thoughts
     'What we all should (do), is to think good thoughts.'

    d. Det vi ikke trenger, er å kjøpe flere bøker.
      it   we not need, is to buy more books
     'What we don't need, is to buy more books.'

The modals in (27) are all deontic modals. Thus, although deontic modals pattern with rasing verbs w.r.t. all properties listed in (19); they differ from (most) raising verbs in this respect. They accept a pseudoclefted complement, *like* control verbs, *unlike* raising verbs. The intriguing question is why this should be so. In our quest for an answer, we will examine one very interesting restriction on deontic modals in these pseudocleft constructions.

As already mentioned in section 3.2.6, Thráinsson and Vikner (1995) fail to notice the existence of root modals with proposition-scope readings. Recall that in these constructions the root modal obligatorily takes scope over the subject, and there is no intuition of anything resembling a θ-relation between the root modal and the subject. Since the existence of such constructions is not acknowledged by Thráinsson and Vikner, it is not very surprising that they would ignore the fact that root modals with proposition-scope readings are illicit in these pseudocleft constructions as well, i.e. with a pseudoclefted complement of the modal; cf. (28).

(28)

    a. *Det en kvinne bør, er å bli vår neste statsminister.
      it a woman should, is to be our next prime minister.
      (Intended: 'What should happen is that a woman becomes our next prime minister.')

    b. *Det apene ikke må, er å mates av besøkende.
      it   the monkeys not must, is to feed-PASSIVE by visitors
      (Intended: 'What must not take place is that the monkeys are fed by visitors.')

When we include the "proposition-scope root" data in our investigation, we discover that the generalization that some modals do and other modals do not accept a pseudoclefted complement does not follow the root-epistemic distinction, as claimed by Thráinsson and Vikner (1995). To make matters worse, it does not even follow the dispositional vs. deontic distinction, as expected on the outline in the present work. Instead, what we find is that deontic root modals are fine in these pseudocleft constructions, provided the modal has a *subject-oriented reading* (i.e. a two-place reading), like in the sentences in (27). In sentences where the modal requires a proposition-scope reading, deontic root modals reject a pseudoclefted complement. In the ungrammatical sentences in (28)a and b (as well as their grammatical uncleft counterparts) our intuition is that there is no semantic relation ('θ– relation') between the modal and the subject; neither *en kvinne* 'a woman' nor *apene* 'the monkeys' are perceived as having any kind of obligation. That is, what truly separates the ungrammatical structures in (28) from their acceptable counterparts in (27) is their lack of subject-orientedness. The relevant generalization, then, is that *proposition scope* modals (root as well as epistemic) reject, whereas *subject-oriented* modals accept a pseudoclefted complement. To illustrate this generalization we exploit once again the table of possible readings of Norwegian modals, repeated here as (29). Note that the term *two-place* refers strictly to a +θ–*reading* here; no claims about a specific argument structure are implied.

(29)

Readings available for Norwegian modals:

Dispositional: Two-place = subject-oriented ¤

Root reading   ⟨   Two-place = subject-oriented ¤

Modals ⟨   Deontic ⟨

One-place = proposition-scope *

Epistemic reading: ——————— One-place = proposition-scope *
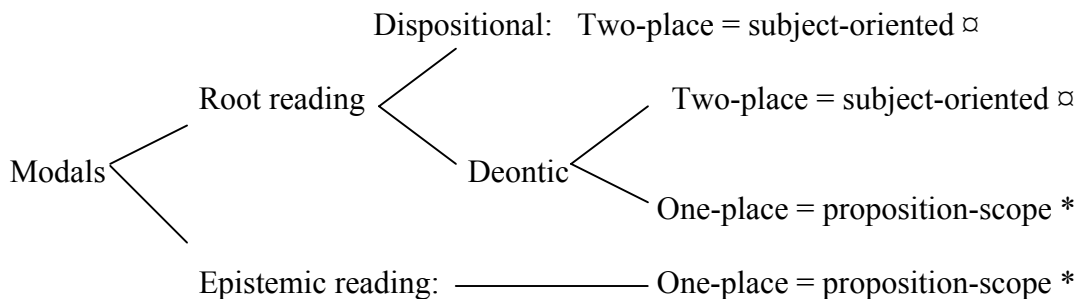
¤: Accepts a pseudoclefted complement; *: rejects a pseudoclefted complement.

So, we have isolated the relevant generalization, that subject-orientedness is the prerequisite for modals to accept a pseudoclefted complement. However, we still lack an explanation for this generalization. This is what we will pursue in what follows.

4.2.1 *Subject-orientedness and Theta roles*

The phenomenon referred to as subject-orientedness in the discussion and table above (cf.also Barbiers 1995, 1999) is exactly what numerous authors, e.g. advocates of the CvR analysis, refer to as a θ-relation, or a two-place reading. Thus the notion of *subject-orientedness* is just another term for a *two-place reading* or a +θ-*reading*. The advantage of the term *subject-orientedness* is that it does not carry any of the connotations or associations to an external θ-role or a specific argument structure that encumbers the two other terms, so this is the term we will adopt in what follows[32].

As discussed above, Thráinsson and Vikner (1995) try to relate the modal's accepting or rejecting a pseudoclefted complement to the assumption that root modals do, whereas epistemic modals do not assign an external θ-role. However, the problem with this analysis is that it does not account for the fact that certain deontic root modals, notably the deontic

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[32] Within the functionalist literature on modals, the term *agent-oriented* is much preferred (cf. Bybee et al. 1994; Bybee and Fleischman 1995). The problem with this term is that it is sometimes used to refer to an agent that is not syntactically present; e.g. *Das Bier sollte kallt sein* 'The beer should be cold' has an agent-oriented reading, according to Heine (1995:26), where "agent" is used to designate the person who acts on this sentence; e.g. the one who puts the beer in the fridge. Thus this term sometimes incorporates information that is of no relevance to us here in describing the behavior of modals in pseuodclefts.

proposition scope modals, reject a pseudoclefted complement as well. But there is one seemingly straightforward way out of this problem.

Let us assume that a subject-oriented reading involves the assignment of an actual θ-role, as proposed by authors within the CvR analysis. In contrast, assume that a proposition-scope reading (root or epistemic) arises when *no such θ-role is assigned*. Then this θ-role assigned by the root modal to the subject is a prerequisite for a pseudoclefted complement. In those instances where no semantic role is assigned, like in the root or epistemic proposition-scope root modal constructions, the complement of the modal cannot undergo pseudocleft.

If we were to follow this line of thought, there is another pressing question we would have to address, namely the possible θ-properties of deontic modals. On the one hand, we have strong indications that deontic root modals are raising predicates in Norwegian. That is, we have evidence that Norwegian deontic modals pattern with raising verbs w.r.t. a range of properties, such as subject selection, scope ambiguity and passivization. (cf. (19)). But if deontic modals are raising verbs, they ought to reject a pseudoclefted complement, since raising verbs typically do (unlike control verbs; cf. the contrast in (25)). However, pseudocleft constructions seemingly recognize the presence versus absence of a "θ-role" assigned by the deontic root modal to the subject, in that only *subject-oriented* readings of deontic modals allow for a pseudoclefted complement. To account for this fact, it seems that we may want to allow deontic modals to assign a θ-role under certain circumstances; e.g. in pseudoclefts.

Note that this problem concerns the deontic modals only, since the dispositional root modals pattern with control structures anyway, w.r.t. all properties listed in (19). Dispositional root modals therefore seemingly *do* assign a θ-role to their subject, they have no proposition scope readings, whereas their epistemic counterparts behave like raising verbs. This means that the behavior of modals in pseudoclefts just described is as expected with dispositional modals. However, Norwegian *deontic* modals exhibit the syntactic behavior of raising verbs, and by assumption, no θ-role is assigned by raising verbs to their syntactic subject. If deontic root modals are raising verbs, why is it that they are licit in this construction at all? And why should only *subject-oriented* deontic root modals (i.e. directed deontic root modals) accept a pseudoclefted complement? One course to follow would be to assume that deontic modals *do* assign a θ-role on the subject-oriented reading.

This would amount to saying that deontic modals both do and do not assign a θ role, which is somewhat troublesome. Put simply, a deontic root modal may be considered a verb

that optionally assigns a θ-role to its subject. However, there are problems with a solution involving a notion of *optional θ-assignment* within a Principles & Parameters Theory[33]. The reason for this is that the principles governing θ-structure, the Projection principle and the θ-criterion, are designated so as to evade a notion of optionality.

The fastest route out of this problem would be to propose, like Brennan (1997) does, that each deontic modal actually corresponds to two different modals[34] (op.cit. 226):

> I propose that each modal auxiliary is actually two modal auxiliaries: *may*$_S$ is translated as an operator which combines with a (poposition-level) conversational background and a proposition to form a modal proposition; *may*$_{VP}$ is translated as an operator which combines with a (property-level) conversational background and a property expression to form a modal property expression. I make parallel claims for the other modal auxiliaries. I do not identify the interpretive class of *may*$_S$ as epistemic or of *may*$_{VP}$ as root.

In syntactic terms, Brennan's proposal amounts to a picture where there exist epistemic modals, which are all raising verbs, root modals, which come in to varieties, one raising variety that does not assign a θ-role to its subject (a variety that is lacking with Norwegian dispositional root modals), and another varitety that does assign a θ-role to its subject. The latter may be considered a control verb, like proposed for all root modals by e.g. Lødrup (1996) and Dyvik (1999)[35]. We would then be assuming, in addition to one separate entry for the epistemic version of the modal, two lexical entries for each deontic modal; one control version and one raising version (a solution which is implicit in Brennan's 1997 suggestion). In deciding which version we are dealing with in a sentence, i.e. whether or not a given modal in a given sentence does assign a θ-role, the natural thing to do is to look to the table of readings available for Norwegian modals (repeated here as (30)).

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[33] Although one might add that the problems are by no means easier to deal with in the various proposals where the +theta reading is accounted for by assuming an "adjunct", "additional", or "secondary" theta-role. Even in these cases, one needs to come up with some additional machinery which makes these "adjunct/additional /secondary" theta-roles "invisible to theTheta-criterion" or in some other way agreeable to the Theta-criterion.

[34] Her analysis at this point builds on the analysis of Perlmutter (1970), who identifies two verbs *begin*. As noted by Perlmutter as well as Brennan, many of Perlmutter's arguments carry over to modals.

(30)

Readings available for Norwegian modals:

Dispositional: Two-place (subject-oriented)

Root reading

Two-place (subject-oriented)

Modals

Deontic

One-place (proposition-scope)

Epistemic reading: One-place (proposition-scope)
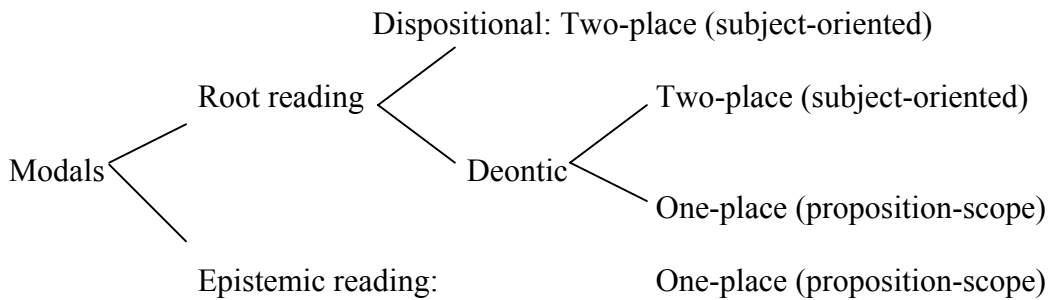
Translating these readings into argument structure, we assume that two-place or subject-oriented readings occur whenever the root modal assigns a θ-role, whereas the absence of a subject θ-role yields the one-place proposition scope reading. Indeed, we would say that a two-place reading arises *exactly because* the modal in these cases are two-place predicates syntactically; i.e. the modals assigns both a subject role and an object-role. We would thus come up with a picture that displays a homomorphic relation between the syntactic properties of a modal and the readings available for the same modal, compare (31) below to (30) above.

(31)

Hypothesis: Deontic root modals come in two varieties; ± an external θ-role:

Dispositional: Assigns θ-role to subject

Root reading

Assigns θ-role to subject

Modals

Deontic

Assigns *no* θ-role to subject

Epistemic reading: Assigns *no* θ-role to subject
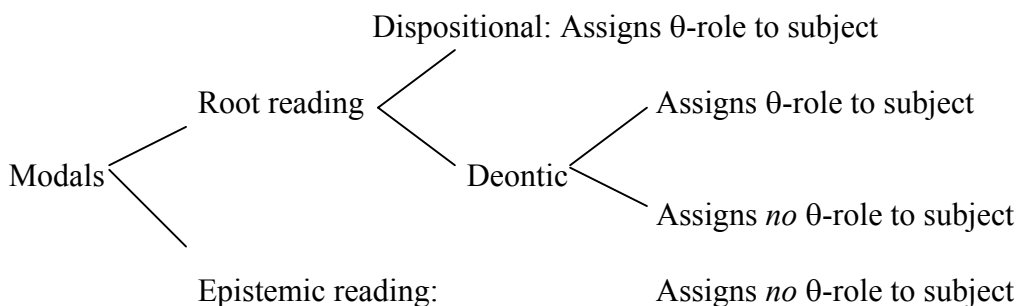
At first sight, this analysis seems to have several advantages. Firstly, it is able to reconcile the two main families of analyses within the P&P framework, notably the "control vs. raising" analysis and the "all modals are raising verbs" analysis. Thus, it pays tribute to analyses and insights within both camps. For instance, works within the control vs. raising camp have often ignored proposition-scope readings of root modals; an error that of course yields a skewed

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[35] The +theta deontic modal could also be considered a raising verb that assigns an *adjunct* theta-role, like proposed for certain root modals by Vikner (1988), Thráinsson and Vikner (1995) for Danish root modals, and

picture of the relevant data. The "optional θ-role" analysis, understood as the hypothesis that there exist two versions or lexical entries for each deontic root modal, would offer a way to maintain many of the hypotheses within the control vs. raising analysis and simultaneously account for proposition-scope readings of root modals. The hypothesis of a raising root modal in addition to the control version would simply function as an extension of the theory by means of an additional lexical entry for each deontic modal. On the other hand, advocates of the "all modals are raising verbs" hypothesis have to take seriously and offer some kind of explanation for the intuition that root modals do seem to assign something like a θ-role to their syntactic subject under certain circumstances. One very clear case where this question is especially pressing is the constructions under discussion here, where the complement of the modal undergoes pseudocleft.

Within the "all modals are raising verbs" camp, various solutions have been suggested to account for the subject-orientedness effect, i.e. the fact that modals seem to assign something like a Theta-role on certain radings. Wurmbrand (1999) suggests that what in these cases appears to be a θ-role assigned by the root modal is in fact something else, like a role or function assigned *contextually*, not syntactically. Modals do not assign an external θ-role, but certain apparent thematic relations result from a "rich contextual component" (p. 13) of modal statements. Thus, what Wurmbrand claims is that these apparent thematic relations are not syntactically encoded, as can be shown, she says, by the fact that non-directed interpretations (i.e. proposition-scope readings) are available in most modal constructions (p.13):

> The availability of non-directed 'interpretations' shows that roles/functions like 'obligee' or 'permissee' etc. do not have to coincide with a specific syntactic argument in the sentence. In other words, the determination of these roles cannot be seen as a mapping between θ-roles and syntactic arguments.

Whereas this claim is correct for modals in other constructions and sentence types, the problem with pseudoclefts is that this is a construction where the non-directed reading is never available. The subject-oriented reading is the only possible interpretation. An approach that invokes contextually determined "θ"- assignment would have to explain why this is so. In which way are the contextual properties of the pseudocleft able to prevent the non-directed reading from arising[36] [37]?

Roberts (1985, 1993).

[36] Two comments are in order: Firstly, Wurmband never discusses modals and pseudoclefts in the short article referred to here. Secondly, she states explicitly that the section containing the proposal of contextually assigned roles is "somewhat preliminary" and that a more elaborate discussion is to be found in Wurmbrand (2001).

In contrast to Wurmbrand's proposal, Barbiers (1995, 1999) proposes that subject-orientedness is syntactically encoded, not in the shape of lexically encoded argument structure, but in the shape of an abstract head D heading a designated projection in the sentence phrase marker. This head D establishes the semantic relation between the subject and the verb, and "it depends entirely on the base position of the modal" relative to this D head whether the semantic relation will be established or not; cf (32) (see section 3.2.7 for a more detailed account).

(32)

a. **root**   b. **epistemic**

```
        DP                              ModP
       /  \                            /    \
  Subject  DP                       Mod      DP
          /  \                             /    \
         D    ModP                    Subject    DP
             /   \                             /    \
           Mod    IndP                        D      IndP
                 /   \                               /   \
               Ind    VP                           Ind    VP
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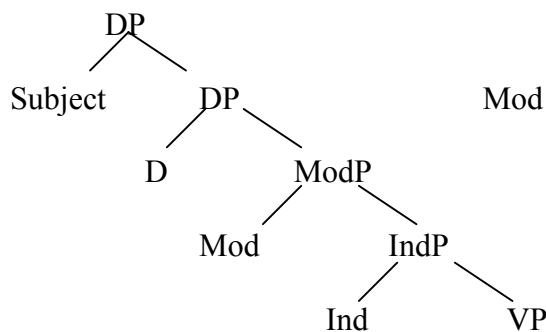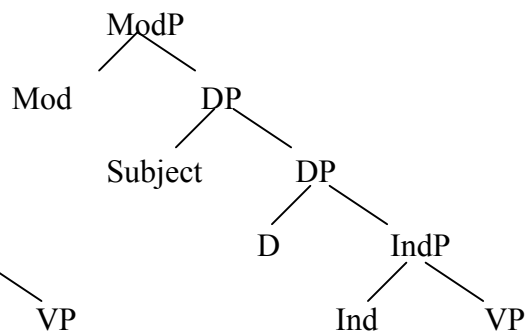
If the modal is generated below D, the subject-oriented reading is the result ((32)a), but if the modal is generated above D, the structure yields the epistemic reading ((32)b). The "proposition-scope root" reading of the modal arises either because the head D is entirely absent from the structure, or because the subject reconstructs at LF into a position within the scope of the modal (Barbiers 1999:20). If the latter course is chosen, Barbiers would have to modify the statement that subject-orientedness rests "entirely" on the base position of the modal, because in that case, LF-reconstruction would play a part as well. For the sake of argument, let us say we adopt Barbiers' D-projection to account for the subject-orientedness of modals and claim that only the structure in (32) a accepts a pseudoclefted complement. We would still need some auxiliary hypotheses to explain *why* this should be the case. Another pressing question is why some modals, like the dispositional modals, always require the

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[37] Note that it is not unheard of to claim that contextual information and world knowledge affects syntactic operations. I will mention only one such case here. Erteschik-Shir (1981) notes that *wh*-extraction from an NP depends on contextual differeces. This is shown e.g. by the following minimal pair:

  i) : Which car did you like the gears in?
  ii) #Which car did you like the the girl in?

Bouchard (1995) advocates the idea that there is a transparent relation between gears and cars, whereas there is a non-transparent relationship between girls and cars. This (non-) transparency affects the extraction possibilities. Alec Marantz (p.c.) suggests that the relationship between gears and cars, unlike the relation between girls and

presence of this head D. Given that this head is a(n optional) part of sentence structure, why would certain modals, like the deontic ones, allow for the presence as well as the absence of this head, whereas dispositional modals never allow this head to be omitted; alternatively, why dispositional modals are not allowed to be generated above D (depending on the explanation chosen)[38].

A third and seemingly straightforward way of accounting for this (additional) θ-role/ subject-orientedness effect would be to allow for the "optional" assignment of a θ role by some root modals; i.e. to assume that deontic root modals come in two varieties, one that does assign a(n adjunct) θ role to its subject and one that does not.

However, there are several problems with the assumption that all and only deontic modals come in two varieties. One is the conceptual problem of the existence of, presumably in addition to one lexical entry for each epistemic modal, homonym pairs for all deontic root modals, where each pair are identical semantically; except for their θ-properties, or in Barbiers' terms, their "subject-orientedness". Assume that we implement this idea by assigning a control structure to the +θ version of the deontic modal; the directed deontic reading. The non-directed deontic reading is construed as a raising verb. This would mean that in any sentence containing the modal, there would be a structural ambiguity. The problem with this massive doubling of possible representations is that in any non-cleft sentence this structural ambiguity would have no observable syntactic consequences. It would be a different situation if the subject-oriented deontic modal took on a number of syntactic properties that are not found with the non-directed counterpart; let us say that subject-oriented deontic modals could suddenly passivize, unlike the non-directed ones. Or, we might expect that with at least one of these homonymous pairs (six pairs, twelwe entries in all) the complement-taking properties of one member of the pair should differ from the complement-taking properties of the other member of the pair. This is not what we find.

So what we would be doing is to invoke the notion of homonym pairs for two reasons only: Firstly, to solve the pseudocleft problem (in one rather ad hoc manner); and secondly, to account for the availability of both subject-oriented and non-directed readings for deontic modals. The only purely *syntactic* consequence accounted for would be the pseudocleft problem, whereas our lexical inventory of root modals would be nearly doubled. This addition

---

cars, amounts to a head-complement relation which is encoded in (covert) syntax, as shown by the fact that *the gears of the car* is a felicitous construction whereas *the girl of the car* is not.

of lexical entries is theoretically unattractive (cf. also Barbiers 1995:156), and one should strive to find a better solution. On the other hand, if this addition of lexical entries did indeed account for the behavior of modals in pseudoclefts, one might consider this solution anyway. However, as pointed out in the discussion of Thráinsson and Vikner's (1995) analysis above, the mere assumption of a(n additional) θ-role assigned by subject-oriented modals does not do the trick. Burzio's Generalization is inadequate in accounting for the difference observed between subject-oriented modals and proposition scope modals in pseudoclefts, since it seems not to be the case that raising verbs reject a *wh*-trace as its complement (cf. the data in (24)). We need to find a better explanation in any case. In an effort to do so, we need to look more closely on modals in the pseudocleft construction from a slightly more semantic perspective. First of all, let us examine some general properties of pseudoclefts.

4.2.2 *The pseudocleft construction*

Heycock and Kroch (1999) propose an account of pseudoclefts where these constructions are analysed as *equative structures*. Furthermore, as noted by Prince (1978), pseudoclefts have a fixed information structure in which the relative clause denotes the ground (known information/topic) and the other argument of the copula denotes the focus (new information/comment) of the sentence. The restrictions imposed by the semantics of equation dictate that only those expressions can appear as the foci of pseudoclefts whose semantic type matches the type of the (free) relative with which they are equated. This Topic-comment structure could be depicted in an X-bar schema like the one in (33); adopted from den Dikken, Meinunger and Wilder (2000)[39] [40], where the copula is assumed to be the lexical expression of a pivotal Topic-head.

---

[38] Presumably, this difference could be described as selectional requirements of the modal at hand, depending on the matrix of selectional requirements ascribed to the modal in the lexicon.

[39] This structure is adopted from den Dikken, Meinunger and Wilder (2000:62). However, in invoking this structure I do not signal that I will follow their analysis of pseudoclefts rather than Heycock and Kroch's (1999); this structure is merely employed as an expository device.

[40] Notice that neither Heycock and Kroch (1999) nor den Dikken et al. (2000) discuss modals with a pseudoclefted complement. Heycock (p.c.) informed me that modals never accept a pseudoclefted complement in English; the modal needs a *do* complement within the relative clause.

(33)

```
                        TopP
               _____/    _____
          Spec: Ground              Top'
            /\                 _____/    \_____
           /  \             Top⁰              XP: Focus
          /____\                               /\
      Det Jon liker        er                 /  \
      'What Jon likes'                       /____\
                          'is'          å være på kontoret
                                      '(to) stay in his office'
```
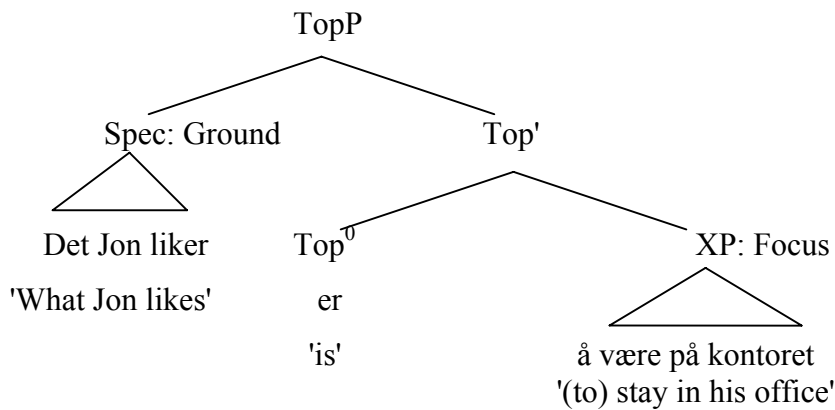
In investigating the internal structure of the (free[41]) relative, we adopt Thráinsson and Vikner's (1995; evidently following Chomsky's 1986: 84-85) analysis of the relative clause, repeated here as (34).

(34)

X_i [$_{CP}$ (op_i) (that) ... t_i ...] was Y

Combining these two pieces of structure, we depict the structure of modals with a pseudoclefted complement as follows (postponing the question of the internal structure of the Focus-consituent XP):

(35)

```
                        TopP
               _____/    _____
          Spec: Ground              Top'
            /\                 _____/    \_____
           /  \             Top⁰              XP: Focus
          /____\                               /\
   Detᵢ [CP (opᵢ) Jon må tᵢ ]   er             /  \
   'What Jon must (do)'                       /____\
                                         å være på kontoret
                                       '(to) stay in his office'
```
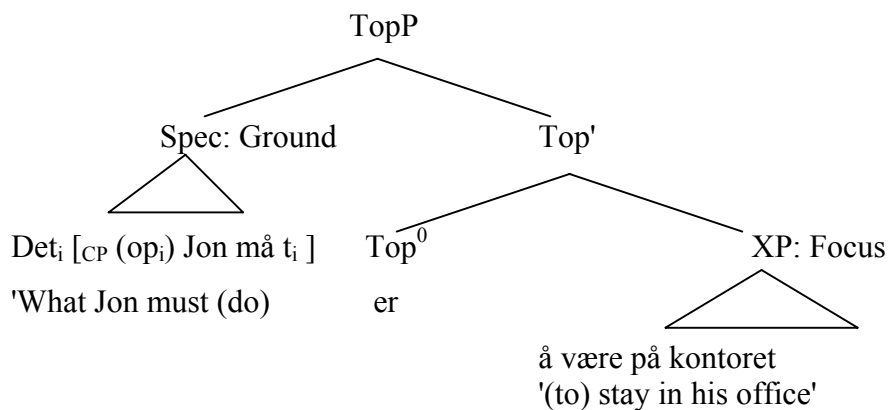
A much debated fact about pseudoclefts is that these constructions display a range of so-called *connectedness* or *connectivity* effects, in that they exhibit the same patterns w.r.t. various syntactic constraints as the simple sentences that paraphrase them. This is the case for e.g. Condition A, B, and C (data from Heycock and Kroch 1999):

---

[41] Note that whereas the relative in English pseudocleft construction may be described as a free relative, headed by a *wh*-constituent, the relative of Norwegian pseudocleft is headed by a non-*wh*-constituent.

(36)

    a. What Mary$_i$ was was proud of herself$_{i/*j}$.
    b. Mary$_i$ was proud of herself$_{i/*j}$.

    c. What Mary$_i$ was was proud of her$_{*i/j}$.
    d. Mary$_i$ was proud of her$_{*i/j}$.

    e. What she$_i$ was was proud of Mary$_{*i/j}$.
    f. She$_i$ was proud of Mary$_{*i/j}$.

In the literature, three types of approaches are found to account for these connectedness effects; den Dikken et al. pp 42-43[42]:

> The *semantic approach* [...] treats connectivity in [pseudoclefts] as a purely interpretive phenomenon, arising without syntactic c-command. Binding dependecies etc. are viewed as side effects of semantic composition, in which semantic properties of *what* and *be* play a key role. The *syntactic reconstruction approach* [...] claims that connectivity effects displayed by [pseudoclefts] reflect syntactic c-command (simple sentence consistency), not obtaining at S-structure but established at LF via covert movement of the [Focus Constituent] into the *wh*-clause. The *ellipsis approach* [...] assumes that the [Focus Constituent] is a full IP which is (usually) reduced by PF ellipsis. The IP-[Focus Constituent] is identical to the corresponding simple clause [...] both before and after S-structure [...], so that connectivity actually reflects regular c-command relations within the [Focus constituent] at all levels of syntactic representation.

Furthermore, we will briefly consider another peculiarity of pseudoclefts. Williams (1994:60) observes that the scope behavior of quantifiers in pseudoclefts is different than the behavior of the same quantifiers in corresponding non-cleft sentences. For instance, a universal quantifier in the Focus Constituent XP cannot take wide scope over an existensial quantifier inside the relative, unlike the interpretations available in the corresponding non-cleft sentence, cf. (37) a vs. (37) b, and (37) c vs (37)d (data quoted from Heycock and Kroch 1999) :

(37)

    a. What bothered a friend of mine was every article that appeared.
    b. Every article that appeared bothered a friend of mine.

    c. ?What someone is prepared to read is every article on linguistics.
    d. Someone is prepared to read every article on linguistics.

---

[42] Den Dikken et al. list Jacobson (1995) and Sharvit (1997) as advocates for the semantic approach; Heycock and Kroch (1999) and Boškovic (1997) as advocates for the syntactic reconstruction approach and Ross (1997) and Schlenker (1998) as advocates of the ellipsis approach. Den Dikken et al. argue for a more fine-grained account. They claim that the ellipsis approach is the correct approach, but only for a well-delineated subset of pseudoclefts, namely those with the following order: *Wh*-clause < counterweight (i.e. FocusXP). For the other type, with the reverse order (i.e. FocusXP < *wh*-clause), they propose that connectivity (i.e. connectedness) effects arises in another way, possibly along the lines of the semantic approach.

Williams concludes that there is no reconstruction into the relative. This is potentially an important observation to our investigation.

Finally, we need to know the basic syntactic properties of the Focus Constituent XP. Den Dikken et al. analyze this constituent (which they dub *the counterweight*) as a full IP, where material already expressed in the "Ground" XP may be repeated, or – as frequently happens – (phonetically) elided. At this point, we will not decide for or against the elipisis analysis. However, it is worth mentioning that in the constructions examined here, where the pseudoclefted constituent is the complement of a modal, the correlate of the relative clause *det* 'it', although it refers to the VP complement of the modal, is equated with a Focus Constituent that is syntactically more than a VP, specifically, a constituent headed by the infinitival marker *å* 'to'. Norwegian modals in unclefted sentences take bare infinitives; the infinitival marker shows up in these pseudocleft constructions only[43] (cf. also Thráinsson and Vikner 1995:fn 16) for the same observation). Thus, in the modal constructions examined here, the Focus Constituent (or counterweight) is always an infinitive headed by the infinitival marker *å,* 'to'.

This particle has sometimes been considered a complementizer, hence situated in C_0 (cf. e.g. Nordgård and Åfarli 1990:117); whereas others have suggested that this particle is the head of IP (Christensen 1983, Platzack 1986:123).

Bech (1998), who investigates Norwegian psych verbs with clausal complements, concludes that Norwegian infinitival constructions headed by *å* 'to' come in two different varieties. There is a control variety, with a PRO subject in <Spec, IP>, protected from government by a C-projection on top of IP. The other type is the raising variety, with a trace of a raised subject in <Spec, IP>. This latter type of *å*-headed infintive constructions are bare IPs, allowing the NP-trace in <Spec, IP> to be properly governed by a lexical head, namely the raising verb selecting the IP; cf. Bech (1998:62). In both cases *å* heads IP, but the control infinitival construction consists of a projection (CP) on top of IP, whereas the raising infinitive is a bare IP.

Stowell (1982) represents another approach to infinitives. Stowell too emphasizes that there are structural differences between control infinitives and raising infinitives. Control infinitives have tensed I(nfl)s, according to this proposal, as opposed to raising infinitives.

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[43] But cf. section 2.3.1, fn 29: In non-standard dialects we find certain constructions where the infinitival marker is present in the complement of the modal. In those cases, the presence vs. absence of the infinitival marker has interpretive effects. No such interpretive effect is present here.

Infinitive tense checks null Case, and the only empty category that requires null Case is PRO. Hence, only PRO can appear in <Spec,IP> of tensed infinitives.

It is not important here to decide which of these approaches to adopt, or which proposal is superior to the other. The important thing to notice, however, is that numerous authors have proposed and investigated structural differences between control and raising infinitives. This is another important matter to our investigation of modals in pseudoclefts. Specifically, the structural difference between a control infinitive and a raising infinitive may be crucial when this infinitive functions as the Focus constituent (or the counterweight) of a pseudocleft; in this case, the pseudoclefted complement of a modal.

4.2.3 Modals and subject scope

At this point, we need to reexamine the scope properties of the subject in raising structures. As discussed in section 4.1, it is a widely acknowledged property of raising predicates that they allow the subject of the construction to take both wide and narrow scope w.r.t. the matrix predicate (cf. e.g. May 1977, 1985). Recall also that this is not so for control structures, in which the subject invariably takes wide scope. Deontic modals pattern with raising predicates in that they allow for a narrow-scope as well as a wide-scope reading of the subject w.r..t. the modal, compare to the deontic modal *must* to the raising verb *seem* and the control verb *hope*:

(38)

    a.   John must stay in his office
        i.   It is considered necessary (e.g. by speaker)that [John stays in his office].
        ii.   John has an obligation to [stay in his office].

    b.   John seems to be happy.
        i.   It seems (e.g. to the speaker) that [John is happy].
        ii.   John [is showing signs of being happy].

    c.   John hopes to talk to her.
    # i.   It is hoped (e.g. by the speaker) that [John talks to her].
        ii.   John [has a hope to talk to her].

The generalization that the subject scope of raising predicates differs from the subject scope of control structures has been accounted for and implemented in a number of ways (cf. Wurmbrand 1999[44]). A widespread assumption is that this contrast between raising structures

---

[44] Wurmbrand lists, in addition to May (1977, 1985) , Bobaljik (1998), Lebeaux (1994), Fox (1998, 1999) and Sauerland (1998) as various approaces proposing mechanisms to account for the "narrow scope reading" of the subject.

and control structures is due to the availability of a lower subject position for the structure (e.g. at LF) in raising structures but not in control structures. This effect is often explained as a consequence of the raising operation itself. The raising of the subject from the (+θ) subject position of the embedded predicate to the (-θ) subject position of the raising predicate yields a structure where the subject may be interpreted in the upper subject position – which gives the subject a wide scope reading – or the subject may be interpreted in the lower subject position; i.e. the subject position of the embedded predicate, in which case *the trace* of the subject is interpreted. This latter option gives the subject the narrow-scope reading w.r.t. the raising predicate. Interpretation of the subject in this lower position depends on the possibility to "lower" the subject back into its trace position (i.e. "reconstruction"), alternatively; the possibility to interpret the *trace* of the subject DP instead of the raised subject DP. On both types of accounts, the point is to semantically "undo" the overt raising of the subject. The difference between control and raising predicates in this respect can be depicted as in (39), adopted from Wurmbrand (1999).

(39)

a. **Control**   b. **Raising**

SCOPE: SUBJ > VERB   SUBJ > VERB > SUBJ
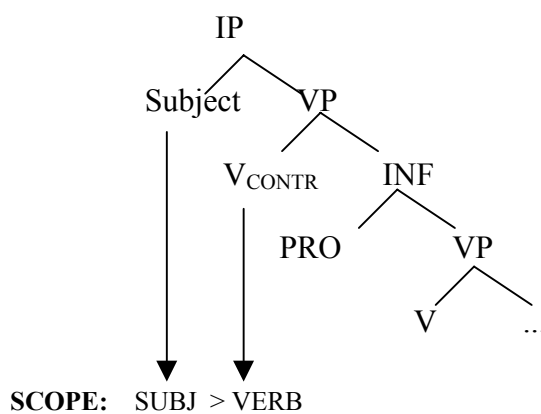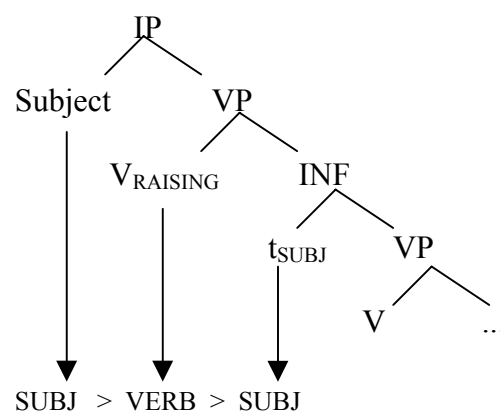
Deontic modals behave like other raising verbs in allowing for narrow-scope as well as wide-scope readings of the subject. However, there is still one very important difference between deontic modals and (most) other raising verbs. This is the fact that whereas the perceived θ-properties of ordinary raising verbs (like e.g. *antas* in (40)a below) remain uninfluenced by the interpretation of subject scope, a wide scope reading of the subject w.r.t. a *deontic modal* simultaneously facilitates a subject-oriented, thus, +θ reading of the modal; cf. (40)bii). And vice versa, the availability of a subject-oriented (+θ) reading is dependent on a wide-scope

reading of the subject[45] in the case of deontic modals, since a narrow scope subject cannot be construed as having any obligation or permission.

(40)

      a. Jon antas å være morderen.
       'Jon is presumed to be the killer.'
       i) It is presumed that (Jon is the killer).
       ii) Jon (has the property: presumed to be the killer).

      a. Jon må passe hunden.
       'Jon must watch the dog.'
       i) It is necessary that (Jon watches the dog). # Jon has an obligation.
       ii) Jon (has the obligation to watch the dog).

A proposition-scope modal obligatorily scopes over the entire proposition of the sentence in which it is contained, including the subject, with no intuition of a θ-relation between the subject and the modal. This amounts to saying that in the case of modals, the wide-scope reading of the subject is a prerequisite for a subject-oriented and thus, a +θ reading, since a subject-oriented reading is unavailable with a narrow-scope subject. Another way of formulating this generalization is that a proposition scope (root or epistemic) reading always and only occurs when the subject is "lowered"; i.e. the trace of the subject is interpreted; recall that this trace sits in the lower subject position.

Interpreting the trace instead of the visible subject is a prerequisite for a proposition scope reading of a modal; indeed, one might quite rightfully claim that this reconstruction procedure is what *constitutes* a proposition-scope reading of a modal. On the other hand, interpreting the subject in the upper subject position gives the subject wide scope over the modal. In the case of modals, as opposed to (most) other raising verbs, a wide scope reading of the subject is semingly linked to a +θ reading of the matrix predicate; i.e. the modal. Likewise, a +θ reading of the modal hinges on the subject being interpreted in its surface position – the upper position. On the other hand, if the subject is interpreted in its trace position, i.e. the lower subject position, what we have is a proposition scope reading of the modal – either a proposition scope root modal or an epistemic modal. This generalization is illustrated in (41):

---

[45] I will go into the terms wide-scope and narrow-scope reading of e.g. a subject much more thoroughly below. I am aware that there exist various proposals where proper names, e.g. *Jon,* are construed as always having wide scope. If we accepted this as a premise, then proposition-scope readings of modals would never be possible with proper names, because the subject would always scope over the modal. However, this does not seem to capture the intuitions about these constructions. I will suggest an answer to the puzzle below.

(41)

Modal raising structures

```
                          IP
                        /    \
                 Subject      ModP
                    |        /    \
                    |     Modal    INF
                    |       |     /   \
                    |       |  t_SUBJ   VP
                    |       |          /  \
                    ↓       ↓         V    ...
                    ↓       ↓     
              SUBJ  >  MODAL  >  SUBJ
                    ↓              ↓
```

READING: SUBJECT-ORIENTED   PROPOSITION SCOPE (ROOT OR EPISTEMIC)
               " +θ"   " – θ"

As illustrated by the figure, the "lowering" procedure, consisting in interpreting the subject in the lower (i.e. trace) position gives the proposition-scope reading of a modal, hence the –θ reading of the modal. The wide scope reading of the subject is linked to the +θ reading of the modal; i.e. for a +θ–reading to arise, the subject needs wide scope.

Now, if we rely on these assumptions about the relation between θ-readings and subject scope (assumptions that will be made subject to scrutiny below), there is a seemingly straightforward way of accounting for the observed generalizations concerning modals with a pseudoclefted complement. Recall that modals accept a pseudoclefted complement provided the modal has a subject-oriented ("+θ") reading. Whenever the natural interpretation of the sentence requires that the modal is given a proposition-scope (root or epistemic) reading (like e.g. in (28), repeated here as (42), the modal rejects a pseudoclefted complement.

(42)

a. *Det en kvinne bør, er å bli vår neste statsminister.
   it a woman should, is to be our next prime minister.
  (Intended: 'What should happen is that a woman becomes our next prime minister.')

b. *Det apene ikke må, er å mates av besøkende'
   it the monkeys not must, is to feed-PASSIVE by visitors
  (Intended: 'What must not take place is that the monkeys are fed by visitors.')

Let us start by examining why proposition-scope readings are unavailable in these pseudocleft constructions. First, we need to reinvoke the internal structure of the relative in <Spec,TopP>. Cf. the illustration in (35), repeated here as (43):

(43)

```
                          TopP
                  _____|_____
                 |                 |
           Spec: Ground          Top'
              /\            _____|_____
             /  \          |             |
            /____\        Top⁰        XP: Focus
Detᵢ [CP (opᵢ) (som) Jon må tᵢ]               /\
'What      (that)  Jon must (do)  er         /  \
                                  is        /____\
                                       å være på kontoret
                                      '(to) stay in his office'
```
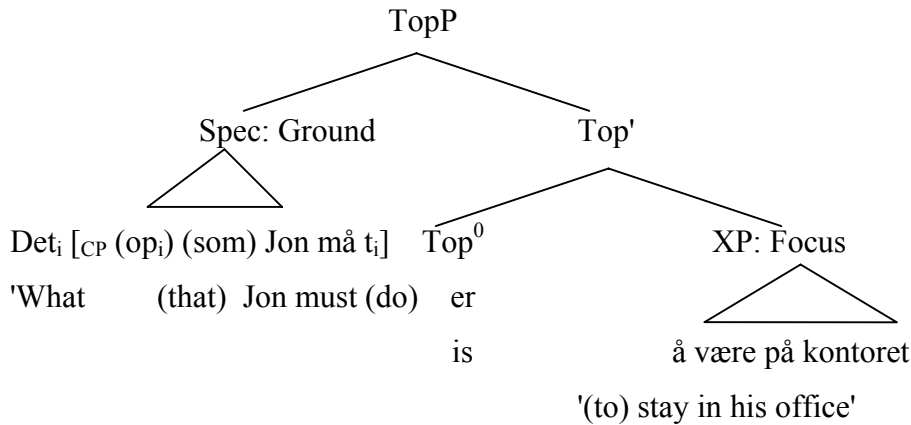
The complement of the modal, dubbed "op" here, is raised to <Spec,CP>. By assumption, this operator gets its reference from the correlate *Det* 'it' outside of CP[46]. This element, *det,* has a variety of functions and (in part unrelated) meanings in Norwegian. In this case, however, it seems legitimate to argue that *det* is a (surface) proform, cf. Lødrup (1994); pertaining to the VP complement of the modal[47]. A mainstream way of getting the semantics right for such a proform would be to assume that the structure of the phonetically deleted VP is syntactically, although not phonetically, present in the phrase marker, at least at LF (cf. also Lødrup 1994:308[48]). I want to assume instead that this proform *det* is a simplex structure, something like a pronoun[49]. There is no syntactic reconstruction of this proform into a fullfledged VP at

---

[46] Chomsky (1986b), Negård (2001:121). The latter claims that the reference and function of a *wh*-operator is determined by the strucural environments of the *wh*-operator; e.g. by whether or not there exists a correlate for the *wh*- operator. When there exists a correlate for this operator, as is the case in relative clauses, the operator refers to the correlate.
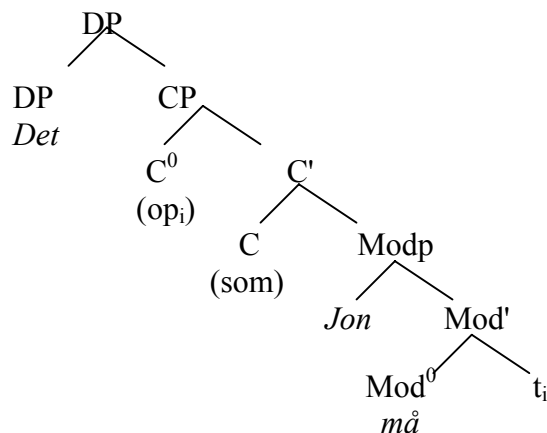
[47] In fact, Lødrup seems to reserve this term for the *det* complement of epistemic modals and certain other constructions. Root modals are analyzed as control verbs, and control verbs "always allow an NP object as an alternative to a verbal complement". Hence, *det* might be analyzed as a pronoun object when it is the complement of a root modal in Lødrup's proposal. I confess that I have glossed over the syntactic differences between *det* as a complement of a subject-oriented root modal and *det* as a complement of a proposition scope (root or epistemic) modal that Lødrup observes; e.g. that *det* as the complement of a subject-oriented root modal is able to take part in "object-shift", as opposed to *det* as a complement of a proposition-scope modal. There are several reasons for making this simplification; firstly, the judgements are subtle for the variations observed, and secondly, Lødrup's examples consists almost entirely of sentences containing the modals *kunne* and *ville,* i.e. dispositional modals. Thirdly, like Thráinsson and Vikner (1995), Lødrup (1994, 1996) ignores the proposition scope root readings of deontic modals.

[48] Lødrups framework is LFG, and this semantic reconstruction, where the antecedent of *det* is copied in and replaces *det* in functional structure.

[49] Lødrup suggests (p. 309) that this proform *det* also has certain properties that makes it legitimate to treat it as a direct object and to assume that its replacement in functional structure is also an object.

any syntactic level[50]. Hence, the structure of the relative clause sitting in <Spec,TopP> could be depicted as the structure in (44); irrelevant details ommitted:

(44)

```
                    DP
                  /    \
               DP        CP
              Det       /  \
                      C⁰     C'
                     (opᵢ)  /  \
                          C      Modp
                        (som)   /    \
                             Jon      Mod'
                                     /    \
                                  Mod⁰     tᵢ
                                   må
```

Assuming this structure for the relative clause allows us to account for the lack of quantifier scope reconstruction into the (free) relative in a pseudocleft, observed and pointed out by Williams (1994), mentioned in section 4.2.2 and repeated here as (45). We assume the structure in (46) for e.g. the relative clause in (45)a (note that the IP-level is omitted for simplicity; this has no theoretical implications).

(45)

a. What bothered a friend of mine was every article that appeared.
b. Every article that appeared bothered a friend of mine.

c. ?What someone is prepared to read is every article on linguistics.
d. Someone is prepared to read every article on linguistics.

(46)

```
                    DP
                  /    \
               DP        CP
             What       /  \
                      C⁰     C'
                     (opᵢ)  /  \
                          C      VP
                               /    \
                             tᵢ      V'
                                    /  \
                                  I⁰    DP
                               bothered  a friend of mine
```

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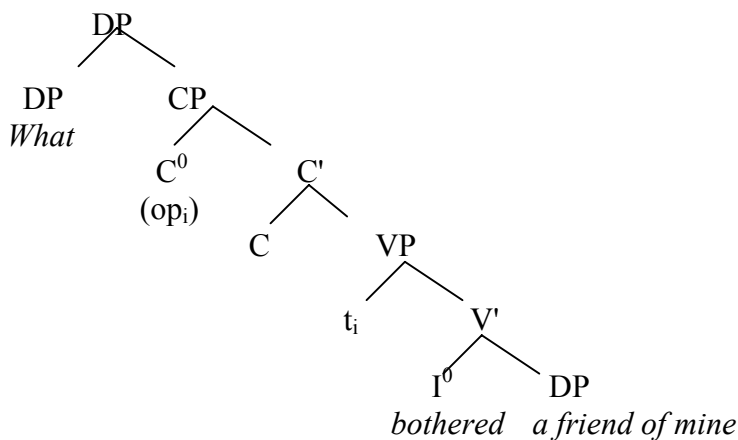
[50] Although I do not rule out the possibility that there exists a reconstruction at a level "more abstract than LF under most current assumptions" along the lines proposed for reconstruction of pseudoclefts in Heycock and Kroch (1999:365).

There is no reconstruction of the *What*-phrase into the quantified phrase *every article that appeared* within the relative clause, hence one would not expect scope-variability any more than one would expect scopal ambigutiy of two quantifiers in two different clauses, e.g. as in the follwing discourse:

(47)

Soneone is prepared to read something. It is every book on linguistics.

Note, however, that connectedness effects, e.g. binding of anaphors, is possible between two different sentences in a discourse.

(48)

John suddenly saw something. It was himself in the mirror.

Thus, the structure we will be assuming for a relative in <Spec, TopP> where the pseudoclefted constituent is the complement of the modal is the one depicted in (44), repeated here for convenience as (49):

(49)
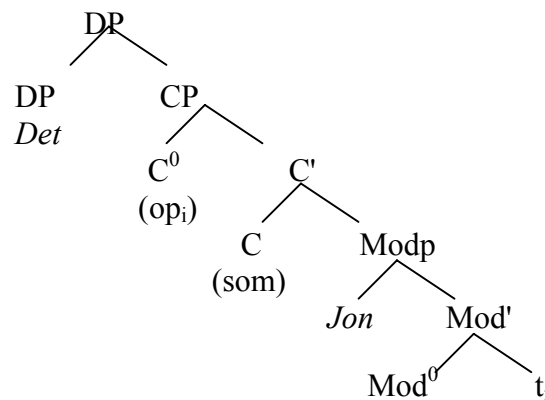
Now, for the modal to get the proposition scope (and minus-θ) reading, we have assumed that it is essential that the subject *trace* is interpreted instead of the surface subject DP; i.e, corresponding to the "lowering" procedure of May (1977, 1985). This means that we need access to a spec-position below the modal, because this is where we find the trace of the subject. But in this structure, there exists no spec-position below the modal. The "pre-movement subject position" is simply elided and deleted and thus not available for interpretation.

The only specifier position available is the position scoping over the modal, which gives the subject wide scope and the modal a +θ reading. If this is on the right track, a

pseudocleft structure where this lower subject position is *retained* inside the relative clause should give rise to proposition scope readings. This is borne out, cf. (50)a. Compare (50)a, where proposition-scope readings are possible, to (50)b, where proposition-scope readings are unavailable:

(50)

       a. Det Jon må være, er arkitekt.
        it Jon must be, is architect
       'What John must be, is an architect.'

       b. Det Jon må, er å være arkitekt.
        it Jon must, is to be an architect
       'What John must do, is to be an architect.'

(50)a is three-ways ambiguous. It does have a subject oriented $(+\theta)$ reading, but crucially, the proposition-scope root and epistemic readings are also both available. The two root readings both need a context, e.g. they are easier to get if (50) is uttered by a director of a play. But the important point here is that both root and epistemic *proposition scope* readings are possible only if the lower subject position (the specifier position of *være* 'be') is syntactically present. The structure of the relative clause in (50)a may be depicted as in (51) below.

(51)
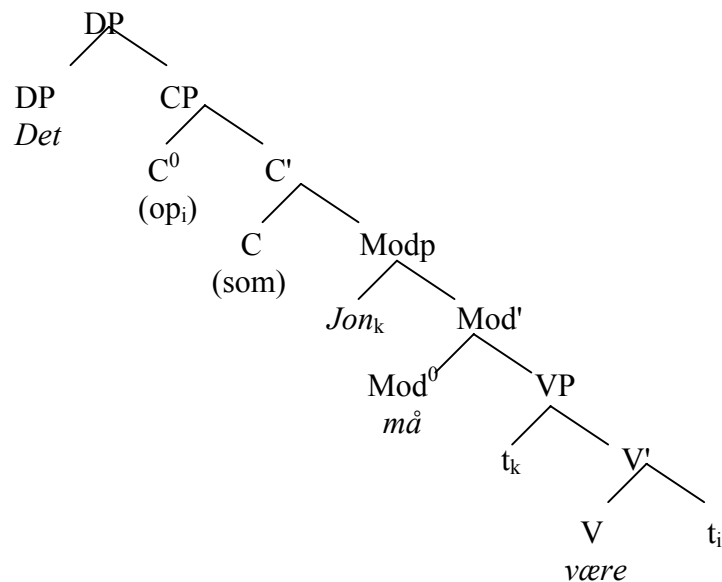
Notice that the presence of *være* 'be' provides a specifier position, but presumably not a θ-role, given that the copula (in an by itself) is not a θ-assigner, by standard assumptions. Thus, let us assume that the main contribution of the copula w.r.t. allowing for a proposition-scope

(non-θ) reading of the modal is to supply the structure with a lower subject position[51]. Only when this position is syntactically present are the proposition-scope readings of the modal available. When this position is elided, as in (44) above, the proposition scope readings are impossible, and the wide-scope subject/ +θ reading of the construction is the only reading.

However, there is a potential snag here. Consider what happens when the pseudoclefted XP is the complement of a perfective verb.

(52)

    a. * Det Jon må ha, er solgt bilen hennes.
       it John must have, is sold her car
     (Intended: What John must have done, is to have sold her car)

Here the aspectual *ha* provides a lower subject position, but the structure is nevertheless ill-formed. However, the ungrammaticality of (52) is straightforwardly explained when we consider the overall structure of pseudoclefts. There are strong restrictions on the possible syntactic realization of the Focus constituent XP. The generalization could be expressed as follows: The pseudocleft structure is an equative structure (cf. Heycock and Kroch 1999 and section 4.2.2 above) where two (referential) entities are equated. Since the head of the relative clause is a pronoun (cf. above), and there exists the restriction on equatives that the two arguments equated must be of the same semantic type, the focus constituent XP must be, in some sense, nominal. Hence, the relevant structure reads something like " $XP_N = XP_N$"; which entails that only argument-type clauses (headed by *at* 'that' or the infinitival marker *å* 'to'), DPs or adjectives are allowed to appear here. Bare VPs (cf. (52)), adverb phrases and PPs are thus banned from constituting the Focus constituent XP; cf. the data in (53):

(53)

    a. *Det Jon må, er hjem/til flyplassen.
       it Jon must is home/ to airport-DEF
     'What Jon must do, is to go home/to the airport'

Være 'be' accepts a pseudoclefted complement because it takes adjectival and (other) nominal categories as complements. This is not so for the aspectual *ha* 'have'. This auxiliary requires its complement to be a perfect participle; hence a bare VP. But verbal (i.e. [+V])categories cannot head the Focus constituent XP. Thus, the structure is ill-formed. As stated and discussed above, though, *være* is quite willing to accept a pseudoclefted complement, and serves to illustrate that our prediction is borne out: the lower subject-position is crucial to the

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[51] I need to modify this claim below, but I will allow this assumption here for the sake of exposition.
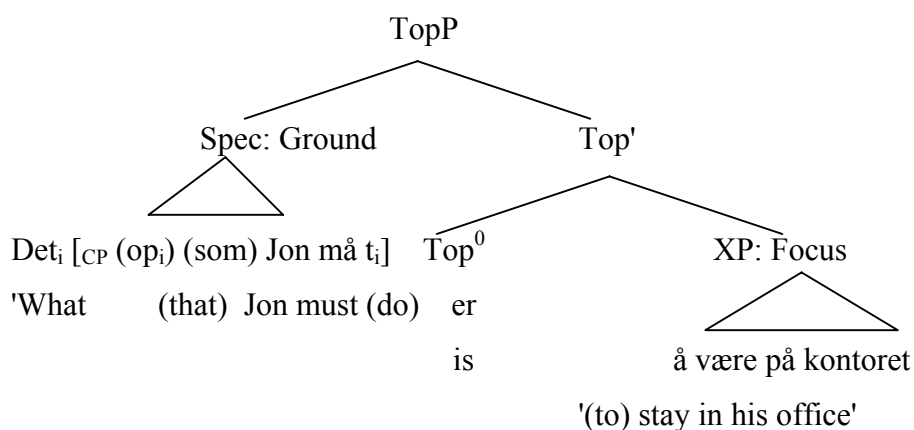
proposition-scope reading of modals. Only when this position is syntactically present is the proposition-scope reading of the modal possible.

Now, this explains the fact that proposition-scope (epistemic *and* root) modals reject, whereas subject-oriented modals accept a pseudoclefted complement. The proposition scope reading of a modal consists in interpreting a subject-trace in a subject position within the syntactic scope of the modal. But when the complement of a modal is pseudoclefted, this complement is replaced with the proform *det,* which has no internal structure; or at least, no subject position of a relevant kind. This means that the lower subject position, which gives rise to the proposition scope reading of the modal and, correspondingly, to the narrow scope reading of the subject, is simply not present in the syntactic structure. Stipulating a one-to-one correspondence between a wide scope subject and a $+\theta$ reading on the one hand, and a narrow scope subject and a $-\theta$ reading on the other hence gives the right result. Norwegian deontic modals are allowed in this structure because they allow for a wide-scope, $+\theta$ reading, as opposed to most other raising verbs (cf. the tables in (30) and (31)).

However, there is one severe problem with this proposal. It remains to explain why other raising verbs are illformed in this construction. If the wide scope vs. narrow scope reading of the subject were the only relevant distinction, other raising verbs ought to be allowed in this construction as well. As we have seen (cf. above), raising verbs allow for a wide scope reading of the subject; hence, all raising verbs should accept a pseudoclefted complement, if the wide-scope reading of the subject is all it takes to rescue the structure. I will examine one potential, GB-style explanation here.

Assume for a moment that the explanation resides in the properties of the Focus Constituent XP. Let us consider the proposed structure again:

(54)

```
                      TopP
                   /        \
          Spec: Ground        Top'
             /\              /     \
            /  \           Top⁰      XP: Focus
Detᵢ [CP (opᵢ) (som) Jon må tᵢ]               /\
'What      (that)  Jon must (do)   er        /  \
                                         å være på kontoret
                                   is    '(to) stay in his office'
```

As mentioned in section 4.2.2, several authors have proposed that there exist structural differences between the complement of a raising verb and the complement of a control verb. For instance, Bech (1998) suggests that infinitival phrases headed by the infinitive marker *å* come in two different varieties. An *å*-headed infinitive functioning as the complement of a raising verb is a bare IP with a subject trace in <Spec, IP>, allowing this trace to be properly governed by the selecting matrix verb, i.e. the verb selecting the complement. On the other hand, an *å*-headed infinitive functioning as the complement of a control verb has a CP on top of IP, protecting the PRO subject in <Spec, IP> from being governed by the matrix control verb selecting the complement; cf. the difference between (55) a (control) and (55)b (raising), from Bech (1998: 62-63):

(55)

a. Ola liker $[_{CP}$ $[_{IP}$ PRO$_x$ å $[_{VP}$ t$_x$ spise bananer]]].
   'Ola likes   to   eat bananas.'

b. Hun$_i$ forekommer meg $[_{IP}$ t$_i$ å $[_{VP}$ t$_i$ analysere setningen]].
   'She   seems (to) me   to   analyze the-sentence.'

We insert these sentences into the TopP structure. (56) is a control structure and a fully grammatical pseudocleft. (57) is a raising structure and an illformed pseudocleft.

(56)

'What   Jon   likes   is   to   eat bananas'

(57)

```
                    *       TopP
              _____
        Spec: Ground                 Top'
            DP              _____
        _____        Top⁰                IP: Focus
      DP       CP         er              _____
      Det    _____                    tₓ            I'
           (opᵢ)     C'                           _____
                  _____                        I          VP
                 C      IP                        å      _____
               (som)  _____                          tₓ        V'
                    Jonₓ      IP'                            spise bananer
                          _____
                        I⁰     tᵢ
                       antas
```
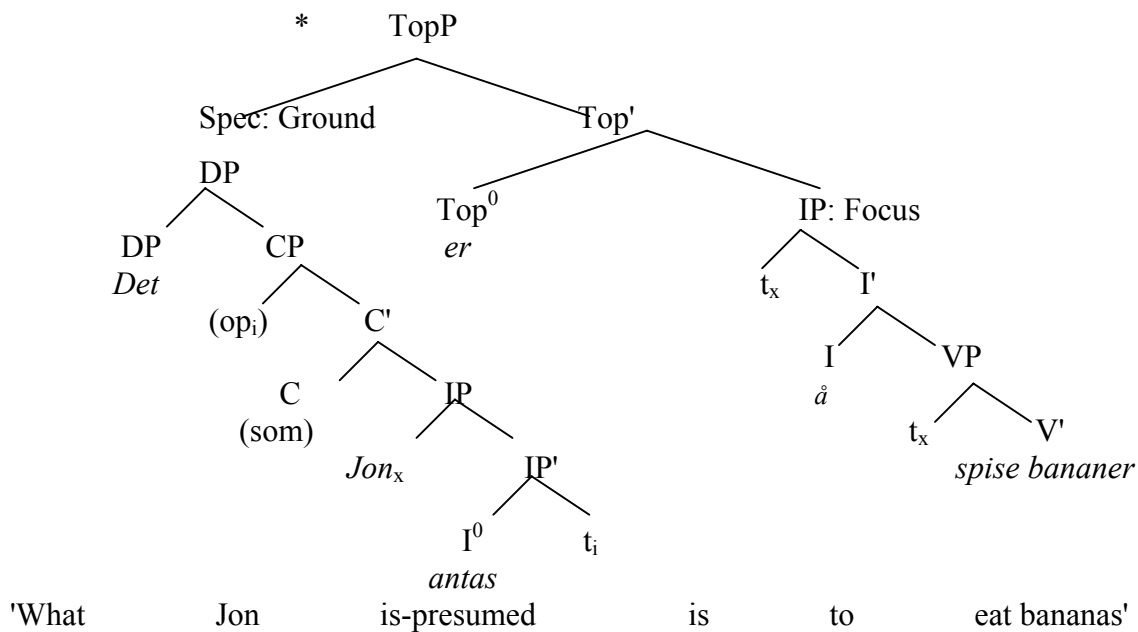
'What   Jon   is-presumed   is   to   eat bananas'
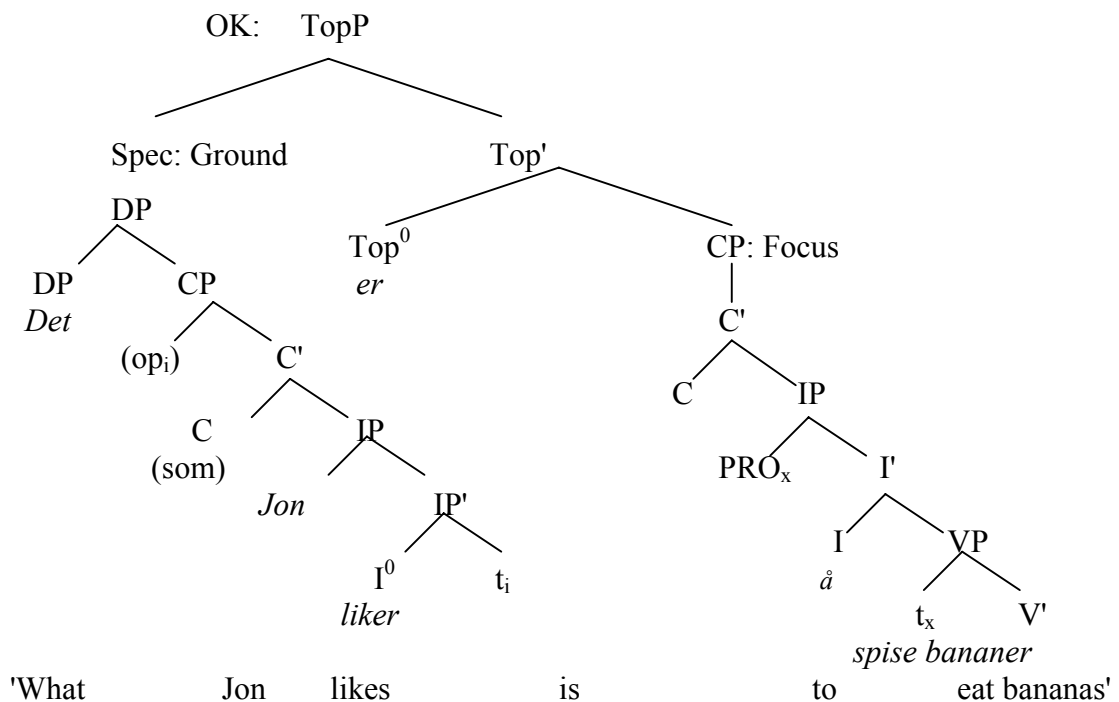
Now, let us assume that the subject trace in <Spec, IP> of the Focus constituent is the offending element of the structure in (57). We may invoke a number of reasons why this should be the case. Most importantly, the trace does not have an antecedent in a c-commanding position. In fact, this trace does not have an antecedent at all, thus it must be base-generated as a trace, not the silent copy of a moved constituent. Secondly, let us assume that the copula lexicalizing the Top head is unable to properly govern this trace; e.g. because it is not a proper lexical verb with any lexical content. Thirdly, given the assumption that *å*-headed infinitives come in one CP variety and one IP variety, we may want to claim that only the CP variety is a true "nominal" category, capable of being equated with a pronoun such as *Det.* We might argue that a bare IP is a non-nominal category, unable of being equated with the pronoun *Det.* Any of these assumptions would allow us to explain why raising structures are illformed in these constructions[52].

On the other hand, it would not explain why deontic modals, as the only types of raising verbs, accept a pseudoclefted complement. One way out would be to propose that deontic modals, although they are defined as raising verbs in the lexicon, are able to be *redefined* as control verbs is these structures only. This is not completely unheard of; it is possible for certain verbs with one specific type of argument structure to be forced into a different frame and thus give rise to new meanings, cf. e.g. the following examples:

(58)

> A: Fjernkontrollen har forsvunnet.
> 'The remote control has disappeared.'
>
> B: Jaså, og hvem har forsvunnet den, da?
> 'Really, and who has disappeared it, then?'

Forsvinne 'disappear' is clearly defined as an ergative (unaccusative) verb in Norwegian, and it does not take an agentive subject. Nevertheless, it is marginally possible – in jocular and poetic contexts – to force an agent into this construction[53]. The resulting construction has a causative reading; 'who made the remote control disappear'.

However, allowing deontic modals to be redefined in this way is still an unsatisfactory solution for a number of reasons. Firstly, because forcing a verb with a given argument structure into a different verb frame seems to give rise to deviating, highly marked or methaphorical readings. No such effect is observed with modals in pseudoclefts. Secondly, if we allow for deontic modals to be control verbs in certain constructions, we might as well allow for two different entries of each modal in the lexicon, the very thing we set out to avoid. Thirdly, the question still remains how we could restrict this kind of redefinition of raising verbs to allow deontic modals, and at the same time disallow other raising verbs, to partake in this kind of "redefinition of argument structure".

But even if we could solve all these problems, one much more fundamental problem for our approach, where $\pm$ θ-reading is seen as a side effect of the scope of the subject, resides in the fact that the stipulated correspondence of subject scope and $\pm$ θ-reading does not hold up against closer scrutiny. Admittedly, it does seem to be a sound generalization that +θ readings demand, or at least strongly prefer, a wide scope subject. But non-θ readings of deontic modals allow for wide-scope subjects as well, just like other raising verbs with non-θ readings, cf. (59)a. But even when the reading of the subject is a wide-scope reading, proposition-scope modals, just like other non-thematic raising verbs, reject a pseudoclefted complement, cf. (59)b:

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[52] This type of approach would favour an analysis where the connectedness effects observed in pseudoclefts are a result of interpretive mechanisms and not the result of actual syntactic C-command between the antecedent and the anaphor.

[53] Interestingly, it is a prerequisite that the additional argument forced into this construction needs to be a prototypical agent. If we replace *hvem* 'who' with *hva* 'what', the construction is (according to my informants) close to nonintelligible, , cf. (i):

> ??/* (i) Hva har forsvunnet fjernkontrollen? ' What has disappeared the remote control?'

(59)

      a. En pasient må opereres.
       ' A patient must be operated on, ∃x & (is operated on x).'[54]

      b. ??/*Det en pasient må, er å opereres[55].
       'What a patient must, is to be operated on.'

What we have learned so far is that the availility of the wide-scope reading of the subject cannot be what allows deontic modals to partake in the construction under scrutiny here.

Intuitively, what *does* separate most other raising verbs from root modals as regards a pseudoclefted complement is perfectly clear. Modals are able to survive in this construction because they may assign what has become known as the additional/adjunct/secondary θ-role (the phenomenon referred to as subject-orientedness above). This is also the intuition expressed by my (non-linguist) informants. The construction *Det Marit antas, er å være uærlig* 'what Marit is presumed, is to be dishonest' is illformed because there is no semantic relation between *Marit* and *antas* 'is-presumed'. Now, one might imagine that this is the layman way of expressing the intuition of wide-scope vs. narrow-scope reading of the subject. But as we have seen, the wide-scope/narrow-scope reading of the subject does not give us the solution in any case, since wide-scope readings alone are in fact not enough to permit a raising verb in this construction. In fact, the wide-scope/narrow-scope subject distinction is useful to us only as far as it correspond to the ± θ reading, and this correspondence is in fact not one-to-one. Thus, there are important reasons to believe that θ-relations and not subject scope is the primary feature in distinguishing between deontic modals and other raising verbs when it comes to accepting vs. rejecting a pseudoclefted complement. On the other hand, the pseudocleft data point to a solution where the syntactic presence of the lower subject position is crucial to get a non-θ/proposition scope reading of the modal. Hence, if we had a way of relating ± θ-readings instead of ± wide scope subject readings to upper and lower subject positions, we would have a much better chance of solving the problem before us, i.e. to explain why proposition scope modals reject, whereas subject-oriented modals accept a pseudoclefted complement.

Now, as discussed a number of times, these subject positions have been taken by numerous authors to encode wide vs. narrow subject scope and not θ-relations. And it is true

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[54] The "box" encodes necessity, whereas the "diamond" ◊ encodes possibility. See Brennan (1997:16 ff) for the history of definitions of these signs in western philosophy.

that there exists a certain correspondence between subject scope and +θ-readings; cf. the discussion above. But the problem is that there exists a discrepancy in certain cases; specifically, that wide-scope subjects do not *guarantee* a +θ reading. So if we want to make a case of the hypothesis that ± θ-reading, not subject scope, is the primary function of access to the upper and lower subject positions, we need to discredit the hypothesis that subject scope is what is encoded by these positions. This is what we turn to next.

4.2.4 Competing for subject positions: Theta–relations vs. subject scope

In the literature, various arguments have been offered to support the assumption (attributed to May 1977) that raising predicates give rise to a wide scope reading as well as a narrow scope reading of the subject, whereas control predicates do not allow for a narrow scope, only a wide scope reading of the subject. I will examine three types of argument here.

4.2.4.1 The argument from nobody/somebody

Firstly, Zubizarreta (1982: 54, following May 1977) points out that the interplay of the quantifiers *nobody* and *somebody* are different when they occur in the subject positions of raising verbs as compared to control verbs. Her data are as follows (her 16 –20).

 (60)

 a. Nobody tried to leave.

 b. Nobody seemed to have left.

 c. Nobody tried to leave but somebody tried to leave (contradictory).

 d. Nobody seems to have left but somebody seems to have left (non-contradictory).

 e. ($\forall$x (x does not seem to have left)) but (seems ($\exists$x (x have left)))

The explanation given by Zubixzarreta for the lack of contradiction in (60)d is that in the first part of this clause, *seem* is predicated of x, but not in the second part; cf. (60)e. Control predicates are not able to scope over their subjects like raising verbs; hence a narrow scope reading of the subject is not available, and so (60)c is contradictory. However, one problem with these data and the lesson to be learned from them is that authors typically use the raising verb *seem* as an example. The picture gets more nuanced when we include other raising verbs.

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[55] This sentence is well-formed given a generic reading of the subject, but not on the wide-scope (nor the narrow-scope/ non-theta) existential reading intended here.

Thus, replacing *seem* with *be likely to* or epistemic *must* (which we have established is a fullfledged raising verb) result in different judgements from my informants:

(61)

      a. Nobody is likely to have left but somebody is likely to have left.
      b. Nobody must have left but somebody must have left.

My informants (native speakers of English) initially judged both sentences to be contradictory. However, when I paraphrased the sentences so as to avoid contradiction, the judgements were that the non-contradictory reading of (62)a is "extremely hard to get" whereas the paraphrase in (62)b was judged to be "still contradictory".

(62)

      Paraphrases of (61) a and b:

      a. There is no person such that he is likely to have left;
         yet it is likely that somebody left.

      b. There is no person such that he must have left;
         yet it must be the case that somebody left.

Notice that the same informants accepted the comparable paraphrase of *seem* without (much) persuation. Now, English *seem*[56], like its Norwegian counterpart *ser ut til å,* has what seems to be a +θ-assigning counterpart. This version of *seem* takes adjectival complements in addition to clausal complements. There is a slight difference in meaning between the two versions of *seem.* The "+θ-assigning counterpart" denotes 'direct visual access to x' and differs from the "-θ-assigning version" in that the former evidently does not accept a proposition scope reading. I.e. it does not accept as a complement a proposition p where it is implied that the speaker does not have direct visual access to the emebedded subject, cf. (63):

(63)

      a. John seems sick/*gone.
       # It seems that John is sick/*gone

      b. Everyone seems to be sick.

      c. Everyone seems sick.

Note that whereas (63) b could be uttered by a teacher as an explanation of an empty class room, (63) c could not. Hence, there exist two different verbs *seem* in English. My suggestion

is that this property of *seem* might have an influence on the informant's judgements in readily accepting (60)d as non-contradictory. The Norwegian counterpart of *seem* is in fact marginally permitted in the pseudocleft constructions discussed above, given that the focus XP contains a subject-oriented predicate allowing for a 'direct visual access' reading; as opposed to a predicate that favours a proposition scope reading of the matrix verb, where a 'direct visual access' reading is unavailable:

(64)

      a. ?Det Jon ser ut til, er å være irritert.
       'What Jon seems (to be), is annoyed'

      b. *Det Jon ser ut til, er å være borte.
       'What Jon seems (to be), is gone'

I should mention that not all of my informants accepted the sentence in (64)a as grammatical, but crucially, every single informant judged (64)b to be dramatically worse than (64)a.

Raising verbs such as epistemic *must* have no θ-assigning (epistemic) version, and this may be what influences on the informants rejecting of a non-contradictory reading of (61) b; *Nobody must have left but somebody must have left.* For *likely,* one may assume that certain speakers have a marginal possibility of a θ-assigning version in addition to the proposition-scope version in their lexicon. Recall that the non-contradictory reading of (61)a (*nobody is likely to have left but somebody is likely to have left*) was judged "extremely hard to get".

4.2.4.2 The argument from some/every

The second family of data taken to confirm the alleged subject-scope differences between control predicates and rasing predicates stems once again from May (1977). The data here are taken from Zubizarreta (1982:55); cf also Hornstein (1998:109), who attributes these observations to Burzio (1986)[57]. What these data are supposed to show is that "a quantifier in the embedded clause of a raising construction may have scope over the matrix surface subject" whereas "in a control structure the matrix quantifier is always construed as having scope wider than the quantifier in the complement clause".

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[56] I want to thank Greg Carlson for discussing with me these properties of *seem*.
[57] According to Zubizarreta (1982), the type of wide-scope/narrow-scope data observed by Burzio (and she refers to Burzio 1981) are data like the following, *One interpreter each seems to have been assigned to the visiting diplomats* but *One interpreter each tried to be assigned to the visiting diplomats.* The distribution of distributive *each* is discussed by Beghelli and Stowell (1999).

(65)

    a. Some politician is likely to address every rally in John's district.
       Some > every; every > some

    b. Some politician decided to address every rally in John's district.
       Some > every; # every > some

Hornstein (1998) adheres to these judgments and assumptions, although his data are slightly different. However, acoording to my investigations these conjectures are simply not correct. My informants assure me that both scope possibilities are available in the following control structures.

(66)

    a. Someone tried to read every book.
       Some > every; every > some (for every book, someone tried to read it)

    b. Someone decided to read every report.
       Some > every; every > some (for every report, someone decided to read it)

The latter reading of (66)b is perhaps a little harder to get and needs some context. Let us say I am a lecturer and that I encourage my students to read each other's reports, whereas I myself promise to read those reports which will otherwise not be read by anyone. Then, I might utter, *Luckily, someone decided to read every report,* where *every* scopes over *someone.*

4.2.4.3 The argument from the ambiguity of indefinites

The third set of data often invoked to illustrate scopal differences between control predicates and raising predicates concerns the possible readings of indefinites. In certain contexts, indefinites may be ambiguous between what linguists refer to as a *specific* w.i.z. a *non-specific* reading. For instance, (67) is ambiguous between these two readings:

(67)

    John is seeking a unicorn.

On the *specific* reading of the indefinite, there exists a particular unicorn of which it is true that John is seeking it. On the other reading, John does not seek a particular individual, he is simply looking for anything that would fit the description of a unicorn. In fact, there may not exist a single individual in the real world which fits the description of a unicorn, but the sentence may nevertheless be true in the real world; e.g. John might not know or believe that unicorns do not exist. Frege (1892) noted that modal operators (e.g. *necessarily, possibly*) are

among the elements which give rise to contexts where we find this type of ambiguity[58]. Other elements that create such *referentially opaque* or *intensional* contexts where we find this particular ambiguity of indefinites are verbs denoting utterance events (e.g. *tell, report*) propositional attitudes (e.g. *believe*[59]*,think*) or intentions (*want, seek*). For short, we refer to all those elements who create the aforementioned ambiguity-promoting contexts as *intensional predicates*.

Now, a much preferred way of representing these different readings of indefinites within formal semantics is to give the indefinite wide scope over the intensional predicate on the *specific* reading, whereas the *non-specific* reading has narrow scope w.r.t. the intensional predicate.

(68)

    a. $\exists x$ (x: a unicorn) & John seeks x (= specific reading)
    b. John seeks $\exists x$ (x: a unicorn) (= non-specific reading).

That is, the terms wide-scope subject vs. narrow-scope subject originally refers to the way these two readings are represented within formal semantics. But wouldn't it be nice if these semantic representations corresponded to syntactic representations in a homomorphic fashion? May (1977, 1985) thought so. He set out to show that wide-scope vs. narrow-scope readings of subjects are in fact syntactically encoded. I will examine the main points of his analysis and the most fundamental arguments.

Firstly, May observes a difference between raising structures and control structures w.r.t. their ability to give rise to the specific-nonspecific/existing-nonexisting ambiguity for indefinites. Cf. (69):

(69)

    a. A hippogryph is likely to be apprehended.
    b. A hippogryph is anxious to be apprehended.

Acording to May, (69)a does not necessarily entail the supposition that hippogryphs exist, unlike (69)b, which can only be truthfully uttered if hippogryphs exist. May links this difference between raising structures and control structures to the thematic properties of the

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[58] In fact, this is part of a bigger problem which concerns definite descriptions (e.g. The Morning Star) in addition to indefinites. This ambiguity with definite descriptions is often referred to as the *de dicto* vs. the *de re*, i.e. roughly, the description vs. the individual fitting the description. But the phenomenon in both cases concerns the intension vs. the extension of a DP.

[59] It is a prerequisite for the intensional reading of *believe* that its complement denotes a proposition. E.g. *John believes me* does not qualify as an intensional context.

matrix verb. Raising predicates have non-thematic subject positions, as opposed to control predicates, which are thematic. The ability to take expletive subjects are taken as a diagnostics for this non-thematic property of the matrix subject position, cf. (70).

(70)

       a. It is likely that a hippogryph will be apprehended.
       b. *It is anxious that a hippogryph will be apprehended.

The non-thematic property of the matrix subject position in a raising structure has two major consequences. Firstly, this property entails that raising predicates allow for movement to the matrix subject position from the subject position of the complement. Secondly, this property allows the matrix subject position of a raising predicate to host an empty expletive. Empty expletives are ruled out in the subject position of a control predicate since this is a thematic position. On the other hand, (70)b above is a finite clause, hence the subject position of the control predicate cannot host PRO either. The subject position of a finite clause is always governed, and PRO must be ungoverned. Thus, there is no empty category that would be allowed to fill the subject position of a control predicate in finite clauses. Therfore, this type of structure is ruled out as ill-formed at LF. But for the non-specific, narrow scope reading of an indefinite subject to arise, it is crucial that an empty expletive fills the upper subject position at LF. It follows that control predicates do not allow for a narrow-scope construal of the subject. Their having a thematic subject position assures that their subjects never get a narrow-scope reading.

      May briefly discusses the possibility that "a semantic generalization might be offered, for instance, that all the predicates concerned are, in some sense, modal". But he rejects this possibilty, on grounds that will be discussed below. Thus, he upholds his hypothesis that the thematic properties of the subject position of raising vs. control predicates is what gives the right result.

      However, there exist some severe difficulties for this account, in my view. Firstly, tying the specific-nonspecific distinction to the thematic properties of subject positions gives predictions that are simply not borne out (cf. below). Secondly, May equals the specific-nonspecific distinction with ± supposition of existence; one quite common move among authors discussing these phenomena within a syntactic framework, one which probably stems from the formal semantics way of representing this distinction. Nevertheless, this is a mistake, because the " no supposition of existence" effect is not unrelated to the modal nature of the matrix predicate, as we will see shortly. Nor is this effect determined by the syntactic position

or syntactic function of the indefinite, and it is not uniquely related to (non-)thematic properties of subject positions. As for the latter claim, cf. e.g. the difference between (71)a and (71)b:

(71)

a. It is likely that a unicorn ate all your flowers.
b. It is regrettable that a unicorn ate all your flowers.

According to May, a sentence like (71)a "can be truthfully uttered without any supposition regarding the existence of [unicorns]" (May 1985: 97). However, this does not seem to be the case when we look at (71)b. Uttering (71)b (truthfully) entails that the speaker believes in the existence of unicorns. On the other hand, observe that it still allows for a specific/non-specific distinction: I regret either that a particular unicorn (e.g. Petunia) ate your flowers, or I might not know which unicorn ate your flowers, but still I may regret the fact that a unicorn ate all your flowers[60]. What this sentence shows, then, is that the specific-nonspecific distinction is independent of the "no supposition of existence" effect, since this effect in fact runs across the specific-nonspecific distinction. The sentence also shows that the nonthematic properties of the matrix subject position is not enough to ensure the "no supposition of existence" effect[61].

The claim that the "no supposition of existence" effect is unrelated to syntactic position or function of the indefinite is supported by data like the following:

(72)

A martian is supposed to have taken a unicorn captive in a UFO.

Uttering this sentence truthfully does not entail the speaker's commitement to believing in neither martians, unicorns or UFO's. Furthermore, although the raising predicate *is supposed* is what creates the effect in this particular sentence, any element expressing someone's

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[60] What would seem like an obvious thing to do is to try to derive the properties of the adjective *regrettable* from the natural assumption that this adjective is derived from a factive verb *regret*. Factive verbs (or bridge verbs) have distinct syntactic behaviour in many languages, as opposed to other verbs taking propositions as a complement.

[61] Koster (1978; in Zubizarreta 1982) suggested that there are no sentential subjects. Those that appear to be cases of sentential subjects are in fact topicalization. The contrast between *That John left seems and *That John left is obvious* follows from Koster's assumption that *seem* selects a proposition as an internal argument while *obvious* selects a proposition as an external argument. But even such an approach would not get us very far in relating supposition of existence to the thematic properties of the subject position, because *likely* and *regrettable* evidently belongs to the same type in this respect; cf. *That a unicorn ate all your flowers is likely; That a unicorn ate all your flowers is regrettable.* These data serve to show two things; one, the ability to raise/topicalize the sentential complement (or subject, depending on your theory) is at least in principle independent of the possiblility to raise the embedded subject to the matrix subject position (cf. the example in (74)). And two, the ability to raise/topicalize the sentential complement/subject is not related to the "no supposition of existence" effect.

propositional attitude towards the proposition will do, cf. (73), where the element creating the 'lack of supposition of existence' effect is an adverbial:

(73)

Allegedly, a martian has taken a unicorn captive in a UFO.

When the adverbial *allegedly* is left out, the speaker is commited to believing in martians, unicorns and UFOs alike. That is, the reading "no supposition of the existence of an x" on behalf of the speaker arises as a result of employing an intensional predicate, whatever it might be. In my opinion, the property of raising verbs which gives rise to this effect is the semantic property of modality, shared by all intensional predicates. An intensional predicate relieves the speaker from the commitment that the proposition embedded under this predicate should describe a state-of-affairs belonging to the speaker's model of the actual world. Instead, the intensional predicate signals that the embedded proposition describes a state-of-affairs in someone else's model of the actual world, which may of course differ from the speaker's model.

Now, a possible objection to the discussion of the data in (71) is that the structure in (71) b is not a raising type adjective. Compare (74) a to (74)b:

(74)

a. A unicorn is likely to have eaten all your flowers.
b. *A unicorn is regrettable to have eaten all your flowers.

Thus, one might argue that the "no supposition of existence" effect is in some way related to the predicate's ability to host the embedded subject in its subject position. This line of thought does not take us very far either. There are a number of predicates in Norwegian, e.g. those known as unaccusatives, which are assumed to have a non-thematic subject position, since this position may host expletives. On the other hand, this subject position may also host the raised postverbal DP. This DP could also be argued to be a raised subject, notably a subject raised from an embedded small clause (cf. Stowell 1981,1983).

(75)

a. There appeared a policeman on the scene.
b. A policeman appeared on the scene.

However, this type of structure does not give rise to the "no supposition of existence" effect, irrespective of their non-thematic subject positions *and* their ability to host a raised subject or an expletive in this subject position. The reason, I claim, is that they are not intensional

predicates[62]. They do, however, give rise to the specific-nonspecific ambiguity, which, evidently, is an inherent property of indefinites unrelated to the syntactic position which they happen to occupy (cf. also Enç 1991 for a similar view). Notably, *a policeman* above may be a particular individual who we know is a policeman (e.g. John) or, alternatively, someone who happens to fit the description of a policeman (e.g. someone wearing a policeman's uniform).

Thus, we conclude that it is the *semantic* properties of raising verbs that give rise to the described ambiguity, not their argument structure. And yet, there is one sense in which May is right in claiming that the supposition effect of indefinites in the subject position of raising structures is related both to the matrix subject position as well as the nonthematic property of this position; in short, to the raising construction itself. Raising constructions allow for the raising of a subject contained in the embedded proposition into the matrix subject position. This embedded proposition is semantically (and via the subject's trace, syntactically) within the scope of the intensional predicate, e.g. *is believed,* and all elements semantically belonging to this proposition are under the modal influence of the intensional predicate. This is why May's argument against a semantic explanation fails; cf. May (1985:105):

> [A semantic approach] would fail to distinguish active and passive occurences of
> *believe*; even if there were some generalization linking *believe* with predicates like
> *appear* and *likely,* we would have to ask why we find an ambiguity in *No agent is*
> *believed by Philby to be a spy for the other side* but none in *No agent believed Philby*
> *to be a spy for the other side.* Presumably both occurences of *believe* mean the same
> thing [...]. Further, why wouldn't other matrix constituents interact scopally with the
> predicate? As pointed out, we only find ambiguities with respect to the subject NP;
> witness the nonambiguity of *Philby is believed by no agent to be a spy for the other*
> *side.*

To stay with readings of indefinites here, we replace May's examples with sentences containing indefinites. But notice that the phenomenon is the same.

(76)

    a. A unicorn is believed by Philby to be a hippogryph.
    b. A unicorn believed Philby to be a hippogryph.
    c. Philby is believed by a unicorn to be a hippogryph.

---

[62] Observe that *appear* has many of the properties attributed to *seem* in section 4.2.4.1 above. These verbs may both function as intensional predicates, provided they have a verbal complement (I believe this is the right generalization). Note the difference between (i) and (ii) and (iii) and (iv) respectively:

    (i)   A unicorn appeared in the garden.   (ii)   A unicorn appeared to be in the garden.
    (iii)   A unicorn seems very annoyed.   (iv)   A unicorn seems to be very annoyed.

In (76)a, *a unicorn* belongs to the proposition believed by Philby to describe an actual state-of-affairs, notably the proposition [A unicorn is a hippogryph]. Hence, *a unicorn* is under the modal influence of the intensional predicate *is believed,* which means that the speaker is entitled to being agnostic w.r.t. to the existence of unicorns, whereas Philby is not (given that Philby is a rational person). The same goes for the supposed existence of hippogryphs; the speaker is not committed to believing that hippogryphs exist, whereas Philby must believe in them. This is because the speaker reports both unicorns and hippogryphs as something belonging to Philby's system of beliefs, while remaining silent about whether or not these creatures belong to his or her own belief-system. Furthermore, given that Philby is convinced that unicorns and hippogryphs exist, there is still the specific-nonspecific ambiguity. Philby may have suspicions concerning one specific unicorn (e.g. Petunia) to be a disguised hippogryph, or he may not know which of the unicorns is a disguised hippogryph. Furthermore, he may suspect that one particular hippogryph (e.g. Baltus) has disguised himself as a unicorn, or he may not know which of the hippogryphs to suspect.

In (76)b and (76)c, *a unicorn* does not belong to the proposition reported as what is believed, since in both sentences, the unicorn is the entity *holding* the belief reported. Instead, *a unicorn* belongs to the matrix proposition denoted by the sentence uttered by the speaker. Hence, the speaker is commited to the assumption that unicorns exist. However, the specific-nonspecific ambiguity is still present, since the speaker may or may not know which unicorn holds the reported belief. And furthermore, as far as the speaker is concerned, hippogryphs may or may not exist – since *a hippogryph* is contained in the proposition reported as belonging to the belief-system of *a unicorn.*

Now, the discussion so far has been an informal and intuitive discription of the "no supposition of existence" effect in propositions embedded under intensional predicates. But there exist far more formalized ways of expressing these intuitions. A recent formal semantic approach to intensional predicates is found in Quer (1998). Quer sets out to explain the distribution and semantics of the subjunctive mood; particularly within Catalan and other Romance languages. In doing so, he relies heavily on recent work of Giannakidou (e.g. 1994,1995). Here, one fundamental assumption is that the subjunctive has to be (syntactically) licenced by occurring within the scope of a "non-veridical" operator. In Giannaikidou (1994, 1995) the property of (non-)veridicality is defined as follows (quoted from Quer 1998:18):

(77)

> An operator Op is non-veridical iff Op p does not imply p; Op is veridical iff Op p implies p (where p is an arbitrary proposition). Schematically:
>
> > a. Op p -/-> p Non-veridicality
> > b. Op p -> p   Veridicality

The categories that obey non-veridicality are e.g. "desideratives, directives, modals and predicates of fear" (Quer 1998:18); sometimes referred to simply as intensional predicates (op.cit.:19).

Now, the next building-block of Quer's analysis is the idea proposed by Farkas (1992) that for the interpretation of argument clauses, truth has to be relativized to worlds and individuals. An epistemic predicate like *believe*, for instance, introduces those worlds that accord with what is believed by the referent denoted by its subject. Thus, propositions denoted by complement clauses must be "individually anchored", i.e. true as far as as the individual referred to by the matrix subject is concerned. Let us look at one example.

(78)

> [$_{P2}$ Philby believes that [$_{P1}$ a unicorn is sleeping in the garden]].

In this sentence, there are two propositions; one denoted by the embedded sentence, and another denoted by the whole sentence, the latter incorporating the embedded proposition as a subpart. In order to interpret the embedded propostion we have to relativize its truth to the individual denoted by the main subject in the following fashion:

P1 = T in w_R (Philby); i.e. P1 is true in a world *w* that models reality *R* according to Philby.

As regards the unembedded proposition, the *individual anchor* in the default case is the speaker; i.e. unless another anchor is implied by context, e.g. when the unembedded proposition occurs in a sentence part of a larger discourse, like a speech, a report or a text where the individual anchor remains constant throughout the discourse and is indicated to be someone else than the speaker. In the default case, however, the truth of the unembedded proposition in (78) is evaluated w.r.t. the world according to the speaker *S* as follows:

P2 = T in w_R (S); i.e. P2 is true in a world *w* that models reality *R* according to the Speaker.

The "no supposition of existence" effect could easily be modelled in this system by means of individual anchoring. Intensional predicates allow the speaker to be agnostic w.r.t. the factual

existence of entities described in the proposition embedded under these predicates because intensional predicates allow for a second individual anchor, i.e. an individual anchor in addition to the speaker, notably the individual holding the reported belief or assumption described by the embedded sentence. Thus, the embedded proposition may refer to entities that exist merely in the subject's (e.g. Philby's) model of the actual world; these entities need not exist in the speaker's model of the actual world. The "no supposition of existence" effect boils down to the two (possibly different) models allowed in intensional contexts. Again, this is a semantic property of intensional predicates (subsuming raising predicates), unrelated to argument structure.

To sum up, the outcome of this discussion is that the wide-scope/narrow-scope effect described by May in fact amounts to two different and in part unrelated phenomena. One is the "no supposition of existence" effect which arises in intensional contexs. Propositions embedded under modal predicates such as raising verbs allow the speaker to be agnostic w.r.t. the factual existence of the entities described in this proposition. We have seen that this effect is unrelated to syntactic position or function, as it concerns all indefinites contained in a proposition embedded under a intensional predicate, irrespective of their status as a subject, an object, or the complement of a proposition (cf. (72) and (73)). Since this is an effect which in and by itself is unrelated to *syntactic* positions, it follows that it should not be linked to the upper vs. lower subject position. Moreover, the other observed effect, the specific-nonspecific distinction, is present in all indefinites irrespective of the semantic nature of the matrix predicate. Hence, it should be considered an inherent property of indefinites that cannot be linked to upper vs. lower subject positions (cf. also Enç 1991). My conclusion, then, is that both phenomena known as the wide-scope vs. narrow-scope readings of indefinites within formal semantics is unrelated to syntactic subject positions.

Summing up our findings of syntactically encoded scope relations between quantified DPs, we have found that the three families of arguments invoked do not hold up against closer scrutiny. The first argument, from the interplay of nobody-somebody in rasing and control structures, turned out to be less trustworthy than often assumed. It is not the case that all raising structures result in the lack of contradiction predicted. In fact, at least some raising structures are judged to be just as contradictory in this respect as any control structure. Hence, this argument fails to distinguish all raising structures from all control structures.

The second argument comes from the possible scopes of *some/every*, where *some* is the matrix subject whereas *every* is contained within the embedded clause. Numerous authors

have claimed that raising structures allow, whereas control structures reject the embedded quantified phrase to take scope over the matrix quantified phrase. We have seen that my informants strongly disagree with this generalization. In fact, control structures allow for both scope possibilities just like raising structures.

The third argument comes from the alleged ambiguity of indefinites in raising structures as opposed to control structures. We have seen that indefinites are ambiguous between a specific and a nonspecific reading in any position, and (following Enç 1991) we conclude that this ambiguity should be treated as an inherent property of indefinites. The other type of ambiguity concerns the "no supposition of existence" effect, i.e. a lacking supposition of the factual existence of the entity described by the indefinite, and this was argued above to be a result of the indefinite belonging to the proposition embedded under an intentional predicate. This effects also concerns all indefinites belonging to this proposition, not only the subject. Hence, this is an effect arising from the semantics of intensional predicates which is not exclusive to the subject position of raising constructions. It follows that this effect should not be ascribed to this subject position.

4.2.5 Are Theta-relations encoded in syntactic positions?

This being the case, these subject positions are free to encode the establishing of θ-relations. We have assumed so far that there is a certain correspondence between subject scope and θ relations; specifically, that directed deontic readings of modals demand a wide-scope subject. Let us look at some data again; cf. (79)[63]. We concentrate on the root reading of the modal only, and WsS = Wide scope subject; NsS = Narrow scope subject; GenS = Generic subject.

(79)

> A student must ride this horse.
> i) A specific student, e.g. Mary, has an obligation to ride this horse (WsS; +θ).
> ii) Some student or other has an obligation to ride this horse. (NsS; +θ).
> iii) It is necessary that a student (specifically: Mary) rides this horse. (WsS; -θ).
> iv) It is necessary that some student (or other) rides this horse (NsS; -θ).
> v) For all x, ((x: a student) -> x has an obligation to ride this horse) (GenS; +θ).
> vi) For all x, ((x: a student) -> it is necessary that x rides this horse) (GenS; -θ).

---

[63] The sentence is taken from Brennan (1993), though the readings are mine.

In my opinion, there is no "no supposition of existence" effect in this sentence on its natural or default reading[64]. Thus, if the only wide-scope subject/narrow scope subject distinction present is the specific-nonspecific distinction, it seems that both readings should be possible regardless of the modal's reading as +θ-assigning or −θ assigning. And this seems indeed to be the case in (79) above. However, the directed deontic (+θ) reading does seem hard to get with a non-specific indefinite subject in a number of other cases. Instead, if we force a directed deontic reading onto the modal in such cases, the generic reading is the one that seems more natural; cf. (80):

(80)

    a. En student bør lese mye før eksamen
      'A student should read a lot before the exam'

    i) A specific student, e.g. Mary, has a weak obligation to read a lot... (WsS; +θ)
    ii) ??Some student or other has a weak obligation to read a lot... (NsS; +θ)[65]
    iii) It is preferred that a student (specifically: Mary) reads a lot... (WsS; -θ)
    iv) It is preferred that some student (or other) reads a lot... (NsS; -θ)[66]
    v) For all x, ((x: a student) -> x has a weak obligation to read a lot...) (GenS; +θ)
    vi) For all x, ((x: a student) -> it is preferred that x reads a lot) (GenS; -θ)

It seems very likely that the observed differences between (79) and (80) are rooted in conceptual preferences; since it varies between different sentences and contexts. If we conceive an obligation or a permission as directed, it does appear to be somewhat counterintuitive to direct it towards an arbitrary individual. Instead, the generic reading pops up in these cases: For *any* individual fitting the discription of *a student*, this individual has an obligation to read a lot.

    We have also seen examples where any directed deontic reading seems very unnatural; recall some of the pseudocleft data repeated here as (81):

---

[64] Although I am aware that someone might disagree. Frege's original observations of the aforementioned ambiguity effects between intention and extension (Sinn und Bedeutung) concerned e.g. the effects of modal operators like *must*. But these effects in this sentence is maintained as the specific-nonspecific distinction. My point is that a speaker would have to be irrational to utter this sentence if he or she did not believe that there existed students, since the necessity expressed by the modal *must* is perceived by the speaker himself (by default), unless the speaker reports this as a rule laid down by someone else (e.g. the regulations of the jockey club). The hearer, on the other hand, would be quite free to remain agnostic as to the existence of students.

[65] This reading is not quite impossible, e.g. in contexts where the utterance is reported speech; " Sally told me about a student who ought to study hard before this exam, but I do not know which student".

[66] This is also a reading which seems hard to get in this particular sentence, but I believe, not impossible. Say the context is as follows: The future of the linguistics department is dependent on at least one student passing this exam. Then this reading would be possible.

(81)

     a. *Det en kvinne bør, er å bli vår neste statsminister.
       it a woman should, is to become our next prime minister.
     (Intended: 'What should happen is that a woman becomes our next prime minister.')

     b. *Det apene ikke må, er å mates av besøkende'
       it the monkeys not must, is to feed-PASSIVE by visitors
     (Intended: 'What must not take place is that the monkeys are fed by visitors.')

In the case of (81)a, the natural reading would be the one that is intended in the gloss. The generic reading of the indefinite is barred because it would not be possible that all (or most) women could become our next prime minister. The specific reading of the indefinite seems very unlikely, but maybe not *totally* impossible with a strong emphasis on the indefinite. In (81)b, the directed reading is unnatural because nobody in his right mind would direct an obligation towards a group of animals. The concept of a directed obligation or permission requires a rational mind as the entity towards which the obligation/permission is directed. In this particular case, *apene* 'the monkeys' would even be required to control what may happen to them; specifically, that they are not fed by visitors.

     This brings us to the subject of *control* over a potential situation. Even if we have an intentional subject of the modal present, the directed deontic reading is sometimes extremely unnatural, if this subject is perceived as a raised object of a passive. Cf. (82):

(82)

     */??Det Jon absolutt ikke må, er å bli operert av doktor Kevorkian.
      it Jon absolutely not must, is to be operated by doctor Kevorkian
     'What Jon absolutely shouldn't be, is operated on by doctor Kevorkian.'

But again, this is a tendency that may be overridden. In some cases, it is possible to force a quasi-agentive reading of the passive, where "quasi-agentive" denotes 'to put oneself in a position to be v-ed'. In these cases, a directed deontic ($+\theta$) reading of the modal is possible; hence, the modal may accept a pseudoclefted complement, albeit marginally:

(83)

     ?Det Jon må, er å bli oppdaget av et plateselskap.
      it Jon must, is to be discovered by a record company
     'What Jon must do, is to (let himself) be discovered by a record company.'

The directed deontic reading of (83) conveys that Jon has the capacity of creating the situation where he is dicovered by a record company; i.e. a quasi-agentive reading[67]. No such effect is present in (81)b above.

In short, what all these data show is that what is conceived as the more natural reading of the indefinite as specific/nonspecific/generic is influenced by a number of (contextual and pragmatic) factors, whereas the reading of the modal as directed deontic $(+\theta)$ or non-directed (proposition scope) seems to be syntactically encoded. We have seen that access to a subject position below the modal is crucial to a proposition-scope reading of the modal. This is shown by the pseudocleft data. In all instances where the lower subject position is elided, the proposition scope reading of the modal becomes impossible; cf. (81) through (83) above and (84)b. In those instances where this position is retained in the pseudocleft, the proposition scope reading of the modal is allowed, cf. (50), repeated here as (84)a (structures below).
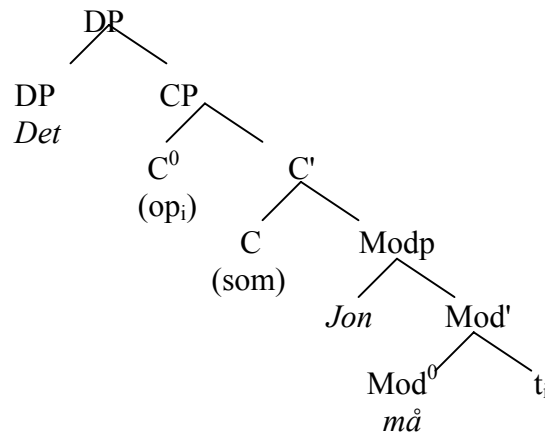
(84)

    a. Det Jon må være, er arkitekt.
     it Jon must be, is architect
    'What John must be, is an architect'

    b. Det Jon må, er å være arkitekt.
     it Jon must, is to be an architect
    'What John must do, is to be an architect'

(85)

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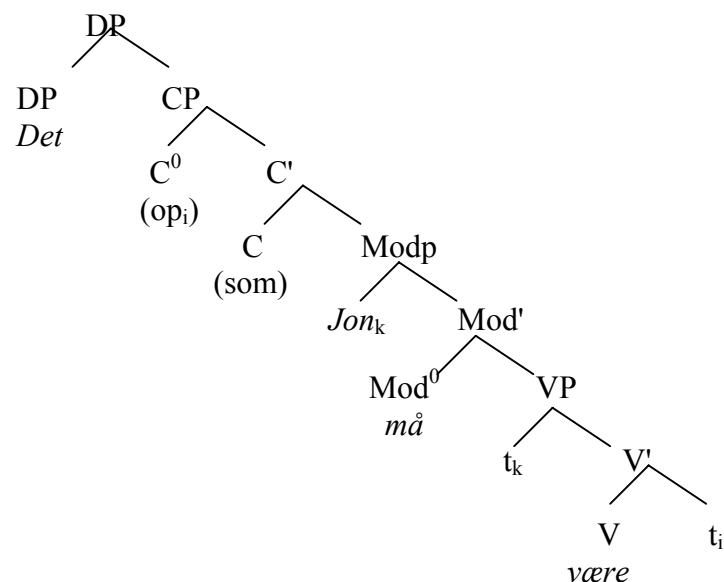
[67] Hornstein (1998:120) discusses examples where arbitrary PRO has a 'quasi'agentive' reading: *PRO to appear to be intelligent is harder than one might think.* According to Hornstein, Chomsky (1995b) assumes that this reading is a by-product of raising. "In other words, this is the sort of interpretation one gets in the raised subject position." Hornstein continues (fn. 30): "it is plausible that these effects are quasi-thematic properties of IP."

(86)

```
                    DP
                 /      \
              DP          CP
              Det        /    \
                       C⁰       C'
                      (opᵢ)    /    \
                             C        Modp
                           (som)     /    \
                                  Jon      Mod'
                                          /    \
                                       Mod⁰      tᵢ
                                        må
```

So far, we have seen that syntactic access to the lower subject position is a prerequisite to a proposition scope (non-θ) reading of the modal. What we have not investigated, however, is whether or not access the *upper* subject position has any consequences for the possible readings of a modal as proposition-scope (-θ) or subject oriented (+θ). Let us examine this issue as well; starting out by looking at some data, given here as (87):

(87)

  a. Det skal bestandig være minst to voksne til stede.
    'There should always be at least two adults present'

  b. Det må komme minst femti personer for at festen skal lønne seg.
     there must come at least fifty people for the party to pay off
    'At least fifty people must show up for the party to pay off'

  c. Det bør bli forandringer m.h.t. denne praksisen.
    there should occur changes w.r.t. this (code of) practice
    'This code of practice ought to change'

  d. Det kan være opptil fire patroner i hylsa pr. ladning
     'There may/can be up to four cartridges in the case in one load'

  e. Det behøver/trenger ikke være noen voksne til stede.
     'There need not be any adults present'

For all sentences in (87) , where an expletive blocks the upper subject postion, the subject-oriented (+θ) reading is impossible. All of these sentences have proposition scope readings only. One might imagine that this is a consequence of the nature of the postverbal DPs involved, since all DPs have a nonspecific-type reading. Recall that it is conceptually difficult to combine a directed deontic or subject-oriented reading of the modal with a non-specific

reading of the subject; cf. the discussion above. So let us construct some sentences where a specific reading of the indefinite is possible:

(88)

       a. Det skal alltid være en voksen til stede, nemlig Jon.
         'There should always be an adult present, specifically, Jon.'

       b. Det kan komme en venn i selskapet ditt; jeg tenkte på Marit.
         ' There may come a friend to your party, I am thinking, Marit.'

Thus, it is possible to construe these indefinites as specific; however, this does not give us the subject-oriented reading. (88)a does not mean that Jon has a personal obligation, instead, the natural reading is that someone else (e.g. the addressee) is responsible for making sure that Jon is present. Likewise, (88)b does not mean that Marit is the one who is given a personal permission to come to the party. Instead, the natural reading of (88)b is that the speaker grants someone else; i.e. the addressee, the permission to invite a friend, e.g. Marit, to the party.

Building on Chomsky's (1986, 1991, 1993) idea that the expletive *there* is replaced by its (postverbal) associate at LF[68], Lasnik (1999) assumes that the expletive *there* is an "LF-affix". Lasnik (1981) suggested that there exists "a general "stranded affix" constraint demanding that underlyingly freestanding affixes ultimately be attached to an appropriate host.[...]". That is, if the associate of *there* does not adjoin to *there,* the LF will crash" (p. 34). Lasnik suggests (in chapters 4 and 6), that *there* lacks agreement features with the result that the agreement features of Agr_S would not be checked unless some movement takes place. The main objective for Lasnik (as for Chomsky before him) in this approach is to explain the agreement facts of English existential constructions, where the verb agrees morphologically with the postverbal DP.

One might imagine that authors who adhere to the hypothesis that specificity (e.g. wide-scope vs. narrow-scope readings) of indefinites is syntactically encoded by the upper vs. lower subject position would seize the opportunity to exploit Lasnik's ideas to account for the fact that we may get a specific reading of the indefinite in (88)a and b. However, the question remains – and this is a forceful objection, in my view – why the putative adjunction of the postverbal DP to the expletive at LF does not result in a subject-oriented reading of the modal, given that the configuration between the initially postverbal DP and the modal ought

---

[68] This is inaccurate. Chomsky (1986a) introduces the "replacement" idea; in Chomsky (1991, 1993) "replacement" is itself replaced by "adjunction"; i.e. the associate of *there* adjoins to *there* at LF to check its Case.

to be just right – at LF – for the association between the modal and the DP. Apart from the fact that Lasnik's account rests on a number of stipulations already (e.g. that *there* is an LF-affix, a notion otherwise unheard of, to my knowledge), he would have to come up with an explantion why modals reject the subject-oriented reading unless a thematic subject (of the right kind; i.e. denoting a rational, responsible individual) fills the upper subject position in overt syntax[69].

In my view, the data in (87) and (88) show that overt access to the upper subject position, i.e. access to this position in overt syntax, is *crucial* to the subject-oriented reading. When this subject position is blocked by an expletive, the subject-oriented (+θ, directed deontic) reading simply cannot arise. On the other hand, the pseudocleft data show that the *lower* subject position is crucial to the proposition scope reading of the modal. Thus, subject-orientedness – understood as the $\pm \theta$ reading – seems to be syntactically encoded after all.

Unlike Barbiers (1995, 1999), I have found no evidence that this semantic relation is encoded by a designated syntactic head (Barbiers' "D"). Instead, the data examined suggest that a subject-oriented reading arises when the subject is interpreted in the upper subject position; by the spec-head relation between the subject and the modal. The proposition-scope reading arises when the subject is interpreted in the lower subject position, i.e. when the *subject's trace* is interpreted instead of the subject in its surface position. The position of the subject trace must be a subject position within the modal's syntactic scope; i.e. lower in the phrase marker than the modal.

In short, the subject-oriented reading arises when the spec-head relation between a modal and the subject holds at LF. Otherwise, the reading of the modal will be the proposition scope reading. The answer to the question posed in the headline of this subsection thus has to be: YES. Yes, θ-relations are indeed encoded in syntactic positions.

---

[69] Another forceful objection to the idea that the associate of the expletive is raised and adjoined to the expletive at LF is the observation (cf. e.g. Lasnik 1999: 136) that this putative raising of the associate is unable to create new scope relations e.g. between negation and the associate. Cf. for instance the following sentence:
    i) There aren't many linguists here.
Many linguists necessarily has narrow scope w.r.t. negation, although if this constituent is raised and adjoined to the expletive at LF, one might expect this construction to exhibit the same scopal relations between *Many linguists* and negation as the ones found in ii):
    ii) Many linguists aren't here.
However, this is not what we find. To account for this fact, Chomsky (1991, 1993) stipulates that the operation of *adjunction,* as opposed to the operation of *replacement,* does not create new scope relations. However, Lasnik (1999:137) points out that on the theory of adjunction, developed in May (1985) and "assumed in all of Chomsky's writings ever since" (Lasnik 1999:137), the adjunction procedure *does* create a relevant c-command relation and should be expected to give rise to new scopal relations.

4.2.6 Raising verbs in pseudoclefts

However, there is still the matter of explaining why other raising verbs do not allow for a pseudoclefted complement like modals do. I suggest that the answer lies within the thematic plasticity of modals. Modals are able to function as θ-assigners just in case they have a subject-oriented reading. Most other raising verbs do not have this possibility, irrespective of their subject-orientation. Following Zubizarreta (1982:97), I want to propose that there exists a constraint that DPs are "thematically identified", where this notion is defined as follows:

> [...] every A-position must be thematically identified. A position is thematically identified if it is a semantic position or if it is linked to a semantic position.

If we assume that it is a restriction on any type of A-movement that the moved DP is identified w.r.t. theta-role, we are in a position to account for the unacceptability of raising verbs with a pseudoclefted complement. Most raising verbs cannot be construed as θ-assigners, thus the subject within the relative clause will not be thematically identified in sentences like (89) below.

(89)

      a.   *Det Jon viste seg, var å være inkompetent.
             it   Jon showed self, was to be incompetent
      (Intended: 'What John turned out to be, was incompetent')

      b.   * Det Marit antas, er å være uærlig.
             it   Marit suppose-PASS, is to be dishonest
      (Intended: 'What Marit is supposed to be, is dishonest')

In these sentences, *Jon* and *Marit* do not receive a θ-role within the relative clause, since raising verbs do not assign θ-roles. Thus, these DPs are not identified as to argument-status or θ-properties. That is, these sentences violate the first half of the theta-criterion, which states that each argument (DP) must be assigned a theta-role. One might say that these sentences are ungrammatical for the same reason as (90) is ungrammatical:

(90)

      *Det Jon, var at han ble overkjørt av toget.
       it John, was that he was run over by the train
      'What Jon, was that he was run over by a train'

The reason modals accept a pseudoclefted complement is that modals, as opposed to raising verbs, may assign a θ-role under certain circumstances; specifically, when the main predicate is agentive and the raised subject is an intentional subject. Indeed, in pseudoclefts of the

relevant kind, they *must* assign a θ-role, for the structure to be well-formed. In fact, this may be the other side of the coin w.r.t. the phenomenon that modals always get a subject-oriented reading in these structures. Not only is the lower subject position syntactically suppressed; the subject DP must be thematically identified as well. The only option is to construe the modal as a θ-assigner. As opposed to most other raising verbs, this is possible in the case of modals[70].

However, recall that not all verbs typically construed as raising verbs reject a pseudoclefted complement. For instance, the Norwegian raising construction *ser ut til å* is accepted in these constructions, *provided* the main predicate is a subject-oriented predicate, and the reading of *ser ut til å* is the 'direct visual access' reading, cf. (91):

(91)

    a. ?Det Jon ser ut til, er å være irritert.
     'What Jon seems (to be), is annoyed'

    b. *Det Jon ser ut til, er å være borte.
     'What Jon seems (to be), is gone'

These facts suggest that the line between raising verbs and control verbs is less rigid and fixed than assumed in the literature. We return to this question in section 4.4 and 4.5.

Finally, note that by assuming that theta-assignment or theta-identification is the relevant property allowing subject-oriented root modals (as opposed to proposition-scope root and epistemic modals and most other raising verbs) to take a pseudoclefted complement, the present analysis is at last reconciled with one fundamental assumption of Thráinsson and Vikner (1995). Recall that these two authors propose that root modals accept and epistemic modals reject a pseudoclefted complement because root modals assign theta-roles, whereas epistemic modals do not. We have seen that the although their analysis rested on some invalid

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[70] Observe that this explanation forces us to assume that the copula may function as a theta-assigner as well. In a sentence like *Det Jon er, er intelligent* 'What Jon is, is intelligent' there is no other verb within the relative to thematically identify the argument *Jon.* This is not too troublesome, however, if we allow for compositional theta-roles in the spirit of e.g. Marantz (1984). Although the copula in and by itself may not be considered the main element assigning the theta-role to *Jon,* it would nevertheless be the head of the compositional predicate assigning a theta-role to *Jon.* This evidently suffices to thematically identify the argument. If we make the natural assumption that the requirement of thematic identification applies to all types of *wh*-movement, we would have to assume that even the perfect aspectual *ha* 'have' possesses some thematic substance, cf. ii):
    i) Jon har solgt bilen hennes. 'Jon has sold her car.'
    ii) ?HVA har han?   'WHAT has he (done)?'
Assume, for instance, that *ha* signals agentivity in ii). This seems to be on the right track, since my informants find iv), where the *wh*-constituent equals a passive, to be worse than ii):
    iii) Jon har blitt overkjørt av toget. 'Jon has been run over by the train.'
    iv) ??HVA har han?   'WHAT has he (done)?

premises (e.g. that root modals always assign theta-roles), their conclusion that theta-assignment from the modal to the raised subject is a crucial factor in determining the acceptability of modals in pseudocleft constructions was eventually reached also by the present proposal.

However, I would like to point out that the property of "thematic substance" ascribed to a predicate in a theory of thematic identification seems more easily gradable than the property of assigning Case to a complement, which is the crucial distinguishing property between root and epistemic modals in Thráinsson and Vikner's (1995) account. A scale of "thematic substance" could range from certain verbs possessing *no* thematic substance w.r.t. an external theta-role (e.g. *antas* 'be supposed to'), via *some* thematic substance w.r.t. an external theta-role (e.g. aspectuals and the copula) to *substantive* thematic substance w.r.t. an external theta-role (e.g. control-type verbs). The property of assigning Case to a complement seems less gradable; intuitively, either a verb assigns a case feature or it does not. Thus, a notion of "thematic identification" seems to be more suitable to capture the fact that grammaticality judgments concerning raising verbs and *wh*-movement (including pseudocleft data) are slippery, vague and to a great extent depend on whether or not the examples in question are provided with a context.

4.3 Reanalysis verbs

It is quite intriguing that modals are sensitive to overt syntactic access to the upper and lower subject positions for their subject oriented (+θ) vs. proposition scope readings respectively. But surely, it would strengthen our case if there existed other verbs, apart from modals, that behave in the same manner. This is why we will broaden our scope so as to include the type of verbs dubbed *the threaten class* (Johnson 1985, Zubizarreta 1982, Arad 1998). I will refer to these verbs simply as reanalysis verbs, since they are said to undergo reanalysis (cf. e.g Johnson 1985, Arad 1998). Examples of these verbs include e.g. *promise* and *threaten,* as well as their counterparts in various languages; cf. e.g. German *Es versprach zu regnen*[71] 'it promised to rain' (see Arad (1998) for examples in French; she also refers to Italian and Hebrew counterparts).

What has been known as the primary reading of these verbs is the agentive reading. In addition, they have another interpretation, which Johnson describes as "events are in motion, such that x is imminent"; Johnson (1985: 25-26, quoted here from Arad 1998:115). Note that

these verbs may take a DP complement, as in (92)a, in which case the verb has only the agentive reading[72]. In fact, whenever the DP encoding the recipient of the threat or a promise is present, the non-agentive reading is blocked, cf. (92)c. On the other hand, a non-agentive subject gives rise to the non-agentive reading only, cf. (92)d, whereas an agentive subject gives rise to both readings, provided the main predicate allows for a causer or an agent (according to Arad 1998), cf. (92)b.

(92)

    a. John threatened Mary. (Agentive reading only)
    b. John threatened to destroy the party. (Agentive/non-agentive)
    c. John threatened his mother to marry Mary. (Agentive reading only)
    d. The ice-cream threatens to melt. (Non-agentive reading only)

(92)b is ambiguous between a reading where John states his intention to destroy the party (the agentive reading), and a reading where his presence or behavior suffices to ensure that the party is destroyed (the non-agentive reading). In the latter case, John might not even be aware that his behavior is destroying the party for everyone else; he might simply be causing this result by his mere presence.

Zubuzarreta (1982), Johnson (1985) and Ruwet (1991) observe a range of similarities between the reanalysis (non-agentive) reading of these verbs and raising verbs (the list is adopted from Arad 1998/ Zubizarreta 1982):

(93)

    I.   In both, the subject role is defined by the lower predicate.
    II.   Both can host in their subject position an idiom which is associated with the lower predicate (e.g. *The shit threatens to hit the fan)*.
    III.   Both allow *en*-cliticization in French (which indicates a connection with a lower position in the structure).

However, the reanalysis reading of these verbs are also found to differ from raising verbs in a number of ways:

(94)

    I.   Reanalysis verbs do not allow expletive *it* as a subject, or French *il*.
    II.   Reanalysis verbs do not allow narrow scope to the subject.
    III.   Reanalysis verbs do not allow any object to intervene between the matrix verb and its complement (compare *threatens #me to...* vs. *It seems to me that...*).

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[71] I am indebted to Philippa Cook for bringing this example to my attention.
[72] This is comparable to the fact that the verb *believe* may take a DP complement, *John believes Mary,* in which case it does not give rise to an intensional context; compare to *John believes Mary to be a thief.*

The set of Norwegian reanlysis verbs seems to consist solely of the compound verb corresponding to *threaten* (*true med*). However, this verb does allow for expletive subjects, at least marginally, cf. (95):

(95)

a. Det truer med å bli en fryktelig oppstandelse på jobben i morgen.
   it theratens with to become a terrible commotion at work tomorrow
   ' A terrible commotion threatens to take place at work tomorrow'

For the second alleged difference between raising verbs and reanalysis verbs, typically illustrated by means of the quantified phrases *some* and *every,* this generalization is simply not correct, according to my English-speaking informants. Cf. the scope ambiguity in (96):

(96)

Some tornado threatened to destroy every city.

It is possible to interpret this sentence as 'For every x, x a city, some tornado threatened to destroy x'. Moreover, the subject *some tornado* may be interpreted as one specific tornado (e.g. "Diana"), or a non-specific tornado. Thus, this sentence allows for all readings typically associated with raising verbs (except the "no supposition of existence" effect, which arises with intensional predicates only).

The generalization that adding the recipient of a threat (or a promise) blocks the reanalysis reading holds in Norwegian as well. One may speculate that adding the recipient of a threat gives the construction a directed reading which is incompatible with the reanalysis reading "events are in motion, such that x is imminent". Apart from that, I can offer no explanation for this restriction.

For our discussion, these verb are interesting because they reject a reanalysis reading in exactly the same environment as modals reject the propostion scope reading, specifically, when their complement is pseudoclefted; cf (97):

 (97)

a. Det Jon truer med, er å ødelegge selskapet.
   it Jon threatens with is to destroy the party
   'What John threatens to do, is to destroy the party'

b. ??/*Det iskremen truer med, er å smelte.
    it ice-cream-DEF threatens with, is to melt.
    'What the ice-cream threatens to do, is to melt'

That is, in these environments, the matrix verb has only the agentive reading and requires an agentive subject; thus, (97)b is ill-formed, unless we assign a human-like property to the ice-cream.

Now, the other two tests possible with modals to indicate that θ-assignment takes place in the spec-head relation consisting of the modal and its specifier position are less useful to us here. Reanalysis verbs take true expletives only marginally (as opposed to modals, but cf. (95)above); cf. (98)[73]:

(98)

> ?? Det truer med å komme to inspektører hit i morgen[74].
> it threatens to arrive two inspectors here tomorrow
> 'Two inspectors threaten to arrive here tomorrow'

However, to the extent that (98) is possible, it can only have the non-agentive interpretation. On the other hand, pseudoclefts where the lower subject position is retained within the relative, are also very hard to construct, but cf. (99):

(99)

> ?Det denne gutten truer med å bli, er virkelig tjukk.
> it this boy threatens to become, is really fat
> 'What this boy threatens to become, is really fat'

Again, to the extent that this construction is possible, it is ambiguous between the agentive and the non-agentive reading, as expected if reanalysis verbs are anything like deontic modals.

So far, we have found that there is good evidence to support our hypothesis that when the subject θ-role of a modal is assigned, it is assigned in a spec-head relation. When the subject postion of the modal is filled by an expletive, the +θ reading is unavailable. On the other hand, this spec-head relation, even if it does apply in overt syntax, may be "semantically undone", provided a lower subject position is available for interpretation. Thus, the spec-head relation in overt syntax is a necessary, but not a sufficient condition for the +θ reading of a modal to arise. An overt spec-head relation between the subject and the modal typically renders the modal ambiguous between a subject-oriented (+θ) reading and a proposition-scope (-θ) reading. However, eliding the lower subject position in overt syntax (e.g. by
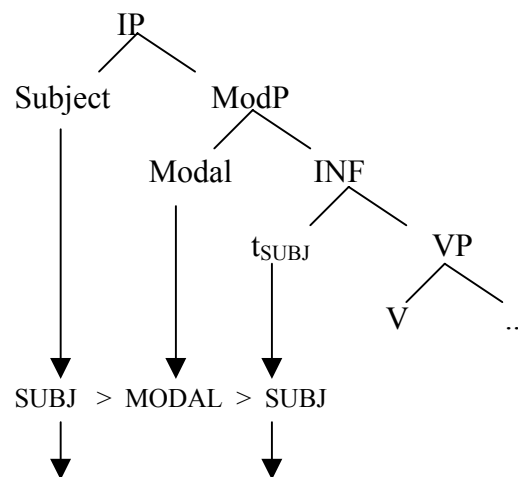
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[73] They also take weather-arguments, as in i):
> i) Det truer med å regne/snø i morgen.
> 'It threatens to rain/snow tomorrow'

[74] Note that the judgements concerning the acceptability of this sentence vary from 'exellent' to 'unacceptable'.

substituting the proform *det* 'it' for the complement VP, as this happens when this VP undergoes pseudocleft), forces the $+\theta$ reading and makes the proposition-scope reading unavailable. Thus, we have concluded that syntactic access to the lower subject position is a prerequisite for the proposition-scope reading of the modal to arise. Hence, we have found evidence for the generalization with which we started out as a working hypothesis, cf. (100):

(100)

   Modal raising structures

```
                       IP
                      /  \
               Subject    ModP
                  |       /   \
                  |    Modal   INF
                  |      |     /  \
                  |      |  t_SUBJ  VP
                  |      |         /  \
                  |      |        V    ...
                  ↓      ↓        ↓
               SUBJ  >  MODAL  >  SUBJ
                  ↓               ↓
```

READING: SUBJECT-ORIENTED   PROPOSITION SCOPE (ROOT OR EPISTEMIC)
                " $+\theta$ "   " $-\theta$ "

I will assume this to be the right analysis for reanalysis verbs as well. As opposed to other authors who have examined these verbs, I assume that on the reanalysis reading, there is no more a semantic *threaten*-relation between the subject of these verbs and their complement than there is a *must*-relation between the subject of the modal *måtte* 'must' and its complement on a proposition scope reading. Hence, I claim that the proposition scope reading of modals and the reanalysis reading of *threaten*-class verbs arises exactly when the subject of these verbs, via its trace, is interpreted in the lower subject position; i.e. the position within the syntactic scope of the matrix verb. In these cases, the matrix verb is not construed as assigning an external θ-role. However, when the subject is interpreted in the upper subject position, the matrix verb is construed as assigning an external θ-role. This holds for modals and reanalysis verbs alike[75].

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[75] It is interesting that reanalysis verbs typically denote agent-oriented, mental, socially determined actions and states, such as *promise* or *threaten.* Modern Norwegian modals developed from verbs typically denoting such agent-oriented, socially determined mental actions. Thus, *burde* 'should' developed from old-Norse *byrja* 'belong to' regarding rights and duties; *ville* from *vilja* 'want, choose, prefer'; *kunne* from *kunna* 'learn to know, know'; *skulle* from *skulu* 'owe', *måtte* from *må* 'manage, have access to', *trenger (ikke)* from 'long for (German)', *behøver*

But then, it seems that we are back where we started. We wanted to avoid the stipulation of two different entries in the lexicon for each deontic modal, and it seems no more appealing by now. But how else could we explain the fact that deontic modals take expletives in their proposition scope (root and epistmeic) readings, whereas they obviously assign θ-roles in the pseudocleft structures, given the explanation above? And how else could we explain the regular semantics of modals with expletives (they all have a proposition scope reading) vs. modals with a pseudoclefted complement (they all have a +θ reading)? Certainly, a "double entry" approach to deontic modals would explain these facts, as well as explaining the difference between modals and (other) raising verbs.

However, the theoretical objections to this solution still stand. This would lead to a doubling of entries in the lexicon; a structural ambiguity in all sentences containing a modal (except for the relevant pseudocleft structures and those containing an expletive subject), and all syntactic and semantic properites of each modal pair would be identical, ecxept for the feature ± external theta-role. Let us postpone the question of possible double entries for a moment, and approach the question from a different angle.

4.4 Hornstein (1998, 1999, 2000)

Norbert Hornstein has recently published a series of articles addressing the possibility of reducing the notions of raising and obligatory control (as opposed to arbitrary control) to one notion only. He suggests that both phenomena should be reduced to raising. Hornstein presents a range of arguments to support his analysis; I will go into a few important ones here and refer the reader to Hornstein's articles for the whole story.

To begin with, Hornstein observes that the interpretational properties as well as the distribution of Obligatory Control PRO (henceforth, OCP) differs from Non-obligatory Control PRO (NOCP) in important respects. Confer the following paradigms; illustrating the properties of OCP in (101) and the properties of NOCP in (102) [76]:

(ikke) from 'being appropriate'. One may assume that the reanalysis verbs do not have all properties associated with raising verbs because they are less 'grammaticalized'; i.e. they have not completed their transformation to raising verbs. There are indications that not all modals went through all changes at the same time either. For instance, the modals *kunne* and *ville* and their cognates in various languages survive as lexical verbs, and Thráinsson and Vikner (1995) provide data from the Icelandic Sagas to indicate that the modals *skulu* 'should' and *munu* 'may' took on an epistemic reading earlier than any of the other modals.

[76] Hornstein states that this paradigm derives from Williams (1980), Lebeaux (1985), Higginbotham (1992) and Fodor (1975). Hornstein's paradigms are reduced by a few points here.

(101)

        a. * It was expected PRO to shave himself.
        b. *John thinks that it was expected PRO to shave himself
        c. *John's campaign expects PRO to shave himself.
        d. The unfortunate expects PRO to get a medal

(102)

        a. It was believed that PRO shaving was important.
        b. John$_i$ thinks that it is believed that PRO$_i$ shaving himself is important
        c. Clinton's$_i$ campaign believes that PRO$_i$ keeping his sex life under control is
           necessary for electoral success.
        d. The unfortunate believes that PRO getting a medal would be boring.

(101)a vs. (102)a indicates that OCP must have an antecedent whereas NOCP does not require an antecedent. (101)b vs. (102)b indicates that the antecedent of OCP must be local, whereas if NOCP does have an antecedent it need not be local. (101)c vs. (102)c shows that the antecedent of OCP must c-command PRO, whereas the antecedent of NOCP need not c-command PRO. In (101)d vs. (102)d the issue at stake is whether PRO must have a "de se" (reflexive) reading. We see that for OCP only the "de se" reading is possible, in that the unfortunate expects *himself* to get a medal, whereas in the NOCP construction, a non-"de se" interpretation is possible, e.g. (102)d could mean 'for anyone to get a medal would be boring'. Hornstein goes on to notice that the difference between OCP structures and NOCP structures is that OCPs behave like anaphors whereas NOCPs behave like pronouns. In short, the interpretive data point to the conclusion that PRO is ambiguous.

However, a "PRO theorem" approach to PRO's distribution cannot accept an ambiguity thesis. The "PRO theorem" relies on the assumption that every PRO is *simultaneously* [+pronominal, +anaphor]. Apart from this snag, Hornstein (quoting Bouchard 1984) mentions that the "PRO theorem" relies on the notion on government; a notion that is unnecessary within binding theory except for deriving the distribution of PRO (cf. Hornstein 2000:31 ff.).

Accounting for the distribution of PRO within the Minimalist Program, Chomsky and Lasnik (1993) suggest that PRO has a "null Case" feature, that can only be checked off by the Infl of non-finite control clauses. Thus, PRO, and PRO alone is assigned "null Case". Although Hornstein admits that this type of approach would be able to account for the interpretive data in (101) and (102), since it is no longer required that PRO be *simultaneously* [+pronominal, +anaphor] (on the contrary, PRO is allowed to be ambiguous), he states that "It

is fair to say that null Case accounts for the distribution of PRO largely by stipulation" (Hornstein 1999: 71).

Instead, Hornstein proposes an account of PRO where NOCP is assumed to equal (small) pro, the null counterpart of the pronoun *one*. Firstly, the arbitrary reading characteristic to non-obligatory control PRO can be accommodated on this assumption. Secondly, NOCP readings are largely restriced to positions from which movement is not allowed (e.g. complex subjects or *wh*-islands, cf. also Manzini 1983). On the other hand, obligatory control PRO (OCP) is reduced to A-movement in Hornstein's analysis, where this empty category is simply an intermediate NP-trace.

The theoretical hindrance for this move is obviously the θ-criterion, which is retained in the Minimalist Program. Chomsky (1995a) restricts θ-assignment to the merger of trivial (i.e. one-membered) chains, which assures 1) that θ-assignment is prior to any A-movement; and 2) that movement from one θ-positon to another is strictly forbidden[77]. Hornstein suggests that we submit these assumptions to scrutiny; (Hornstein 1999: 71).

> How well motivated are they? Why assume that chains are biuniquely related to θ-roles? What goes wrong if movement takes place from one θ-position to another? Why distinguish trace from PRO? As is generally the case with minimalist meditations, I assume that the burden of proof is on those who wish to promote these assumptions and invoke these distinctions. What is not at issue is that control and raising sentences manifest different properties. The minimalist question is whether these differences require the technical apparatus standardly invoked to distinguish them.

Of course, Hornstein acknowledges the set of data which constitutes the empirical basis for prohibiting movement from one θ-position to another.

(103)

a. *John$_I$ saw t$_I$. (meaning: John saw himself)
b. * John$_I$ believes t$_I$ to be a fool. (meaning: John believes himself to be a fool).

Hornstein suggests (in "an inadequate sketch") that the sentences may violate Case theory. Say the verbs in (103) have an accusative Case feature which must be checked by an overt DP. In these cases, what we find instead of a phonetically null DP-trace is a reflexive. In other words, reflexives are also the residue of movement; they are spelled-out DP-traces (Kayne 1996 proposes something similar for reflexive *se* in French). When the verb in question does

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[77] Brody (1995: 12) also includes as a fundamental constraint the theta-criterion; in this approach dubbed *the Main Thematic Condition:* "All non-root positions of chains are nonthematic (where the root of the chain is its most deeply embedded position)". And p. 77: "Only the root position(s) of a chain can be theta-related (i.e., assigning or receiving a theta role)."

not require its accusative Case feature to be expressed, however, the reflexive is no longer obligatory; cf. e.g. (104):

(104)

> a. Mary washed (herself) thoroughly.
> b. John shaved (himself) carefully.

Although there are many remaining questions for such an approach to control vs. raising phenomena, let us proceed as if these problems are non-existent. In order to utilize Hornstein's ideas, we need to state the basic properties of his theory. Firstly, Hornstein assumes that links, not chains, are the actual entities of interpretation.

(105)

> a. At the CI Interface (LF) an A-chain has one and only one visible link.
> b. DPs begin in VP internal positions – their θ-domains- and move to VP external spec positions to check morphological features such as Case.
> c. Movement is actually copy plus deletion.
> d. Grammatical conditions apply exclusively at LF.

(105)a implies that "lowering" is possible in A-chains. "Lowevring" is effected when higher links of a chain are deleted and a lower link is retained. (105)a requires that all but one link of a chain delete, but it does not specify which one is retained nor does it favor the deletion of lower links over higher ones. This treats chain links rather than chains as responsible for determining relative scope, by means of the interpretive rule:

α scopes over β just in case α c-commands β.

Secondly, Hornstein has specific assumptions concerning the nature of θ-assignment. Importantly, θ-roles are conceived as semantic features on verbs and predicates; thus, they may be checked by DPs, just like e.g. the EPP feature. Specifically (Hornstein 2000:38):

(106)

> a. θ–roles are features on verbs
> b. A DP "receives" a θ-role by checking a θ feature of a verbal/predicative phrase that it merges with.
> c. There is no upper bound on the number of θ-roles a DP can have.

I would like to mention that Manzini and Roussou (1997) proposes an analysis of control that shares many of these assumptions. The main difference is that Manzini and Roussou suggest that DPs are base generated in their Case position, hence, that A-movement does not exist. The θ-features of the embedded predicate(s) raise to adjoin to the head Infl of the matrix

sentence, thus aquiring the right spec-head relation to the matrix subject DP. PRO positions are phonetically null because there is nothing there at all, according to this proposal.

For our purposes, Hornstein's approach is better suited, since it also addresses scope issues and allows for "lowering" of a DP into an embedded subject position. Recall that although all but one link of the A-chain must be deleted by LF, there is nothing to prevent the upper link from being deleted and the lower (or an intermediate) link to be retained. That is, there is nothing in the fundamentals of this proposal that prevents the upper link from being deleted. However, certain properties of a sentence may force the upper link to be retained for the sentence to converge. One such property may be e.g. the requirements of the binding theory. Consider (107), for instance.

(107)

    a. A student$_i$ seemed to his$_i$ supervisor [t$_i$ to read every article].
    b. A student$_i$ seemed to himself$_i$ [t$_i$ to read every article].

In these phrase markers the lower copies must delete, otherwise binding of the pronoun/reflexive is not possible, and the sentence will be ill-formed. Another property that would force the upper link of the A-chain to be retained is the expression of θ-roles. Cf. (108).

(108)

    a. *The shit expects [t to hit the fan].
    b. * There expects [t to be a man in the garden].

These sentences are ill-formed because idoms (*The shit)* and expletives (*There)* are unable to check θ-roles (although they are able to check the EPP-feature). Thus, verbs that assign an external θ-role need a thematic DP of a right kind in their subject-position. Provided this spec-head relation must hold at LF, which seems reasonable, given that thematic roles are important to the overall interpretation of a sentence, a matrix verb assigning an external θ-role would always force the upper link of an A-chain to be retained, whereas all other links are deleted. Deleting the upper A-link would leave the θ-feature of the verb unchecked, hence, the sentence would not converge at LF.

Hornstein mentions (1998, fn 10) that a weak-strong distinction might be relevant to the checking of θ-roles.

> θ-roles are presumably interpretable. As such, they need not be checked [...]. One could argue that θ-theory requires these roles to be expressed and nominals to bear them [...]. One might further ask *why* θ-roles must meet this requirement [...]. An answer consistent with the spirit of MP is that θ-roles are bound affixes. If so, they

would need nominal support. If these affixes are strong, then they would have to be supported in overt syntax. If weak, a θ-feature could be checked at LF.

I want to reject this latter assumption here. We have seen that for modals, it is a prerequisite for a +θ reading that the modal's subject position is not filled by an expletive. If the modal has an expletive subject, the +θ reading cannot arise. On the other hand, if any verb has a 'weak' θ feature, this must be the case for deontic modals, since deontic modals *allow* for a θ-reading – given that they have a thematic subject – but they also allow for their θ-feature to be unexpressed (even at LF). However, if the right spec-head relation between the modal and the subject is not established at some point in overt syntax, the θ-reading will not arise at all; it cannot arise at LF unless established in overt syntax.

Hence, it would make sense to ascribe a weak θ-feature to modals if and only if the weak-strong distinction is taken to mean non-obligatory vs. obligatory assignment of a(n external) θ-role, where this relation holds in overt syntax as well as at LF. However, since the terms strong-weak are theoretically encumbered, I will exploit instead the terms *obligatory* vs. *non-obligatory*. It is not unheard of to ascribe an optional θ-role to modals. E.g. Zubizarreta (1982: 84) refers to the subject position of modals as receiving a "non-obligatory adjunct external θ-role". Armed with Hornstein's theory, where the θ-criterion is modified to allow for movement into a θ–position, there is no need to distinguish between adjunct and argument θ-roles[78]. The version of the theta-criterion adopted in what follows is stated in (109) . Compare this to the original theta-criterion from Chomsky (1981:36) quoted in (110).

(109)

The Modified Theta-criterion:

> Each argument bears at least one θ–role, and each obligatory θ–role is assigned to one and only one argument.

(110)

The Theta-criterion:

> Each argument bears one and only one θ–role, and each θ–role is assigned to one and only one argument.

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[78] This is a simplification. Zubizarreta also refers to adverbs as adjunct theta-role assigners. Thus, one might want to keep the term "adjunct theta-role" for the type of theta-role assigned by subject-oriented adverbs such as *intentionally, unwillingly* etc. Muysken (1981) paints a picture where adverbs are important to interpretation, but rather unimportant as regards the structure of a clause, cf. section 5.1.

On this background, I want to classify Norwegian deontic modals as raising verbs that *optionally* assign an external θ-role to their subjects. Norwegian epistemic modals are raising verbs that *never* assign an external θ-role to their subjects, and Norwegian dispositional modals are raising verbs that *always* assign an external θ-role to their subjects.

4.5 Optional and obligatory Theta-assigners

Ascribing to deontic modals the property of being optional θ-assigners allows us to account for their syntactic behavior without stipulating two different entries in the lexicon for each deontic modal. That is, instead of the two-entries listing in (111)a, I will propose the single-entry listing in (111)b:

(111)

    a.   I. *må,* deontic modal: < θ, VP>   b. *må,* deontic modal: <(θ), VP>
           II. *må,* deontic modal: < e, VP>

In what follows, we will assume that Norwegian deontic modals (and presumably, Norwegian reanalysis verbs) are described in the lexicon as raising verbs with an optional external θ-role[79]. This θ-feature is optionally checked or discharged by an agentive DP entering into a spec-head relation with the modal at some point before the string is spelled out; that is, during the part of the derivation belonging to overt syntax. Discharging this θ-feature forces a +θ reading of the modal and simultaneously prevents the DP from being interpreted in the lower subject position; hence, the proposition-scope reading of the modal is unavailable. However, it is also possible for the agentive DP to enter into a spec-head relation with the modal in overt syntax *without* discharging the θ-feature[80]; e.g. solely to fullfill the EPP or subject-requirement of a clause. In this case, "lowering" (i.e. interpretation of the lower DP-link) is

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[79] This is parallel to verbs like e.g. *spise* 'eat', which are typically taken to amount to two different entries in the lexicon. The reason for this is that *spise* may take an internal argument, e.g. *bananer* 'bananas', but this argument is not obligatory. Thus, this verb could be described as assigning an optional internal theta-role; *Spise:* <θ,(θ) >.
[80] This is semingly what distinguishes modals from verbs like e.g. *rope* 'i.e. call'. In Norwegian, it is possible to make impersonal constructions with these highly agentive verbs; e.g. i):
      i) Det roper i skogen.
   (lit.) There calls in the woods
Thus, these verbs could easily be argued to assign an optional external theta-role, like modals. However, these verbs do not allow for non-thematic (i.e. proposition-scope) readings when they have an intentional subject, unlike deontic modals:
      i) Jon roper i skogen
      I. 'Jon calls in the woods'
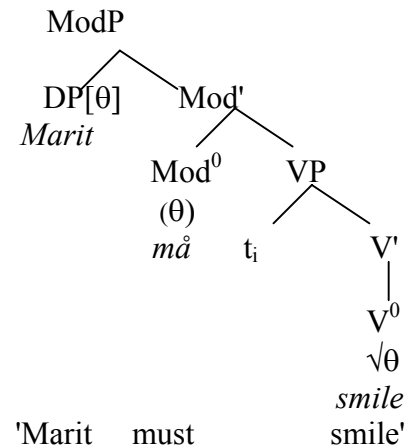   II. '#Something calls Jon in the woods.

allowed, and the proposition-scope reading of the modal is the result. Let us see how this works.

(112)
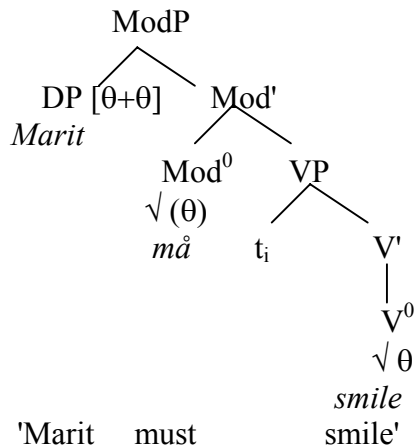
a.   b.

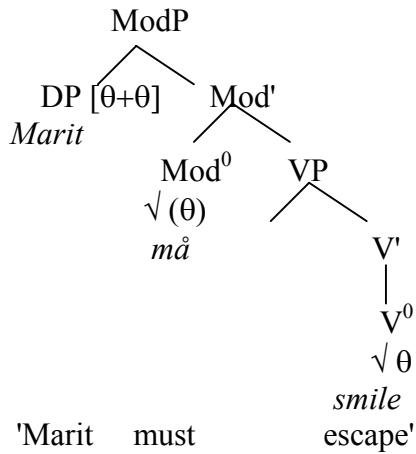In (112), the DP Marit checks the theta-feature of *smile* by merging with *smile,* resulting in a spec-head configuration. Thus, the theta-feature of *smile* is checked (represented by √). This is an obligatory operation, since *smile* obligatorily assigns a theta-role. Next, the VP [Marit [smile]] merges with the modal. This operation is once again obligatory given the relevant string. The third merger is also obligatory, presumably because of the EPP: The Mod' merges with the raised subject. However, at this point there is an optional operation. Either the subject DP checks (represented as √) the theta-feature of the modal *må,* or it does not. If it checks this feature, the resulting representation is (112)a, where the subject DP ends up bearing two theta-roles. On the other hand, if the subject DP does not check the theta-feature of the modal, the resulting structure is (112)b, where the subject DP has only one theta-role; i.e. the theta-role assigned by the embedded predicate *smile.*

Now, if we look at the possible *interpretations* of these phrase markers, we find that when the subject DP checks the theta-feature of the modal, as in (112)a, the subject must be interpreted in this position; i.e. the topmost link of the DP-chain is the link retained and interpreted; cf. (113)a. However, if the theta-feature of the modal is left unchecked, as in (112)b, the lower link of the DP-chain (i.e. the subject trace) is the link retained and interpreted; cf. (113)b.

(113)

a.

```
            ModP
           /    \
    DP [θ+θ]     Mod'
     Marit      /    \
            Mod⁰      VP
            √ (θ)    /  \
             må       V'
                      |
                      V⁰
                      √ θ
                     smile
    'Marit    must      escape'
```

b.

```
            ModP
           /    \
                 Mod'
                /    \
            Mod⁰      VP
             (θ)     /  \
             må   DP[θ]   V'
                  Marit   |
                          V⁰
                          √θ
                         smile
           'must  Marit   escape'
```
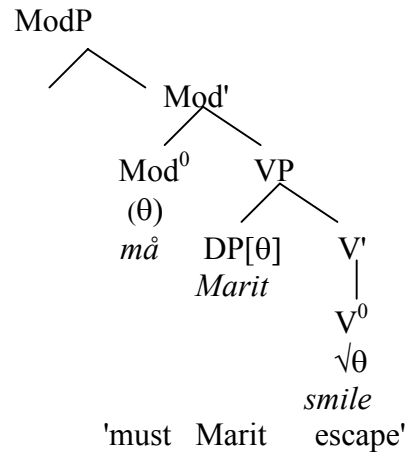
An appropriate question at this point is the following. What prevents the modal from assigning a theta-role to some argument other than the raised subject? That is, what excludes a string like (114)a or b?
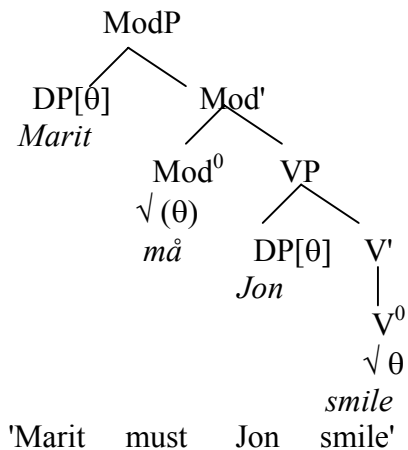
(114)

      a. * Marit må Jon rømme.
         'Marit must Jon escape'

      b. *Det må Marit rømme.
         'There must Marit escape'

After all, if the modal optionally assigns a theta-role and the embedded predicate assigns another theta-role, how come the structures in (114) are unacceptable?
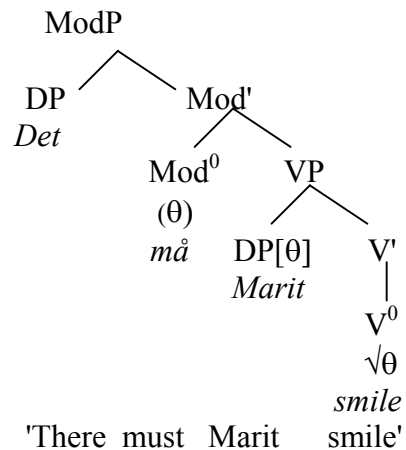
    To account for this fact, I will invoke the assumption from Nordgård and Åfarli (1990:100) that modal auxiliaries do not assign Case. Consider the structures in (115):

(115)

a.   *

```
            ModP
           /    \
      DP[θ]      Mod'
     Marit      /    \
            Mod⁰      VP
            √ (θ)    /  \
             må   DP[θ]   V'
                   Jon    |
                          V⁰
                          √ θ
                         smile
    'Marit    must    Jon    smile'
```

b.   *

```
            ModP
           /    \
      DP         Mod'
     Det        /    \
            Mod⁰      VP
             (θ)     /  \
             må   DP[θ]   V'
                  Marit   |
                          V⁰
                          √θ
                         smile
    'There  must   Marit    smile'
```

In (115)a, *Marit* will be assigned Case by whichever head assigns Case to the subject of finite clauses, e.g. C[+finite]. However, *Jon* will not be assigned Case, because the modal is not a Case assigner. Likewise, in (115)b, the expletive will be assigned Case (e.g. by C[+finite]), but *Marit* will not be assigned Case; once again because the modal does not assign Case to a DP which it C-commands[81].

Now, blocking the matrix subject position with an expletive excludes the +θ reading of the modal. For the θ-feature to be discharged, an DP denoting an agentive entity must enter into a spec-head relation with the modal in overt syntax (i.e. during the derivation of the overt syntactic structure). An expletive subject prevents this move from taking place by occupying the subject position of the modal. Hence, the proposition-scope reading of the modal is the only possibility.

One might picture a scenario where a DP-chain acquires a θ-feature from the modal (by means of the overt subject) before being interpreted in the lower subject-position (by means of the subject's trace). The question is, why should this move not be possible? The resulting reading ought to be a reading which is simoultaneously a +θ reading (acquired in the spec-head configuration [subject [modal]]) and a proposition scope reading (stemming from the relative scope of the modal and the subject's trace; i.e. the lower link in the DP-chain) where the modal has scope over the entire proposition, including the subject (by means of the subject's trace). But this is a much more general question that does not pertain solely to modals. One might just as well ask, why is it that "control verbs" *in general* do not allow for proposition scope readings? The generalization within a Hornstein-type approach could be expressed as follows:

(116)

      a. Delete all links in the A-chain except one. BUT:
      b. The retained link must be at least as high in the structure as the topmost θ-position.

Thus, to explain why deontic modals do not simultaneously express a +θ and a proposition-scope reading, we would first have to explain why control verbs in general do not allow for proposition-scope readings. They just don't. A legitimate interpretation of a control verb – or any verb obligatorily assigning an external θ role – requires that the DP expressing or bearing this external θ-role is interpreted either in the spec-position of this verb or, alternatively, in a

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[81] This structure would presumably be ruled out anyway, on account of the definiteness-effect.

position c-commanding this spec-position. In the latter case, the relevant DP is interpreted in a position *higher* in the structure than the spec-position of the θ-assigning verb. In either case, the subject is not allowed to scope *under* the θ-assigning verb. Control verbs; i.e. in this picture, raising verbs that obligatorily assign an external theta-role, simply do not allow their subjects to scope under them, and neither do θ-assigning modals. Recall that Hornstein suggests that deleting the upper A-link would leave the θ-feature of the verb unchecked, hence, the sentence would not converge at LF.

In the case of deontic modals, then, either the θ-feature is discharged, which prevents interpretation of the lower link of the DP-chain. Or, alternatively, the θ-feature is not discharged, and interpreting the lower link in the DP-chain is allowed.

This approach to deontic modals allows us to explain a range of otherwise troubling data. The assumption that deontic modals optionally assign an external θ-role accounts for the fact that they have +θ as well as proposition-scope (non-θ) readings. It explains why they licence expletives in their subject positions, because their assigning an external θ-role is optional. The auxiliary assumption that θ-assignment takes place in a spec-head configuration allows us to explain why expletives block a +θ reading from arising, and relating the proposition-scope reading to the interpretation of the lower link in the DP-chain allows us to account for the fact that a proposition-scope reading never arises when the complement of the modal is pseudoclefted, since in these cases, the lower subject position is elided. Hence, in these cases, there exists no "lower link" in the DP-chain. Moreover, the only way a DP could be thematically identified in these pseusocleft structures is by checking the optional theta-role of the modal, since there is no other potential theta-assigner to perform this task.

This approach also allows us to solve another puzzle, regarding modals taking small clause complements. Consider the following data.

(117)

    a. Jon må hjem.
      'Jon must (go) home.'

    b. Vi skal på kino.
      'We are-going to the movies.'

    c. Marit vil til flyplassen straks.
      Marit wants to the airport immidiately
      'Marit wants to go to the airport immidiately'.

You may recall from chapter 3 that Barbiers (1995, 1999) uses these non-verbal complements as an argument against the control vs. raising analysis. The argument goes as follows.

Using as an "uncontroversial diagnostic" that small clause complements cannot be extraposed, Barbiers establishes that the non-verbal predicative complements of modals are indeed small clauses, cf. (118) (Barbiers' 1999: (14)).

(118)

a. dat Jan morgen <naar Amsterdam> moet <*naar Amsterdam>
 'that John tomorrow to Amsterdam must to Amsterdam'

b. dat de brief morgen <in de prullenbak> mag <*in de prullenbak>
 'that the letter tomorrow into the trashcan may into the trashcan'

If the bracketed constituents are small clauses complements, then the DPs *Jan* and *de brief* must be their subjects. Their subjects cannot be PRO, since a small clause complement (of a selecting verb) cannot have PRO as its subject[82] (cf. (119)a; Barbiers' 1999: 15a), so the subject must have raised from a position inside the small clause; cf. (119)b (op.cit. 15b).

(119)

a. Jan drinkt [$_{SC}$ zich /*PRO ziek].
 'John drinks   SE   sick.'

b. Jan$_i$ moet [$_{PP}$ t$_i$ naar Amsterdam].
 'John must to Amsterdam.'

The assumption that these constructions are raising constructions fits nicely with the overall behavior of Norwegian deontic modals like *måtte* 'must' and *skulle* 'should' (cf. (117) a and b), since deontic modals pattern with raising verbs in most respects anyway. On the other hand, *ville,* 'want-to', is a dispositional modal, and dispositional modals pattern with control verbs in important respects. Thus, if these modals with small clause complements are raising structures, *ville* should not be able to occur in these structures, if it is a control verb. It seems that without a Hornstein-type reduction of obligatory control to a subtype of raising, we would have to allow for a redefintition of *ville* in such cases; that is, *ville* behaves as a control

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[82] Small clauses may appear in adjunct positions where the PRO subject will not be governed by a selecting verb. This is the case e.g. for small clauses headed by *som* (Mainland Scandinavian), *as* (English) and *als* (German). Cf. e.g. Eide (1997, 2000a, 2000b), Flaate (1998), Flaate and Eide (1998), Eide and Flaate (1999). One might think that these constructions would pose a serious problem for a Hornstein-type analysis, since in these cases, A-movement would be to a non-c-commanding position. But Hornstein takes care of this by an additional stipulation; e.g. Hornstein (1998:107): "Sidewards movement is permitted", and Hornstein (1999:79): "What is important here is that c-command is not part of the *definition* of movement. Thus, the computational system does not prohibit the copying of an expression to a position that does not c-command the "movement" site.

verb in all other constructions, but as a raising verb in exactly these small-clause constructions. Interestingly, typical control verbs are rarely found in these constructions, but there exist certain verbs which are semantically similar to certain modals, e.g. *ønske* 'wish (for)' or *tro* 'believe' that take small clause complements similar to those found with modals. Note, however, that these control verbs are ungrammatical if the small clause subject is phonetically empty, cf (120):

(120)

       a. Marit ønsket *(seg) langt vekk.
        Marit wished herself far away
      'Marit wished she was far away'

       b. Flyktningene trodde *(seg) trygge.
        refugees-def believed themselves safe
      'The refugees beieved themselves to be safe'

One way of accounting for these facts within a Hornstein-based analysis would be to assume, in radical opposition to Burzio's generalization, that in the case of raising verbs (including control verbs), there is no absolute correspondence between the verb's assigning an (obligatory) external θ-role and its case-assigning properties[83]. Instead, these properties are idiosyncratic properties of raising (subsuming control) verbs, where Case- and theta-properties are defined for each verb. Thus, for the matrix verbs in (121), the property of assigning an external θ-role (represented here as ± θ) and the property of assigning Case to a complement DP or an embedded subject (represented here as ± Case) vary independently:

(121)

       a. Jon virket (*seg) trygg. (*virke*: -θ, -Case)
        Jon seemed himself safe
        'Jon seemed (to be) safe.'

       b. Flyktningene trodde *(seg) trygge. (*tro*: +θ, +Case)
        refugees-DEF believed themselves safe
        'The refugees believed themselves to be safe.'

---

[83] For Norwegian, this assumption is problematic for a range of other (i.e. 'more lexical') verbs as well. For instance, many so-called unaccusative verbs like *smelte* 'melt'*, brenne* 'burn', *kjøre* 'drive' have transitive as well as ergative versions. In their transitive version they take an agentive subject, whereas in their ergative version, the post-verbal patient may be promoted to subject. However, for the ergative versions, there exists another possibility as well, notably to fill the subject position with an expletive and let the post-verbal DP remain in situ. Thus, in these cases, the verb does not assign an external theta-role, but it obviously assigns (some kind of) Case to the complement DP nevertheless.

c. Marit ønsket *(seg) langt vekk. (*ønske:* +θ, + Case)
Marit wished herself far away
'Marit wished she was far away.'

d. Vi skal (*oss) på kino. (*skulle*: ± θ, -Case)
we will ourselves to movies
'We are going to the movies.'

e. Marit vil (*seg) til flyplassen straks. (*ville*: +θ, -Case)
Marit wants-to (herself) to the airport immidiately
'Marit wants to go to the airport immidiately.'

That Norwegian modals do not assign Case to a DP which it governs is, as mentioned above, not a new assumption; cf. e.g. Nordgård and Åfarli (1990:101). On the other hand, verbs like *tro* 'believe' or *ønske* 'wish' are able to assign Case e.g. to a complement DP; cf. (122):

(122)

a. Jon trodde Marit.
'Jon believed Marit'

b. Alle ønsket en løsning[84].
'Everyone wished (for) a solution'

Raising verbs like *virke* 'seem' are like modals in not assigning Case, however. What separates most raising verbs from deontic modals is that raising verbs do not normally assign a θ-role to a subject, whereas deontic modals optionally assign such a θ role, and dispositional modals obligatorily assign an external θ-role, like control verbs. The property "+obligatory external θ-role" of the modal *ville* simultaneously rules out the possibility of expletive or idiom-chunk subjects and proposition scope readings; in short, makes dispositional modals pattern with typical "control verbs" in most respects[85].

In Hornstein's approach the difference between control and raising reduces to the assumption that in control structures, the DP aquires two θ-features during the derivation, since the DP moves from one θ-position into another θ-position. In raising structures, the DP

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[84] It is also possible to add another argument here, one reminicent of the "free dative" argument in German. That is, a benefactive (resembling an indirect object) may be added in a number of constructions where the verb otherwise assigns only one internal theta-role, e.g. *Alle ønsket Marit en fin dag* 'everyone wished Marit a nice day'.

[85] The other dispositional modal *kunne* 'can =ability' never occurs in these constructions in Norwegian. However, its German cognate *können* does in fact take small clauses like the ones discussed here, e.g. *Können Sie selber ins Auto, oder brauchen Sie vielleicht hilfe?* Lit. 'Can You by-yourself into the car, or do You perhaps need help?' Thanks to Herbert Pütz for this information.

moves from a θ-position into a non-thematic subject position; hence, the DP aquires only one θ-feature during the derivation.

There seems to be a general consesus on the assumption that raising verbs differ from control verbs in that "in raising verbs, the subject role is defined by the lower predicate". This is true, but to some extent, inaccurate. Even control verbs need their subject to be compatible not only with the matrix (control) verb, but with the lower predicate as well. This fact seems so obvious that it is sometimes ignored, but in fact, this is exactly the kind of thing obligatory control is all about. Thus, whereas it has been noted numerous times that a sentence like (123)a is ill-formed because control verbs obligatorily assign an external θ-role, data like (123)b, which serves to show that even the subject of control verbs are defined, not solely by the θ-role assigned by the control verb, but by the embedded predicate as well, are remarkably absent in this discussion:

(123)

        a. *The shit expects to hit the fan.
        b. *John tried to rain.

Thus, in control structures, the subject first receives a θ-role from the embedded predicate(s), and must meet the selectional requirements of this predicate(s) before it moves to the subject position of the control predicate, where it has to meet another set of semantic requirements, i.e. those of the control predicate, which assigns to the subject another θ-role. Raising verbs impose few or simply no selectional requirements onto their subjects; thus, the subject is required to meet the selectional requirements of the embedded predicate(s) only, since raising verbs have few or no selectional requirements for the subject to meet[86].

At this point, let us consider once again the table of observed differences between proposition-scope (root and epistemic) modals and raising verbs on one side and control verbs and dispositional modals on the other, repeated here as (124).

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[86] Bouchard (1995) argues against the concept of theta-roles altogether and claims that the term theta-role has no identifiable content across verb classes (p. 59): If verbs can vary so much in restrictiveness, a given thematic role could be associated with no selectional restrictions. For example, *seem* could assign a "Seemer" role, with no selectional restrictions – anything can seem."

(124)

	Raising verbs, epistemic modals & proposition-scope deontic root modals:	Control verbs, dispositional root modals & subject-oriented deontic root modals:
a. Allow expletive subjects	yes	no
b. Allow weather-*det* 'it' subjects	yes	no
c. Allow idiom-chunk subjects	yes	no[87]
d. Allow quirky subjects (Ic.)	yes	no
e. Allow passive compl. with inanimate subject	yes	no
f. Display subject-modal scope ambiguity	yes	no
g. Passivize	no	yes/no [88]
h. Accept pseudoclefted complement	no	yes

(124) a, b and c are all explained on the different selectional requirements of "raising" verbs and "control" verbs. Control verbs are simply raising verbs with an attitude; i.e. they have a number of selectional requirements for their subjects to meet. They demand their subjects to be intentional and agentive, and their subject DPs must carry a nominative case marking. This latter requirement accounts for the fact that at least some Icelandic root and epistemic modals accept, whereas dispositional modals (*kunna* 'can' and *vilja* 'want-to') reject quirky subjects; cf. (124)d. The strict selectional requirements of dispositional modals and "control" verbs also prevent them from taking passive complements with inanimate subjects (124)e.

Since all but one link of any DP-chain must be deleted by LF, and furthermore, since the retained link must be at least as high in the structure as the topmost θ-position, this gives rise to the interpretational differences observed between "control" verbs and "raising" verbs. Control verbs assign an external θ-role, and this forces their subject to be interpreted at least as high as the spec-position of the control verb. Raising verbs do not assign an external θ-role, thus their subject may be interpreted in a non-topmost position (by means of its trace), unless the upper DP-link is required for other reasons (e.g. binding). The different θ-assigning properties also account for the different scope-possibilities of subject-oriented and proposition-scope modals; cf. (124)f.

It is expected that control-type verbs should passivize, on the account that they assign an external theta-role. However, Norwegian modal auxiliaries do not passivize, unlike control

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[87] Recall that *kunne* does sometimes accept an idiom-chunk subject.

verbs. Their main verb versions, which take a proper argument as an object, may passivize; i.e. modals passivize only when they function as ordinary transitive verbs. We do not have any explanation for the fact that dispositional modals do not passivize in their auxiliary version. It is true that a number of other control verbs do not passivize very easily either, i.e. in those instances when they take an infinitival complement:

(125)

    a. *Det håpes/blir håpet å kunne åpne døra.
       there hopePASS   to canINF open the door
    'One hopes to open the door'

    b. Det *prøves/?blir prøvd å åpne døra.
       there tryPASS to open the door
    'One tries to open the door'

However, we do not have an explanation for the lack of passive with modal auxiliaries, other than suggesting that this is related to their taking infinitival complements instead of DP/CP complements.

      As regards the ability to take a pseudoclefted complement (124)h, we have seen that this can be accounted for within the approach advocated here. "Raising" verbs like non-thematic modals have proposition-scope readings, hence the lower link in the subject's DP-chain is retained, not their topmost link. However, the lower subject-position is unavailable when the complement is pseduoclefted, and the proposition-scope reading cannot arise. Furthermore, the requirement that argument DPs must be thematically identfied rules out the possibility for proposition-scope modals and other "raising" verbs in this construction.

      Modals hence constitute a mixed category w.r.t. thematic properties. Epistemic modals are raising verbs that do not assign an external θ-role under any circumstances and they have no selectional requirements w.r.t. a possible subject. Dispositional modals are raising verbs that obligatorily assign an external θ-role to their subjects; hence they demand intentional subjects. And finally, deontic modals optionally assign an external θ-role, and correspondingly, they may have either proposition scope (-θ) readings or subject-oriented (+θ) readings. Their external θ-role being optional, they accept non-argument subjects on a proposition-scope reading and reject such subjects otherwise. None of these modal auxilaries,

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[88] It is the main verb version of the dispositional root modals that passivizes. The auxiliary version, with a verbal complement, does not. Also, the main verbs *trenger ikke/behøver ikke* passivize. These two have deontic root counterparts, not dispositional root counterparts.

neither root nor epistemic, neither dispositional nor deontic, assign Case to the subject of a clausal complement[89].

In addition, we know that four of the modals have main verb versions (shown by the fact that they accept *do*-replacement in tags, they may passivize, and they take DP/CP complements). These four, notably *kunne* 'can', *ville* 'want-to', *behøve* 'need' and *trenge* 'need' behave like ordinary transitive verbs in that they obligatorily assign an external θ-role to their subjects as well as (accusative) Case to a complement. A note of caution is in order; *ville* takes CP, not DP complements, thus one might want to make an exception w.r.t Case-assigning properties for this verb, unless one adheres to the assumption that CP argument clauses need Case as well. I will leave this question open here.

4.6   The Source of modality: Conceptual Structure vs. Semantic Form

I argued in section 4.2.4.3 that modals are intensional predicates. It was suggested (following Quer 1998) that intensional predicates are indexical in that the truth of their embedded propositions must be relativized to worlds and individuals, i.e. provided with an *individual anchor*; cf. for instance (126), which could be represented as (127):

(126)

[P2 Philby believes that [P1 a unicorn is sleeping in the garden]].

(127)

P1 = T in w_R (Philby); i.e. P1 is true in a world *w* that models reality *R* according to Philby.

Now, in (127) (and (126)) *Philby* is the individual anchor for the intensional predicate *believe*. The question we will pursue in what follows is: What may constitute the individual anchor for a modal? Rephrased in a manner more in line with the functional literature on modals, who or what constitutes the *source of modality*?

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[89] It is true however that modals accept pro-predicates like *det* as a complement, e.g. as in ii):
  i) Kan bussen ha kommet? 'Could the bus have arrived?'
  ii) Den kan (nok) det.   Lit. 'It could possibly that'.
However, since *det* in these cases should be considered a pro-predicate and not a pronoun, we assume that it does not need case in these instances. A slightly bigger problem is the fact that root modals accept definite pro-predicates like *dette* 'this', e.g. *Jeg vil ikke dette* 'I do not want this (to happen)', as noted by Lødrup (1994). Although this element could also be described as a pro-predicate which does not need case, it does seem more pronoun-like than *det*. The fact that root modals accept, whereas epistemic modals reject *dette* as a complement could be accounted for by invoking the fact that root modals may be construed as two-place predicates, whereas epistemic modals cannot. Thus, *dette* denotes a VP complement which functions almost like a direct object, and should perhaps be expected to be assigned Case. I have no solution to this problem at present.

Within the functionalist literature, this question is an important one, since e.g. the source of an obligation or permission to a great extent determines the overall intepretation of an utterance containing a modal in a specific context; cf. e.g Heine (1995:29 ff). But not only functionalists are concerned with this issue; we find attempts of formalizing the source of an obligation or permission within logic (e.g. the *dyadic deontic logic* of Hansson 1970) early Transformational Grammar (e.g. Newmeyer 1969) and Government and Binding approaches; e.g. Öhlschläger (1989).

To clarify, so far we have been exclusively concerned with what has been known as the *goal* of modality, i.e. the individual towards which the obligation or permission is directed on a directed deontic or subject-oriented reading (and correspondingly, towards which no obligation or permission is directed on a non-directed reading) . At this point, we want to look into the *source* (German: *Quelle*) of modality. Here, Calbert (1975:24):

> [...] each modality can be expressed from the point of view of the Source (X in [a below]) or from the point of the Goal (Y in [b below]). These alternatives may be called *Source-oriented* and *Goal-oriented* modalities respectively [...]:
>
> a. X wants Y to...
> b. Y has to...

In Heine (1995:29 ff), this source is dubbed *Force* and is explicated in the following manner:

> There is some force **F** that is characterized by an "element of will" (Jespersen 1924:320-1), i.e. that has an interest in an event either occurring or not occurring.

Newmeyer (1969) proposed that deontic root modals are ditransitive semantically, where e.g. *must* in the sentence *John must eat soup* has a semantic structure like *require* in the sentence *Something requires of John that he eats soup.* In this early Transformational Grammar literature, the *source* is sometimes referred to as the *rule-giver* argument (term quoted from Brennan, 1997:38).

These few references already serve to show that the interpretive importance of the *source* of modality has been acknowledged by a variety of linguistic frameworks. Now, one might want to argue, and quite rightfully, that the *rule-giver* or *source* of modality belongs to the pragmatic information provided by a context, thus it is not obvious that this is a matter which need to be examined in a semantico-syntactic investigation. However, in my opinion, adressing the question of the source of modality helps us to sort out certain quasi-conceptual influences which direct the readings of modals in specific ways; readings that have been taken to be syntactically encoded (e.g. Barbiers 1999). Furthermore, this is a subdomain of a much

larger field consisting of the semantics of intensional predicates in general, and we have already seen that intensional predicates impose specific semantic effects onto e.g. indefinite DPs within their semantic scope (cf. the dicussion in 4.2.4.3 above).

The puzzle concerning the Source of modality expressed by modals thus consists in the fact that there is a tacit, mostly contextually determined presence of a rule-giver which may or may not be explicitly expressed. However, even if this rule-giver is overtly expressed, this entity does not occupy an argument position of the modal; at least not an argument position on any current understanding of the term. (128) exemplifies sentences where the rule-giver or source of modality is explicitly expressed:

(128)

    a. *According to your mother,* you ought to become a doctor.
    b. *The doctor said* that I may stop taking this medicine.
    c. *In my view*, you should'nt do that.
    d. *Regulations indicate* that all of our students must take this exam.
    e. *Thanks to his exceptional physical shape*, John can cross the river.

Öhlschläger (1989) represents a G&B approach which tries to incorporate the source of the modality expressed by the modal. Although he ascribes the "rule-giver" argument to the semantics of the modal, and semantics alone, he recognizes that this gives rise to a discrepancy between his syntactic description of modals as raising verbs and the semantic discription, which contains an argument that is not expressed in syntax (op.cit. 246; my translation):

> [...] There exists a discrepancy, an opposition, between my syntactic and my semantic description, which is rooted in the fact that I invoke a θ-role "Source" in my semantic description, that does not correspond to an argument position in the D-structure of raising verbs, which leads to a violition of the θ-criterion. In my opinion though, the syntactic arguments supports an analysis of the modals as raising verbs just as unequivocally as the semantic arguments support a semantic explication of the kind that I have proposed. One possibility to solve this opposition would be to add an argument position in D-structure.

The author is reluctant to make this move, though, since this would amount to proposing an argument position which is not occupied in overt syntax; thus, he leaves this question open.

The core problem here is as stated by the quote from Öhlscläger above: The semantics of modals seemingly encode some kind of argument, 'the Source', which does not correspond to a syntactic argument position, and the way 'D-structure' is employed within G&B, this is a serious problem. There is something about (especially epistemic and deontic) modals that emphasize the presence of an intentional, rational mind, an authority or a narrator, and it is

not obvious that this is all pragmatics. Modals demand a 'Source argument' much in the way speaker-oriented adverbs like *luckily, obviously, unfortunately, evidently* are associated with the speaker: These adverbs can only be interpreted as evaluations expressed by the speaker (cf. Jackendoff 1972 for similarities and differences between modals and speaker-oriented adverbs[90]). One could quite rightfully claim that this type of information needs to be expressed in the semantic representation of an entry in the lexicon, instead of assuming that this is contextually inferred. Since D-structure argument-positions cannot do the job (and since D-structure has seized to exist within the Minimalist Program version of P&P anyway), one might imagine that Source interpretations could be encoded by LF-relations, as implied by the approach of Barbiers (1995). Recall that Barbiers proposes a syntactic projection DP headed by an invisible determiner D to account for subject-orientedness. This subject-orientedness of e.g. *kunnen* 'can', may be interpreted either as ability or as permission. According to Barbiers, this is due to the ambiguity or abstractness of the head D:

> The relations established by D are the other building blocks: the possibility of the [...] event is determined and the subject is the determiner. Since the notion of determiner is taken to subsume notions such as source, possessor, origin and so on, the subject [...] can be interpreted as the <u>source of the possibility</u> [my emphasis], which yields the ability interpretation, or as the possessor of the possibility, which yields the permission reading. The ambiguity between a dispositional and a directed deontic interpretation is thus ascribed to the ambiguity of, or rather the abstractness of D, just as in the case of *John's portrait,* where the semantic relations between *John* and *portrait* established by D can be interpreted as posessor, artist, source and so on.

Some readers may find it strange that the subject itself could be considered a source of modality, as long as we have equated Source with "Rule-giver". However, within the German tradition at least, it is common to recognize two major types of Source, dubbed "subject-external" and "subject-internal" modality respectively. Only in the former case does it make sense to equal *Source* with *Rule-giver*; typical examples are deontic modals. In the latter case, the Source of modality resides within the entity described by the subject DP; for instance the subject-internal 'intention' of *wollen* (Germ.) */ville* (Norw.) */willen* (Dutch) 'want-to' or the subject-internal 'enabling properties' of *können* (Germ.) */kunne* (Norw.) */kunnen* (Dutch).

Instead of invoking semantics, D-structure or LF/abstract heads, or writing this subject off as 'pragmatic/contextual/world-knowledge', the present proposal situates the Source of modality on the borderline between semantics and pragmatics. In an effort to describe the

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[90] Op.cit.p 104: The claim, then, is that speaker-oriented adverbs and epistemic modals, which are syntactically totally dissimilar excpt that they are daughters of S, are treated identically by the semantic component, which only makes use of the single syntactic property they have in common.

Source of modality, I will exploit the idea of a two-level semantics of the kind advocated by Bierwish and Lang (1989) and Bouchard (1995). Although I have no need for the elaborated notation and machinery of Bierwisch and Lang here, I want to utilize their idea of separating a level of Semantic Form (SF) from a level of Conceptual Structure (CS), much like Bouchard distinguishes Grammar Semantics from Situational Semantics[91]. These two semantic levels allow us to describe any linguistic object by two different semantic representations; cf. Bierwisch and Lang (1989: 474 ff.):

> [C]ertain properties of the lexical items which determine their syntactic behavior are established in their internal SF structure. This applies in particular to the syntactic argument structure of lexical items, determined by the θ–grid, a structure which has crucial bearing on the syntactic functions of lexical items [...]
> [...]since[...] the conceptual interpretation of the D[imensional] A[djectives] [i.e. the linguistic objects] must be distinguished from their SF structure, there can be no general identity between SF and CS.

This gives us a system that allows for one semantic level that operates close to syntax, and another semantic level that operates close to conceptual organization, and the important assumption that there is no general identity between them.

So I will pursue the following idea: At the close-to-syntax SF-level, epistemic modals are one-place predicates that take the embedded proposition as their argument. Dispositional modals are two-place predicates that take the subject and the embedded proposition as arguments, whereas deontic modals are either one-place predicates or two-place predicates; they optionally assign an external θ-role to a subject while obligatorily taking the embedded proposition as an internal argument. However, at the close-to-conceptual-organisation CS-level, I assume that *all* modals are two-place predicates, where the second argument is the proposition described by the sentence (minus the modal), and the first argument, i.e. the *Source*, may be instantiated by one out of three options: Speaker, Subject or External[92].

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[91] Bouchard separates between Grammar Semantics and Situational Semantics. However, Bouchard's levels does not correspond to Bierwisch and Lang's levels in all respects. Bierwisch and Lang describe the assigning of theta-roles as an important aspect of Semantic Form (i.e. syntax-relevant Semantics). Bouchard rejects the idea that theta-roles are important to Syntax (p.45): "Theta-roles are [...] not appropriate primitives to use in constructing Semantic Representations. They are unsuitable to represent meaning because any slight change in the context can bring about a change in roles." And p. 51: "[A] thematic representation is, in a sense, analogous to the situation it describes; it corresponds to the situation itself." P. 41: " The claim is that the very notions on which theta roles are based are external to Grammar."
[92] Antoher way of implementing these ideas would be to exploit the notion of *individual anchoring* referred to above, where the *individual anchor* is equated with the first argument.

Semantic Form:	Epistemic modals:	Modal (p)
	Dispositional modals:	Modal (subject, p)
	Deontic modals:	Modal (p) v Modal (subject, p)
Conceptual Structure:	All modals:	Modal (x,p), & x = Speaker, or
		x = Subject, or
		x = External

I consider the term "Speaker" to be self-explanatory[93]; "Subject" refers to the syntactic subject of the modal, whereas the latter term "External" deserves some explanation. First of all, "External" refers to an entity different from the Speaker and the Subject. Secondly, it does not refer to an entity necessarily external to the discourse; on the contrary, the "External Source" entity is in general easily recoverable from the overall context. Moreover, "External" does not always refer to an entity external to the sentence either; we have seen that the Source of modality may be specified and explicitly expressed in a sentence albeit not as a syntactic argument of the modal (cf. (128) above). In general, the external Source of modality does not need to be explicitly expressed. Thus, the term *external* is chosen for two reasons; firstly because the Source is *in general* sentence-external, secondly because the term *external modality* is a familiar term, within the German literature on modals at least. Admittedly, this term traditionally incorporates "Speaker as Source" readings; moreover, external modality is sometimes treated as an inherent property of deontic modals; cf. e.g. Heine (1995: 30):

> [...] Force [i.e. Source] is different from C [the agent] in the case of modals such as *müssen* 'must', *sollen* 'shall, should' or *können* 'can' [...].

This is not completely accurate, however. Although it is true that deontic modals *allow* for an external Source of modality, they by no means rule out the possibility of the subject being the Source of modality in some cases. This is particularly obvious in (129) below:

(129)

a. Jon skal på kino.
   Jon will to movies
  'Jon is-going to the movies'

b. Marit må kaste opp.
   'Marit must throw up'

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[93] Like a temporal point of reference can be shifted, or the reference of the first person pronoun *I* can be shifted from the speaker to some other referent given that the sentence is embedded within e.g. a discourse of reported speech, a letter etc., "Speaker" as a first CS-argument is able to be shifted in the same manner.

The more natural reading of both these sentences requires the subject to be the Source of modality, although one might object to this claim in the latter case. *Marit* does not "require of herself" that she throws up, instead her physical condition requires that she throws up. On the other hand, "the physical condition of x" is traditionally considered sufficiently "subjective" in the case of *kunne* 'can' in that this is dubbed "internal modality" on this paraphrase. Thus, this ought to suffice in the case of *måtte* 'must' as well.

Another pressing question in describing the argument structure of modals on two semantic levels is whether it is possible to find paraphrases or semantic descriptions that are sufficiantly abstract to allow for a "conceptual argument" which is not expressed in overt syntax, while simultaneously being substantial enough for a close-to-syntax semantic level. Preferably, this core meaning should cover both root and epistemic meanings as well, since I agree with the observation made in Dyvik (1999) that

> [...] the analysis of epistemic and root modals as distinct lexemes would give rise to a puzzlingly systematic homonymy linking pairs of epistemic and root modals in Norwegian, a systematicity which would then be unaccounted for. The formal identity of all morphosyntactic forms which they both have, along with their obvious semantic relatedness, would appear accidental.

This quote places Dyvik (1999) in the "Unifiers" camp, whereas some of my descriptions signal an affinity to the "Dividers" camp; the terms are due to Brennan (1993), who invokes these terms to describe the two major approaches to the dual reading of root vs. epistemic modals. *Unifiers* argue that there is only one lexical entry with two different uses, an epistemic use and a root use respectively. The context, alternatively, the syntactic surroundings are responsible for the felt difference in mening. *Dividers* argue that modals are lexically ambiguous; i.e. there are (at least) two different lexical entries for each modal. In principle, I cheer wholeheartedly for the Unifiers, thus I set out to find semantic descriptions that would cover both epistemic and root readings; descriptions that would function simultaneously on a Conceptual Structure level as well as on the level of Semantic Form.

This turned out to be quite a challenge, and the suggestions I have made should be considered tentative descriptions that hopefully will make way for better suited replacements. For some of the modals, then, I decided to go for two different descriptions of root vs. epistemic readings, although I believe it is possible in principle to find more abstract notions that could encode both root and epistemic versions. For instance, I have described the core semantic content of *skulle* 'shall' as "intention" on the root reading, but "opinion" on the epistemic reading. However, there ought to exist a slightly more abstract concept that could

cover both, and there probably does exist such a concept. Take an example like the following minimal pair[94].

(130)

> a. He insists that I leave him.
> b. He insists that I left him.

In (130)a, *insists* means roughly 'forcefully expressing an intention that p' whereas in (130)b, *insists* means 'expressing a convinced belief that p'. Although it is possible to account for this fact by assuming two different lexical entries for *insist,* it is tempting to conclude that at least at some point in time, *insist* denoted a concept that covered both "intention" and "opinion". The same can be observed with e.g. *be supposed to:*

(131)

> a. John is supposed to become an architect.
> b. John is supposed to be an architect.

Again, 'intention' vs. 'opinion' are the relevant readings. To find these two readings as a possibility with one and the same linguistic form in one case after another ought to indicate that these two concepts are closely related, perhaps that they are different aspects of one and the same concept on a more abstract level. However, since I have found no word in my vocabulary corresponding to this more abstract concept, I have resorted to two different descriptions for root and epistemic *skulle.* Thus, I have chosen to give *skulle* 'shall' the following semantic description:

Skulle:

Conceptual Structure:	Root:	Intention of (x) that p is made true
		x = Speaker, or
		x = Subject, or
		x = External
	Epistemic:	Opinion of (x) that p is true
		x = External
Semantic Form:	Root:	There exists an intention that p is made true
		+ external θ-role: The subject has the responsibility of acting on this intention.
		- external θ-role: The intention is not addressed to any particular individual.
	Epistemic:	There exists an opinion that p is true

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[94] Cf. Quer (1998:54) for a discussion of the importance of the subjunctive/indicative distinction in such cases.

The choice between *Speaker, Subject* or *External* as the first CS-argument gives us three different nuances of meaning. If *Speaker* instantiates this first argument, the reading of the modal is typically performative, since the Speaker reports his or her intention that p is made true. This does not necessarily mean that the utterance is conceived as an order or a command; this depends on whether the subject is 2nd or 3rd person (a 2nd person subject favours a 'command' reading) but the utterance may just as well be conceived as a promise (cf. Dyvik 1999 for the 'promise' reading of *skulle*), or a threat, and depending on whether the state-of-affairs described by the embedded proposition is conceived as positive or negative for the hearer; cf. e.g. (132):

(132)

      a. Du skal ikke på kino i kveld.
         You will not to movies-DEF tonight
         'It is my intention that you do not go to the movies tonight'

The perlocutionary (cf. Austin 1962) aspects of the utterance; i.e. exactly *how* an utterance is conceived by a hearer, belongs to the pragmatics component, in my view, and I have no intention or ambition to be able to formalize these aspects of modals here. Thus, whether the utterance is conceived as a command, a promise or a threat depends on the context. However, the Source of modality in a modal is another matter; I believe that this property of modals can and should be systematized and formalized in order to shed some light on the complex semantics of modals.

      The sentence in (132) has another reading where the subject is the Source of modality; i.e. it is the subject itself that has the intention and constitutes the first CS-argument. This reading is more visible if we make the sentence denote a question, cf. (133):

(133)

      a. Du skal ikke på kino i kveld?
         You will not to movies-DEF tonight
         'Is it your intention not to go the movies tonight?'

The third possibility is that the source of modality is neither Speaker or Subject, but some other entity, typically an authority of some kind. Say John's baby sister Mary delivers the following message from their parents:

(134)

> a. Du skal ikke på kino i kveld.
>   You will not to movies-DEF tonight
>   'It is their intention that you do not go to the movies tonight'

Here, the Source is external; i.e. neither Speaker nor Subject, but the parents. It is the parents' intention that is expressed by *skulle* in this context.

In a number of sentences the Source of modality, i.e. here, the entity whose intention is expressed by *skulle,* must be external because the syntactic subject does not denote an entity which is a rational being. This is the case in (135) below. Note that, as indicated by the gloss, the 'intention' reading is particularly clear in this sentence:

(135)

> a. Maskinen virker ikke slik den skal.
>   machineDEF does not work like it should
>   'The machine does not work the way it is intended'

Another intriguing fact about the Source of modality, in this case, the entity which has the intention, is that it need not be constant throughout a context or even throughout a sentence. Look at the following authentic example (a response from an official to a curious journalist asking questions about a suspicious deal; roughly, Why weren't the proper authorities informed about this deal?).

 (136)

> Det var aldri noen annen intensjon enn [s1 at [s2 de som skulle kjenne til avtalen,
> skulle kjenne til avtalen]].

> 'There was never any other intention; [s1 [s2 those who were supposed to know about
> the deal], were supposed to know about the deal].'

One might have expected this sentence to be a tautology, but it is not. The reason this is not a tautology is that there are different Sources of modality in the two instances of *skulle.* In S2 the Source is external authorities, say, laws and regulations; in S1, the Source argument is instantiated by the parties involved in the deal (including the Speaker). The sentence means that *the intention of the parties involved in the deal (including the speaker)* were the same as *the law's intentions* as regards informing the proper authorities about the deal.

In describing the semantic content of deontic *skulle* as 'intention of (x) that p is made true', I simultaneously reject the more wide-spread assumption that *skulle* 'shall'*, måtte* 'must' and *burde* 'should' denote 'obligation' in and by themselves (as implied by e.g. Sørensen

2000). Instead, 'obligation' is an implication, a *derived* meaning, stemming from one specific set of possible CS-argument/ ± θ combinations. Specifically, this reading arises when we have a +θ reading on Semantic Form, and a Source argument on Conceptual Structure which is different from the Subject. That is, this reading arises when, for instance, the intention expressed by *skulle* is the intention of some entity different from the Subject, and the Subject has the responsibility of making the embedded proposition true (+θ-role). This pertains to *måtte* and *burde* as well; what is perceived as an obligation is in fact just one possible combination of CS-arguments and SF θ-relations. Note, for instance, that no 'obligation' reading arises if the subject itself constitutes the first CS argument, cf. (137):

(137)

Skal du kjøpe den boken?
will you buy that book
'Is it your intention to by that book?' -/-> obligation
'Is it the intention of someone else that you buy that book?' -> obligation

On the epistemic reading, the Source of modality is always External in the case of *skulle,* which means that the opinion expressed is always the opinion of some entity different form the Speaker or the Subject (cf.(138). This being a idiosyncratic property of *skulle,* it seems likely that this information belongs to the lexical description of this modal.

(138)

Hovmesteren skal være morderen.
'The butler is supposed to be the killer.'

Continuing with the description of deontic modals, I propose that 'necessity' is an inherent part of *måtte* 'must'. In this I adhere to a long tradition of proposals within numerous linguistic frameworks. My proposal differs, however, from those of many other authors (especially within logic) in assuming that this necessity is always *perceived by some entity*; i.e. the difference amounts to assuming a Source of modality even for this modal. In this respect, I follow Öhlscläger (1989), and on a more general level, functionalist authors such as Palmer (1986:16), who suggests that

> Modality in language is, then, concerned with subjective characteristics of an utterance, and it could even be further argued that subjectivity is an essential criterion for modality. Modality could, that is to say, be defined as the grammaticalization of speaker's (subjective) attitudes and opinions.

At the same time, I reject the distinction drawn by numerous authors between *subjective* and *objective*[95] readings of *måtte* 'must' (and other modals); cf. e.g. Lyons (1977), Öhlscläger (1989) where *objective* readings equal *logically necessary*. In my view, the way *måtte* is employed and used in natural language, the necessity expressed by *måtte* is always perceived by some entity; i.e. only the *subjective* reading is viable in natural language. The description of *måtte* 'must' is hence as follows:

Måtte:

Conceptual Structure:	Root:	Necessity perceived by (x) that p is made true
		x = Speaker, or
		x = Subject, or
		x = External
	Epistemic:	Necessity perceived by (x) that p is true
		x = Speaker
Semantic Form:	Root:	There exists a necessity that p is made true
		+ external θ-role: The subject has the responsibility of acting on this necessity.
		- external θ-role: The necessity is not addressed to any particular individual.
	Epistemic:	There exists a necessity that p is true

The following non-tautological sentence serves to ilustrate that even *måtte* allows for different entities to instatiate the first CS-argument:

(139)

> Du må gjøre det du må gjøre.
> 'You must do what you must do.'

One possible reading of this sentence is the following paraphrase: The speaker perceives it as necessary that the subject performs the acts which are perceived as necessary by the speaker.

The description of *trenger ikke/behøver ikke* 'need not' takes the description of *måtte* 'must' as its point of departure and amounts to the negated version of *måtte;* i.e. ¬ , no necessity. Note also that I have one description pertaining to both *ikke trenge/ikke behøve,*

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[95] Be aware that there are at least two important uses of this pair of terms. In the German literature, *subjective* and *objective* mostly denotes *epistemic* vs. *deontic/dynamic*. The other important use is the one aimed at here, where *subjective* denotes some entity performing some kind of evaluation, and *objective* denotes logically necessary/possible, where the necessity/possibility is independent of any entity perceiveing this necessity.

since I have found no relevant semantic differences between them. Stylistically, though, *behøve* sounds slightly more archaic than *trenge.* I have chosen not to represent this fact here.

Ikke trenge/behøve:

Conceptual Structure:	Root:	No necessity perceived by (x) that p is made true
		x = Speaker, or
		x = Subject, or
		x = External
	Epistemic:	No necessity perceived by (x) that p is true
		x = Speaker
Semantic Form:	Root:	There exists no necessity that p is made true
		+ external θ-role: The subject would have had the responsibility of acting on this necessity.
		- external θ-role: The necessity would not have been addressed to any particular individual.
	Epistemic:	There exists no necessity that p is true

Burde 'should' is often described as 'weak obligation'. As argued above, the 'obligation' reading arises when we have a situation where the first CS-argument is not the Subject, and the Subject is assigned a θ-role from the modal. Moreover, that this reading is paraphrased as 'weak obligation' and not simply 'obligation' seemingly signals a certain optionality, instead of the absolute necessity represented in the description of *måtte.* I have chosen to represent this optionality as 'preference', as follows:

Burde:

Conceptual Structure:	Root:	From a set of propositions $<p_1....p_n>$,
		(x) prefers that p is made true
		x = Speaker, or
		x = Subject, or
		x = External
	Epistemic:	From a set of propositions $<p_1....p_n>$,
		(x) prefers p as the one most likely to be true
		x = Speaker

Semantic Form: Root: There exists a preference that p is made true

+external θ-role:The subject has a
responsibility of acting on this preference.

- external θ-role: The preference is not
addressed to any particular individual.

Epistemic: There exists a preference for p as the propostion
most likely to be true

The deontic modals described so far are all often ascribed an 'obligation' (wiz. lack of obligation) reading by numerous authors. *Kunne* is different in that it is said to denote 'permission'. Again, I suggest that the 'personal permission' reading stems from the same combination of CS-arguments and θ-assignment as mentioned above with 'obligation'. This assumption allows us to give *kunne* 'can' a slightly more abstract representation than simply 'permission'. Note also that *kunne* has two different entries; one among the deontic modals and another among the dispositional modals. This move is justified on a number of grounds. We know that dispositional modals display a syntactic behavior which is different from deontic modals in a number of respects (cf. the previous section). Moreover, although the 'ability' dispositional reading of *kunne* 'can' is sometimes claimed to be subsumed by the more general deontic reading (cf. e.g. Papafragou 1998), it is a fact that it is the 'ability' reading which survives as a lexical main verb in various English dialects and other languages, among those Norwegian. This points to a situation where there exist two homonym modals *kunne* 'can', one deontic and one dispositional. Moreover, I will assume here that it is the deontic *kunne* which gives rise to the epistemic reading, not the dispositional one. As a matter of fact, numerous authors count the English cognate of *ville* 'will' in its epistemic reading as a tense morphem instead of a modal (cf. the discussion in Dyvik 1999, Julien 2000a and McCawley 1971[96]). This assumption would allow us to draw the generalization that the dispositional modals do not have epistemic counterparts. However, as pointed out by Dyvik (1999)

> The epistemic meaning of *ville* comes close to 'future tense', but considering the systematic relationship between *ville* and the other modals, Norwegian grammar seems to classify this meaning as the epistemic counterpart of volition, i.e. as a modal rather than as a temporal kind of meaning.

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[96] Pullum and Wilson (1977:775) quote the following claim from McCawley (1971:112): "The future tense in English differs mainly morphologically from the present and past; its marker is morphologically a modal verb rather than an affix."

Thus, what I want to suggest here is that only *kunne* in its dispositional sense lacks an epistemic counterpart. This assumption is not without problems, though. Recall from chapter 2.4.2 that *få* 'get' was excluded from the group of modals exactly because it lacks an epistemic counterpart. Consistency ought to require that dispositional *kunne* should be excluded from the group of modals on the same grounds. One way to circumvent this problem would be to say that dispositional *kunne* has an epistemic counterpart which is semantically so close to the epistemic counterpart of deontic *kunne* that they are in principle indistiguishable. This assumption is counterintuitive, in my view, and I will not argue further for this solution here. Instead, I will make an exception for dispositional *kunne* and count it among the proper modals although it seemingly lacks an epistemic counterpart. I readily admit that this choice is inconsistent with the discussion in section 2.4.2 where *få* was excluded on the same grounds. However, as already mentioned, it is possible in principle to argue for an epistemic counterpart of dispositional *kunne,* hence it seems slightly more legitimate to consider it a proper modal. No such solution would be possible in the case of *få* 'get'.

Deontic *kunne* 'may' thus receives the following description:

Kunne:

Conceptual Structure:	Root:	(x) allows that p is made true x = Speaker, or x = Subject, or x = External
	Epistemic:	(x) allows that p is true x = External
Semantic Form:	Root:	There exists a permission that p is made true
		+ external θ-role: The subject has the personal opportunity to act on this permission.
		- external θ-role: The permission is not addressed to any particular individual.
	Epistemic:	There exists an possibilty that p is true

The two dispositional modals in Norwegian differ from the deontic modals in that they only allow for the Subject as the first CS-argument (corresponding to the notion of *subject-internal modality* mentioned above). Hence, one could argue that this level is less important in the case of dispositional modals. However, as regards the first CS-argument of epistemic *ville*

'will', this is instantiated by the speaker (with the exceptions pertaining to all epistemic modals, as mentioned in footnote 93 above). Interestingly, the German cognate of *ville* demands the *subject* as the first CS-argument, not the speaker, and the meaning is reminicent of epistemic *skulle,* i.e. 'opinion', cf. (140):

(140)

      a. Johann will reich sein.
        Johann will rich be
       'Johann claims to be rich'

      b. Maria will Schauspielerin gewesen sein.
        Maria will actress   been   be
       'Maria claims to have been an actress'

However, the Norwegian epistemic counterpart of *ville* has 'prediction' as its core semantics rather than 'opinion'. This assumption is supported by the observation in Bybee et al. (1994:244) that 'future' is equivalent to 'prediction' in many languages, and the Norwegian *ville* in its epistemic sense is typically used as a future marker.

> We regard the focal use of future as equivalent to a prediction on the part of the speaker that the situation in the proposition, which refers to an event taking place after the moment of speech, will hold.

Thus, I propose the following descriptions for the two dispositional modals in Norwegian; *kunne* and *ville* respectively:

Kunne:

Conceptual Structure:	Root:	Ability of (x) to make p true x = Subject
Semantic Form:	Root:	The subject has the ability to make p true + external θ-role only

Ville:

Conceptual Structure:	Root:	Intention of (x) that p is made true x = Subject
	Epistemic:	Prediction of (x) that p will be true x = Speaker
Semantic Form:	Root:	The subject has an intention that p is made true + external θ-role only
	Epistemic:	There exists a prediction that p will be true

For the lexical/main verb modals, the main verb version of *ville* may be given the same description as modal auxiliary *ville,* since main verb *ville* takes CP complements, which also denote a proposition p. For main verb *kunne* 'can' and *trenge/behøve,* the meaning resembles the auxiliary versions, although main verb *kunne* typically denotes mental, not physical ability ('know' as opposed to 'know how to'), and main verb *trenge/behøve* denotes that the subject needs whatever is denoted by the DP/CP complement. This could nevertheless be described as 'necessity perceived by (x)' , where x is always the subject. Thus, there is no doubt that the main verb modals semantically resemble their auxiliary counterparts to a great extent.

I want to emphasize once again that the descriptions given here should be considered a first approximation to the core semantics of Norwegian modals. Firstly, because I hope to come up with paraphrases that would allow for the same meaning to cover both epistemic and root senses. Secondly, because this is an experiment aiming at including a representation of the 'rule-giver' or Source of modality which may not, in the long run, turn out to belong to the semantic representation at all. However, there exist certain indications that the assumption that the Source is important semantic property of modals is indeed justified, cf. e.g. the non-tautological sentences (136) and (139) above. This sentence shows that although the relevant "Rule-giver" has to be recovered from context, the ability to take on such a Rule-giver argument is a property of modals that separates them from other verbs and auxiliaries; cf. e.g. the difference between (141) with the modal *skulle* 'intention of (x)' and (142) containing the verb *mene* 'think, believe' below:

(141)

> Det var aldri noen annen intensjon enn at de som skulle kjenne til avtalen, skulle kjenne til avtalen.

> 'There was never any other intention; those who were supposed to know about the deal, were supposed to know about the deal'

(142)

> Det var aldri noen annen mening enn at de som mente å kjenne til avtalen, mente å kjenne til avtalen.

> 'There was never any other opinion; those who believed to know about the deal, believed to know about the deal'

It is striking that whereas (142) is a tautology, (141) is not. This, I claim, is because modals imply a rule-giver CS-argument, as opposed to verbs like *mene.* Hence, to incorporate this

information in the argument-structure of modals, albeit on a Conceptual Structure level of little importance to syntactic behavior, seems justified.

4.7   Summing up

We have seen in this chapter that Norwegian modals constitute a mixed group as regards theta-assignment. Firstly, there exist main verb modals that behave like ordinary transitive verbs (*trenger(ikke), behøver (ikke), kunne, ville),*assigning one external and one internal theta-role. Secondly, there exist two dispositional modals that group with control verbs in (nearly) all relevant respects, they take an external DP argument and an internal infinitival complement. Thirdly, there exist epistemic modals that group with raising verbs and never assingn an external argument but take infinitival complements; and fourthly, there exist deontic modals that are best described as optional theta-assigners in that they optionally assingn an external theta-role; these modals too take infinitival complements.

I have argued that theta-assignment is what is encoded by access to upper and lower subject-positions, not wide vs. narrow subject scope. In this discussion, I argued for a point of view which is in strong opposition to e.g. May (1977, 1985). Modals with a pseudoclefted complement and modals with expletive subjects constituted an important part of this discussion.

Furthermore, I have presented recent proposals from Hornstein (i.e. 1998, 1999, 2000), where it is argued that control should be reduced to raising. I argued that making this assumption would allow us to account for otherwise problematic constructions, such as dispositional modals with a small clause complement.

Finally, I have proposed that what is known in the literature as the source of modality constitute an important part of the semantics of modal auxiliaries. Since the source of modality seems to be of little or no importance to the syntactic behavior of Norwegian modals, I invoked a two-level semantics in the sprit of Bierwisch and Lang (1989) to account for the various readings of modals as e.g. obligation vs. intention. I argued that the obligation or permission reading of deontic modals stems from a certain combination of entities instantiating the arguments of these modals at Conceptual Structure and Semantic Form.

5   How modals interact with other categories

In this chapter, I want to explore how modals interact with other catgories and semantico-syntactic markers in a given sentence. These questions have been subject to scrutiny for many decades, within the functionalist as well as the formalist camp, and within the generative syntax branch of the latter, the relevant data have been considered important indicators of the possible insertion positions of a root vs. epistemic modal in a sentence structure (cf. e.g. Picallo 1990, Dyvik 1999, Barbiers 1998).

Section 5.1 is devoted to The Bioprogram Hypothesis of Bickerton (1981), (1984) and other Universalist approaches to tense/modality/aspect, like Bybee (1985) and Muysken (1981). These approaches suggest that Tense-Modal-Aspect markers typically obey a strict hierarchy in a syntactic structure, to the extent that these markers constitute important clues to a "default sentence structure", and thereby to important aspects of Universal Grammar. The assumption that TMA markers are subject to a universal constraint on relative scope, is largely supported by the empirical findings of Bybee (1985), although her typological study suggests a relative ordering of TMA markers as MTA rather than TMA. Bybee investigates a sample of fifty languages throughout the world (op.cit. p. 5), and her investigation of TMA markers focusses on TMA type *inflections* rather than TMA type syntethic, free-standing *particles*; importantly, the latter have been the focus of attention in Bickerton's and Muysken's work. Thus, Bybee's findings suggest that the universal ordering of TMA markers is Modal-Tense-Aspect, whereas Bickerton's and Muysken's proposal imply the order Tense-Modal-Aspect. We will discuss whether and how this can be solved within a more fine-grained approach to TMA markers.

Our reason for dwelling on these issues is the hypothesis, represented by the proposal of Åfarli (1995), that Germanic modal and aspectual *auxiliaries* may and should be analysed on a par with the type of TMA markers that we find in creole languages. We investigate whether this type of approach is adequate to account for epistemic and root readings of modals in Norwegian (and other Germanic languages) relative to the aspectual auxiliary *ha* 'have'. Our findings, however, point to a solution where many important generalizations assumed to be syntactic constraints on the behaviour of modals are in fact semantic in their nature. Thus, semantics seems to be a far more important submodule than syntax when it comes to restricting root versus epistemic readings and possible insertion sites of Norwegian modals. Admittedly, this is a different matter in a language like English, where modals are

subject to restrictions of a stricter and more syntactic kind than their cognates in other Germanic languages.

In order to determine certain important aspects of the behaviour of Norwegian modals as semantically or syntactically motivated, I have conducted an investigation of the interaction of modals with some major semantico-syntactic categories. I take "major semantico-syntactic category" to refer to a category which has a substantial semantic impact on a given proposition, a formally recognizable mode of expression, preferably, of cross-linguistic relevance. Thus, I have concentrated on the three categories aspect, tense and negation.

I will discuss the interaction of modals and aspectuals in 5.2. Section 5.3 deals with the aspectual and temporal properties of a modal's complement more generally. The temporal properties of modals is the subject of section 5.4, whereas modals and negation is the subject of section 5.5. Finally, in section 5.6, I sum up some important findings.

5.1   The Language Bioprogram and Other Universalist Hypotheses

Whether one accepts or rejects the actual hypothesis, the Language Biopogram Hypothesis (LBH) of Bickerton (1981, 1984) constitutes a watershed within the literature on pidgin and creole languages. Our discussion here will concentrate on one important fragment of this literature, concerning the expression of Tense, Mood and Aspect (TMA-markers) in creoles[1]. The empirical findings giving rise to this hypothesis are in fact 'old news'; the surprisingly similar properties of TMA markers in creoles with radically different lexical bases were noted by various authors as early as the nineteenth century; Singler (1990: vii ff.) mentions Van Name (1869-70) and Schuchardt (1882) as early works commenting on this similarity. Later, in the mid-twentieth century, Thompson (1961) and Taylor (1971) drew attention to the TMA systems of creoles. Specifically, these authors make the following observations about the preverbal TMA particles found in creoles (as summarized by Muysken 1981:183):

(1)

    (a) each Creole language tends to have three of them; a past tense marker; a potential mood marker; and a durative aspect marker.

---

[1] There exist of course other categories whose realization in Creoles are taken to constitute "unmarked settings" and "default settings" of language parameters. Bickerton (1999:59) lists the following set of semantic oppositions: anterior/non-anterior, realis/irrealis, punctual/non-punctual in TMA systems; specific/non-specific, accomplished/unaccomplished, and stative/nonstative elsewhere. He goes on to suggest that these oppositions could be regarded as "the default settings of semantic parameters".

(b) when we find more than one particle accompanying a verb, the particles always occupy a fixed order; tense, mood, aspect, main verb. The combinations of the particles are interpreted in fixed, and rather complex ways.

Bickerton interprets these observations in a specific way. He argues that creoles provide a window to Universal Grammar; i.e. to our innate linguistic capacity. The syntactic systems common to and characteristic of creoles may be taken to display the *default* settings of possible semantic and/or syntactic parameters; hence, the inventory and relative ordering of creole syntactic markers could be seen as pointing to *the default syntactic structure of human language.* The fundamentals of the hypothesis are outlined as follows in Muysken and Smith (1995:11); cf. also Muysken and Veenstra (1995: 129 ff):

> The bioprogram theory claims that creoles are inventions of the children growing up on the newly founded plantations. Around them they only heard pidgins spoken, without enough structure to function as natural languages, and they used their own innate linguistic capacities to transform the pidgin input from their parents into a full-fledged language. Creole languages are similar because the innate linguistic capacity utilized is universal, and they are simple because they reflect the most basic language structures. One feature shared by all creoles that would derive from the innate capacity is the system of pre-verbal tense/mood/aspect particles. Not only do they seem limited in the creole languages to a particular set of meanings, but they also seem always to occur in a particular order. The system of tense/mood/aspect particles, its interpretation and its ordering would directly reflect universal aspects of the human language capacity.

Muysken (1981) proposes that TMA particles, *unlike* categories like e.g. adverbs, are constrained by principles of *core grammar.* Invoking this notion might be seen as an early attempt of specifying a universal ordering of *functional heads* or *functional categories*, and in doing so, separating a set of *functional categories* from lexical categories (like e.g. adverbs[2]), where the latter are not subject to the constraints of core grammar. Thus, Muysken (1981:187) proposes the following:

> Semantic interpretation involves two components [...]: SI-1, constrained by principles of core grammar, and SI-2, determined by the interaction of pragmatic, lexical, cognitive, and other considerations. The elements in the auxiliary, which may include tense, mood, and aspect, are interpreted by component SI-1. The interpretation rule can be roughly formulated as follows:
>
> $[_S ... [_{AUX} T_i, M_J, A_K, ...] ...]$ is interpreted as: $T_i M_J A_K$ (P), where P corresponds to the propositional content of S.

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[2] Thus, Muysken's proposal differs from Cinque's (1999) more recent theory where adverbs are associated with specific functional projections; i.e. as specifiers of these projections.

Now, there exist (at least) two wide-spread and partially related views as to *why* the default order of TMA particles should be the one observed. One camp ascribes the observed order to universal syntactic ordering principles (cf. e.g. Woisetschlaeger 1977), whereas the other camp claims that the structure of creole languages directly reflects universal *semantic* structures ("The Hypothesis of Semantic Transparency)". The latter view takes Creole TMA particles to reflect separate logical operators, fairly directly mapped onto surface structures; thus, the syntactic ordering between them reflects the universal relative semantic scope of these semantic operators (cf. Muysken and Smith 1995:11). A third quite influencal view (especially within functionalist frameworks) is the one developed by Bybee (1985), where the constraint responsible for restricting the relative order of TMA markers or morphemes (in this case, TMA type *inflections*) is a principle of *relevance*; defined as follows (Bybee 1985:13):

> A meaning element is *relevant* to another meaning element *if the semantic content of the first directly affects or modifies the semantic content of the second*.

Bybee continues on p. 15 (op. cit):

> Among inflectional categories, we can distinguish degrees of relevance of the concept expressed inflectionally to the concept expressed by [...] a verb stem. A category is *relevant* to the verb to the extent that *the meaning of the category directly affects the lexical content of the verb stem.*

The workings of this principle of relevance thus restricts the relative ordering of TMA markers or morphemes in a rigid manner, here described in Hopper and Traugott (1993:143):

> Given the hypothesis of relevance, aspect is most relevant to the verb, tense less so, since it relates the time of the situation to some other time, and mood least so since it expresses speaker point of view on the situation. If that which is most relevant is that which is most likely to be close to the verb, then we would expect aspect to be most likely of the three categories to be ordered next to the stem (or even be part of it, as a derivational form), tense next, and mood last [...]. [T]he natural order is mood-tense-aspect-V (or, in OV languages, V-aspect-tense-mood).

Now, note that the notion "relative closeness to the verb stem" comes out as the common principle in the two aforementioned approaches to TMA markers, represented by Bickerton on one side and Bybee on the other. In the case of free-standing TMA particles, "relative closeness to the verb stem" is signalled by the overt sequence of pre-verbal markers, where the marker closest to the verb occurs in the rightmost position in the TMA cluster. In the case of TMA type inflections, "relative closeness to the verb stem" refers to the position of an inflectional morpheme, e.g. an affix, encoding Tense, Mood or Aspect, relative to the verb stem and relative to the other TMA affixes.

Interestingly and perhaps unexpectedly, the findings of Bybee (1985) suggest that the relative ordering of TMA markers or morphemes is Mood-Tense-Aspect rather than Tense-Mood-Aspect. That is, she objects to the relative ordering of TMA markers proposed by Bickerton and his advocates to be universal, since her own sample of 50 languages contains only one language (notably Ojibwa) where the mood marker occurs closer to the stem than the tense marker (op. cit. p. 35). Now, one might want to propose that this difference could be explained by the hypothesis that TMA morphemes display a different relative ordering when expressed by *inflectional morphemes* as compared to *free-standing, syntethic particles* (a line of thought which is pursued and ultimately rejected by Bybee herself[3]).

However, if one adopts the Mirror Principle of Baker (1985), along with the auxiliary assumption that functional elements such as TMA markers head their own syntactic projection in a sentence structure (regardless of their status as affixes or free-standing particles), the relative ordering of TMA markers – understood as relative closeness to the verb stem – ought to come out as identical, independently of their status as bound or free morphemes. That is, on this specific understanding (elaborated on below) of how "identical ordering" is syntactically expressed, notably as relative closeness to a verb stem, there ought to be no divergence between free-standing particles and inflectional morphemes as regards relative ordering.

Baker's Mirror Principle states that "morphological derivations directly reflect syntactic derivations and vice versa". A slightly modified version of the Mirror Principle, dubbed the Lexicalist Mirror Principle, is proposed in Thráinsson (1996:258). This version (or some similar version) of the Mirror Principle has numerous advocates within the Principles and Parameters framework:

> Let us make the natural assumption that morphological features are not associated with each lexical element as a set (i.e. in an unordered fashion) but rather with the relevant overt morphemes (when such morphemes are available). Thus the morphological feature of tense is associated with the tense morpheme of a verb, and morphological features of person and number (e.g. subject agreement features) of a finite verb are associated with the agreemenet morpheme of the verb in question. These morphological features are then checked off in a cyclic fashion as the verb form is adjoined to the relevant functional head, beginning with the features associated with the morphemes closest to the stem of the verb since features associated with "outer" morphemes are not visible until features associated with morphemes closer to the stem

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[3] Instead, Bybee (1985:197 ff) proposes that the "Mood" particles employed in the Creole systems investigated in Bickerton's work are examples of "agent-oriented modality" markers rather than Mood markers per se. As these agent-oriented modalities develop (over time) into mood-markers, they can no longer be modified by tense; thus the order Tense-Modality-Verb changes into Mood-Tense-Verb.

have been checked off. In a language where a tense morpheme is closer to the stem of a finite verb than a subject agreement morpheme for instance, this would mean that the functional head T (i.e. the head against which the morphological feature of tense is checked) would have to be lower in the syntactic structure than AgrS (the head against which the subject agreement feature is checked). I will refer to this version of the Mirror Principle as the Lexicalist Mirror Principle.

Assuming we adopt the (Lexicalist) Mirror Principle, one would expect the affix closest to the stem to be lower in a syntactic structure and to have a narrower scope than an affix less close to the stem. Applying this principle to TMA markers, the ordering of bound TMA morphemes (i.e. inflections) should come out as a relative closeness to the verb stem, where the outmost affix would have semantic (and again, given the (Lexicalist) Mirror Principle, syntactic) scope over a more deeply embedded affix, i.e. an affix closer to the verb stem. On a Universalist approach, the relative ordering of TMA morphemes ought to come out as identical on this level of abstraction, regardless of their status as inflections or free-standing particles. Thus, the difference between different sets of TMA morphemes (apart from lexical content) should, ideally, reduce to a question of one property only; namely, the property of being expressed by a bound or free morpheme, the relevant feature being [± affix].

Imagine two languages that employ the same number of TMA morphemes. The only (presently relevant) difference between these two languages is that the language depicted in (2)a has affixal TMA morphemes, whereas the language in (2)b has free-standing preverbal TMA particles. Abstracting away from all kinds of potential snags (e.g. portmanteau-/zero morphemes; head-complement direction, possible mixes of prefixes, infixes and suffixes, possible combinations of pre- and postverbal markers), the two structures in question would come out as follows:
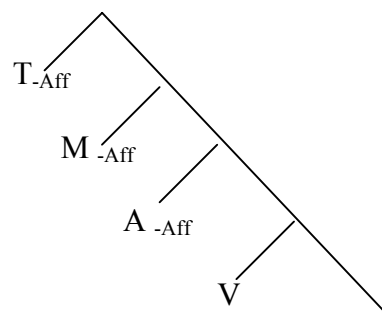
(2)

a. Bound TMA affixes

b. Free-standing TMA particles

T_{+Aff}

M_{+Aff}

A_{+Aff}

V

T_{-Aff}

M_{-Aff}

A_{-Aff}

V
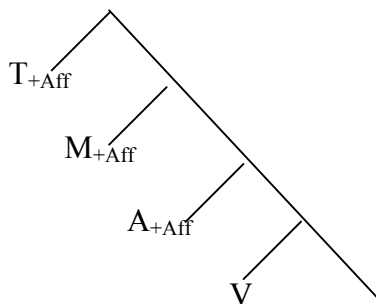
[Aff_{Tense}[Aff_{Mood} [Aff_{Aspect} [V-stem]]]]   Tense Mood Aspect Verb

Although this is an idealized case, where this minimal pair of languages does not correspond to two empirically attested languages[4], it still seems possible to align inflectional and free-standing TMA morphemes w.r.t. relative ordering and semantic and syntactic scope, and the study of one set of markers should ideally be able to shed some light on the other.

We will return to the discussion on relative ordering of Tense and Mood morphemes below (cf. section 5.4.1). At present, let us note the fact that although Bickerton's and Bybee's proposals differ in their view on the universal relative ordering of *Tense* and *Mood* markers, they evidently agree on the relative ordering of *Mood* and *Aspect*, in that Aspect morphemes surface in a position closer to the verb or verbstem than do Mood morphemes.

Now, why should this discussion have any bearing on Norwegian modals? After all, it is an observable fact that Norwegian and other Germanic languages do not employ the kind of preverbal Tense-Mood-Aspect particles that we find in e.g. Creole languages, neither does Norwegian or any other Mainland Scandinavian employ inflectional Mood or Aspect morphemes (except for relicts of Mood, such as the Optative). In fact, it is a quite wide-spread opinion that Mood and Aspect do not amount to functional categories at all in Germanic languages. Here, in the words of Thráinsson (1996: 262):

> Interestingly, most syntacticians working on Germanic languages, for instance, seem to assume that Mood and Aspect do not play any role as F[unctional] C[ategories] in these languages. I have seen no syntactic evidence that they do and the approach advocated in the present paper would predict that they do not since Mood and Aspect are not marked separately in the overt morphology of these languages.

But there exists one proposal which is at odds with this more wide-spread view. This is the proposal of Åfarli (1995).

5.1.1 Åfarli (1995) – modal and aspectual auxiliaries and TMA markers

The line of thought pursued in Åfarli (1995) is to try aligning modal and aspectual *auxiliaries* found in Germanic languages with the type of TMA particles found in creoles. The author first proposes that any functional projection must consist of some substance, phonetic and/or semantic. This leaves exactly four conceivable possibilities, where ±p refers to phonetic substance and ±s refers to semantic substance:

---

[4] Although it is possible to claim that (2) b is exemplified by the Creole languages studied in Bickerton's and Muysken's work. However, the validity of this claim depends on whether or not one accepts or rejects Bybee's objections to this relative ordering, since Bybee claims that the "Mood" particles invoked by Bickerton and his advocates are in fact "Agent-oriented modality" markers, and not mood markers at all (cf. footnote 3).

(3)

        a. [-p, -s]   b. [+p, +s]   c. [-p, +s]   d. [+p, -s].

The first of these matrices denotes no substance at all and cannot trigger the construction of a projection. The other three matrices correspond to various types of "functional seeds"; i.e. feature combinations which are able to trigger and head their own projections. Type b is an *overt seed,* since it has both semantic substance (i.e. content) and phonetic substace (i.e. form). Type c is a *covert seed,* since it has content but no form, and finally, type d is a *dummy seed*; it has only phonetic substance and no content[5]. These functional seeds, if they have semantic content, are to be considered operators that takes the proposition as argument, and the author mentions as plausible candidates for such functional operators Tense, Mood and Aspect. Thus, the semantic representation of a Tense, Mood or Aspect operator can be described as in the left column of (4) below, whereas the corresponding syntactic structure could be represented as in the right column:

(4)

        a. T $[_{prop} P(a)]$ b. $[_{TP} ... [T [_{clause} NP [V...$
        c. M $[_{prop} P(a)]$ d. $[_{MP} ... [M [_{clause} NP [V...$
        e. A $[_{prop} P(a)]$ f. $[_{AP} ... [A [_{clause} NP [V...$

The author goes on to argue that whereas Tense should be considered a covert seed in Norwegian and English, Tense-Mood-Aspect particles in Creole languages as well as modal and aspectual auxiliary verbs in Norwegian and English are overt functional seeds. To classify a functional seed as *covert* in a given language does not mean e.g. that this seed has no visible morphosyntactic consequences in this language. If that were the case, this proposal would be reminicent of Cinque (1999), who claims that all sentences in all languages employ a universal set of functional categories, where each category heads its own projection; i.e. in this respect, there is no parametrization, no variation. Where languages vary, Cinque claims, is whether or not a given functional category is *overtly* realized in this language[6]; cf. also Roberts and Roussou (2000). This is not what is meant by "covert seeds" in Åfarli's proposal,

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[5] We will not dwell on the subject of dummy seeds here, since this is less relevant to our investigation. As examples of dummy seeds, Åfarli proposes the copula and the version of *do* found in *do*-support.

[6] One relevant paragraph bearing on this issue goes as follows (Cinque 1999:52): "If we ignore agreement and negation, the partial relative orders of functional heads for which there is overt evidence[...] in different languages appear to be compatible with a single overall order. Thus, putting the partial relative orders of functional heads found into a single, more comprehensive, order seems to provide no contradiction, at least in a more careful examination. I take this to be significant, that is, nonaccidental. In the interpretation I suggest, this

on the contrary, the author explicitly rejects the view that all clause types in all languages employ one universal set of functional categories, and Åfarli adheres to Iatridou's (1990a) view that evidence for a proposed functional category must be found in each specific language and for each specific clause type. Instead, what is meant by "a covert seed" in Åfarli's proposal is a functional category sited in the head position of a functional projection where the observable morphosyntactic consequences are of a more indirect kind. An *overt* functional seed hosts a designated element which is base generated in the head of the corresponding projection. A covert functional seed, on the other hand, does not host such a base generated designated element, but solely the *abstract features* corresponding to the functional category. Let us consider one example. Say tense is spelled out as an affix in a language L. Then there are two possibilites. Either this affix is basegenerated in a designated projection, in which case it constitutes an overt seed, or, alternatively, the tense operator is a covert abstract seed, in which case the affix is not base generated in T_0, but is merely spelled out as a reflex on the verb governed by the tense operator. Look at (5).

(5)

       a. $[_{TP} ... [\text{Aff}_{Tense} [_{VP} [\text{V}...$

       b. $[_{TP} ... [\text{Op}_{Tense} [_{VP} [\text{V}...$

In (5)a, the tense affix heads the TP, and in order for the affix to be associated with the verb, the verb must move and adjoin to the tense affix. In (5)b, the tense operator assigns the tense feature to V by an inflectional rule (Tense Assignment) and the tense affix is the spell-out of the assigned tense features. In the former case, the tense operator amounts to an overt seed. In the latter case, the tense operator amounts to a covert seed.

Now, of particular interest to us here is that Åfarli proposes that Creole TMA particles also constitute overt functional seeds, designated heads of their own functional projections. Furthermore, he argues that Norwegian modal and aspectual auxiliaries are overt functional seeds as well. Thus, Norwegian modals and aspectual auxiliaries are treated on a par with TMA particles in Creole languages in that they are all analyzed as overt mood and aspectual operators heading their own functional projections[7].

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is so because the partial orders found overtly in different languages are subsequences of a single universal sequence of functional heads, present in all languages."

[7] One major difference between Norwegian and the Creole languages under discussion is that in Norwegian, Tense is a covert, abstract functional operator which can assign a Tense feature to a mood operator or an Aspectual operator in its domain. That is, Tense in Norwegian is assigned to the topmost verbal category, whether this is a main verb, a modal auxiliary (i.e. a Mood operator) or an aspectual auxilary (i.e. an Aspectual operator), and the Tense feature is spelled out as an affix on this topmost verbal category, whether it is a main

As regards the relative ordering of tense-mood-aspect markers, Åfarli's proposal is not strongly committed to the Universalist rigid relative ordering hypothesis[8]. However, the author does mention (footnote 5, p. 146) that

> [T]he order of functional projections is such that the covert tense seed c-commands the overt auxiliary verb seed. This is necessary if tense is to be assigned to the overt seed. Laka (1990) independently argues that tense is the highest functional projection. This is compatible with the observation made in Muysken (1981) that the normal order of functional particles in Creole languages is tense, mood, and aspect.

Now, if the normal order of functional particles in Creole languages reflects the normal order of functional projections, and furthermore, if modal and aspectual auxiliaries in Norwegian are indeed Mood and Aspectual operators heading such projections, then one would expect Norwegian modal and aspectual auxiliaries to obey the same rigid relative ordering w.r.t. one another as TMA particles in Creoles. That is, one would expect that in a sequence consisting of one aspectual and one modal auxiliary, the modal would precede the aspectual and the aspectual ought to occur closer to the verb than the modal. We would not however expect occurrences of the sequence [aspectual-modal], since this would go against the strict relative ordering of Mood and Aspect operators found in creoles.

Now, to some potentially serious objections to Åfarli's proposal. Recall that Åfarli (seemingly) identifies a modal auxiliary with the mood operator (p. 146):

> If we assume that tense can in fact be assigned to the overt mood operator, we get an overt mood operator with a tense affix. In other words, we get what is usually called a modal auxiliary verb.

Admittedly, it is not unheard of to consider e.g. *epistemic* modals to express some mood-like content. Bybee (1985:28), for instance, defines *mood* as follows:

> Mood refers to the way the speaker presents the truth of the proposition, whether as probable, possible, or certain[...].

Employing Bybee's definition, it seems legitimate (and customary) to ascribe to *epistemic* modals a mood-like status. Moreover, Palmer (2001) suggests that epistemic modals express

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verb, a modal or an aspectual auxiliary. In Creole languages, Mood and Aspect particles do not carry a visible tense feature in the shape of an affix; instead tense is expressed by a designated free-standing particle which takes scope over the entire proposition, (presumably) including the Mood and Aspect markers.

[8] A note of caution is in order. The analysis of modals constitutes a small and subordinate part of Åfarli's article, and many of the questions pursued in the present work are not addressed in his proposal. Furthermore, there is nothing in Åfarli's proposal that explicitly excludes the existence of different types of modals, e.g. epistemic modals and root modals, or the co-existence of affixal mood and modal particles in one and the same language. By the author's own statement (p.c.), the aim of this article is to propose an overarching system in which to analyze these types of linguistic markers, not to conduct a thorough, cross-linguistic investigation of modals and TMA markers in various languages.

exactly the speaker's attitude to the truth-value or factual status of the proposition, and Huddleston (1984:164) proposes that auxiliaries may constitute "an analytic mood system". These assumptions put together could give us a point of departure for arguing that *epistemic* modals could and should be considered mood operators, like Åfarli proposes. Whether or not *root* modals could be considered mood operators is an entirely different question. Root modals do not express the speaker's attitude to the truth-value or factual status of the proposition; thus, their semantic content does not resemble what is typically understood by "mood". So the important question is, should all modals be considered mood operators, or solely epistemic modals? Åfarli does not address this question in this article.

Moreover, Åfarli seemingly adheres to a view reminicent of Huddleston's proposal of auxiliaries as 'analytic mood' mentioned above. In fact, Åfarli mentions (p.146) that

> [I]t is perhaps suggestive that we find modal and aspectual auxiliary verbs in languages like Norwegian or English, i.e. languages that lack mood and aspect affixes on verbs.

This suggestion might be taken to imply that modal auxiliary verbs are less likely to be found in languages with inflectional mood or designated preverbal mood markers. However, a language like German readily contradicts this tentative expectation, since German employs inflectional mood *and* modal auxiliaries; moreover, these modal auxiliaries express both epistemic and root modality, just as in Norwegian and English. To pursue Åfarli's line of thought, one might be inclined to think that in a language like German, which employs inflectional mood in addition to modal auxiliaries, inflectional mood would render epistemic readings of modal auxiliaries superfluous, such that root readings would be the only readings of modal auxiliaries. This is not at all what we find[9].

Furthermore, although Åfarli quotes Muysken (1981), he seems to have missed out on the fact that Muysken himself mentions as a possible snag to his own proposal the existence of modal verbs in Creole languages, crucially, *in addition* to preverbal TMA particles (Muysken 1981:199):

> A second, quite major, problem concerns the interaction between the preverbal particles and the modal verbs, which have not been mentioned so far, but which occur in most Creole languages as well.

Finally, the relative ordering of modals and aspectual auxiliaries actually observed in Norwegian constitutes a potentially serious problem to Åfarli's proposal. Recall that the

---

[9] Note also that Icelandic employs both inflectional Mood and modal auxiliaries, where these modal auxiliaries have both root and epistemic readings.

author implies that he takes the order Tense-Mood-Aspect to be the "natural order" (although, admittedly, nothing in this proposal hinges on this assumption). However, if *all* modals are taken to signal an underlying mood operator, one fact that remains to be explained is that Norwegian sentences employ the pattern Aspectual-Modal in addition to the expected Modal-Aspectual order. Indeed, we also find examples of Modal-Aspectual-Modal and, more marginally, Modal-Aspectual-Modal-Aspectual within (what appears to be) the the same sentence; cf. (6) a – d:

(6)

    a. Marit kan ha kommet.
      'Marit may have come.'

    b. Han hadde ikke kunnet komme før.
      he   had   not canPERF come earlier
      'He hadn't been able to come earlier.'

    c. De kan ha måttet stoppe på veien hit.
      they may have mustPERF stop on wayDEF here
     'They may have had to stop on their way here.'

    d. ?Jeg skulle gjerne ha kunnet ha kommet før lunsj[10].
      I should gladly have canPERF have come before lunch
     'I should gladly have been able to have arrived before lunch.'

What is the status of the different modals in these patterns? Are they all mood operators? Or should modal auxiliaries be considered multifunctional items, i.e. lexical items which are capable of taking on various syntactic functions?[11]

      The latter path seems the more promising. But suppose for a moment that modal auxiliaries are *not* multifunctional. Suppose instead that they always signal an underlying Mood operator. In this case, we could reject the Universalist rigid relative ordering hypothesis and adopt instead an hypothesis which allows for the pattern [Aspect operator-Mood operator] in some languages and the pattern [Mood operator-Aspect operator] in other languages; along the lines of Thráinsson's (1996:257) Limited Diversity Hypothesis:

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[10] This pattern, with several perfect auxiliaries in the same sentence, seems to be less marginal in Swedish; cf. Wiklund (1998:18). In Norwegian this sentence sounds somewhat marginal, as indicated.

[11] Cf. also Baptista (1997: 106) where the TMA particle *ta* in Capverdean Creole is analysed as a multifunctional item which takes on a number of different meanings and functions:" [T]here are several morphemes realized phonetically as *ta* in the Capverdean language. *Ta₁* conveys futurity whereas *ta₂* expresses purpose and continuation and *ta₃* may be closer to an infinitive marker like English *to*."

(7)

> *The Limited Diversity Hypothesis (LDH)*
> Clausal Architecture is detemined by UG in the sense that UG defines the set of functional categories, $\{F_1, F_2..., F_n\}$, that languages "select" from. Cross-linguistic and intra-linguistic variations are limited to the following:
>
> a. It is not the case that all FCs are instatiated in all languages.
> b. The FCs selected by a given language may not be present in all clause types of that language.
> c. The sequence (c-command relations) of those functional categories (dominance relations between the functional projections) that are directly related to morphological distinctions may vary from language to language, consistent with the Mirror Principle.

Adopting such a perspective will help us solve the disagreement between Bickerton's proposal that Creoles display a rigid Tense-Mood-Aspect order and Bybee's claims that her sample of languages display the relative ordering Mood-Tense-Aspect. Different languages would be allowed to display different orders of TMA-markers, because these markers are directly related to morphosyntactic distinctions. However, on the face of it, the LDH will not help us in the question of different orderings of TMA markers within the same language. Thráinsson's emphasizes that

> it follows from [(7)], i.e. the Mirror Principle, that the sequence of any two functional categories that are directly related to morphological distinctions is uniform for all clause types within each language, as long as the order of morphological markers [...] does not vary in the language in question.

Thráinsson continues (in a footnote) that he does not know of any languages where the order of morphological markers varies in this sense.

To maintain the hypothesis that modal auxiliaries in Norwegian always instantiate Mood operators whereas aspectual auxiliaries always instantiate Aspect operators, we would have to assume that Norwegian with its various possibilities of relative ordering between modals and aspectuals does constitute a language where the dominance relations between various functional projection may vary from one sentence to another. That is, to account for the fact that we find in Norwegian the sequence [aspectual-modal] in addition to [modal-aspectual] as well as even more complex combinations, we would have to say that Norwegian allows for several different relative orderings of Mood and Aspect operators; which would amount to rejecting the requirement that the dominance relations of functional projections should be consistent within one and the same language. Alternatively, we could claim that there exists some kind of 'restructuring principle' which rearranges the functional categories at

LF and align them with the universal relative ordering (a similar type of approach is pursued by e.g. Bartos (2000) for Hungarian[12]). In both cases, we would have to address the question why Norwegian allows various ordering patterns in overt syntax, when creole languages evidently allow for one pattern only; notably the Mood-Aspect order.

This is not a theory that we will pursue here, though. Instead, we will study in more detail the various readings of Norwegian modals when they precede and when they follow an aspectual auxiliary respectively. The immediate purpose of this investigation is to determine whether or not it would be possible to argue that root and epistemic modals belong to two different syntactic catgories, where only epistemic modals instantiate a Mood operator in Åfarli's sense. If we could find evidence that the reading of a modal in the sequence [modal-aspectual] is consistently different from the reading we find in the sequence [aspectual-modal], this would support a division between the two categories in syntax. Specifically, the hypothesis we are pursuing is that the former sequence always gives rise to an epistemic reading, whereas the latter always gives rise to a root reading. If this is correct, then the rigid relative ordering of Mood and Aspect could be argued to hold even in Norwegian, since only epistemic modals instantiate Mood operators, whereas root modals do not. First of all, let us look at some earlier proposals regarding this specific subject.

5.2 Modals and aspectuals: readings and scope

In Dyvik (1999) we find two claims that regard the possible readings of modals preceding and following the prefect auxiliary *ha.* That is, the author claims that

(a)   Norwegian modals get *an epistemic reading* whenever they *precede* a perfect auxiliary, and

(b)   Norwegian modals get *a root reading* whenever they *follow* a perfect auxiliary.

Dyvik illustrates this generalization with the following data, where the (a) sentence gets an epistemic reading, and the (b) sentence gets a root reading:

(8)

    a. Han   vil/kan/må/skal   ha dreiet håndtaket
      'He   will/may/must/is said to have turned the lever.'

---

[12] Specifically, Bartos proposes that this restructuring takes place by means of a "proxy" head; i.e. the empty head of a functional projection which is available as an adjunction-site for tense and modality affixes base-generated in a lower position. This adjunction to a proxy head allows a category to scope over another category at LF, i.e. the scope relations in overt syntax may be inverted by means of this proxy head.

b. Han har   villet/kunnet/måttet/skullet   dreie håndtaket
   he   has   [want-to/can/must/shall]PERF   turn the-lever
   'He   has   wanted/been able/ been obliged/had a duty to   turn the lever'

Likewise, Picallo (1991:293) observes the same phenomenon for Catalan, notably, that the modal gets an epistemic reading when it precedes the perfect auxiliary, and a root reading when it follows the perfect auxiliary. He uses these data to support his analysis that epistemic modals are constituents of INFL, whereas root modals are adjuncts of VP:

(9)

    a.   En Joan **pot haver** anat a Banyoles.
          Joan may have gone to Banyoles.

    b.   En Joan **ha pogut** anar a Banyoles.
            has   could go
         'Joan has been allowed to go to Banyoles.'

Finally, Barbiers (1995: 197) makes the same generalization for Dutch, expressed as follows:

(10)

    a.   Mod   HAVE [...]   **probability**   [i.e. epistemic; my comment]
    b.   HAVE   Mod [...]   **polarity**   [i.e. root; my comment]

In the discussion surrounding this generalization, Barbiers claims that "the order HAVE MOD forces a polarity (i.e. a root) interpretation [whereas] the order MOD HAVE is compatible with the probability interpretation"[13].

That is, what we have so far is the same observation made for three different languages; Picallo observes for Catalan what Barbiers observes for Dutch and Dyvik for Norwegian, notably that a modal preceding a perfect auxiliary gets an epistemic reading, whereas a modal following a perfect auxiliary gets a root reading. Assuming these observations to be correct (an assumption that we will modify below), there is a seemingly straightforward way of accounting for these facts and simultaneously maintaining the major assumptions of Åfarli (1995) outlined above. Assume that we follow Bybee (1985) in distinguishing a functional category Mood from a semi-lexical category (agent-oriented) Modality. Then we could count epistemic modals as Mood markers and root modals as Modality markers, where these two categories have designated positions in a syntactic

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[13] Barbiers' reason for using "is compatible with" instead of "forces" in this latter quote is his observation, mentioned in his footnote 41 (p.197) that "The correspondence between modal interpretation and the relative order of modal and auxiliary is not perfect: The order MOD AUX can also have a polarity (i.e. root)

structure, heading their own designated projections. The dominance relations of these projections become clear when we observe their respective orders relative to the perfect aspectual *have*. Thus, from what we know so far, the dominance relations between epistemic modals, perfect aspectuals and root modals are as follows:

(11)

MoodP
Epistemic modal

AspP

ModalP
Root modal

V

.....
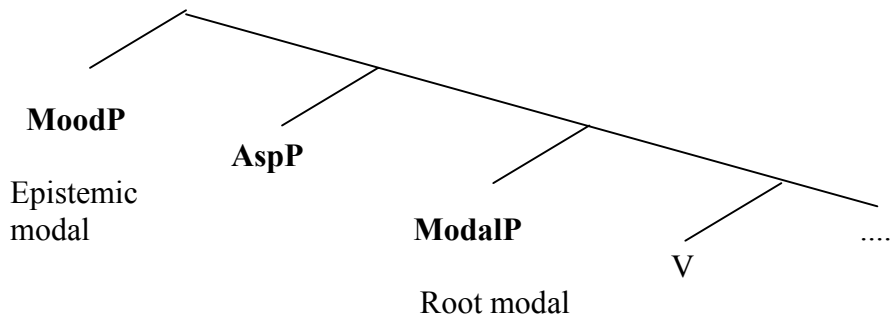
a**.** *må   ha   kunnet   spille piano*

   must   have   canPERF   play   piano
   'must   have   been able to   play the piano'

b.   *har   måttet   (kunne) spille piano*

       has   mustPERF   (can)   play the piano
       'has   been obligated to (be able to) play the piano'

In this picture, Norwegian Mood and Aspect markers obey the rigid ordering pictured by Universalist approaches to TMA markers, since only epistemic modals are Mood markers. Root modals are not Mood markers, but *modality* markers; hence they are not among the elements partaking in TMA patterns. This way we could salvage Åfarli's hypothesis in that *some* Norwegian auxiliaries are functional elements of the same type as creole TMA markers, and furthermore, we could account for root vs. epistemic readings of modals as a result of the same visible element – a modal – being inserted in different positions in a syntactic structure; in the head position of ModalP and MoodP respectively. Moreover, if root modals belong to a functional category different from Mood, it comes as no surprise that Creole languages

interpretation[...]. The analysis of the order MOD AUX must therefore be more complex than [MOD BE D Ind R]. I leave this for further research."

employ preverbal Mood markers as well as modal verbs, where these modal verbs would be expected to have root readings[14].

Another prediction of this hypothesis would be that in a sentence where a modal is embedded under another modal, the outmost modal would get an epistemic reading whereas the embedded modal would get a root reading. This prediction is by and large borne out, but there are exceptions. In certain sequences of two modals, both of them may get an epistemic reading; especially if the second modal is *kunne* 'can, may' (cf. Vikner 1988: 9-10 and Thráinsson and Vikner 1995:76), and most clearly before the perfect auxiliary *ha* (data from Dyvik 1999):

(12)

> Han vil kunne ha reist   i morgen.
> he   will may have travelled tomorrow
> 'Tomorrow it will be the case that he may have gone away.'

Likewise, it is possible to get a root reading of both modals in a modal-modal sequence:

(13)

> Det er absurd at vi skal måtte gå til domstolen med disse spørsmålene.'
> It is absurd that we shall must go to the court with these questions
> 'It is absurd that we are supposed to have to go to court with these questions.'

We could account for these observations by allowing the catgory MoodP to be recursive above AspP and likewise, to allow the category ModalP to be recursive below the AspP. On that assumption, it is more adequate to describe Mood versus Modality as two structural *domains* rather than unique projections, in that the Mood domain may contain more than one functional Mood head each hosting an epistemic modal, as long as they are all situated above AspectP. Likewise, the Modal domain may contain pairs or sequences of root modals, each heading its own functional or semi-lexical projection, but confined to the structural domain below the AspectP and above the main predicate projection (e.g. VP). What should be impossible, however, is a sequence of two modals where the first gets a root reading and the second gets an epistemic reading. This prediction is borne out without exception. In fact, I

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[14] Another piece of empirical evidence that could be accounted for within this type of approach is the observation in Palmer (1986:19) that "There is, similarly, a distinction in Modern greek. Here, the same verb (BORO) is used in both senses, but in the epistemic sense the 'impersonal' (3rd person singular) form is found, with no agreement with the subject, while in the deontic and dynamic senses fully inflected forms, with agreement, are used [...]." We could ascribe this variation to the different properties of the two functional projections MoodP and ModalP; MoodP does not interact with AGR, but ModalP does.

know of no VO language, nor have I seen any reference to a language where this generalization does not hold. Thráinsson and Vikner (1995:78) ascribe this effect to the different argument-taking properties of root modals and epistemic modals:

> Since epistemic modals predicate of a whole proposition whereas root modals predicate of one of the arguments (typically the subject) of a proposition, we would not expect root modals to be able to take scope over epistemic modals.

Recall from section 3.2.6 that these two authors assume root modals to always assign a(n additional) theta-role, whereas epistemic modals assign no theta-role. As discussed in section xx, root modals may also have proposition scope readings where they do not assign a theta role to the subject, just like epistemic modals. Thus, invoking argument-taking properties does not explain the fact that an epistemic modal always scopes over a root modal. However, it is tempting to ascribe this effect to a rigid ordering of functional projections, guided by a Semantic Transparency principle; where this rigid ordering of syntactic heads reflects a universal ordering of *semantic* operators. This does of course amount to a stipulation, but it does at least capture the observed pattern.

Now, consider some potentially serious problems encountered by the analysis just proposed. As mentioned in section 2.1, my own dialect of Norwegian displays a non-standard pattern as regards the possible readings of the order [Aspectual-Modal]. According to the generalizations proposed by Dyvik, Picallo and Barbiers presented above, a modal auxiliary embedded under an aspectual auxiliary yields the root reading only[15]. While this generalization does hold for the two Norwegian standard dialects (Bokmål and Nynorsk), it does not hold for a number of non-standard dialects spoken in western and northern parts of Norway[16]. In these dialects, the epistemic reading is available even for a modal embedded under an aspectual, cf. (14):

(14)

> a. Han har måtta arbeidd med det i heile natt.
>   he has mustPERF workPERF on it in all night
>   ' He must have worked on it all night through.'

---

[15] Note that although Barbiers notices that there are exceptions to the general rule that the sequence [Mod-Have] gives rise to an epistemic reading (cf. footnote 13 above) he allows for no exceptions to the rule that [Have-Mod] gives rise to a root reading of the modal.

[16] According to Vikner (1988), it does not hold without exception for Danish either: *Han har skullet bo i Århus* 'he has should live in Århus; He is supposed to have lived in Århus'. Moreover, one of my informants assures me that there are exceptions to this generalization even in dialects closer to Bokmål, particularly in colloquial speech.

b. Han har skulla vorre en sjarmør i sine yngre daga, har æ hørt.
   he has shallPERF bePERF a charmer in his younger days have I heard
' He is supposed to have been a charmer in his younger days, so I've heard.'

c. Hu har kunna vorre her og forre igjen.
she has canPERF bePERF here and leavePERF again
'She may have been here and left again.'

Furthermore, the generalization that a modal always receives an epistemic reading when preceding an aspectual auxiliary does not hold even in the standard varities of Norwegian, cf. (15)a – c; in fact, neither does it hold for Dutch, cf. (15)d, nor English, cf. (15)e:

(15)

a. Pasienten skal ha blitt beviselig feilbehandlet for å ha krav på erstatning.
   PatientDEF shall have been provenly wrong treated for to have claim on
     compensation
  ' The patient must provenly have been subject to malpractice in order to be entitled to
    a compensation.'

b. Du bør ha gjort ferdig leksene dine før du går på kino.
   you should have done finished homework yours before you go to movies
   ' You ought to have finished your homework before going to the movies.'

c. En student må ha ridd denne hesten for å bli opptatt i rideklubben.
   a student must have ridden this horse to to become admitted in jockeyclub-DEF
 'A student must have ridden this horse in order to be admitted to the jockey club.'

d. Jan moet morgen zijn kamer opgeruimd hebben[17].
   John must tomorrow his room cleaned have
  'John must have cleaned his room (by) tomorrow.'

e. Students must have taken calculus by the start of their senior year[18].

It is the addition of an adverbial (sentence), typically a purpose-clause or a temporal adverbial (clause) denoting a point in the future, that facilitates a root reading of the modal in a [modal-aspectual] sequence, as seen in examples (15) a- e.

Thus, we have provided examples where the sequence [Aspectual-Modal] gives rise to the epistemic reading instead of the expected root reading in non-standard dialects of Norwegian (as well as Danish; cf. fn. (14)) , and we have examples from Norwegian, English and Dutch showing that the sequence [Modal-Aspectual] might give rise to the root reading in addition to or instead of the expected epistemic reading. Our initial hypothesis was that the

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[17] The sentence is taken from Barbiers (1995:fn.41).
[18] Sentence from Brennan (1997: 42).

aspectual uniquely and unambiguously delimits two modal domains, where the upper domain is a Mood[19] domain, instantiated by epistemic modals, whereas the lower domain is a Modality domain, instantiated by root modals. This hypothesis did not hold up against closer scrutiny, however, since we have found that a modal following an aspectual may have an epistemic reading; moreover, a modal preceding an aspectual may perfectly well have a root reading in a range of Germanic languages. Thus, we need to modify our hypotheses.

5.2.1 A recursive category Aspect in Mainland Scandinavian?

It would be possible to account for the data and still maintain our hypothesis of designated projections for root and epistemic modals in a syntactic representation of a clause if we allow for the AspP category hosting the perfect auxiliary to be recursive. Evidence suggesting that this is in fact an available strategy for Mainland Scandinavian languages is provided by Wiklund (1998:18); quoted here as (16):

(16)

Jag skulle (ha) velat (ha) kunnat (ha) åkt skidor på fredag.
I shouldPAST have wantPERF have canPERF goPERF skiPLURAL on Friday
'I would have liked to be able to go skiing on Friday'

In this particular sentence, any of the three occurrences of *ha* may be ommitted, and still yield a fully grammatical structure, but the important thing to notice here is that the structure is fully grammatical also with the three instances of *ha* retained (according to Wiklund 1998). Thus, examples such as (16) suggest that any verbal projection in a clause, including those headed by modals, may project an AspP hosting a perfect aspectual on top of it, in contrast to the hypothesis implicit in the discussion above that the perfect aspectual is sited in a non-recursive, unique projection reminicent of the system we find in Creole languages. If we make the assumption that in MSc, any verbal projection (including those headed by modals) may project its own AspP, we are in a position to account for the relevant data from non-standard dialects of Norwegian as well. Look at (17):

(17)

a. Han har måtta arbeidd med det i heile natt.
 he has mustPERF workPERF on it in all night
' He must have worked on it all night through.'

---

[19] I want to emphasize that the term Mood-domain should be taken to refer to a functional domain with specific semantic traits, e.g. evidential or epistemic modality. However, in employing the term Mood-domain I am absolutely not signalling that this functional domain corresponds exactly to the functional projection hosting inflectional Mood.

b. Han har skulla vorre en sjarmør i sine yngre daga, har æ hørt.
   he has shallPERF bePERF a charmer in his younger days have I heard
' He is supposed to have been a charmer in his younger days, so I've heard.'

c. Hu har kunna vorre her og forre igjen.
she has canPERF bePERF here and leavePERF again
'She may have been here and left again.'

The verb embedded under the modal must be a perfect participle if the intended reading of the modal is the epistemic reading. Note that (17)a-c is ambiguous between a root reading and an epistemic reading, whereas an infinitival complement of the modal would force a root reading of the same modal in these dialects[20]; compare (18) a to (18) b:
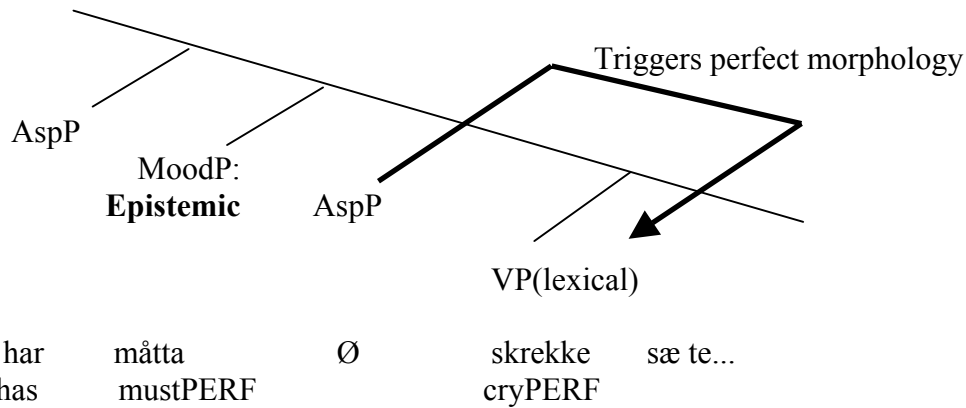
(18)

a. Han har måtta skrekke sæ te pænga te kinobillætta
   he has mustPERF cryPERF himself into money for movie-tickets
   'He must have whined himself into money for movie tickets (epistemic/root).'

b. Han har måtta skrik sæ te pænga te kinobillætta.
   he has mustPERF cryINF himself into money for movie-tickets
   'He has had to whine himself into money for movie tickets (root reading only).'

This effect may be explained by assuming the presence of a second aspectual in the sentence structure in (17) a-c and (18) a. This aspectual is deleted before "Spell-Out", alternatively, a phonetic form is never assigned to this second aspectual. However, the assumption that this aspectual has some kind of syntactic presence is supported by the fact that something triggers the perfect morphology on the embedded lexical verb, and a phonetically empty *ha* 'have' seems a perfect candidate. Thus, the structure of these sentences is as depicted in (19):

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[20] Cf. also Vikner (1988:7) for a similar type of data in Danish: *Han har skullet bo i Århus* 'He has shouldPERF liveINF in Århus'. Vikner explains these data as 'misplaced perfect'; i.e. the perfect of the modal belongs with the main verb, from a semantic point of view. Note in particular that these data differ from the non-standard Norwegian data in that the relevant Norwegian dialects require the main verb to be a perfect participle for the epistemic reading to be allowed, whereas an infinitival main verb gives rise to a root reading of the modal; in fact, certain informants judges the infinitival main verb to be ungrammatical. This is evidently not the case for Danish. I have no explanation to offer why non-standard Norwegian should behave differently from Danish in this respect.

(19)

AspP

MoodP:
Epistemic   AspP

Triggers perfect morphology

VP(lexical)

har	måtta	Ø	skrekke	sæ te...
has	mustPERF		cryPERF	

The root reading of the modal is also possible in this construction. To account for this fact, we replace the MoodP in the figure above with a ModalP, hosting a root modal. In all other respects, the two structures come out as identical.

Armed with the general assumption that any verbal category (including modals) in MSc can project an AspP on top of it, we may claim that the difference between standard and non-standard dialects of Norwegian w.r.t. ordering of aspectuals and modals is due to one property only. Specifically, standard dialects of Norwegian allow any verbal category to project an AspP on top, *except for epistemic modals*. Non-standard Norwegian dialects, on the other hand, makes no distinction between epistemic modals and all other verbal categories as regards the possibility of projecting an AspP on top of it.

The assumption that (virtually) any verbal category in a MSc sentence may project its own AspP, and the observation that we may encounter several aspectuals within one and the same sentence (cf. (16) above) implies that the relative ordering between a modal and an aspectual like *ha* 'have' cannot be used as a unequivocal diagnostics for the modal's position in a sentence structure and hence its status as epistemic or root. This is so because it is evidently not the case that there exists a unique AspP projection in MSc sentence structure delimiting an epistemic mood domain above AspP and a root modal domain below AspP. However, it remains a sound generalization that the "epistemic domain" scopes over the "root domain" in any of the languages we have considered, a fact that may be accounted for by assuming a universal ordering principle between Mood(-like) and Modality semantic operators, where the former may be instantiated by epistemic modals and the latter by root modals.

The lack of ambiguity in (18)b is still a puzzle in the picture painted here. However, we may speculate that the presence of a *single* aspectual above the modal does function as a delimiter in the sense that it delimits the ModalP below it, since it remains a sound

generalization that the sequence [Aspectual-modal-infinitive] gives rise to a root reading of the modal in any of the Norwegian dialects we have considered (although this does not hold for Danish, cf. fn. 20).

Moreover, it is still the case that a modal preceding an aspectual tends to yield an epistemic reading, by default, as it were, as long as nothing forces a root interpretation; cf. (20). We observe that the epistemic reading is the natural reading in (20) a, whereas adding an adverbial purpose clause to the same string favours a root reading of the modal, cf. (20)b:

(20)

a. Pasienten må ha blitt feilbehandlet.
   patient-DEF must have been wrong treated
'The patient must have been subject to malpractice.'

b. Pasienten må ha blitt feilbehandlet for å få erstatning.
   patient-DEF must have been wrong treated for to get compensation
'The patient must have been subject to malpractice in order to get a compensation.'

These facts seem to defy a solution based on a fixed ordering of the syntactic categories MoodP/ModalP relative to a unique AspP. Instead, the data in (20) point to a solution where the resulting reading of a sequence Modal-Aspectual is determined by the overall semantic construal of a sentence. Thus, instead of assuming that an aspectual defines a structural domain for epistemic modals above it and root modals below it, I will propose that the *semantic contribution* of an aspectual favours an epistemic reading of a modal scoping over the aspectual, whereas the same semantic contribution favours a root reading of a modal in the aspectual's scope. This "semantic contribution of an aspectual" must be allowed to posit a certain plasticity, in order to account for the fact that aspectuals following a modal give rise to a) an epistemic reading of the modal 'by default', as observed in (20)a , and b) a root reading of the modal when combined with the semantic contribution of certain adverbials, as observed in (20)b.

In order to build a case for these claims, we will look into what might be the relevant semantic contribution of an aspectual in a sentence structure. I will start out by examining the semantic contribution of an aspectual when it functions as the complement of a modal, as in (20). Specifically, we want to find out which semantic properties an aspectual must posit in order to give rise to the alternation in (20) a vs. b.

Given the wide-spread assumption that aspectuals provide any construction with specific aspectual properties, it seems a reasonable hypothesis that the core properties of an

aspectual are aspectual properties. In fact, this might seem to be a self-evident statement, but we will conclude that this is not so. However, we will take the time to investigate the aspectual properties of aspectuals and how they affect the reading of the modal selecting it.

We start out by examining the alleged stative properties of aspectuals. The stative property of an aspectual is likely to be important, since stative lexical verbs embedded under modals display the same pattern as the aspectual in (20) above; namely an epistemic reading of the modal "by default", cf (21)a, and a root reading of the modal in the presence of an adverbial purpose clause; cf. (21)b:

(21)

    a. Jon må virkelig like pannekaker.
     'Jon must really like pancakes.'

    b. Jon må virkelig like pannekaker for at svigermora skal like ham.
     Jon must really like pancakes for that mother-in-lawDEF shall like him
     'Jon must really like pancakes in order to make his mother-in-law like him.'

If we compare (21)a and b to (20) a and b above, we find that the stative verb *like* is subject to the same pattern as the aspectual *ha;* i.e. that when they function as the complement of a modal, they favour an epistemic reading of the modal 'by default', but they allow for a root reading of the same modal in the presence of an adverbial purpose cluause. Thus, it is tempting to propose that aspectuals and stative verbs share some essential properties that cause them to behave in the same manner when they are embedded under a modal, for instance a [+stative] feature, which can be modified or overridden by a purpose clause.

Specifically, we will investigate whether or not root and epistemic modals have different selectional requirements w.r.t. the aspectual properties of a potential complement. In this quest, we will will broaden our scope and investigate the aspectual properties of *any* possible complement of root modals and epistemic modals respectively.

5.3   The aspectual and temporal properties of the complement

Throughout the investigation of the aspectual properties of a modal's complement, it turns out that these aspectual properties are intertwined with the temporal properties of the same complements. Thus, for the sake of efficiency as well as clarity, the following discussion will revolve around aspectual *and* temporal properties of a modal's complement[21].

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[21] Norwegian modals are still the focus of attention, although English modals are included to shed light on a progressive complement of a modal.

Chapter 5

Numerous authors concerned with the aspectual properties of linguistic expressions have found it useful to distinguish a notion Aktionsart from the notion Grammatical Aspect. One quite wide-spread practice is to take the notion of *Aktionsart* to denote the inherent properties of verbs in isolation[22], as opposed to aspectual properties acquired by the verb in specific syntactic environments[23]. *Aspect* is typically first taken to denote a grammatical category, i.e. the "grammaticalization of the relevant semantic distinctions", to quote Comrie (1976:7). In the present discussion, the perfect (*John has read the book*) and the progressive (*John is reading a book)* will be the most relevant *formal* (i.e. grammaticalized, in Comrie's terms) aspectual categories. In both these cases, there is an aspectual auxiliary which heads the construction and, by assumption, provides it with specific aspectual properties, in a manner to be discussed[24]. However, it is also customary to refer to another set of aspectual properties as *aspect,* namely those aspectual *semantic* changes or influences that arise when the Aktionsart of the verb interacts with other lexical items in the clause; adverbials being an important case in point. For instance, when a verb with a dynamic, punctual Aktionsart (e.g. *flash*) combines with a durative adverbial (e.g. *until dawn*) and as a result gives an iterative reading (*The light flashed until dawn*[25]), it is customary to refer to this as iterative *aspect*[26]. For our purposes, the distinction between Aktionsart and Aspect does not seem to be crucial, which is why I will refer to the aspectual properties of the modal's complement simply as encoding e.g. dynamic or stative aspect, although I am aware that the term Aktionsart would be more appropriate in some cases.

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[22] The inherent properties of verbs (verb semantics) constitute a whole industry within linguistics, and I have no ambition to do justice to the vast spectrum of attested and conceivable verb types represented in this industry. However, I would like to mention Vendler (1967) and his four verb types *states, activities, accomplishments and achievements.* Cf. also Pustejovsky (1995:16).

[23] There exists another widespread use of the notion Aktionsart, namely to restrict this term to the aspectual properties of morphological (derivational) affixes, particularly in the literature on Slavic languages; cf. e.g. Comrie (1976:6, fn. 4).

[24] Furthermore, in section 5.3.3.2 I will argue that these properties are not aspectual properties at all, but temporal properties (cf. also Julien 2000a). But for now, we will refer to the perfect and the progressive as aspectual categories, following the minstream way of referring to these categories.

[25] The sentence is taken from Jackendoff (1997:51).

[26] Jackendoff (1997:51) refers to this type of aspectual shifting as *aspectual coercion,* a topic which is also addressed in e.g. Pustejovsky (1995:202 ff) within an elaborated formal apparatus. In this firamwork, coercion is in general defined as a 'type shifting'; (p.111) "a semantic operation that converts [e.g.] an argument to the type which is expected by a function, where it would otherwise result in a type error". The definition of coercion is later etended to deal with e.g. aspectual coercion.

5.3.1 The event – state distinction

For our purposes, the most interesting aspectual division is that between *state* and *change-of-state*. The difference between the two could be depicted as follows (Carlson 2000):

(22)

    a. _____

          ------ S ---------   (e.g. *sove* 'sleep')

                _____

    b. _____|

    ---- ¬S -->|<----- S -----   (e.g. *sovne* 'fall asleep')

(22) a represents a state, that is, a situation S which holds unchanged over time. (22) b represents a change from the absence of S to the presence of S. Predicates denoting the latter type of situation are sometimes referred to as *dynamic* predicates, *eventive* predicates, or simply as *events*[27]. A predicate which denotes the pattern in (22) a is e.g. *sove* 'sleep', whereas *sovne* 'fall asleep' has the pattern in (22) b. That is, *Jon sov* 'Jon slept' encodes a situation where Jon was in the state of sleeping, with no reference to the beginning or end of this state. On the other hand, *Jon sovnet* 'Jon fell asleep' encodes a situation where John went from a state of not-sleeping to a state of sleeping[28].

In the literature on aspect, the distinction between states and changes-of-state; i.e. between states and dynamic situations (or events), is often taken to be one fundamental feature of conceptual and linguistic organization; cf. Michaelis (1998:1):

> Those who explore tense and aspect seek to relate presumably universal features of conceptual structure (e.g., the distinction between static and dynamic situations) to the language-particular recources which are available for talking about situations.

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[27] Note that several authors maintain a further subdivision of dynamic situations into *events* and *processes*; e.g. Comrie (1976). This division is not very important to our discussion here, but see the discussion of habitual and iterative aspect below.

[28] Another way of characterizing the difference between a stative and a dynamic situation is found in Comrie (1976: 49): "With a state, unless something happens to change that state, then the state will continue [...]. With a dynamic situation, on the other hand, the situation will only continue if it is continually subject to a new input of energy [...]. To remain in a state requires no effort, whereas to remain in a dynamic situation does require effort, whether from inside [...] or from outside[...]."I will not adhere to this description of the state-event distinction. Using this description as the relevant distinction between states and events would lead us to define the iterative (or habitual) aspect as a dynamic situation in a number of cases (e.g. *Mary climbed the fence for six years*). However, in aligning the iterative/habitual aspect with the perfect and the progressive, we need to define the iterative/habitual aspect as stative; cf. the discussion below.

She goes on (p. 16) to quote Langacker (1987:258), who claims that the distinction between states and events (linguistically encoded e.g. as the imperfective/perfective contrast) has "a primal character", because it is linked to a basic cognitive capacity: The ability to perceive change (or the lack of change) over time. Michaelis thus decides to take states and events as the "two primary situation classes"; two classes that are distinct in the following respects (op.cit. p.4):

> [E]vents (e.g. falling asleep or peeling an apple) are situations which (a) have salient boundaries (i.e., points of inception and/or termination) and (b) involve change over time; states (like being green or looking happy) are situations which do not involve change over time, and which do not have salient endpoints. I will maintain that the event-state distinction, as outlined here, should form the basis of all explanation in aspectology[29].

In what follows, we will exploit this distinction between stative and non-stative (i.e. dynamic or eventive) aspect. We will take this distinction to be the primitive aspectual distinction, and investigate whether Norwegian root and epistemic modals select for different values of these aspectual features for their complements. Specifically, our initial hypothesis is that the feature [+stative] is selected by epistemic modals in Norwegian, required to apply to an epistemic modal's complement. Likewise, we will assume that [-stative] is selected by Norwegian root modals and required to apply to the complement of a root modal.

5.3.2 Selectional requirements of Norwegian modals

Early on in my investigation on Norwegian modals, I came to suspect that the event-state distinction might be important to the specific reading of a given modal in a given sentence as epistemic or root. Initially, I observed that a root reading of a modal is favoured when the complement of the modal is construed as dynamic; i.e. involving a change of state, whereas an epistemic reading prefers a stative complement.

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[29] Furthermore, the temporal boundaries of an event is reminicent of the spatial boundaries of individuals, according to Michaelis. Thus, the state-event distinction bears a conceptual resemblance to the *mass-count* distinction (op.cit. 6): "While an event qualifies as an *individual*, a state does not. Individuality is contingent upon (a) the presence of boundaries and (b) indivisibility. An indivisible entity is one whose subparts do not count as instances of the whole (e.g., the handle of a cup is not a cup). Since an event is wholly contained within some relevant period – and is fully instantiated at no point within that period - it is both bounded in time and indivisible. A state obtains at all points within the relevant interval, and possibly at times anterior and subsequent to that interval; it is therefore neither bounded nor indivisible [...]. These two situation types are analogous to the conceptual categories *mass* versus *count,* which concern the disposition of an entity through space [...]. While spatially bounded entities (like cats or cups) qualify as individuals, unbounded entities (like water or mud) do not."

Barbiers (1995) makes a similar observation for Dutch root and epistemic modals, an observation which constitutes the basis for one fundamental notion in his analysis, the notion of *polarity transition* (cf. section 3.2.7, Barbiers 1995: 149 ff. f). What gives the root reading of a modal, according to Barbiers, is that the complement of the modal denotes a transition from a negative stage ¬S (i.e. where S does not hold) at the speech time, to a positive stage S (where S does hold) at some point in the future. An epistemic reading of the modal ensues when the complement of the modal does *not* encode a transition from ¬S to S; i.e. when it encodes a stative situation. Compare e.g. (23)a, where the modal has a dynamic complement (i.e. in Barbiers' terminology, a complement which denotes a polarity transition), to (23)b, where the complement of the modal is stative (and hence does not encode a polarity transition):

(23)

> a. Marit må klatre over gjerdet.
>   'Marit must climb the fence.'

> b. Jon må virkelig like pannekaker.
>   'Jon must really like pancakes.'

Furthermore, and seemingly very promising for this line of thought, Bybee et al. (1994) elaborate on the importance of the aspectual as well as the temporal propeties of the modal's complement; specifically, the discussion referred here concerns the English *must*. On a root reading, the modal *must* selects for a dynamic complement with a future reading; on an epistemic reading, *must* selects for a stative complement with a contemporanous ('present') reading (op.cit. 200 ff):

> The contexts in which *must* has an obligation reading and the contexts in which it has an epistemic reading are mutually exclusive. In the future, *must* has only an obligation reading.
>> (i) The letter must arrive some time next week.
> In present and past sentences, however, *must* has only an inferred certainty reading.
>> (ii) The letter must be in the mail.
>> (iii) The letter must have been in the mail.
> In fact, in the past tense and in the present tense with a stative verb, *must* can ONLY have an epistemic reading. Thus even with a dynamic verb in the past, *must* is epistemic.
>> (iv) He must have called three times while you were gone.
> And in the non-past with a dynamic verb, *must* is epistemic with progressive situations.
>> (v) He must be trying to call me right now.
> In a restricted set of cases, the reading of *must* can be ambiguous between an epistemic reading and an obligation reading. One such case is [(vi)].

(vi) He must play tennis a lot   (or he won't win the tournament).
                                               (and that is why he is so good).

In this case the epistemic reading has the present habitual aspect, while the obligation reading is future-projecting.

Note that by "present" and "future" Bybee et al. (1994) evidently refer to the temporal *readings* of the infinitival complement of a modal, and the same goes for the present discussion. It should be emphasized, however, that "future tense" and "present tense' does not correspond to a *formal* difference; i.e. there is no morphological marking on the infinitive to correspond to the "future" and "present" readings respectively. What we will claim is that the infinitive is ambiguous between a "future" and a "present" reading; specifically, that the infinitve may be interpreted as temporally subsequent to the modal ("future") or as temporally contemporaneous to the modal ("present"). We will elaborate more thoroughly on these questions in section 5.3.3.2.

The claims quoted from Bybbe et al. (1994) above suggest that the stative vs. dynamic construal of the modal's complement is crucial to trigger the epistemic versus root reading respectively. Moreover, the temporal reading of the infinitival complement seems to fall nicely into place as well, such that the combinations [dynamic aspect + future tense] and [stative aspect + present tense] in fact exhaust the aspectual and temporal readings of the (infinitival) complement of the modal. This latter generalization can be made on the basis of sentences like the following (Bybee et al, 1994:201):

(24)

a. He must understand what we want (or we'll never get it [root]).
                                   (we've told him so many times [epistemic]).

Bybee et al. observe that "the epistemic reading here calls for a stative interpretation of the main verb, but the obligation reading requires a dynamic sense". We might add that the epistemic reading requires the present (i.e. contemporaneous) reading of the (infinitival) complement, whereas the root reading favours the infinitive to receive a future interpretation. That is, we may paraphrase the two distinct readings as follows:

(25)

He must understand what we want.
 (i) It is required that there is a change of state
       from the present state, where he does not understand what we want (¬S),
       to a *future* state, we he does understand what we want (S).
 (i) It must be the case that he is *presently* in a state of understanding what we want.

Assume for a moment that this is in fact the relevant generalization: The specific combination of semantic features required of a complement to trigger a root reading is [dynamic aspect+future tense] whereas the combination of features required for an epistemic reading is [stative aspect+present tense]. Then epistemic and root readings of modals select for *the exact opposite feature combinations* in their complements; i.e. [dynamic+future] for root modals and [stative+present] for epistemic modals. If this is a valid generalization, we need simply to identify these two properties w.r.t. any potential complement, and then we would really have an elegant generalization with very strong predictions. In fact, we would be in a position to predict exactly where an epistemic reading would arise, and where a root reading is the only possibility.

This is what we turn to next; we will investigate whether or not all types of complements of epistemic modals encode [stative+present] and whether or not all types of complements of root modals encode[dynamic+future]. First however, let us summarize the relevant claims mentioned in the discussion above. Anticipating the discussion that follows, we also include non-verbal directional small clause complements in our table, although these constructions have not been mentioned above.

(26)

Complement	Reading of modal
[dynamic + future]	root
[stative + present]	epistemic
perfect	epistemic
progressive	epistemic
habitual/iterative	epistemic
directional small clause	root

Our next project then, is to find arguments to support the idea that the perfect, the progressive and the iterative aspect all encode the properties [stative + present], since they give rise to the epistemic reading of the modal selecting them. Moreover, we will search for arguments to support the hypothesis that directional small clauses encode the properties [dynamic + future], since these small clauses are embedded under root modals only; i.e. an epistemic reading of a modal is disallowed with these types of complements.

This latter assumptions has not been mentioned in the discussion above. Thus, let us investigate the aspectual properties of this construction first of all.

5.3.2.1 Directional Small Clauses

As mentioned above, a modal with a directional small clause complement rejects an epistemic reading; cf. section 3.2.7, Barbiers (1995, 1999)[30] and (27):

(27)

      a. Jon må hjem.
        Jon must home
        'Jon must go home.'

      b. Vi skal på kino.
        We will in the movies
        'We are going to the movies.'

These small clauses have a dynamic as well as a future reading. The situation described by the small clause does not hold at the moment of speech, in fact, it would be absurd to utter (27)a in a situation where Jon is already home, or to utter (27)b if we are already in the movie theatre. Instead, the situation described by the small clause is required/intended/permitted to hold at some point in the future; hence it fulfills the requirements of a 'polarity transition', in Barbiers' terms. There is no way to construe the small clause complement of a Norwegian modal as encoding a situation contemporaneous with the moment of speech; neither is it possible to construe the small clause as a stative predicate. The stative counterpart of e.g. (27)a, which would involve the non-directional or stative counterpart of *hjem* 'home (directional)', i.e. *hjemme* 'home (stative)' is ungrammatical in these constructions, cf. (28)[31]:

(28)

      a. Jon må *(være) hjemme.
        'Jon must (stay) home.'

The way to save this construction would be, as indicated, to supply the sentence with a copula, which gives a grammatical construction. But in this case, the complement of the modal is no longer a small clause complement. Hence, small clause complements of Norwegian (and evidently, Dutch) modals do encode both properties required to encode a polarity transition; i.e. [+dynamic, +future], but none of the properties required from a complement of an epistemic modal; i.e. [+ stative, +present].

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[30] Barbiers takes these small clause complements as the basis for his analysis, which is extended to account for verbal complements.

[31] An appropriate question might be why the construction *Jon må hjemme* 'Jon must home-STATIVE' does not give rise to an epistemic reading of the modal. I will suggest an answer to this question in section 5.4.3.

5.3.2.2 The Perfect

It is commonly assumed that the perfect encodes some kind of past-time reference, or in the words of Dyvik (1999), a *non-referential relative past*[32]. But does the past-time reference in any way prevent the perfect from simultaneously encoding a state? Numerous authors have suggested a negative answer to this question. On the contrary, it is by no means a rare assumption that that the perfect encodes a state, cf. ter Meulen (1995:5):

> The perfect *Jane has sighed* describes th[e] state caused by the end of [Jane's] sighing. Such perfect states are atemporal in the sense that once they have begun, they never end.

She continues (op. cit. p.6):

> The difference between the simple past and the perfect is hence aspectual in nature: The former describes events in a context-dependent way, whereas the latter gives only stative information.

What this proposal suggests is that unlike most states, the perfect denotes not only a state, but the event whose culmination *caused* the given state as well. The 'relative past' reading comes from straightforward inference, since if there exists a state described as commencing at the exact time of culimination of the very event that caused the state, and the culmination of this event is an essential part of the description of the state, then it follows that this event must

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[32] In fact, Dyvik makes this claim for the Norwegian (and English) perfect only: "The Norwegian perfect is semantically very close to the English perfect, and less close to the French and German perfects, which can be used to refer to specific past times ("Ich habe ihn gestern gesehen" 'I saw him yesterday'). The meaning of Norwegian (and English) perfect is neither deictic past tense nor perfective aspect, but rather non-referential relative past - the category existentially quantifies over times preceding the time indicated by the tense of the finite verb: "Jeg har sett ham" 'I have seen him' = There exists a time in the past such that I saw him then."

In my opinion, however, the difference between the Norwegian and the German perfect resides not in a difference between a specific versus relative reading; they both denote relative past. However, languages differ w.r.t. whether or not they employ two (or more) different formal markers to encode what Bybee et al. (1994:100) refer to as the "immediate past" versus "remote past" distinction: "The exact time period covered by immediate and remote may vary [...]". For instance, Comrie (1985b:85) claims that the Spanish Present Perfect (which Bybee et al. characterize as an anterior) may be used as a simple past for situations taking place on the day of the speech event. Dahl (1985:125) reports that the Romance languages Spanish, Catalan and Occitan use the Present Perfect with 'this morning', but the simple past with 'yesterday'; I might add that this is the system found in Norwegian as well. However, the "immediate" vs. "remote" system seems to be even more intricate than observed by Bybee et al. Evidently, what counts in Norwegian as "immediate past", signalled by the perfect, are the cycles 'today', 'this week' as well as 'this year': *Jeg har ikke sett ham i dag/ denne uka/ i år* 'I have not seen him today/this week/this year' are all fine, and the perfect is possible with all these adverbials. However, for the adverbials meaning 'yesterday', 'last week' or 'last year' to be licenced, the simple past must be employed and the perfect is impossible: *Jeg så ham ikke i går/ i forrige uke/ i fjor* 'I did not see him yesterday/last week/last year'; *Jeg har ikke sett ham *i går/i forrige uke/i fjor* 'I have not seen him yesterday/last week/last year'. In any case, Norwegian seems to encode the distinction "remote" versus "immediate" past syntactically, by two different syntactic forms (the simple past versus the perfect), whereas German does not. However, I cannot see that this effect is accounted for by invoking the terms "specific past" versus "relative past", as suggested in Dyvik (1999).

already have taken place in order for the state to hold at the time of utterance. Therefore, what is syntactically encoded is 'state', but since the event must have taken place in order for the state to hold, the 'past event' reading is an inevitable inference.

Michaelis (1998:51), following Herweg (1991a, 1991b), refers to the perfect as a *stativizing operator*, an operator which maps an event predication true at one time (*Madge swallow-the fly*) into a stative predication true at a later time. This state predication is describable as the aftermath of the fly-swallowing event (just as in ter Meulen's proposal referred to above). Hence, the perfect provides a stative construal of what would otherwise be an event predication.

Thus, there exist several proposals suggesting that the perfect encodes a stative situation. Moreover, it has been argued that the perfect is really some kind of 'present tense'. Cf. e.g. Jespersen (1931:47):

> The perfect [...] is itself a kind of present tense, and serves to connect the present time with the past. This is done in two ways: first, the perfect is a retrospective present, which looks upon the present state as a result of what has happened before in the past; and second the perfect is an inclusive present, which speaks of a state that is continued from the past into the present time.

See also Michaelis (1998), who, by her own statement (p.10) refines and elaborates on the analysis offered by Jespersen, and Comrie (1976:52), who claims that the perfect has "a present relevance". Thus, there exist several proposals that lend support the assumption that the perfect encodes [+stative] as well as [+present]; that is, both of the features that we have assumed to be crucial for the complement of a modal on the epistemic reading.

5.3.2.3 The progressive

For the progressive, these assumptions seem to be less controversial. The progressive is widely held to encode a stative aspect[33] (cf. e.g. ter Meulen 1995:66, Michaelis 1998:52, Herweg 1991a, 1991b, Langacker 1987, 1991). For instance, Michaelis (1998:52) follows Herweg (1991a, 1991b) in referring to the progressive as *a stativizing operator*, i.e. an operator which maps an event into a state. For a given event, there is a state that holds prior to the time at which that event has reached its point of culmination. This state is the progressive state. Thus, the event(-interval) "selected" by the progressive is inot a state in and by itself (e.g. *Madge swallow the fly*), but the progressive denotes a state (*Madge is swallowing a fly*); cf. Michaelis (1998:266).

For the assumption that the progressive encodes 'present', cf. almost any proposal on the subject, e.g. Kreidler (1998:222):

[The progressive] is also about the present moment but calls attention to the fact that the activity is in process now [...].

Thus, we have at present no reason to doubt that the semantic properties required from a potential complement assumed to trigger the epistemic reading of a modal ; i.e. [+stative, +present], are both encoded by the progressive as well.

5.3.2.4 The iterative

Now, the matters are perhaps less evident when it comes to ascribing stative properties to the iterative. Thus, we must emphasize once again that the event–state distinction is primarily concerned with change-of-state versus no change-of-state. In this perspective, the iterative seems indeed to qualify as a state, since the iterative encodes no change; i.e. it encodes no reference to the beginning or the end of the iterative situation, which is the defining property of a state. Furthermore, those adverbials that are typically licenced in stative constructions are licenced with the iterative construal of otherwise dynamic predicates; cf. the difference between (29)a (single dynamic event) and (29)b (iterative construal):

(29)

    a. Marit klatret   over gjerdet   [på seks sekunder].
       Marit climbed over fence-DEF in six seconds
       'Marit climbed the fence in six seconds.'

    b. Marit klatret over gjerdet [i seks år].
       Marit climbed over fence-DEF for six yers
       'Marit climbed the fence for six years.'

The natural reading of (29)b is that *Marit* was in the habit of climbing the fence on a regular basis for a period of six years; i.e. an iterative reading (that is, unless Marit was a really slow climber), and the adverbial 'for six years' is the kind that typically goes well with stative predicates. Thus, we have indications that the iterative has stative features. Another way of depicting the iterative within Carlson's (2000) system could be as a 'series':

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[33] But cf. Comrie 1976:35 for the opposite view.

(30)

```
        _____
         __   __   __   __   __ S
        _|  |_|  |_|  |_|  |_|  |_ ¬S
        _____
```

Here, we may represent the dynamic situation of climbing the fence as the change from ¬S to S, whereas the iterative is represented as a state framing or encompassing the dynamic situation, characterized by the repeated sequence of ¬S and S.

We have seen evidence that the iterative may be construed as a stative. But does it have a 'present' reading? Looking at iterative readings of predicates embedded under modals, the answer is positive. Cf. (31):

(31)

a. Marit må klatre over gjerdet.
Marit must climb fenceDEF.
'Marit must climb the fence.'

b. Tom Cruise skal spise i denne restauranten.
Tom Cruise shall eat in this restaurant
'Tom Cruise is supposed to dine in this restaurant.'

The sentences in (31) have (at least) two readings, one where the modal gets a root reading and the embedded predicate encodes a future event, and another where the modal receives an epistemic reading and the embedded predicate is read as an iterative; i.e. as stative[34]. Crucially, the reading of the embedded predicate in the latter case is one of contemporacy; i.e. the predicate encodes a state which is characterized by the regular repetition of a certain action, notably the action of Marit's climbing the fence or of Tom Cruise's dining in this restaurant. This state has no beginning and no end (which defines it as a state), since there is no reference to when Marit started or stopped climbing the fence or when Tom started or stopped dining in this restaurant. It would not be felicitous to utter this sentence intending the epistemic reading of the modal if the speaker did not believe that the situation characterized by this repeated action still holds; i.e. that Marit still climbs the fence and that Tom still dines in this restaurant on a regular basis.

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[34] Some of my informants have cartain difficulties in getting the epistemic reading of (31)a, but they are always helped by the following context: You and I are coming to visit Marit in her new house. However, we can find no gate in the garden fence. How does Marit manage to get into her own garden? In a moment of desperation, I might utter (31)a, meaning 'it must be the case that she climbs the fence'.

5.3.2.5 Why selectional restrictions are insufficient

So far, we have found good reasons to assume that the perfect, the progressive and the iterative all encode the semantic features [+stative] and [+present]. Thus, according to our initial hypothsis, we would expect these constructions to occur with epistemic readings of modals, which were assumed to select for [+stative,+present] complements. We would not expect them to occur as complements of root modals, however, since we have assumed that root modals select for [+dynamic,+future] complements.

We may state these selectional requirements in a slightly more formal manner. Let $T1$ be the evaluation time of the modal and $T2$ the evaluation time of the embedded proposition; furthermore, let "=" encode the relation of simultaneity and "<" the relation of precedence:

(32)

    a.   Epistemic: *Må* $_{T1}$ ($_{STATE}$ [Marit klatre over gjerdet]$_{T2}$) & $T1 = T2$
    b.   Root: *Må* $_{T1}$ ($_{EVENT}$ [Marit klatre over gjerdet]$_{T2}$) & $T1 < T2$

            must   (Marit climb the fence)

The formula in (32) a says that the modal *må* 'must' is true at a point in time $T1$ and the propositional expression *Marit klatre over gjerdet*, 'Marit climb the fence', where this propositional expression describes a state, is true at a point $T2$ and that $T1$ is identical to $T2$. These are the temporal requirements of the epistemic modal. In (32)b, on the other hand, we state the requirements of a root modal. The root modal *må* is true at a point in in time $T1$ and the embedded proposition, i.e. the modal's eventive complement, is true at a point in time $T2$ and $T1$ is required to precede $T2$. That is, epistemic modals are temporally contemporaneous with their complements whereas root modals temporally precede theirs. Since we have found support for the view that the perfect, the progressive and the iterative all have contemporanous readings, we would expect these aspectual construals to be suitable complements for epistemic modals only.

However, this is obviously not right. As the reader may recall, we have already seen (section 5.2 above) that this expectation is not bone out, since a perfect embedded under a modal may give rise to root readings of the modal in addition to the epistemic reading, provided a purpose clause (or a temporal adverbial denoting future) is added:

(33)

    a. Pasienten må ha blitt feilbehandlet.
     patient-DEF must have been wrong treated
    'The patient must have been subject to malpractice.'

   b. Pasienten må ha blitt feilbehandlet for å få erstatning.
    patient-DEF must have been wrong treated for to get compensation
   'The patient must have been subject to malpractice in order to get a compensation.'

Furthermore, the progressive behaves the same way. Embedded under a modal, a progressive typically favours an epistemic reading of the modal, unless a temporal adverbial is added. Norwegian does not employ a designated progressive, which is why I illustrate this phenomenon with English data ((34) b is taken from Brennan 1997):

(34)

   a. The water must be boiling.
   b. The water must be boiling when you pour it over the tomatoes.

Likewise, admittedly, the iterative construal of the situation embedded under a modal typically does give the expected epistemic reading as a (possible) result (cf. (35) a), but it is equally possible to force an iterative construal of the complement and still get a root reading of the modal. Again, this latter reading comes easier if we add an adverbial, cf. (35) b:

(35)

   a. Marit må [klatre over gjerdet]$_{\text{ITERATIVE}}$.
    Marit must climb fenceDEF
    'Marit must climb the fence'

   b. Marit må [klatre over gjerdet] $_{\text{ITERATIVE}}$ resten av sitt liv.
    Marit must climb fenceDEF   restDEF of her life
    'Marit must climb the fence for the rest of her life'

And finally, recall that an inherently stative lexical verb like *like* 'like' is subject to the same pattern as the perfect, the progressive and the iterative. Again, the stative verb gives rise to an epistemic reading of the modal, and again, an adverbial facilitates the root reading.

(36)

   a. Jon må virkelig like pannekaker.
    'Jon must really like pancakes'

   b. Jon må virkelig like pannekaker for at svigermora skal like ham.
    Jon must really like pancakes for that mother-in-law shall like him
    'Jon must really like pancakes in order to make his mother-in-law like him'

Now, although we have found reasons to believe that the perfect, the progressive and the iterative behave like stative verbs because they have stative properties, we are no closer to a

solution to the problem we started out with, namely, why do certain adverbials give rise to this "override" effect?

There is one potential path to follow. Assume that we hold on to our hypothesis that epistemic modals typically select for [+stative, +present] complements whereas root modals select for [+dynamic,+future] complements. However, let us add the modification that these matrices constitute the *proptotypical* matrices of epistemic and root modals, respectively. What if we assume that one of the features is more important than the other, e.g. that a [+future] complement always gives rise to a root reading of the modal, whether the complement is [+stative] or [+dynamic]? Then, we could claim that forcing a future reading of the otherwise contemporaneous (i.e.[+present]) complement of a modal by means of a temporal adverbial suffices to allow for a root reading of the modal. In short, assume that a future reading of a stative complement suffices to give the modal a root reading.

One argument in favour of this line of thought is that the adverbials giving rise to this "override" effect are temporal adverbials denoting 'future' and purpose clauses. Moreover, we could argue that the latter also denote some point in the future:

(37)

Pasienten må ha blitt feilbehandlet for å få erstatning.
patient-DEF must have been wrong treated for to get compensation
'The patient must have been subject to malpractice in order to get a compensation '

In this sentence, 'receiving a compensation' is temporally subsequent to the action described as 'being subject to malpractice'; i.e. the reading is that 'being subject to malpractice' must already have taken place by the point in time when a compensation is received. The purposes described by the purpose clauses is seen as a (potential) consequence of the action encoded by the complement of the modal, hence, the purpose must be subsequent in time to this action. Knowing that causes must precede their consequences, this is an effect of our knowledge of how the physical world actually works. Thus, it is possible to argue that purpose clauses denote a point in the future.

Furthermore, assume that these types of adverbials are able to give the entire complement of the modal a 'future' reading. After all, the reading of the a sentences in (33) - (36) is that some action *has taken place* or *is taking place* now; whereas the reading of the b senteces is that an action must have taken place or must be taking *place by some future point in time* (specified by a temporal adverbial or a purpose clause). Thus, the adverbial turns the 'present' complement of a modal into a 'future' complement, and this seemingly suffices to

turn the "epistemic modal complement" into a "root modal complement". Hence, we may formulate the 'override' rule as follows:

> Epistemic modals select for [+stative, +present] complements.
> Root modals select for [+dynamic, +future] and [+stative, +future] complements.
> Certain adverbials turn a [+present] complement into a [+future] complement.

In this scenario, we could maintain the hypothesis that epistemic modals select for [+present] complements, whereas root modals select for [+future] complements, as claimed above. Furthermore, these temporal properties seemingly typically correlate with the aspectual properties [+stative] vs. [+dynamic] of the complement, where [+stative] goes with [+present] and [+dynamic] goes with [+future]. However, as described above, we may get a 'future' reading even of the [+stative] complement; which suffices to make it a suitable complement of a root modal.

Now, unfortunately, the hypothesis of different selectional requirements does not hold up against closer scrutiny. The reason for this is that our fundamental assumption, that epistemic modals select for present complements only, whereas root modals select for future complements only, turns out to be false. The first piece of evidence that our hypothesis is insufficient comes from the fact that the modal *ville* 'will' in its epistemic reading has a 'prediction' reading. This entails that this epistemic modal at least selects for future-denoting complements. Now, if this were an idiosyncracy of the modal *ville*, we might invoke an explanation where this modal is exceptional and perhaps not a real epistemic modal in any case, but rather some kind of future tense marker (as has been argued for e.g. English; cf. Comrie 1976, Julien 2000, 2001). However, in a closer investigation of the other epistemic modals, we find that epistemic modals *in general* accept future-denoting complements. Note that the following sentences are ambiguous between root readings and epistemic readings, but the important point to notice here is that they do in fact allow the epistemic interpretation, even though the complement is future-denoting.

(38)

> a. Det skal bli regn i morgen.
>   'It is supposed to rain tomorrow.'
>
> b. Da må bomben eksplodere om bare tre sekunder![35]
>   ' Then the bomb must explode in only three seconds!'

---

[35] Thanks to Tor Åfarli for this example.

c. Han behøver ikke komme på møtet, bare fordi han sa det.
   'He need not come to the meeting, just because he said so.'

d. I følge mine beregninger, bør møtet være i morgen.
   'According to my calculations, the meeting should take place tomorrow.'

Furthermore, the predicates embedded under the epistemic modal in (38) a – c are dynamic predicates. This means that even epistemic modals allow for [+dynamic,+future] complements; the combination of properties we have claimed to be selected by root modals only.

To make our initial hypothesis look even worse, we observe that root modals accept [+stative,+present] predicates, the combination of semantic features we have reserved for epistemic modals. Look at (39), for instance:

(39)

Jon må være på kontoret.
'Jon must be/stay in his office.'

Contrary to the assumptions made above – confer especially Barbiers' polarity transition requirement for the complement of root modals – this sentence, on a root reading of the modal, may be uttered in a situation where Jon is already in his office. That is, the situation required to hold may very well hold already at the moment of utterance. There is simply no reference to whether or not the situation already holds[36]. Furthermore, the complement is stative. Recall also that the perfect, the iterative and the progressive are assumed to be stative and still give rise to root readings of the modal, but in the latter case, we could at least argue that the [+future] feature of the complement is enough to trigger the "override" effect. Example (39), however, shows that even a [+present] complement may give rise to a root reading of the modal. This is certainly a blow to our hypothesis about the "override" effect; i.e. that it could be explained by assuming that turning the [+present] complement into a [+future] complement triggers the root reading of the modal. If root modals too accept

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[36] This is an important point, one which will be elaborated on below. It will be assumed that the present reading of the complement of a root modal is irrelevant. The reason for this is conceptual. Root modals state that a situation is required, allowed, intended or wanted to take place. Thus, they have a communicative function resembling that of the imperative. For instance, this makes modals suitable replacements for the imperative in embedded clauses in Norwegian:

(i)   Han sa: GÅ! ---> Han sa at vi skulle/måtte gå
         'He said: Leave!' ---> He said that we should/had to leave'

However, it makes no sense to e.g. order a person to bed, if this person is already in bed. Thus, I believe that root modals focus on the future i.e. 'from now on, this situation S must/should/may hold', and it follows that it is irrelevant whether or not this situation already holds.

[+present] complements, just like epistemic modals accept [+future] complements, there is no reason to expect that turning a [+present] complement into a [+future] complement should automatically lead to a shift in reading of the modal from an epistemic reading to a root reading.

Thus, first of all, we need to modify our initial hypothesis that epistemic modals select for [+stative, +present] complements only, whereas root modals select for [+dynamic, +future] only. However, these properties are seemingly *prototypical* properties of the complement of epistemic and root modals, respectively. That is, based on what constitutes the more natural reading of a modal as epistemic or root with various types of complements out of context, we can state the following. Norwegian epistemic modals *prefer* [+stative,+present] complements, although there are exceptions. Firstly, the epistemic modal *ville* encodes 'prediction' and selects for future-denoting complements, and these complements may very well encode dynamic events. Secondly, other epistemic modals accept [+dynamic,+future] complements as well (albeit more marginally). Furthermore, Norwegian root modals *prefer* [+dynamic, +future] complements, but they also accept [+stative,+present] complements. When the complement of a modal is the perfect or an iterative, progressive or an otherwise stative construal of an infinitive (and in English, the progressive construction) this typically yields an epistemic reading of the modal, unless an adverbial purpose clause or a temporal adverbial denoting 'future' is added to the construction, in which case it may get a root reading.

We still have no valid explanation for the latter fact; i.e. the'"override" effect. We have seen that an account bulding on different selectional requirements of aspectual properties does not get us very far. On the other hand, an analysis invoking a shift in temporal construal of the complement did not give us the right answers either. And yet, the latter approach still seems to capture something of what is going on in these cases; the shift in temporal construal does seem to be important somehow. This is seen perhaps most clearly in the perfect:

(40)

a. Pasienten må ha blitt feilbehandlet.
  patient-DEF must have been wrong treated
 'The patient must have been subject to malpractice.'

b. Pasienten må ha blitt feilbehandlet for å få erstatning.
  patient-DEF must have been wrong treated for to get compensation
 'The patient must have been subject to malpractice in order to get a compensation.'

The root reading is close to impossible in (40) a, unless something resembling an adverbial (e.g. a purpose clause) can be drawn from context. Likewise, the epistemic reading seems very unnatural in (40) b, although perhaps less so than the root reading in (40) a. I want to pursue the idea that this effect is somehow related to temporal construal of the modal's complement. In this quest, we need first of all to look more closely into some essential properties of the Norwegian tense system. This is what we turn to next.

5.3.3 Some essential properties of the Norwegian tense system

In this section, I will take as my point of departure the recent publications of Julien (2000a, 2001). I present some of her fundamental assumptions and the basic workings of her model. In the next subsection, I will argue against some of Julien's assumptions whereas I adopt those claims that, in my opinion, present themselves as valuable insights. Building on and developing Julien's ideas, I propose a system of Tense-chains, where each verb in a sentence is temporally ordered w.r.t. the c-commanding verb or the speech event S. Within this model, it is possible to account for the "override" effect we find with e.g. perfect constructions discussed in the previous section.
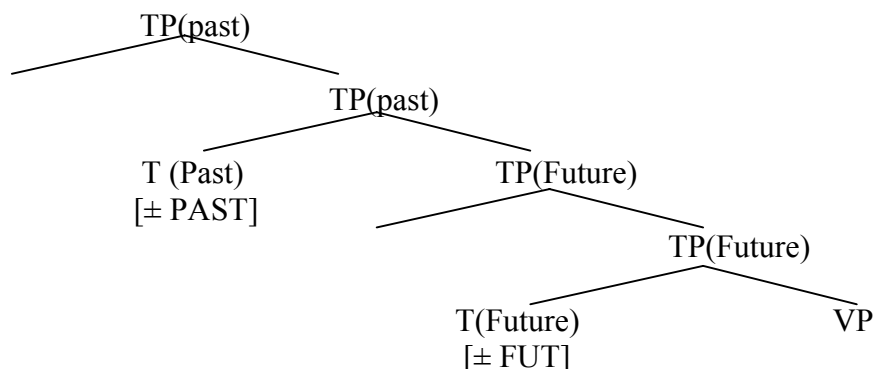
I should emphasize that I have moulded my hypotheses on the Norwegian tense system in tandem with my work on Norwegian modals; that is, the thoughts that I put forward here are ideas that have presented themselves as useful first and foremost relative to the temporal properties of the various complements of modals as well as the temporal properties of modals. Thus my analysis of tense does not constitute a general theory encompassing all facets of the Norwegian tense system. Nevertheless, I believe my ideas to have some merit, and they represent a fresh look at the interaction of tense, aspect and conceptual knowledge in temporal construal in natural language.

5.3.3.1 Julien (2000a, 2001)

Julien (2000a, 2001) presents a tense theory for languages universally. One essential assumption of her theory is that *any clause contains exactly two temporal heads*, past and future. These two heads can each have a positive or a negative value, where the positive value will be spelled out by a corresponding tense marker.

(41)

```
            TP(past)
           /
        TP(past)
        /      \
   T (Past)    TP(Future)
   [± PAST]    /        \
           TP(Future)
           /        \
      T(Future)      VP
      [± FUT]
```

A positive value for T(past) combined with a negative value for T(future) gives a simple past as a result. A positive value for T(Future) combined with a negative value for T(Past) yields a simple future as a result. A negative value for both heads simultaneously gives a present tense, and it is also possible for both heads to have a positive value simultaneously, which gives 'a future viewed from the past', as in the following sentence (Julien 2000a:130):

(42)

      She   woul-d   write.
              FUT-PAST

Now, another important idea elaborated on by Julien (2000a, 2001) is the assumption that there exists a distinction in the universal tense system between finite and non-finite tenses (or in the words of Comrie 1976, absolute and relative tenses). Julien's achievement is that she manages to argue convincingly that *the perfect, the progressive and the prospective* should be viewed as non-finite tenses instead of aspects, where the perfect is a relative past, the progressive is a relative present, and the prospective is a relative future[37]. The difference between finite/absolute tenses and non-finite/relative tenses is that the latter are unable to relate to the moment of utterance (or the speech event S), whereas the former typically do relate to the moment of utterance. Hence, non-finite tenses will always be embedded under some other, finite verbal element, whereas finite tenses may function as the highest tense element in a sentence functioning as a complete utterance.

    A third important assumption in Julien (2000, 2001) is the hypothesis that tense elements are dyadic predicates of temporal ordering. Tense elements are seen as abstract

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[37] Julien mentions Demirdache and Uribe-Extebarria (2000) as elaborating on a closely related idea. Furthermore, I would like to mention Guéron and Hoekstra (1995), who defend a similar view for the perfect and the progressive.

entities, although they are phonlogically realized by appropriate tense markers[38], e.g. affixes or designated preverbal particles of the kind mentioned in section 5.1. The two arguments of a tense element are both *events*[39]*,* and each tense element specifies a temporal relation between these two events. To exemplify, let T be a tense element, hence a dyadic predicate, which specifies a temporal relation between its two arguments e_1 and e_2. Moreover, let the tense element in question encode the temporal relation 'precedence', such that e_1 precedes e_2. This would be a description of a tense element encoding future, cf. (43), since e_2 is 'future' w.r.t. e_1:

(43)

$$T_{+FUT \& -PAST} (e_1 < e_2)^{40}$$

In any tense construction, the highest tense element can have the speech event S as one of its arguments. The lowest tense element must have the predicate event, E, as one of its arguments. E is syntactically represented by VP. It follows that in simple tenses, where there is only one active tense element (Julien suggests that the non-active tense-element may be inert), this tense element must have both S (i.e. the speech event) and E (i.e. the predicate event) as arguments, so that S is directly related to E; i.e. in this case, e_1 and e_2 in (43) would correspond to S and E respectively. The two events, e.g. S and E, must be related in one out of three ways, which exhaust the logical possibilities: precedence, subsequence or simultaneity. Look at (44), for instance.

(44)

a. Mary loves John. S=E (S is contemporaneous with E); $T_{-FUT \& -PAST} (e_1 = e_2)$
b. Mary loved John.   S > E (S follows E); $T_{-FUT \& +PAST} (e_1 > e_2)$
c. Mary will love John. S < E (S precedes E) $T_{+FUT \& -PAST} (e_1 < e_2)$

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[38] It should be noted that "tense markers" may sometimes be phonologically zero; e.g. the present tense is often phonologically zero, according to Julien (2001:129). In such cases, it is customary to assume that "zero morphemes" still have a denotation because of their paradigmatic opposition to other, phonetically realized tense markers.

[39] Julien discusses and rejects various hypotheses on the arguments of tense elements. Reichenbach (1947), Comrie (1985) assume that tense elements encode a relation between time points. Bennett and Partee (1978), Demirdache and Uribe-Extebarria 2000 assume that tense elements relate time intervals. Both these views are rejected by Julien. Instead, she adopts the assumption of Giorgi and Pianesi (1997) that tense elements relate not time points or time intervals but *events*, where *event* is construed as a cover term for events in the narrow sense (i.e. non-states/dynamic situations) and states; i.e. as synonymous with the *eventuality* of Bach (1981) or the *situation* of Barwise and Perry (1983). Julien (2001:127): "On this approach, *John ran* is true iff before the speech event there was an event of John running, and similarly, *John was sick* is true iff before the speech event there was an event that consisted in John being sick. It follows that the precise extension in time of the event or state becomes irrelevant, and the problems associated with the time point or time interval approaches disappear."

[40] I would like to emphasize that this amounts to my understanding of Julien's assumptions; this formula is not taken from any of Julien's work quoted here. Thus, potential errors are mine.

Chapter 5

This exhausts the possible orderings of S and E. However, S and E do not suffice to account for all types of temporal orderings in natural language, as is well known. Reichenbach (1947) also introduced R, 'reference time', to account for the intricacy of natural tenses, and each tense was seen as a global ordering of S, R and E. Vikner (1985) proposed that every tense involves *two* Rs, i.e. two reference times. Julien rejects both these views and argues instead that each tense element is taken to specify only one relation, between two events, where the speech event may constitute one of these events. Furthermore, there is in principle no upper limit to the number of such relations within one and the same construction. Instead, the number of reference times R is a function of the number of tense elements that are present in the construction. Since Tense elements are taken to be realized in Tense projections which project on top of lexical VPs, it follows that the number of tensed verbs (finite or non-finite), in a construction is what determines the number of reference times R[41]. However, there is a requirement that every R introduced must serve a *function* to be licit at LF. This means that R_n must not coincide with either S or E or R_{n-1}. To exemplify, Julien claims that this is the reason why (45) is ungrammatical:

(45)

   *She is being reading LGB.

Here, the finite auxiliary states that S is simultaneous with R_1, which is the reference time introduced by that auxiliary. Moreover, the progressive *being* adds another R, R_2, which is simultaneous with R_1. Finally, the progressive *reading* states that R_2 is simultaneous with E. In other words, R_1, R_2 and E are all simultaneous. The two Rs cannot both have a function, and the construction is ungrammatical.

   Julien goes on to elaborate on the function and syntactic realization of R. She claims that R is a perspective time, a time from which another event is viewed, and that it might possibly be encoded by the syntactic head T(Future), at least in certain cases, or maybe R does not have a syntactic representation at all.

   For Julien, the difference between the (present[42]) perfect and the simple past (and similarly, the difference between the progressive and the simple present) is that the simple,

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[41] This is inaccurate, since Julien proposes (see above) that both T(FUT) and T(PAST) may be active in one and the same clause, cf. (42), where the verb *would* is taken to realize both T(FUT) and T(PAST). If both heads have a positive value, there are two tense elements present in the same extended projection of one and the same verb, which means that the number of reference times R are just in part determined by the number of tensed verb in a sentence.

[42] The *present perfect* is a perfect construction where the auxiliary is marked with present tense. Thus, *I have seeen him* is the present perfect wheras *I had seen him* is the past perfect.

finite tenses directly relate S to E, whereas the complex, non-finite tenses contain an R in addition to S and E. It is the tense marking of the auxiliary which specifies the relation between S and R, whereas the tense marking of the main verb *-en* (and presumably *–ing* in the progressive) specifies the relation between R and E. To exemplify, in the present perfect R is simultaneous with S, and focusses on the fact that E is viewed from S, cf. (46)b.

(46)

> a. I bought that book. S > E
> b. I have bought that book. S=R & R > E

Since R=S, the only temporal adverbials that are compatible with these constructions are adverbials denoting the moment of utterance. The focussing function of R in the present perfect is said to prevent these adverbials from specifying E (i.e. the predicate event), which means that they *must* specify R, which in the present perfect is contemporaneous with S[43]:

(47)

> I have bought that book now/*yesterday.

On the other hand, in the past and future perfect, R does not coincide with S, which is why temporal adverbials in these constructions need not specify R, they may also specify E, according to Julien. This accounts for the ambiguity of the following sentences:

(48)

> a. Mary had arrived at six o'clock.
> b. When you arrive at seven, she will have arrived at six.

The ambiguity is seen by the two possible paraphrases of each of these sentences; either Mary's arrival took (or will take) place at six o'clock, or she had (or will have) arrived *by* six o'clock. In the former case, the adverbial specifies E, the predicate event time, in the latter case, it specifies R, the reference time.

---

[43] In fact, this turns out to be inaccurate, according to my own observations. First of all, it is perfectly possible in Norwegian to add adverbials to this construction, adverbials that do not specify the moment of utterance, as long as they belong to the same daily, weekly, monthly or yearly cycle (cf. footnote 32) e.g. *Jeg har kjøpt mange bøker i dag/denne uka/ denne måneden/ i år* 'I have bought many books today/this week/this month/this year'. Julien mentions (2001:143) that the speech event is not necessarily construed as intrinsically punctual, an assumption that might account for this fact, although I am not sure how to incorporate this in the system outlined here. Secondly, one possible piece of counterevidence to Julien's assumptions about the possible specification of R vs. E is a sentence like the following, where both E and R are specified at once, and the perfect in question is the present perfect:

> (i) Hver gang jeg ringer min mor, har hun sovet dårlig natten før.
>   'Each time I call my mother, she has slept badly the night before'

Here, the adverbial clause *Hver gang...*'every time...' specifies R, whereas *natten før* 'the night before' specifies E.

5.3.3.2 A different approach

Firstly, I will raise a few objections to Julien's system. In her approach, complex tenses typically imply the existence of several clauses, where one is embedded into the other. Each verb in a construction projects the two temporal heads T(Past) and T(Future) on top of it, and since, by Julien's assumption (cf. above), each clause can contain only two temporal heads as a maximum, we need (in most cases) one clause, each containing these two heads, for each lexical verb[44]. In addition, every extended projection of each verb in any clause must contain a FinP, encoding ±finiteness. This yields, in my view, unneccessary complex structural representations for each sentence. I see no a priori reason why finiteness *and* tense could not be encoded by the same functional head, as long as they clearly do not correspond to two different, separable affixes in Mainland Scandinavian[45].

Secondly, although Julien assigns a temporal function to the perfect participle, notably the function of bearing the 'non-finite past' marking, she assigns no such temporal function to the infinitive, which has as its sole function to lexicalize the V head of the predicate VP. In fact, Julien explicitly rejects that the infinitive has any temporal marking (cf. Julien 2001:126, "the (infinitival) main verb is uninflected"). In my view, the infinitive does have a temporal function on a par with the perfect participle and partakes in the temporal construal of Norwegian sentences, thus I will ascribe temporal properties to the infinitive as well[46]. This point will be elaborated on below.

Thirdly, though I strongly admire the effort to invent a theory that accounts for all possible tense combinations in all possible languages, the extent and ambition of such an endeavour may in some cases jeopardize the accuracy and adequacy of the description of each

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[44] Again, the exception is when both T(FUT) and T(PAST) have a positive value, where e.g. the verb *would* realizes both heads. Note also that the definition of 'clause' is fully dependent on the assumption that two T(ense) heads are, universally, the maximal number of T(ense) heads in a single clause. Thus, if two 'past' relations are to be licit in one and the same construction (e.g. *She had* [past] *eaten* [past]), it follows that we need two T(PAST) heads to incommodate these relations. Since Julien assumes as a universal principle that only one single T(PAST) head is projected pr. clause (in addition to one single T(FUT)), it follows that such constructions must be biclausal.

[45] It seems that Julien's reason for assuming a separate Finiteness projection is the fact that subject agreement always co-occurs with finiteness (Julien 2000a: 63): "Since subject agreement always co-occurs with finiteness, one might reasonably guess that it is the Finite head which hosts subject agreement [...]." While I agree that assuming a separate projection FinP is one reasonable way of accounting for this fact, one might assume that this could be accounted for by assuming that a feature [FIN] could be hosted by another projection, like e.g. a T-projection. A T-projection carrying the feature [+FIN] would then be assumed to trigger subject agreement, whereas a T-projection lacking this feature does not trigger subject agreement.

Another point is that MSc in general does not employ subject-verb agreement, except as relicts. Thus, one might want to claim that a FINP could be parametrized as well, and possibley lacking in MSc.

specific language. Specifically, I will claim below that Mainland Scandinavian languages do not employ 'future' in their tense systems, since 'future' is not morphologically encoded[47]. One way to implement this idea in Julien's system would be to allow the two different tense heads to be parametrized, where languages may select T(Past) only, T(Future) only, both heads, or none. Evidence to support this idea is found in Comrie (1985:48 ff), where the author discusses languages where a) only a future/non-future distinction is made, b) languages where only a past/non-past distinction is made, and c) "languages that lack tense altogether". Julien herself provides data from languages where, evidently, both the past/non-past and the future/non-future distinction are made. In my view, MSc belong to the languages in b); i.e. languages that make the past/non-past distinction only. This does not mean, of course, that Norwegian is unable to express 'future'. Just like languages that lack morphologically/syntactically encoded tense features altogether may express temporal relations by modal or lexical means, MSc employs e.g. modals to fill in the gaps in the tense paradigm. Thus, contrary to Juliens assumptions, I do not take the modal *ville* 'will' to be a marker for future tense, but a modal auxiliary denoting 'intention' in its root reading and 'prediction' in its epistemic reading. As such, it does give rise to a future reading of its complement, but it does not belong to the inventory of markers in the Norwegian tense system per se. Likewise, all the other root and epistemic modals may give rise to a future reading of their complements without explicitly acting as tense markers. Instead, I will take the two-way distinction mentioned in Comrie (1985:48ff) to be the fundamental split in the Norwegian tense system, where 'past' is morphologically encoded as a preterite and the 'non-past' is morphologically encoded as present.

> While the general theory allows us a three-way distinction within absolute tense, many languages in fact have a basic two-way split [...]. Past versus non-past is [...] the basic tense-split in many European languages, with sub-divisions within non-past (especially future as oppsed to the present) being at best secondary: thus the so-called present tense in such languages is frequently used for future time-reference [...].

Adopting Julien's hypothesis of non-finite tense, I would like to propose that Norwegian employs the following distinctions: *finite* versus *non-finite* and *past* versus *non-past*. Contrary to Julien's assumptions, I claim that the infinitive functions as the non-finite non-past tense in

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[46] Julien herself (p.c.) agrees that this might be a possibility, at least for Norwegian. She admits that she has not focussed on the possible temporal contribution of the infinitive in her work.

[47] Julien mentions that Solà (1994) expresses the view that the future in English is not a tense either, but a mood. Like the view defended here, Solà assumes a [± PAST] tense distinction in English.

Chapter 5

Norwegian tense constructions. This yields the following paradigm (which will be modified below).

(49)

	+Finite	-Finite
+Past	**preterite**	**perfect**[48]
-Past	**present**	**infinitive**

The main difference between Julien's model and the paradigm above is that I ascribe to the infinitive a prominent place in the tense system, and that I do not assume 'future' to be expressed by a designated tense element in Norwegian.

Furthermore, I will adopt Julien's account of the arguments of tense elements, namely, that tense elements, in Norwegian expressed by tense affixes, establish a temporal ordering between events, where the speech event may be one of these events[49]. I want to advocate below the idea that each and every verbal predicate denotes an event (in the wide sense, encompassing states; cf. fn. 39), and that this event takes part in temporal construal. This means, for instance, that I take modal auxiliaries to denote their own separate events; they do not express temporal facets of other events, as suggested by Julien's approach outlined above. That is, on my approach, modals provide their own Es (i.e. predicate events)[50].

In addition, I exploit Julien's idea that finite tenses relate to S whereas non-finite tenses relate to R. However, I will claim that the R in question is provided by the c-commanding verb; in fact, in my proposal, there are in a sense no R's, only E's, since each verb provides an E *which functions as an R* w.r.t. to the following verb.

Finally, I assume that any verbal predicate in Norwegian contains a tense-element, i.e. there are no untensed verbs in Norwegian (this claim will be elaborated on in section 5.4.3). The tense element of any given verb encodes a temporal relation between two events. If the

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[48] Note that this is the non-finite perfect; i.e. the perfect construction stripped of any finite marking. We return to this point below.
[49] It is possible to say that "event" here is short-hand for "event-argument" of the kind suggested by Davidson (1967).

tense element in question is a non-finite tense element, it encodes a relation between the event denoted by the verb c-commanding the tense element and the event denoted by the verb containing the tense element (i.e. the verb containing the affix denoting the tense element). Alternatively, if the tense element in question is a finite tense element, it encodes a temporal relation between S (the speech event) and the event denoted by the verb containing the tense-element.

To exemplify, a sentence containing three verbal predicates contains three tense elements, hence three temporal relations, and each relation specifies the temporal ordering of two events – which means that there are four events in all, since S constitutes the topmost event. Thus, these three verbal predicates constitute a Tense-chain with four links, with S as the topmost or left-most link in the Tense-chain; cf. (50). Note that e.g. *skulle* is shorthand for the tense-element [+PAST, +FINITE] expressed by the preterite form *skulle:*

(50)

$$e_1 \quad e_2 \quad e_3$$
Marit skulle prøve å komme. --> *skulle* (S, e_1), *prøve* (e_1, e_2), *komme* (e_2, e_3)
Marit should try to come
'Marit would try to come.'

This means that the Tense-chain in question consists of the four events (S, e_1, e_2 and e_3), where e_1 is the event denoted by the modal *skulle,* e_2 is the event denoted by the verb *prøve* and e_3 is the event denoted by *komme.* The verbal predicates involved are thus hooked up to one another in a 'tongue and groove' fashion, where their respective tense elements anchor the verb w.r.t. the previous event in the chain, whereas the event denoted by the verb itself provides the anchor for the next tense element in the construction. Thus, the tense element of *skulle* orders the event denoted by *skulle* w.r.t. S, the tense-element of *prøve* orders the event denoted by *prøve* w.r.t. the event denoted by *skulle* and finally, the tense-element of *komme* orders the event denoted by *komme* w.r.t. the event denoted by *prøve.*

Now, we have not addressed the nature of the temporal ordering imposed by the specific tense elements. We have only stated that each tense-element encodes the relation between two events, we have not specified *what* relation between these two events is encoded by the various tense elements. However, since I am already committed to the assumption that Norwegian employs a past/non-past distinction only, it follows that I believe these two relations to be the only two relations that could possibly be encoded by Norwegian tense

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[50] Below, I will argue that even aspectuals provide their own E's; i.e. they encode their own events. For

elements. The"' past relation" is expressed by a) the perfect, which encodes the *non-finite* "past relation" (we will return to the perfect below and specify this assumption) and by the preterite, which is the *finite* "past relation". Now, recall that the difference between finite and non-finite tense elements is that finite tense elements relate to S (which means that they take S as their first argument), whereas non-finite tense-elements relate to the c-commanding verb. Thus, the past-relation expressed by the preterite modal *skulle* in (50) takes S as its first argument and the event denoted by *skulle* as its second argument, and orders S as 'after' the event denoted by *skulle:*

(51)

$$\textit{skulle} \text{ [+PAST, +FIN] } (S > e_{\text{SKULLE}})$$

This amounts to saying that the tense element of *skulle* has two features. Firstly, the "past relation" encoded by the tense element signals that the event instantiating its first argument is subsequent in time to the event instantiating its second argument. Secondly, [+FIN], i.e. the finiteness feature, signals that the first argument of this specific tense element is S, the speech event. In short, S is temporally subsequent to the event denoted by *skulle,* which means that the event denoted by *skulle* is 'past relative to S'.

Now, the second temporal relation expressed by the Norwegian tense system is the non-past. Recall the quote from Comrie (1985) above where it was stated that the non-past form encompasses 'present' as well as 'future'. Thus, we have two ways of representing this relation. One choice is to represent it as $((e_1 = e_2) \lor (e_1 < e_2))$, which means that e_1 is either contemporaneous with e_2 or e_1 precedes e_2. This means that e_2 is either 'present' w.r.t e_1 or e_2 is 'future' w.r.t. e_1; recall that the non-past forms are underspecified w.r.t. these two relations, since it encodes both, simultaneously. Our other choice is to represent the non-past relation simply as the "elsewhere" case, i.e. as the negated 'past' relation $\neg (e_1 > e_2)$, which means 'non-past'. This amounts to saying that the non-past form encodes 'everything but' the past-relation; i.e. the present as well as the future. The latter representation is the one we will employ in what follows, but keep in mind that it equals the representation $((e_1 = e_2) \lor (e_1 < e_2))$ in all relevant respects.

Now, let us look at the finite non-past tense element. This amounts to *the present*. The present is represented by the matrix [-PAST, +FIN], which means that it imposes a non-past

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expository purposes, however, I want to keep these assumptions in the background at present.

relation on its two arguments, and because of the positive value of the finiteness feature, we know that the first of these arguments is S:

(52)

    a. Marit kommer.   *kommer* [-PAST,+FIN] $\neg$ (S $>$ e_{KOMME})
       'Marit comesPRES.'

    b. Marit liker Jon.   *liker* [-PAST,+FIN] $\neg$ (S $>$ e_{LIKE})
       'Marit likesPRES John.'

The information encoded in this tense element, then, is that it imposes a non-past relation between its two event arguments, a relation that encompasses the 'present' as well as the 'future'. Thus, the event denoted by the verbal predicate is anything from 'future' to 'contemporaneous' w.r.t. S, the speech event. We know from section 5.3.2 that dynamic predicates tend to get a 'future' reading whereas stative predicates tend to get a 'present' reading, at least this is the case for the infinitival complements of modals. We can observe the same effect in the present; cf. (52) a versus b. The dynamic predicate *kommer* 'comes' is easily construed as 'future' w.r.t. S, whereasthe stative predicate *liker* 'likes' is hard to construe as 'future'. The natural reading of this stative predicate is simultaneity, i.e. 'present'. However, this is not information encoded in the tense element. The tense element encodes only two bits of information; one, the relation imposed by the tense element on its two arguments is the non-past relation; and two, the first of these arguments is S, because the tense element has a positive value for the finiteness feature. The actual choice between a 'future' and 'present' reading is thus not imposed by the tense element, this is an effect of the aspectual properties of the predicates carrying the tense element as an affix.

      Now, to the infinitive. Recall from the table in (49) that the infinitive is the non-finite non-past. Hence, the infinitive is the non-finite tense element ranging from present to future, and the relation this tense element imposes on its two event arguments is the relation of non-past, just like the present. However, unlike the present, the infinitive does *not* take S as its first argument; being non-finite, it takes as its first argument the event of the c-commanding verb.

(53)

    a. Jon skal arbeide.   *arbeide* [-PAST,-FIN] $\neg$ (e_{SKULLE} $>$ $e_{ARBEIDE}$)
      Jon shall work
      'Jon is supposed to work.'

b. Jon skulle arbeide. *arbeide* [-PAST,-FIN] $\neg$ ($e_{SKULLE} > e_{ARBEIDE}$)
Jon should work
'Jon was supposed to work.'

Now, notice that the representation of the infinitival tense element is identical in a and b. However, we know that the event denoted by *arbeide* is 'future' or 'present' w.r.t S in (53) a, whereas the same event might be in the past, relative to S, in (53) b. This is expected on the theory outlined here. The tense element of *arbeide,* being non-finite, cannot relate directly to S. It relates solely to the event denoted by the c-commanding verb, in this case *skal/skulle.* Now, whereas *skal* in (53) a is present, hence encodes a [-PAST, +FIN] tense element, *skulle* in (53) b is preterite and encodes a [+PAST,+FIN] tense element. Thus, *skal* is non-past w.r.t. S, and *skulle* is past w.r.t. to S. The tense element of the matrix verb is what relates to S, whereas the infinitive relates to the matrix verb. Thus, the event denoted by *arbeide* may be construed as 'non-past relative to S' in (53) a because of its dependence on the c-commanding verb, which is 'non-past relative to S'. On the other hand, the event denoted by *arbeide* in (53) b may be construed as 'past relative to S' because its c-commanding verb is 'past relative to S'. This effect might be called "temporal inheritance", since the temporal construal of *arbeide* relative to S depends on the relation between the c-commanding verb (e.g. *skal/skulle*) and S.

Now, consider an apparent counter-example to these claims; cf. (54):

(54)

Jon skulle arbeide i morgen, sa han. *arbeide* [-PAST,-FIN] $\neg$ ($e_{SKULLE} > e_{ARBEIDE}$)
Jon should work tomorrow, said he
'Jon was going to work tomorrow, he said.'

In this sentence, the event denoted by *arbeide* is construed as 'future relative to S', even though *skulle* is still 'past relative to S'. Thus, this is an apparent counter-example to 'temporal inheritance'. This is not so, however. Since *arbeide* in (54) is still non-past relative to *skulle,* which is the information encoded by the tense element, it may be construed as 'future' relative to *skulle,* and since the tense element does not encode any restriction on *how far* into the future this event may be w.r.t. *skulle,* it follows that the event denoted by *arbeide* may even be construed as 'future relative to S'. The tense system simply remains silent about this relation; the only two relations encoded is the relation beween *arbeide* and *skulle* (encoded by the infinitive) and the relation between *skulle* and S (encoded by the preterite). Note however, that the temporal construal of *arbeide* relative to S must be *compatible* with the overall temporal construal, which it is in (54), unlike in (55) below:

(55)

> *Jon skal arbeide i går, sa han.   *arbeide* [-PAST,-FIN] $\neg$ (e_{SKULLE} > $e_{ARBEIDE}$)
> Jon shall work yesterday said he
> 'Jon will work yesterday, he said.'

In this sentence, there is nothing to licence the adverbial *i går* 'yesterday', since the only two temporal relations encoded is the non-past relation encoded by the infinitive *arbeide*, and the non-past relation encoded by the present *skal*. Thus, neither of the events may be construed as 'past relative to S', and the adverbial *i går* is illicit.

Now, as regards the choice between 'future' and 'present', both being encompassed by finite or non-finite non-past forms, we see once again that the aspectual properties of the verb carrying the non-past tense element (i.e. the tense affix) are decisive, such that dynamic predicates typically give rise to a 'future' construal, whereas stative predicates give rise to a 'present' construal. We have observed that the present (i.e. the finite non-past tense element) is subject to this effect (cf. (52)). Moreover, this effect was alluded to in section 5.3.2, where it was observed w.r.t. to the infinitive as well. A similar observation is mentioned in Stowell (2000), who attributes this observation to Zagona (1990):

> When the complement of a modal is stative (including habitual and progressive construals of eventive predicates), the eventuality-time (or the interval of habitual quantification) may coincide with the modal's evaluation time, but when the complement of a modal is eventive, it must be irrealis/forward-shifted.

A dynamic predicate, like *komme* 'come', typically gives rise to the 'future' construal, i.e. the infinitive is construed as 'future' w.r.t. the c-commanding verb, whereas a stative verb like *like* 'like' typically gives rise to a temporal construal where the event denoted by *like* is 'present' w.r.t. the c-commanding verb, cf. (56):

(56)

> a. Marit må komme.   *komme* [-PAST,-FIN] $\neg$ ($e_{MÅ}$ > e_{KOMME})
>   'Marit must come.'

> b. Marit må like pannekaker.   *like* [-PAST,-FIN] $\neg$ ($e_{MÅ}$ > e_{LIKE})
>   'Marit must like pancakes.'

As represented in the formulas, though, the choice between 'future' and 'present' is not encoded by the tense element of the infinitive. This tense element simply encodes that the relation between its two arguments is the non-past relation, and that the first of these arguments is the event denoted by the c-commandig verb. The choice between a 'future' or 'present' construal of the non-past relation is instead affected by the aspectual properties of the

predicates involved, as parallelled by the finite non-past; i.e. the present, as described above (cf. (52)). However, as opposed to the finite non-past, which relates directly to S, the aspectual properties of the c-commanding verb also are important to this choice in the case of the non-finite non-past (i.e. the infinitive). That is, the aspectual properties of the verb carrying the infintive tense element are important, but even the properties of the c-commanding verb have influence on the choice between a 'future' and 'present' reading of the complement. For instance, if we replace the modal *må* in (56) b with the modal *ville,* it is easier to get a 'future' construal of the stative infinitive, simply because *ville* denotes intention (root) or prediction (epistemic); both being "future-projecting" predicates in the sense that their complements are construed as 'future' w.r.t. the modal.

Now, to the most complex tense element of all, the non-finite past construction which is the non-finite perfect. First of all, note that Julien assumes the auxiliary *ha* 'have' to be an integral part of the non-finite past construction, and I adhere to this assumption (a question that will be specified below). The reason why we need to make this assumption is the fact that deleting the aspectual *ha* (a phenomenon known as *ha*-deletion or *ha*-omission) deprives the construction of some essential temporal properties, as described below in section 5.3.3.3. Thus, we will regard the non-finite perfect as a compound, consisting of the non-finite auxiliary *ha* and the perfect participle, and this complex construction is what gives us the 'non-finite past tense' construal.
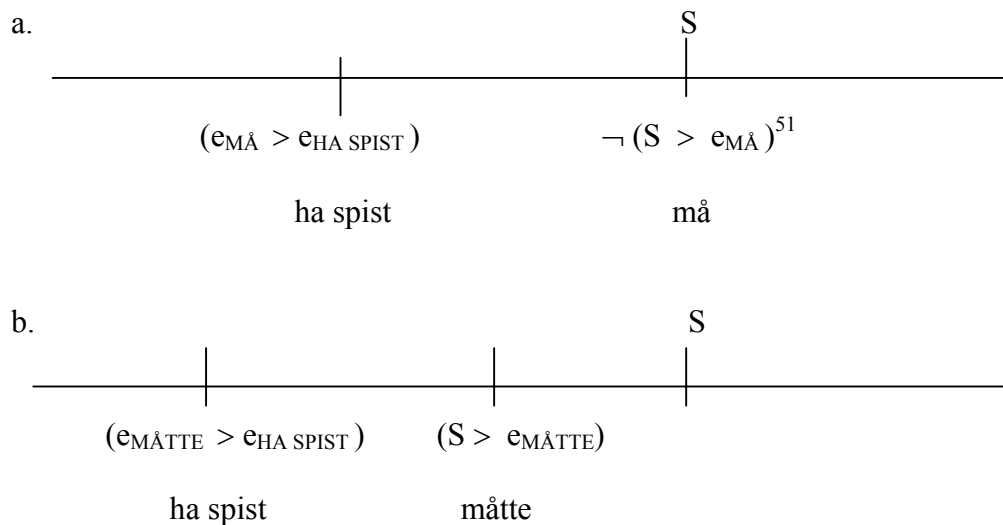
Now, recall that non-finite tense elements relate to the event denoted by the c-commanding verb. If we assume that the non-finite perfect is a compound which encodes the non-finite past tense element, this ought to be the case for the perfect as well. That is, let us assume for now that the non-finite perfect is a compound tense, where e.g. *ha spist* together expresses the matrix [+PAST, -FIN](an assumption that I will modify below). Being non-finite, this compound relates to the c-commanding verb, and expressing 'past', the compound denotes a 'past' relation between its two arguments. On the face of it, these assumptions give the right results, cf. (57):

(57)

    a. Jon må ha spist.   *ha spist* [+PAST,-FIN] $(e_{MÅ} > e_{HA\ SPIST})$
       Jon mustPRES have eaten
       'Jon must have eaten.'

    b. Jon måtte ha spist.   *ha spist* [+PAST,-FIN] $(e_{MÅTTE} > e_{HA\ SPIST})$
        Jon mustPAST have eaten
       'Jon had to have eaten.'

This would again constitute an example of "temporal inheritance" since the event denoted by *ha spist* inherits its temporal construal w.r.t. S from the relation between the c-commanding verb and S. Thus, whereas the present modal *må* is non-past w.r.t. S and the preterite modal *måtte* is past relative to S, the event denoted by *ha spist* is 'past relative to *må/måtte*' in both cases; compare the two time-lines depicted in (58):

(58)

a.

$$(e_{MÅ} > e_{HA\ SPIST})\qquad \neg\ (S\ >\ e_{MÅ})^{51}$$

ha spist   må

b.

$$(e_{MÅTTE} > e_{HA\ SPIST})\qquad (S > e_{MÅTTE})$$

ha spist   måtte

However, these assumptions are clearly insufficient to account for the various temporal construals possible with the non-finite perfect. To exemplify, let us look at (59) a below, and compare this sentence to (57)a, repeated here as (59) b:

(59)

      a. Jon må ha spist før han kommer
        Jon must have eaten before he arrives
        'John must have eaten before he arrives.'

      b. Jon må ha spist.   *ha spist* [+PAST,-FIN] $(e_{MÅ} > e_{HA\ SPIST})$
        Jon mustPRES have eaten
        'Jon must have eaten.'

Whereas the representation of the temporal relations in (59)b gives the right result for this sentence, it is obviously insufficient for the temporal relations in (59)a. In the latter case, the natural reading is crucially *not* that *ha spist* is past relative to the event denoted by *må*. Instead, the natural temporal construal of this sentence is that there exists a point in the future,

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[51] Note that the non-past relation encoded by the present does not force *må* to be simultaneous with S; it may also be construed as 'future' w.r.t. S, since all that is encoded by the present is the non-past relation.

specified by the adverbial *før han kommer* 'before he arrives', and the eating-event is required to have taken place before this point in the future. The eating-event may very well take place *after* the event denoted by *må,* i.e. the eating may be 'future' w.r.t. *må.* This is hard to account for within the machinery invoked so far. Hence, we will modify, or rather *specify* our machinery to account for these facts.

There is one important thing to notice in analyzing the non-finite perfect, and that is the assumption that it is composed of an infinitive *ha* 'have' + the perfect participle. Now, recall that we have assumed all other infinitives to express a non-past relation w.r.t. the c-commanding verb. However, we have ascribed to the non-finite perfect, e.g. [*ha*INF *spist*PTCPL[52]], the matrix [+PAST, -FIN]. This leads to a contradiction, since the perfect cannot simultaneously express both past and non-past. So thus far, we have suppressed the fact that the non-finite perfect consists of an *infinitival* auxiliary in addition to the perfect participle.

However, at this point, I want to propose that the perfect consist of not one, but *two* temporal relations. Firstly, it consists of the temporal relation between the auxiliary *ha* and the c-commanding verb. Secondly, it consists of the temporal relation between the auxiliary *ha* and the perfect participle. Whereas the relation between *ha* and the c-commanding verb is a *non-past* relation – since it is encoded by the infinitival form of the auxiliary – the relation between the perfect participle and the auxiliary is the non-finite *past* relation. That is, the non-finite perfect encodes two temporal relations at once, which is the reason for its double-faced behaviour. Thus, let us replace the representation of the temporal relation of the perfect invoked in (57) above, repeated here as (60) a, with the representation in (60)b:

(60)

a. Jon må ha spist.   *ha spist* [+PAST,-FIN] $(e_{MÅ} > e_{HA\ SPIST})$
Jon mustPRES have eaten
'Jon must have eaten.'

a. Jon må ha spist.   *ha* [-PAST, -FIN] $\neg\ (e_{MÅ} > e_{HA})\ \&$
Jon mustPRES have eaten   *spist* [+PAST,-FIN] $(e_{HA} > e_{SPIST})$
'Jon must have eaten.'

Now, let us see whether this move gives us the right results. Since *ha* is taken to encode a non-past relation because of its infinitival form, it may in principle be construed as anything from simultaneous to future w.r.t. its c-commanding verb. However, we know that there are

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[52] Meaning 'participle'.

good reasons to describe the perfect as a state, and I want to propose that the auxiliary is what encodes this state. Recall also that stative predicates with non-past tense elements tend to be construed as contemporaneous with the c-commanding verb, if the non-past tense element in question is a non-finite tense element, or contemporaneous with S, if it is a finite tense element. In the case of (60), we have a non-finite non-past tense element, namely the infinitive. Thus, since *ha* is assumed to be a stative predicate, the 'default' choice between 'future' and 'present' construal is the latter. Thus, we will modify our time-line in (58) a above according to our new assumptions:

(61)

$$\neg (S > e_{MÅ})$$
$$må$$

$$(e_{HA} > e_{SPIST})$$
$$spist$$

$$\neg (e_{MÅ} > e_{HA})$$
$$ha$$
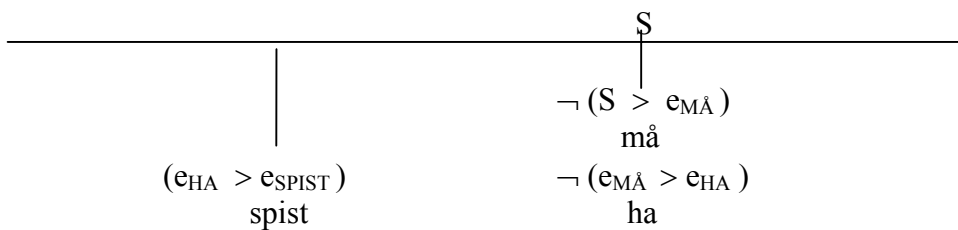
Now, we know that a stative predicate with a non-past tense element, which is typically construed as 'present,' may be forced to encode 'future' by means of an adverbial denoting a point in the future. This is the case, for instance, for (62) below:

(62)

    a. Jon spiser.
      'Jon eatPRES'
     'Jon is eating.'

    b. Jon spiser når han kommer.
      Jon eats when he arrives
      'Jon will eat when he arrives.'

We also know that this is the case for stative predicates in the non-finite non-past, i.e. the infinitive; cf. e.g. (63), where it is easy to construe the infinitive as contemporaneous with *må* in (63)a, although the natural construal of the infinitive is 'future' w.r.t. *må* in (63)b:

(63)

    a. Marit må kunne denne boka utenat.
      'Marit must know this book by heart.'

    b. Marit må kunne denne boka utenat til i morgen.
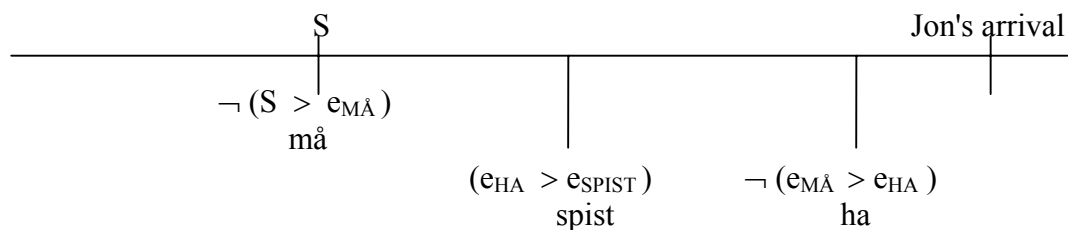   'Marit must know this book by heart by tomorrow.'

Thus, since the aspectual *ha* is an infinitive, we would expect that it might be forced into a 'future' construal by means of a temporal adverbial denoting a point in the future, as well:

(64)

       a. Jon må ha spist før han kommer
        Jon must have eaten before he arrives
       'John must have eaten before he arrives.'

Thus, it is the infinitival form of the aspectual that makes this construction licit. The non-past relation between *ha* and the c-commanding verb *må,* which in its turn is 'non-past relative to S', is compatible with a future-denoting adverbial because the non-past relation encoded by the infintival auxiliary encompasses 'future' in addition to 'present'. Hence, the adverbial simply specifies the non-past relation encoded by the non-finite non-past tense element. We may depict the relations in (64) by the following time-line:

(65)

$$S \qquad\qquad\qquad\qquad\qquad\qquad \text{Jon's arrival}$$

$$\neg\,(S > e_{MÅ})$$
$$\text{må}$$

$$(e_{HA} > e_{SPIST}) \qquad \neg\,(e_{MÅ} > e_{HA})$$
$$\text{spist} \qquad\qquad\quad \text{ha}$$

This time-line captures the intuitions about the temporal construal of (64), since a natural paraphrase of this sentence is that 'by the time of Jon's arrival, a state must have commenced consisting in the after-math of the event of Jon's eating'.

     Now, there is an apparent snag to this solution. The non-finite perfect accepts not only future-denoting adverbials, it even accepts past-denoting adverbials, cf. (66):
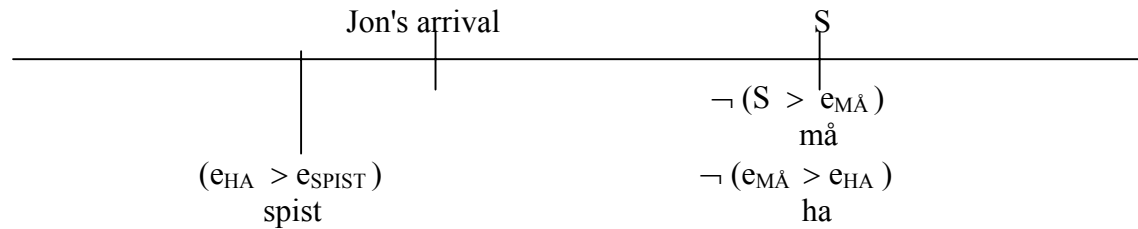
(66)

       a. Jon må ha spist før han kom.[53]
        Jon must have eaten before he arrived
       'John must have eaten before he arrived.'

However, this is not necessarily as big a problem as it seems. Recall that the non-finite perfect encodes two temporal relations, the non-past relation encoded by the infinitive and the past relation encoded by the perfect participle. I want to claim here that the adverbial *før han kom* 'before he arrived' specifies the past relation encoded by the perfect participle, not the non-past relation encoded by the infinitive. This is reminicent of Julien's proposal above (cf.

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[53] Thanks to Helge Dyvik for making me aware of this type of data.

section 5.3.3.1) that the perfect provides an R in addition to an E (where the latter is encoded by the participle), and an adverbial may specify either R or E[54]. In my terminology, an adverbial may specify the past-relation encoded by the participle or the non-past relation encoded by the infinitival auxiliary. Hence,we may represent the temporal relations in (66) by means of the following time-line:

(67)

$$\neg (S > e_{M\mathring{A}})$$

Jon's arrival — S

$$(e_{HA} > e_{SPIST})$$
spist

$$\neg (S > e_{M\mathring{A}})$$
må

$$\neg (e_{M\mathring{A}} > e_{HA})$$
ha

Again, this time-line seems to capture the natural temporal construal of the sentence. The natural paraphrase of (66) is that 'there must exist a state consisting in the aftermath of the event of Jon's eating before he arrived'.

Now, we know that the perfect has finite versions in addition to its non-finite version. Let us see how this theory fares w.r.t. the finite forms of the perfect.

(68)

    a. Jon har spist.
       'Jon has eaten.'

    b. Jon har spist når han kommer.
       Jon has eaten when he comes
       'Jon will have eaten when he arrives.'

In opposition to the non-finite non-past tense element, which signals that the event carrying the tense element must take the c-commanding verb as its first argument, the finite non-past tense element signals that the first argument of this tense element is S. Since the non-past relation encodes 'future' as well as 'present' (although 'present' is the default with a stative predicate), the stative auxiliary *ha* may be taken to encode simultaneity w.r.t. S (as in (68)a)

---

[54] In some cases, both R and E may be specified in the same construction, cf. Julien (2000b:fn.5). Recall also that Julien claims that the present perfect (i.e. where the auxiliary is 'finite present') does not allow for a specification of R and E; only E (the predicate time) may be specified in the present perfect. This does not seem to be correct, however. Cf the following sentence:
    (i) Hver gang jeg snakker med min mor, har hun sovet dårlig natten før.
   'Each time I speak to my mother, she has slept badly the night before.'
Here the temporal adverbial clause *hver gang jeg snakker med min mor* specifies R/the non-past relation encoded by *har,*whereas *natten før* specifies E/the past relation encoded by the participle.

and 'future' w.r.t. S (as in (68)b), whereas the participle must be 'past relative to *ha*' in both cases; i.e. ($e_{HA} > e_{SPIST}$).

Moreover, the perfect may be equipped with the finite past tense element encoded by the preterite. In this case, both relations encoded are 'past' relations. Firstly, the preterite auxiliary *hadde,* being finite, encodes 'past relative to S'; i.e. ($S > e_{HA}$). Secondly, the perfect participle is 'past relative to *ha*'; i.e. ($e_{HA} > e_{SPIST}$). Thus, we get two past relations, represented by the following time-line:

(69)

$$(e_{HADDE} > e_{SPIST}) \qquad (S > e_{HADDE})$$

spist   hadde
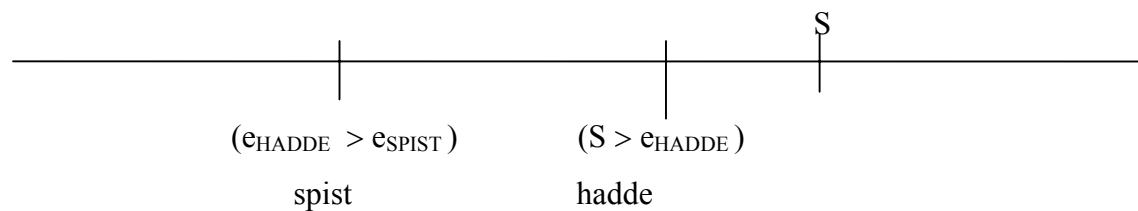
Finally, let us test our assumptions on a somewhat longer Tense-chain, where the temporal relations involved make up a quite complex temporal construal:

(70)

> Han måtte ha villet prøve å svømme.
> he mustPAST have wanted try to   swim
> 'He had to have wanted to try to swim'

måtte	[+PAST,+FIN]	($S > e_{MÅTTE}$)
ha	[-PAST,-FIN]	$\neg$ ($e_{MÅTTE} > e_{HA}$)
villet	[+PAST, -FIN]	($e_{HA} > e_{VILLET}$)
prøve	[-PAST,-FIN]	$\neg$ ($e_{VILLET} > e_{PRØVE}$)
svømme	[-PAST-FIN]	$\neg$ ($e_{PRØVE} > e_{SVØMME}$)

We may depict these relations on a time-line, like in (71). To simplify matters somewhat, we take every non-past relation to encode 'simultaneity', but keep in mind that every non-past relation may be construed as 'future' in addition to 'simultaneity'.

(71)

måtte ($S > e_{MÅTTE}$)
ha $\neg$ ($e_{MÅTTE} > e_{HA}$)

villet ($e_{HA} > e_{VILLET}$)
prøve $\neg$ ($e_{VILLET} > e_{PRØVE}$)
svømme $\neg$ ($e_{PRØVE} > e_{SVØMME}$)
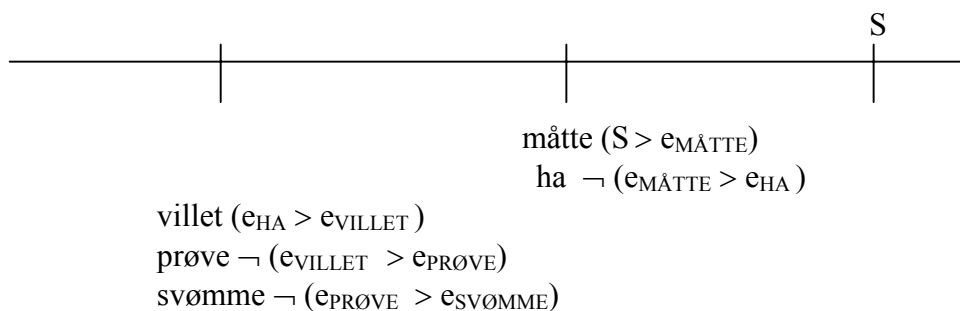
This tense-chain consists of six events, one encoded by each verb plus S, the speech event. These events are ordered by five tense elements; each encoded by a tense-affix on a verb. Only the top-most tense element is finte, since this is the only tense element which takes S as an argument. All other tense elements in this chain are non-finite, since each of them takes the event denoted by the c-commanding verb as their first argument. Now, some of the relations in this chain are past relations, whereas other are non-past relations. Non-past relations may be contrued as 'future' or 'present', depending in part on the aspectual properties of the predicates involved and in part on the presence of specific temporal adverbials.

In this picture, it is not completely accurate to describe the perfect as a non-finite past, since the perfect consists of two relations; the past relation encoded by the participle and the non-past relation encoded by the non-finite auxiliary. However, since the perfect is, in Hofmann's (1976: 94) words, " of course the only way to represent past time with an epistemic modal", it does take on the *function* of a non-finite past. To illustrate this point, the answer in B must employ the non-finite perfect under the modal, whether or not the question in A employs the perfect, as in (72) a, or the preterite, as in (72)b:

(72)

a.   A: Tror du Marit har drept ham?   B: Hun *må* ha drept ham.
           believe you M. has killed him   she must have killed him
           'Do you believe that Marit has killed him?'   'She must have killlled him.'

b.   A: Tror du Marit drepte ham?   B: Hun *må* ha drept ham.
            believe you Marit killed him   she must have killed him
           'Do you believe that Marit killed him?'   'She must have killlled him.'

However, our table of tense-forms in (49) should be replaced with the following:

(73)

	+Finite	-Finite
+Past	**preterite**	**participle**
-Past	**present**	**infinitive**

Now, we are in a position to seek an aswer for the "override" rule alluded to in section 5.3.2 above. Recall that the "override" effect arises e.g. with the non-finite perfect embedded under a modal, where the perfect gives rise to an epistemic reading of the modal as a 'default' (as in (74)a). However, when we add an adverbial, like a temporal adverbial denoting 'future', or a purpose clause, the natural reading of the modal is the root reading, cf. (74) b. On the other hand, adding an adverbial denoting a point in the past once again gives rise to the epistemic reading of the modal.

(74)

a. Jon må ha spist. ha [-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon mustPRES have eaten $spist$ [+PAST,-FIN]   ($e_{HA} > e_{SPIST}$)
   'Jon must have eaten.'

b. Jon må ha spist før han kommer ha[-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon must have eaten before he arrives $spist$ [+PAST,-FIN] ($e_{HA} > e_{SPIST}$)
   'John must have eaten before he arrives.'

a. Jon må ha spist før han kom. ha [-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon must have eaten before he arrived $spist$ [+PAST,-FIN] ($e_{HA} > e_{SPIST}$)
   'John must have eaten before he arrived.'

At this point, we need to address the different *functions* of root and epistemic modals. We know that root modals are employed to state what is required, needed, allowed or intended to hold at some point in time. However, the situation required embedded under the modal; i.e. the situation which is required/intended/needed/allowed to hold cannot denote a point in time preceding the evaluation time of the modal, because this will lead to a conceptual crash. It does not make sense to require/intend/want/need/permit a situation to take place in the past. This is why root modals are 'future-projecting', their complements describe a situation that is temporally subsequent to the eventuality-time of the modal *for conceptual reasons*. When we require/intend/want/need/permit a situation to hold, this requirement/intention/will/need or permission cannot possibly influence on things that have already occurred. I.e. although I might have wanted my requiring John to have eaten before S to be able to alter the actual events taking place, this is not possible in reality. In the word of Lyons (1977: 843):

> *John may have come yesterday* construed as a permission-granting utterance is semantically anomalous for the same reason that *Come yesterday, John!* is anomalous.

This means that when an event embedded under a modal is construed as temporally preceding the eventuality-time of the modal, the reading of the modal will always be epistemic. When

the complement of the modal is construed as future w.r.t. to the eventuality-time of the modal, however, the root reading becomes possible.

Recall from section 5.3.2.5 that it was claimed that root modals take stative complements which are construed as contemporaneous with the root modal. The example is repeated here for convenience (please ignore for the moment that an epistemic reading is also possible):

(75)

> Jon må være på kontoret.
> 'Jon must be/stay in his office.'

It is true that the situation embedded under the root modal, i.e. Jon's being in the office, may very well already hold at the time of utterance. However, this is not the construal implied by the communicative function of the root modal. To exploit the quote from Lyons above, it makes no sense to allow a person to do something yesterday. Likewise, it makes little sense e.g. to order a person to bed, if this person is already in bed. Thus, I want to claim here that it is irrelevant for the root reading of a modal whether or not the situation embedded under the modal may be construed as 'already holding'. The root modal states that 'from now on, the following situation must/may/will/shall etc. hold', it makes no reference to the present situation. This is, I believe what is meant by various descriptions of the 'future-projecting' properties of root modals.

Unlike root modals, epistemic modals are concerned with the truth value of the embedded proposition. Thus, they do not require the embedded situation to take place in the future; on the contary, epistemic modals are perfectly comfortable with propositions denoting events in the past w.r.t. the modal (the exception is the epistemic root modal *ville*, denoting 'prediction'). Thus, we may state these generalizations by means of the following illustration, slightly simplyfying the facts:
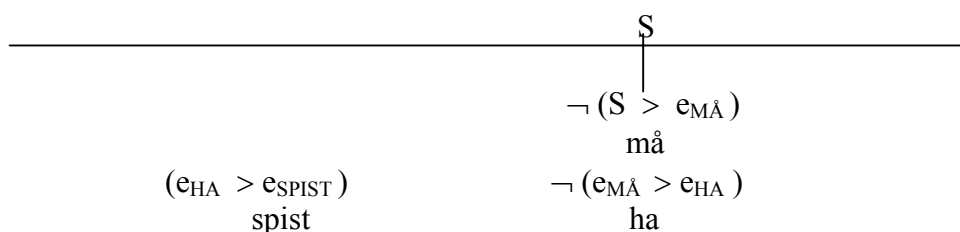
(76)

'past'	S	'future'

modal

Epistemic only   Root possible
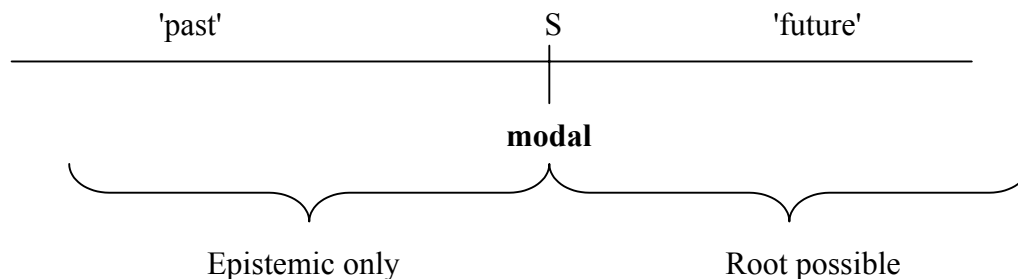
With these assumptions, it is possible to explain the various reading of the modal in the sentences in (74), repeated here as(77). The aspectual *ha,* being stative, is construed as contemporaneous with the modal unless forced into a future reading by means of the future-denoting adverbial, like it is in (77)b. But since the participle is always construed as 'past relative to *ha'* a contemporaneous reading of *ha* places the participle in the past w.r.t. S, cf. the illustration in (78).

(77)

a. Jon må ha spist.   *ha* [-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon mustPRES have eaten   *spist* [+PAST,-FIN]   ($e_{HA} > e_{SPIST}$)
   'Jon must have eaten'

b. Jon må ha spist før han kommer   *ha*[-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon must have eaten before he arrives   *spist* [+PAST,-FIN] ($e_{HA} > e_{SPIST}$)
   'John must have eaten before he arrives'

a. Jon må ha spist før han kom.   *ha* [-PAST, -FIN] $\neg$ ($e_{MÅ} > e_{HA}$) &
   Jon must have eaten before he arrived   *spist* [+PAST,-FIN]   ($e_{HA} > e_{SPIST}$)
   'John must have eaten before he arrived'

(78)

$$S$$

$$\neg \,(S \,>\, e_{MÅ})$$
$$må$$

$$(e_{HA} > e_{SPIST}) \qquad\qquad \neg\,(e_{MÅ} > e_{HA})$$
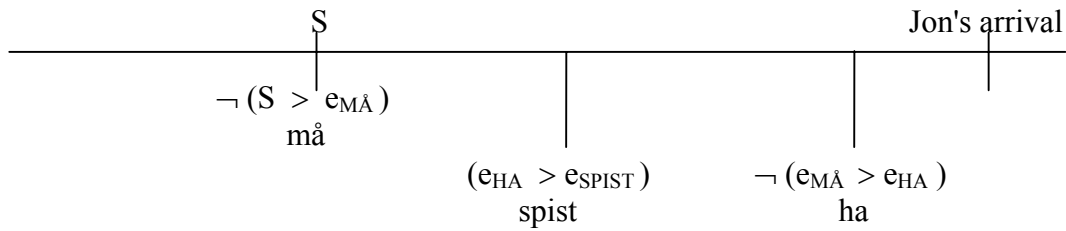$$spist \qquad\qquad\qquad ha$$

Thus, the main event (i.e. the eating) is 'past w.r.t. modal', hence the root reading is not felicitous. However, since the aspectual *ha* is infinitive, it encodes a non-past relation, and this non-past relation may be specified to encode 'future' by means of an appropriate adverbial. This places the main event in the future[55] w.r.t. the modal, and the root reading is possible, as seen in (79) below:

---

[55] Note that this is *one* possibility, not the *only* possibility. The temporal information encoded by the participle is simply that it is 'past w.r.t. *ha'*. There is no limit on the construal as to *how far back* in the past w.r.t. *ha* the event denoted by the participle is situated. Thus, the participle could in principle be construed as 'past w.r.t. the modal'. But again, this is inference and not morphologically encoded information.
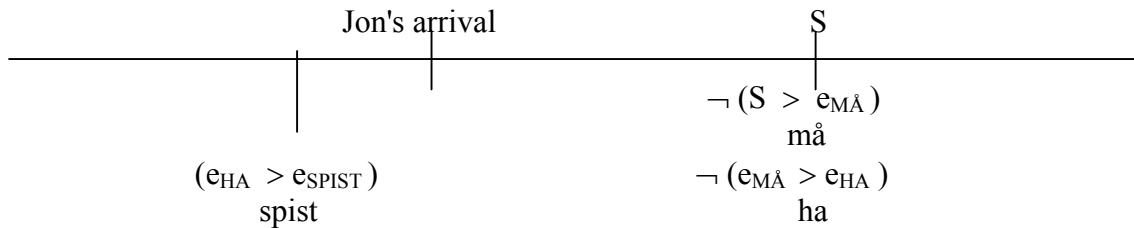
(79)

$$S \qquad\qquad\qquad \text{Jon's arrival}$$

$$\neg\,(S > e_{\text{MÅ}})$$
$$\text{må}$$

$$(e_{\text{HA}} > e_{\text{SPIST}}) \qquad\quad \neg\,(e_{\text{MÅ}} > e_{\text{HA}})$$
$$\text{spist} \qquad\qquad\qquad \text{ha}$$

Finally, adding an adverbial denoting a point in the past once again gives rise to the epistemic reading of the modal, since the main event is 'past' w.r.t. the modal, hence not a suitable complement for a root modal, which requires its complement to be construed as 'future':

(80)

$$\text{Jon's arrival} \qquad\qquad S$$

$$\neg\,(S > e_{\text{MÅ}})$$
$$\text{må}$$

$$(e_{\text{HA}} > e_{\text{SPIST}}) \qquad\quad \neg\,(e_{\text{MÅ}} > e_{\text{HA}})$$
$$\text{spist} \qquad\qquad\qquad \text{ha}$$

Thus, we have an explanation for the fact that a modal preceding an aspectual *ha* 'have' typically gets an epistemic reading – the main event described by the participle is typically construed as temporally prior to the eventuality-time of the modal. Simultaneously, we have an explanation for the fact that a temporal adverbial denoting a point in the future w.r.t. the modal's eventuality-time or a purpose clause (which has the same type of temporal function) may give rise to a root reading of the modal, even though the complement of the modal is the non-finite perfect. The participle is even in this case construed as past w.r.t. *ha*, but *ha* is forced into a future reading by means of the adverbial, hence the participle as well may be construed as future relative to the modal. Finally, a temporal adverbial denoting a point in time *prior* to the modal's eventuality-time does not have the same effect as a temporal adverbial denoting a point in time subsequent to the modal's eventuality-time. This is because the participle in this case is once again construed as prior to the modal. Thus, the root reading is impossible, since the root reading requires a non-past complement, and the epistemic reading is the only possibility.

Thus, what this outline has shown is that it is the *temporal* properties of the perfect that is responsible for its behaviour when embedded under a modal, crucially *in addition to* its aspectual properties. Likewise, we have seen that even for the infinitive the aspectual properties of the verb are of crucial importance to the reading of the modal. A (single-event

construal of a) dynamic verb typically gives rise to a root reading of the modal, and a stative infinitival complement facilitates the epistemic reading, without excluding a root reading of the modal.

Finally, there is one type of complement that is lacking in the preceding section, and for good reasons. Small clause complements of modals certainly fulfills the aspectual requirements of a prototypical root modal complement, in that they are construed as dynamic. However, we have said little about the *temporal* properties of these complements, although we have suggested that they have a 'future' reading w.r.t. the modal. However, nothing in the discussion above explains why an epistemic reading of the modal should be *exluded* in these constructions, since we have seen that epistemic modals too may take [+dynamic,+future] complements (cf. e.g. 5.3.2). We return to this question in section 5.4.3, but for now, we will simply list these complements as complements of root modals only.

(81)

Past complement:	Epistemic reading only
Non-past complement, future construal:	Root reading preferred
Non-past complement, present construal:	Epistemic reading preferred
Stative infinitival complement:	Epistemic reading preferred
Dynamic infinitival complement:	Root reading preferred
Iterative/Progressive construal:	Epistemic reading preferred
Dynamic small clause complement:	Root reading only

5.3.3.3 More on the temporal function of *ha*

As mentioned in section 2.3.1, there exist cases where a Norwegian modal takes a bare perfect participle as a complement. This is illustrated in the following sentences.

(82)

    a.   Jon burde (ha) vært på kontoret.
            'Jon should (have) been in his office.'

    b.   Marit kunne (ha) svømt.
            'Marit could (have) swum.'

    c.   Pasienten måtte (ha) blitt behandlet straks.
            'The patient had to (have) been treated immediately.'

    d.   Begge skulle (ha) reist i morgen.
            'Both (of them) should (have) left tomorrow.'

e.   Myndighetene ville (ha) revet huset.
      'The authorities would (have) demolished the house.'

As suggested by the data, it is possible to add the auxiliary *ha* 'have' in all such cases, crucially without altering the reading of the sentence; an observation that has caused the phenomenon to be known as *ha*-omission. *Ha*-omission as a phenomenon exists in Swedish as well as in Norwegian; moreover, the constructions where *ha*-omission is possible in Norwegian constitute only a subset of the constructions where it is allowed in Swedish. I will not go into the differences between Norwegian and Swedish in this respect here, instead I refer the reader to Julien (2000b), who presents a survey of various works that has been concerned with this phenomenon in Swedish and Norwegian respectively. I will address the conditions for Norwegian *ha*-omission only, and I refer to Swedish only for those constructions that correspond to the instances where *ha*-omission is allowed even in Norwegian.

The constructions where *ha*-omission is possible in Norwegian turn out to be rather limited. Firstly, *ha*-omission is possible only when the auxiliary *ha* is non-finite[56] (cf. (83) a vs. b). Secondly, *ha* can never be omitted when it is governed by the infinitival marker *å* (cf. (83) c), which means in effect that *ha* can only be omitted when it follows a modal, since only modals take bare infinitival complements[57], and the auxiliary *ha* is formally an infinitive. And thirdly, the modal must be marked 'preterite' for *ha*-omission to be allowed, neither a modal marked 'present' nor an infinitival modal makes *ha*-omission possible (cf. (83)d and e respectively).

(83)

a. Jon skulle (ha) kommet.
    'Jon should have come.'

b. Jon *(har/hadde) kommet.
   'Jon has/had come.'

c. Jon ble påstått å *(ha) kommet.
   'Jon was claimed to have come.'

d. Jon skal *(ha) kommet.
   'Jon is supposed to have come.'

---

[56] Note also that there exists a lexical verb *ha* 'have', which means to 'have' or 'possess'. As mentioned in Wiklund (1998), this lexical *ha* can never be omitted, neither in Swedish nor Norwegian.
[57] This is a simplification since a verb like *pleie* 'use to', especially when it is negated, also takes an infinitival complement: *Jeg pleide ikke høre på ham* 'I didn't use (to) listen to him'.

e. Jon vil kunne *(ha) kommet før tirsdag.
Jon will canINF have come before tuesday
'John will possibly have arrived by tuesday.'

Now, as noted by Julien (2000b), two important observations concerning *ha*-omission in Norwegian are presented by Taraldsen (1984) and Wiklund (1998), respectively. Taraldsen (1984) observes that *ha* cannot be omitted after a modal verb that does not have a counterfactual reading, cf (84):

(84)

Han krevde at vi skulle *(ha) gjort det innen mandag.
'He demanded that we should have done it by Monday.'

Wiklund observes that *ha* can only be omitted if the combination of *ha* and the participle does not require "a perfect state reading". She supports her claims with the following Swedish sentences taken from Wiklund (1998:15); cf. also Julien (2000b:41) for similar data.

(85)

a. Han skulle ha läst boken på måndag.
he should have read the-book on Monday
I. He should have read the book on Monday.
II. He should have read the book by Monday.

b. Han skulle läst boken på måndag.
he should read (Participle) the book on Monday
I. He should have read the book on Monday.
II. *He should have read the book by Monday.

Julien explains the grammaticality judgements in (85) by means of her analysis of the perfect as being a non-finite past. Thus, the ambiguity of (85) a resides in the fact that the perfect provides both an R and an E, both of which can be specified by the temporal adverbial *på måndag* (Julien op.cit. 43, details omitted)*:*

(86)

[Han skulle (T_1) [ha   läst (T_2) [boken på måndag]]]
he should   have read   the-book on monday

T_1 = Past: S after R   E   R   S
T_2 = Past: R after E |_____|_____|———▶

If the temporal adverbial specifies E, the predicate event, we get reading I of (85)a. When this adverbial specifies R, however, we get reading II of (85)a. Julien goes on to claim that the lack of ambiguity in (85)b is explained on the assumption, based on Taraldsen's (1984)

observation referred above, that the modal in these cases does not instantiate a T(ense) head at all, but a M(ood) head. This means that the only T head in this sentence is the one instantiated by the participle, which means that T in this case is spelled out by a non-finite past:

(87)

[Han skulle (M) [läst (T$_1$)   [boken på måndag]]]
  he should   read (Participle)   the-book on monday

T$_1$ = Past: S after E   E   S
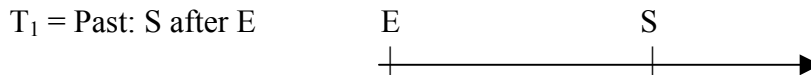
While this accounts for the observed data, I am reluctant to accept that the modal in these cases is inserted in a Mood head. If that were the case, there would be a range of Norwegian sentences where no T head would be spelled out at all. That is, if we accept the proposal made by Julien (2000a, 2001) that the infinitive has no temporal properties (a claim that was disputed in the previous section). What is sometimes known as "the modal use of past" (cf. e.g. Palmer 1986:210 ff) is by no means excluded for modals with an infinitival complement, cf. (88).

(88)

a. Dette kunne være løsningen.
   'This might be the solution.'

b. Jeg ville bli en fantastisk statsminister.
   'I would be an exellent prime minister.'

The natural reading of the modal in these cases, especially out of context, is absolutely not 'past'; they certainly have a mood-like reading, although it is 'hypothetical' rather than 'counterfactual'. In any case, I believe that data like these constitute a problem for Julien's explanation, since in her system, the modal would presumably be inserted in a Mood head, whereas nothing spells out the T head. Thus, we would have sentences with nothing to relate even E to S, which is the minimal temporal relation[58].

Instead, I will assume here that the 'R' provided by the perfect does indeed reside in *ha* 'have' itself, as suggested in section 5.3.3.2 above. Specifically, the aspectual *ha* denotes an event (or rather a state, but this is the wide-sense reading of *state*), which takes part in temporal construal, as proposed above. This explains that the omission of *ha* prevents a temporal adverbial from specifying the event denoted by *ha* (i.e. R, in Juliens terms); this is in

fact expected on the approach developed above, since temporal adverbials can only specify temproal relations explicitly expressed by tense elements, in this case the tense element expressed by the infinitival form of *ha* (non-finite non-past). Hence, it seems clear that *ha* does fulfill an important temporal function, since the omission of *ha* leads to the absence of at least one temporal relation present in the corresponding construction where *ha* is not omitted. Moreover, it seems to be a sound generalization that the modal gets a counterfactual reading in the constructions where *ha* is omitted. However, unlike Julien, I will not ascribe this fact to the modal's insertion into a Mood head. Instead, I will simply assume that the preterite may be used for modal purposes in Norwegian (like in many other languages), even though it occupies a Tense head. I simply reject the idea that there exists a Mood head in Norwegian clause structure at all, on the basis of the fact that Norwegian lacks morphologically encoded Mood affixes different from tense affixes (unlike Old Norse)[59].

　　Finally, I would like to remark that the counterfactual vs. hypothetical readings of the modal depending on the past (i.e. participle) vs. non-past (i.e. infinitive) property of the complement is another piece of evidence that supports the hypothesis of the infinitive and the perfect participle as non-finite tenses in Norwegian. This is so because "distal" forms like the preterite is often used for modal purposes, as discussed in Palmer (1986: 208 ff). "Distal" is in fact Langacker's (1978:855) term employed to cover both 'past tense' and 'unreality', whereas Joos (1964: 121-122) suggests that the essential common feature is 'remoteness, in time or reality'. Be that as it may, the fact remains that 'past tense' is employed in many languages to signal a greater distance to reality than 'present tense'. We would expect this to be the case for non-finite tenses as well as finite ones. And this is exactly what we find. Thus, in Norwegian, we find a gradually increasing "distance to reality" in the following modal constructions:

(89)

　　a. Dette kan　　　være　　　en løsning.
　　　　Non-past　　Non-Past
　　'This may be a solution; i.e. potential'

---

[58] Note that this problem would go away if we assume that the infinitive does indeed encode temporal properties, as I have suggested above.

[59] Recall from section 5.2 that epistemic modals were described as a Mood-like category. However, this regards the reading, i.e. the semantics of these modals. I do not assume that these epistemic modals are inserted in a functional projection corresponding to inflectional Mood in other languages. Recall also that e.g. German employs inflectional Mood as well as epistemic modals and even epistemic modals may have the subjunctive inflection, in addition to their having an epistemic reading (E.g. *Das dürfte wahr sein* 'that might be true'). One might think that the modal and the inflection in this case would compete for the same head position. Although this problem might be solved, e.g. by means of allowing the Mood Category to be recursive, I do not assume that epistemic modals are situated in a Mood Projection corresponding to inflectional Mood in other languages.

b. Dette kunne   være   en løsning.
             Past   Non-Past
   'This might be a solution; i.e. hypothetical'

a. Dette kunne (ha)   vært   en løsning.
             Past   Past
   'This might (have) been a solution; i.e. counterfactual'

Thus, we might conclude that the participle alone does encode a "distal" relation. However, for the perfect to fulfill its potential range of *temporal* functions, *ha* cannot be omitted, since *ha* provides the tense-chain with one additional event.

5.4   The tense of modals

In this section, I want to start out by focussing on the possible differing properties of root and epistemic modals as regards finite (or "absolute") tense marking and temporal interpretation. Initially, I want to present and briefly discuss some recent proposals concerned with these questions. In the second subsection I will investigate how root and epistemic modals relate to finiteness; an investigation which involves questioning some "canonical truths" within the literature on these issues.

5.4.1 *The relative ordering of modals and tense*

Several proposals have emerged lately where the alleged differences between root and epistemic modals as regards temporal properties are ascribed to their fixed position relative to Tense in a Universal Hierarchy, pace Cinque (1999). Recall from section 3.2.4 that Cinque takes epistemic modals to scope over tense whereas root modals scope under tense. That is, the designated functional projection for epistemic modals is situated higher in the Universal Hierarchy of functional projections than the projections hosting past and future Tenses, whereas the designated projections for root modals are situated below these Tense projections[60]. The author supports his assumptions with evidence from various languages where this order is displayed e.g. by overt TMA particles (op.cit.: 60); the following data are found in Sranan, a Creole language spoken in Surinam:

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[60] Cinque also proposes a third Tense projection for anterior tense, but we will have nothing to say about this projection here. See also Julien (2000a, 2001), who argues against the existence of this third tense projection.

(90)

a. A ben kan nyan.
   he PAST can eat.
'He could eat.'

b. A kan ben e nyan.
   he may PAST PROG eat
'He may have been eating.'

According to Cinque, the modal particle gets a root reading when it occurs to the right of the tense marker, as in (90)a. The same modal particle *kan* appears to be interpreted epistemically when it occurs to the left of the tense marker, as in (90)b[61]. Cinque takes these data as direct evidence for this ordering of the relevant functional categories, conflated here for the sake of simplicity (note that, in what follows, "x > y" encodes that x scopes over y):

$$Mod_{epistemic} > Tense > Mod_{Root}$$

Now, these data make a case for the proposed relative ordering because the *surface* positions of the epistemic and root modal particles support this hypothesis. However, as noted by Roberts and Roussou (2000), who adopt Cinque's hierarchy as "the null hypothesis", the proposed relative ordering may seem somewhat counterintuitive for e.g. the Mainland Scandinavian languages:

> It may seem strange to propose that epistemic modals in Danish occupy a very high functional position like $Mod_{Epistemic}$ when the evidence is that all verbs, including modals, occupy just two positions in this language: The V2 position (presumably C) and what appears to [be] the base V-Position (see Vikner 1995 and the references given there). The problem really concerns associating the epistemic interpretation with the low position.

As alluded to in this quote, e.g. Vikner (1995:143 ff) provides evidence that although main clauses in MSc display V2 (i.e. I-to-C movement of the finite verb), the finite verb in embedded clauses remains in situ, i.e. it remains in its base position in V. To illustrate, let us construct one such sentence with an epistemic modal:

(91)

a. Jon kunne plutselig ha tatt boka.
   'Jon might suddenly have taken the book'

---

[61] I want to point out the remarkable similarity between these readings and assumptions and the data discussed in section 5.2. Many authors have assumed that a modal gets an epistemic reading when it occurs to the left of a perfect auxiliary *have* wheras the same modal gets a root reading when occurring to the right of *have* (an assumption that was shown to be too crude, cf. section 5.2) . Recall also that the perfect auxiliary *have* is part of a non-finite PAST in the tense system advocated here. Thus, the phenomena are apparently related.

b. Marit mistenkte [at Jon plutselig kunne ha tatt boka].
    Marit suspected that Jon suddenly might have taken the book
    ' Marit suspected that Jon might suddenly have taken the book'

In the main clause in (91)a, the finite epistemic modal moves past the adverbial *plutselig,* unlike what is the case in the embedded sentence in (91)b, where the verb is said to remain in situ. Now, I cannot determine exactly which of Cinque's many projections would be the most likely candidate to host an adverbial like *plutselig* 'suddenly' in its specifier position, but it seems clear that it must be one of the numerous Asp heads, perhaps the same head that hosts *quickly,* i.e. $Asp_{CELERATIVE}$. For clarification, let us look at Cinque's hierarchy once more.

(92)

[*frankly* $Mood_{speech\ act}$ [*fortunately* $Mood_{evaluative}$ [*allegedly* $Mood_{evidental}$
[*probably* $Mod_{epistemic}$ [*once* T(Past) [*then* T(Future) [*perhaps* $Mood_{irrealis}$
[*necessarily* $Mod_{necessity}$ [*possibly* $Mod_{possibility}$ [*usually* $Asp_{habitual}$
[*again* $Asp_{repetitive\ (I)}$ [*often* $Asp_{frequentative\ (I)}$ [*intentionally* $Mod_{volitional}$
[*quickly* $Asp_{celerative\ (I)}$ [*already* T(Anterior) [*no longer* $Asp_{terminative}$ [*still* $Asp_{continuative}$
[*always* $Asp_{perfect\ (?)}$ [*just* $Asp_{retrospective}$ [*soon* $Asp_{proximative}$
[*briefly* $Asp_{durative}$ [*characteristically*(?) $Asp_{generic/progressive}$ [*almost* $Asp_{prospective}$
[*completetly* $Asp_{SgCompletive\ (I)}$ [*tutto* $Asp_{PlCompletive}$ [*well* Voice [*fast/early* $Asp_{celerative(II)}$ [*again* $Asp_{repetitive\ (II)}$ [*often* $Asp_{frequentative(II)}$ [*completetly* $Asp_{SgCompletive(II)}$

Observe that the Asp heads are situated lower in the hierarchy than the designated position of the epistemic modal. But if the adverbial *plutselig* is situated in the specifier of an AspP, and the epsitemic modal *follows* this adverbial, as in Norwegian embedded sentences, the surface position of the epistemic modal must be lower in the structure than any of the modal heads, not to mention the designated position of the epistemic modal, i.e. the head position of the designated functional projection. Roberts and Roussou (2000) go on to emphasize that this problem is a general one for MSc languages, and not one that is created by assuming Cinque's hierarchy:

> This problem is just an instance of the general problem that arises in Mainland Scandinavian languages [...] of associating functional information (at the very least Tense) with the *in-situ* verb, and as such is not created by assuming the Cinque hierarchy. Whatever the technical device we postulate to associate tense with the *in-situ* verb (affix-hopping, chain-formation, LF-movement, etc.) can be exploited to associate an epistemic modal with its functional position.

Thus, we need some "technical device" to associate the modal in a "low" surface position with the 'high' position of the functional category $Mod_{Epistemic}$. The same type of problem turns up

in Hungarian as well, cf. the following data from Bartos (2000), who investigates scope variability/scope inversion in Hungarian :

(93)

        Vár-hat-t-ak.
         wait-poss-past-3pl
        'They were allowed to wait/They may (possibly)have waited.'
        I. It WAS [Possible [for them to wait]   Past [Poss [...]] T > Mod
        II. It is   [Possible [that they waitED]   Poss [Past [...]] Mod > T

Bartos adds (footnote 4) that scope inversion in this example is accompanied by a switch in modality from permission (I) to possibility (II), i.e. from deontic to epistemic modality. He goes on to speculate that an analysis might be proposed in which these two modalities are treated apart in syntax, represented by two different projections embracing the projection of tense, an approach which would in fact be compatible with Cinque's proposal. However, Bartos emphasizes that such an analysis would have to face the "crucial problem of deriving the identical morpheme orders". That is, the relative ordering of affixes does not change, it is the same morpheme order that gives rise to the two different interpretations.

     Unlike Bartos, Stowell (2000) does not seem to consider the association of a 'low' surface position with a 'high' logical position a crucial problem. This author simply states that the generalization of the logical scopal relations as $Mod_{epistemic}$ > Tense > Mod_{Root} holds "regardless of the syntactic ordering relation of tense/modal pairs within a single clause":

    (a) As implied by Cinque's hierarchy (whatever its ultimate explanation), tenses can
    scope over at least some root/deontic modals:

    John can move his arm with great difficulty (he **is** able)
    After the crash, John could move his arm only with great difficulty (he **was** able)
    John had to take care of the cat (he **was** obligated to do so)

    (b) with epistemic modals (at least those with an evidental interpretation), the modal
    logically scopes over tense:

    John could be in that house (Past tense construal of modal disallowed)
    John could have been in that house (It **is** possible that he **was** in that house)
    John must/might be in that house
    John must/might have been in that house

    (c) These generalizations hold regardless of the syntactic ordering relation of
    tense/modal pairs within a single clause; thus we encounter cases of tense/modal
    reversal, where the modal is syntactically subordinate to the tense but is obligatorily
    construed above it [...]. This is suggestive of a logical (LF?) checking domain for the
    epistemic modals above the tense. (LF modal movement?)

Thus, what is implied by Stowell's and Roberts and Roussou's approaches is that epistemic modals, although they may overtly surface subordinate to tense, logically and interpretationally scope over tense, indeed "are outside the scope of absolute tense altogether" (Cinque 1999:79).

Iatridou (1990b) presents some interesting facts about what she calls *metaphysical* versus *epistemic* predicates which may shed some light on the conjecture above. Note initially that Iatridou's use of the term *epistemic* should not be confused with *epistemic modals*, since (at least some) epistemic modals are identified by Iatridou as metaphysical predicates. The author starts out by observing a difference, that holds in various languages, between two types of adjectival predicates taking propositional complements in the frame [It was/will be AP that S]. Evidently, predicates like *evident/obvious* are fully acceptable in this context, whereas predicates like *possible and probable* are not; observe the difference between (94)a and (94)b:

(94)

       a. It was/will be evident that John stole the tapes.
       b. #It was/will be possible/probable that John stole the tapes.
       c. It is possible/probable that John stole the tapes.

The oddness of (94)b must be due to the incompatibility of predicates like *probable/possible,* i.e. 'metaphysical' predicates, with future or past tense, since these predicates are fine with the present tense, cf. (94)c. Moreover, Iatridou suggests that predicates like *possible/probable,* i.e. metaphysical predicates, are temporally independent:

> Let us assume that the metaphysical modalities are predicates of propositions and are temporally independent; that is, they can be said to lack a time variable [...]. This hypothesis would explain why they are incompatible with tense. Epistemic predicates, on the other hand, are sensitive to time; that is, they do have a time variable:

>   P(p)   : It is possible that p.
>   Obvious (x,p,t)   : It is obvious to x at time t that p.

The assumption that metaphysical predicates lack a time variable also explains the following contrast, according to Iatridou, since adverbials like *often* are predicated of a time variable:

(95)

       a. It is often obvious (to me) that you don't study enough.
       b. * It is often possible that you don't study enough.

Furthermore, if metaphysical modality predicates are temporally independent, then the apparent present tense in (94) c is not interpreted semantically and is essentially pleonastic.

And, Iatridou continues, if this is correct, then one would predict – in analogy with other pleonastic elements, like expletives or the copula – that there exists at least one language where metaphysical modality is not tensed at all. Basque is such a language. A metaphysical predicate in Basque can only carry the irrealis morphology, while present and past tenses are excluded:

(96)

  a. Baliteke   lamiak   erreketan   bizitzea.
   be-Irr   fairy-PL-Abs river-PL-Loc live-Inf
   'It is possible that fairies live in rivers.'

  b. #Badaiteke lamiak   erreketan   bizitzea.
   be-Pres fairy-PL-Abs river-PL-Loc live-Inf

  c. #Bazitekeen lamiak   erreketan   bizitzea.
   be-Past fairy-PL-Abs river-PL-Loc live-Inf

Iatridou claims that in Basque the present tense is "real" and is not used as a default marker as in English. Since the language makes available a form that does not anchor a sentence in time, that form must be used in metaphysical modality.

  Now, there is a striking semantic similarity between what Iatridou calls metaphysical predicates and at least some epistemic modals. Unlike metaphysical predicates like *possible,* epistemic (and evidential) modals are in fact compatible with an adverbial like *often* in the sense that this type of adverbial may co-occur with epistemic modals; however, it remains a sound generalization that the adverbial cannot take scope over the epistemic (or evidential) modal:

(97)

  a. Ofte skal Jon ha ertet Marit.
   # I. 'It is often supposed that Jon has teased Marit'.
    II. 'It is supposed that Jon has often teased Marit.'

  b. Dette vil ofte bli et problem.
   # I. I often predict that this becomes a problem.
    II. 'I predict that this often becomes a problem.'

  c. Marit må ofte ha vært syk.
   # I. It must often be the case that Marit has been ill.
    II. 'It must be the case that Marit has often been ill.'

This behaviour distinguishes epistemic modals from root modals, since root modals allow an adverbial like *often* to scope over them:

(98)

    a. Ofte vil Jon på fotballkamp når jeg vil på kino.
      Often wants Jon to footballmatch when I want on cinema
      'Often, Jon wants to see a footballmatch when I want to go to the movies.'

    b. Marit må ofte passe lillesøsteren.
      Marit must often watch baby sisterDEF.
      'Often, Marit must watch her baby sister.'

    c. Ofte kan ikke sykkelen tas med på bussen.
      Often can not bicycleDEF takePASS on busDEF.
      'Often, one cannot take one's bicycle on the bus.'

Interestingly, the incompatibilty with an adverbial like *often* extends beyond metaphysical predicates and epistemic modals, it is a phenomenon that encompasses so-called generic (or gnomic) sentences as well, cf. (99):

(99)

    a. #Two plus two often equals four.
    b. #The earth is often round.
    c. #Lions are often mammals.

Furthermore, generic sentences also exhibit the same rejecting of past and future tenses that we find with metaphysical predicates:

(100)

    a. #Two plus two was/will equal four.
    b. # The earth was/ will be round.
    c. # Lions were/will be mammals[62].

Carlson (1988:167) states that

> Epistemologically, a generic sentence is one expressing a truth (or falsehood) the truth value of which cannot, in general, be ascertained solely with reference to any particular localized time. For instance, the present tense sentence "Dogs bark" is true, even though at the present time there may be no dogs barking.

Faced with these data and assumptions, we may be inclined to agree with Iatridou (1990b) that there are certain types of predicates that are insensitive to temporal reference, e.g. because they lack a time variable. The properties she observes for metaphysical predicates apply to epistemic modals and generic sentences as well, thus it is tempting to try to find a common semantic trait for all three types of linguistic expressions, i.e. metaphysical predicates, epistemic modals and generic sentences. Intuitively, the common semantic trait is

that all three types of expression focus on the unchanging truth of a(n embedded) proposition rather than solely asserting the (potential) existence of the state-of-affairs described by this proposition. This intuition is shared w.r.t. epistemic modals by numerous authors who have claimed that one essential trait distinguishing epistemic modals from root modals is that the former qualify the truth value of the sentence (cf. e.g. Hofmann 1976, Platzack 1979, Vikner 1988, Thráinsson and Vikner 1995, section 4.6 of this dissertation). Furthermore, Iatridou (1990b) identifies at least some modals typically referred to as 'epistemic' as metaphysical predicates. And as seen in the quote above, Carlson (1988) states that generic sentences express 'truths'. Thus, let us assume that the common semantic trait between epistemic modals, metaphysical predicates and generic sentences is that they accentuate and sometimes qualify the truth value of a(n embedded) proposition.

Although these expressions accentuate the truth value of the (embedded) proposition rather than the state-of-affairs described by this proposition, neither of the aforementioned linguistic expressions need an *explicit* reference to the truth value of the (embedded) proposition, like e.g. 'it is true that p', although such an explicit reference may be added:

(101)

    a. It is possible [that it is true] that John stole the tapes.
    b. It must [be true] that John stole the tapes.
    c. [It is true] that lions are mammals.

Hofmann (1976) speculates that the infrequency of explicit reference to the truth of p is explainable by the dictum that *to assert a sentence to be true is equivalent to asserting simply the sentence.* Thus, the (embedded) proposition p may be said to carry the implicit assertion that p is true. By assumption, epistemic modals, metaphysical predicates and generic sentences target this implicit assertion [p is true] and qualifies it in stating that it is possible, necessary, probable – or in the case of generic sentences, simply that the truth of p holds.

In accentuating (and qualifying) the implicit statement [p is true], these linguistic expressions seemingly abstract away from temporal reference, although they are syntactically associated with 'pleonastic tense'. This could be linked to Stowell's proposal of LF-movement of modals in the following way. Assume that metaphysical predicates, epistemic modals and probably some generic operator ("*Gen*"), where the latter could be stipulated to give rise to the generic reading of a sentence, all move 'higher than tense' on LF. This LF-movement would render these elements (i.e. epistemic modals, metaphysical predicates and *Gen*)

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[62] Observe the apparent exception *Boys will be boys.*

insensitive to temporal distinctions, since they would be, to quote Cinque once more, "outside the scope of absolute tense altogether". Let us leave this question open at the moment, while we investigate other possibilities.

5.4.2 Sequence-of-Tenses

Firstly, let us turn to another property that concerns the temporal features of metaphysical predicates, epistemic modals and generic sentences alike. These linguistic expressions, although they are said to be incompatible with "real" tense, are still all subject to Sequence-of-Tenses phenomena, characteristic of e.g. indirect speech; (102)b is from Iatridou 1990b, fn.1:

(102)

    a. Marit påstod at Jon måtte være morderen.
      Marit claimed that Jon mustPAST be killer-DEF.
     'Marit claimed that Jon had to be the killer'

    b. Colombo said that it was possible that John had stolen the tapes.

    c. The vikings believed that the earth was flat.

Iatridou claims that past tense in such contexts is irrelevant to anchoring that clause in time (and so does not contradict her descriptive generalizations), which is what she means by her statement that past tense in these contexts is not a 'real' tense. Once more, it seems, we have evidence in support of the view that these linguistic expressions lack the ability to interact with 'real' tense.

However, there exist certain snags to the conjecture that Sequence-of-Tenses phenomena should be considered as some kind of morphosyntactic reflex which does not signal any 'real' anchoring of the embedded clause in time. For instance, Enç (1987) objects to this understanding of the Sequence-of-Tenses phenomenon, i.e. solely as a copying of the past of the matrix onto the complement present. For starters, she notes that the Sequence-of-Tenses phenomenon is not obligatory, cf. the following data (some of which are taken from Enç, op.cit).

(103)

    a. John heard that Mary was pregnant.
    b. John heard that Mary is pregnant.

(104)

      a. We found out that John loved Mary.
      b. We found out that John loves Mary.

(105)

      a. Sally told me that John was very depressed.
      b. Sally told me that John is very depressed.

Now, if the Sequence-of-Tenses phenomenon was merely 'morphological copying' of past tense from the matrix verb to the embedded verb, and if, in addition, this rule is optional, one would expect the a. and b. sentences above to be synonymous, since the past tense of the embedded sentence by assumption is "pleonastic", therfeore, it should be semantically vacuous. This is not what we find, however. There is an observable interpretational difference between the a. and b. examples, which must be due to the alternation between past and present tense marking of the embedded verb, since all other elements are identical. Comrie (1985) claims that the present tense on the embedded verb signals that the proposition expressed by the embedded sentence has "present relevance". Enç sets out to make this statement more precise. She claims that the difference between the a. and b. examples is that past tense on the embedded verb signals that the embedded proposition should be evaluated not at the speech time S but at the past time given by the matrix tense. On the other hand, present tense on the embedded verb signals that the proposition expressed by the embedded sentence should be evaluated at the speech time S, i.e. *now.*

      Now, when we look at epistemic modals, this approach is a tempting path to follow. Recall (section 4.6) that I assume epistemic modals to be two-place predicates on Conceptual Structure, i.e. these predicates are always restricted to some individual's belief system. In the default case, this individual is the speaker, but in Sequence-of-Tenses contexts this individual is typically the matrix subject[63]; cf. the difference between (106)a and b:

(106)

      a. Jon må være morderen.
       'Jon must be the killer.'

      b. Marit påstod at Jon måtte være morderen.
       'Marit claimed that Jon had to be the killer.'

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[63] Consider an apparent counterexample, brought to my attention by Tor A. Åfarli:
    Marit forstod ikke at Jon måtte/må være morderen.
    'Marit did not understand that Jon had to/must be the killer.'
In this sentence, it seems that the speaker is the individual holding the belief, although the present modal facilitates this reading; the preterite does not seem to give the same effect.

The "outmost" speech event S in (106)b consists of the speaker asserting that [Marit claims that p]. But there is another speech event here, notably Marit's asserting that [Jon must be the killer]. On the face of it, the epistemic modal takes its cue from this 'inner' speech event, where Marit's belief system produces the conviction and the assertion that Jon must be the killer. If the modal relates to Marit's convictions rather than the speaker's convictions, why should not the tense marking of the modal relate to Marit's speech event rather than the speaker's speech event? This way, all relevant reference points would be shifted in Sequence-of-Tenses contexts; the 'individual anchor' would shift from the speaker to the subject, the assertion of the modal and its complement would shift from the outmost to the "inner" speech event, and the temporal reference would shift from S – the outmost speech event, to the "inner" speech event. All points of reference are shifted at once, nicely and symmetrically.

However, this warranted symmetry does not hold up against closer scrutiny. If we replace the Past marking of the embedded sentence with Present, it is still Marit's belief system, not the speaker's conviction, which is expressed by the modal *må* 'must':

(107)

> Marit påstod at Jon må være morderen.
> 'Marit claimed that Jon must be the killer.'

The speaker is no more committed to the truth of the embedded proposition [Jon must be the killer] if we replace the embedded Past with Present, i.e. *Marit* is still the individual anchor, and her conviction is still the one expressed. Intuitively, the difference between (106)b and (107) can be stated as follows. In (106)b, the speaker asserts that the truth of the proposition [Jon must be the killer] was (seemingly) compatible with Marit's belief system at some previous point in time, without any reference to whether or not the truth of this proposition is entailed by Marit's belief system at present. This previous point in time is in this case taken to be contemporaneous with the matrix event[64], i.e. Marit's claiming that Jon must be the killer, since Marit, if she is truthful, must believe the proposition to be true at the point in time where she states this proposition.

On the other hand, in (107), the truth of the embedded proposition [Jon must be the killer] is construed as entailed by Marit's belief system at present, i.e. the speaker has no

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[64] A contemporaneous reading between the matrix event and the embedded event in Sequence-of-Tenses requires that the embedded predicate is construed as a stative predicate. This is another indication that epistemic modals are stative predicates; cf. below, and also Barbiers (1995), Stowell (2000).

reason to believe that Marit's system of beliefs has changed since she made the claim [Jon must be the killer]. That is, the speaker asserts that Marit made the claim [Jon must be the killer], and by endowing this embedded proposition with the present tense, the speaker signals that he believes this proposition to still belong to Marit's system of beliefs. Hence the following contrast:

(108)

    a. #/??Marit påstod at Jon må være morderen, men det tror hun ikke lenger.
       Marit claimed that Jon must be the killer, but that believes she not longer
       'Marit claimed that Jon must be the killer, but she no longer believes that.'

    b. Marit påstod at Jon måtte være morderen, men det tror hun ikke lenger.
       Marit claimed that Jon mustPAST be the killer, but that believes she not longer
       'Marit claimed that Jon had to be the killer, but she no longer believes that.'

Faced with these facts, it seems tempting to adhere to the proposal in Enç (1987), that the past tense on the embedded verb signals that the embedded proposition should be evaluated, not at the speech time S, but at the past time given by the matrix tense. In Enç (1987), this "shift in evluation time" correlates with the requirement that *the embedded proposition relates temporally to the matrix event instead of the outmost speech event S.*

       However, there exist data where this assumption does not seem to yield the correct result. For instance, we can easily construct examples where past tense of the embedded verb must be constructed as non-contemporaneous to the matrix past time, e.g.

(109)

    a. Jeg hørte at du strøk på prøven.
       I heard that you failed on test-DEF
       'I heard that you failed the test.'

Conceptually, your failing the test will precede my hearing about it, which means that in this case, the embedded predicate must be construed as past relative to the matrix past. Enç needs an elaborated apparatus to account for the fact that the past tense of embedded sentences sometimes gives rise to what she calls 'shifted readings' (i.e. past relative to matrix past) and sometimes not (i.e. present relative to matrix past). But let us explore instead the idea that the past-past reading arises in some cases simply for conceptual reasons.

       Thus, consider (109). This sentence could be given a context where the speaker was standing outside the open window at the very minute where the adressee failed the test and

that the speaker actually heard it happen. In this case, the two events would be contemporaneous. However, the more natural reading out of context would be the aforementioned past-past reading. Let us further assume that the past of the embedded predicate does *not* signal that this embedded event must be temporally related to the event of the embedding verb. The temporal relation between these two events must be established on conceptual grounds only. We have already shown that the past of the embedded predicate may give rise to a reading where the embedded event is previous to the matrix event, as well as a reading where the embedded event is simultaneous to the matrix event. What we have not mentioned so far is that the past of the embedded predicate may even give rise to a reading where the embedded event is *subsequent* to the matrix event. This is shown in (110):

(110)

Jon er en stor spåmann. Han forutså at du strøk på prøven.
Jon is a great fortune teller. He predicted that you failed testDEF
'Jon is a great fortune teller. He predicted that you would fail the test.'

Again, on conceptual grounds, the prediction event must *precede* the failing event, since otherwise it would not have been a prediction. Thus, these facts support the idea that the past of the embedded predicate does *not* force any particular temporal ordering of the embedded event w.r.t. the matrix event. The temporal relation between the embedded event and the matrix event depends entirely on the conceptual construal arising from the aspectual and conceptual properties of the two predicates involved.

Thus, all that is expressed by the tense system in Sequence-of-Tenses is that the event of the embedded sentence, e.g. your failing the test, is *past relative to S*, just like my hearing about it/Jon's prediction of it is *past relative to S*. No temporal ordering between the two events is imposed by the tense elements expressed on the two verbs. This assumption is supported by the fact that the Sequence-of-Tense phenomenon is optional, since this shows that if there were a temporal ordering between an embedding verb and a finite embedded predicate, at least this ordering cannot possibly be obligatory. Recall that even Enç agrees that the embedded predicate *may* relate to S, namely whenever the embedded predicate is present instead of past. I suggest that there is no reason to expect that the temporal ordering between the embedded event and the matrix event should suddenly be obligatory when the embedded proposition shows past tense instead of present tense. Furthermore, the possible construal of the embedded event as past, simultaneous or subsequent relative to the matrix event depending on the predicates involved supports the idea that the past of the embedded

predicate does *not* signal a temporal ordering between the matirx event and the embedded event. Instead, the past of the embedded predicate signals one particular temporal ordering of the embedded predicate *w.r.t. S*, notably that the event expressed by the embedded predicate is situated at a point in time previous to S.

Now, it is possible to give these facts and assumptions an account within the system of tense-chains suggested in section 5.3.3.2. Recall that whereas non-finite tense elements (i.e. in Norwegian, the perfect and the infinitive) must take the event argument of a c-commanding verb as their first argument, finite tenses were claimed to take the speech event S as their first argument. Recall from section 5.3.3.2 that the preterite signals a past relation between S and the event argument of the verb carrying this past tense ($S > e_1$), whereas finite present tense signals a 'not-after' relation between S and the relevant verb. Let us see how these claims fares w.r.t. to the observed difference (and note that here, "x > y" encodes that x is *after* y, i.e. x is temporally subsequent to y).

(111)

> a. John heard that Mary was pregnant. $(S > e_{HEAR}) (S > e_{BE\ PREGNANT})$
> b. John heard that Mary is pregnant. $(S > e_{HEAR}) \neg (S > e_{BE\ PREGNANT})$

The non-past relation between S and $e_{BE\ PREGNANT}$ is taken to be the temporal relation of simultaneity, given that the embedded verb is construed as stative. At least for Norwegian, a dynamic verb in the same position would give rise to a 'future' reading (cf. also section 5.3.3.2):

(112)

> a. Jeg hørte at du kommer på festen?
>   I heard that you attend to party-DEF
> 'I heard that you will attend the party?'
>
> a. Jeg hørte at du stryker på prøven.
>   I heard that you fail on test-DEF
> 'I heard that you will fail the test.'

In neither of these cases is there any requirement of temporal ordering imposed by the tense system between the embedding predicate and the embedded predicate. This ordering has to be made on conceptual grounds. Instead, both the embedded event and the embedding event relate temporally to S, since they are event arguments of verbs carrying a finite tense marking, and finite tenses take S as their first argument.

If this is on the right track, then Sequence-of-Tenses phenomena are in fact instances of "real" tenses, in opposition to Iatridou's (1990b) claims presented above. Contrary to her claims, tense in these constructions is by no means irrelevant for temporal anchoring of the embedded proposition, on the contrary, tense anchors the embedded proposition w.r.t. S, just like any other finite tense. One might object to Iatridou's approach that since epistemic modals and metaphysical predicates do partake in Sequence-of-Tenses, they must contain a time-variable; i.e. they must contain a tense element which is able to relate the event-argument contained in the modal to S, just like other verbs. To further weaken Iatridou's claims, we could go on to assume that the reason why epistemic modals, metaphysical predicates and generic sentences are incompatible with adverbials like *often*, is that they are stative, and stative predicates are in general incompatible with these types of adverbials:

(113)

      a. #Jon liker ofte pannekaker.
        'Jon often likes pancakes'

      b. #Marit har ofte store ører.
        'Marit has often big ears'

Another reason for these types of predicates to be rather insensitive to temporal reference is that they qualify or accentuate truth values. They describe what is conceived as *unchanging* truths as well as what is ontologically possible/necessary given an individual's model of the actual world. That is, these linguistic expressions deal with what is possible, probable or given for this model to be a *coherent* model. If an individual's model of the world is an adequate model of the actual world, what is construed as 'possible' or 'necessary' within such a model, is not likely to switch value from one moment to another. Thus, in order for me to utter (114)a, I have to believe that my model of the world will change from the present model to a different model in the future. Likewise, for me to utter (114)b, I have to admit that what constituted my model of the world yesterday turned out to be an inadequate model, since I obviously no longer entertain this model:

(114)

      a. It will be possible that John is the killer.
      b. Yesterday, it was probable that Mary was killer.

Note that if we invoke a context of e.g. writing a novel, where the writer is free to contruct his own fictional minature model of the world, i.e. the discourse universe, and change this

universe as he pleases from one day to the next, (114)a and b seem felicitous. The reading of (114)a would imply that the author intends to change the novel's universe in such a way that it will be possible that John is the killer, although the present universe may not give rise to this possibility. Likewise, (114)b implies that yesterday's version of the novel's universe gave rise to a probability that Mary was the killer, although today's version of this universe may not give rise to the same probability. However, in the actual world, where the events take place in a unidirectional manner, we cannot go back to erase or delete those events that would lead to another set of contingent possibilities/necessities. Therefore, many of the propositions we accept and live by may seem like unchanging truths.

As it happens, there exist (in fact, many) examples where what is conceived to be an ' "unchanging truth" turns out to be false. In these instances, one would expect e.g. generic sentences to be sensitive to temporal reference, cf. e.g.(115).

 (115)

>   a. Jorda har faktisk vært rund i over 500 år.
>   earth-DEF has in fact been round for 500 years
>   'The Earth has actually been round for 500 years.'

>   b. Hvaler var fisk før, men nå har de vært pattedyr lenge[65].
>   whales were fish before, but now have they been mammals long
>   'Whales used to be fish, but they have been mammals for a long time now.'

The only natural interpretation for these sentences is, crucially, not that we used to have a state-of-affairs such that the earth was flat, and that at some point it changed into a round shape. On the contrary, the natural way to interpret this sentence is that five hundred years ago, we started to conceive the proposition [the earth is round] as true, whereas this proposition used to be conceived as false before that time. Likewise, (115)b must mean that we used to consider the proposition [whales are fish] to be true, but nowadays we consider the proposition [whales are mammals] to be true, and we have held this belief for a long time now. Given our knowledge of the world, it would be unnatural for a species to change – over night, so to speak– from being fish into being mammals. Admittedly, predicates that relate to our model of the world and what is possible/probable/timeless truths within this model do not seem to be very dynamic either. But since the sentences above deal with specific propositions of which we know that they have "changed truth-values" in the sense that they used to be

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[65] Cf. also Hofmann (1976) for similar data, although his grammaticality judgements differ from these.

conceived as false whereas they now are conceived to be true, this interpretation is the more natural.

If these thoughts have any merit, then metaphysical predicates, epistemic modals and generic sentences are still sensitive to temporal reference, even though they accentuate the truth value of a proposition rather than the state-of-affairs described by this proposition. They may be less sensitive to such reference than are many other types of predicates, but they are not totally insensitive to temporal distinctions, as witnessed e.g. in Sequence-of-Tenses constructions. We will elaborate further on these claims in the next section, concentrating once more on epistemic and root modals.

5.4.3 Modals and finiteness

Recall from the previous section that Iatridou (1990b) points out Basque as a language where metaphysical predicates carry irrealis mood marking only and reject present and past tense marking. As regards epistemic modals, we have seen that they first and foremost get a present tense marking in Norwegian (like in English), but that they accept a past tense marking in Sequence-of-Tenses contexts. In German we find that epistemic modals accept present tense indicative as well as subjunctive mood, which makes German epistemic modals a mixed case in this respect:

(116)

    a. Er kann es gesagt haben.
      he canPRES it sayPERF haveINF
    ' He may have said it.'

    b. Er könnte es gesagt haben.
      he canSUBJUNCTIVE[66] it sayPERF haveINF
    'He might have said it[67].'

It is a quite widespread assumption that the common trait between Mood and Tense is that they both express finiteness. Cf. e.g. Holmberg and Platzack (1995:23):

> A category related to tense and mood is the category of *finiteness* [...]. In traditional grammar *finite* has roughly the meaning 'restricted to the particular situation', i.e. the finite form of a verb indicates the existence of a predication *at the time of the utterance* [...]. Thus, in a way, finiteness is a prerequisite for tense and mood: Unless a predication is related to the time of utterance via the concept of finiteness, we have no

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[66] This is the mood called 'Konjunktiv II', which is a more 'distal' mood than 'Konjunktiv I'. Accroding to Reiten (1990:207), there is no temporal distinction between these two forms, although 'Konjunktiv II' is sometimes referred to as the 'Konjunktiv Präteritum'.
[67] These data are taken from Reiten (1990).

basis for expressing the relative position in time of the situation expresssed by the predication vis-à-vis the utterance, and we cannot relate the attitude of the speaker to the situation.

In Platzack and Rosengren (1998:189 ff), this idea is further developed. These authors implement the idea that Tense and Mood are related to finiteness by assuming that the category Fin^0 (i.e. finiteness) attracts a feature [finite] that present in Tense and Mood, in other words, that both Tense and Mood may instantiate finiteness. Moreover, the semantic function that is ascribed to finiteness is that of referentiality. That is, finiteness endows the proposition with rerefence; Platzack and Rosengren (1998:191):

> Let us finally consider the contribution of Tense/Mood and Finiteness to the finite clause. Generally speaking, Mood indicates whether the event described is relevant for our world (indicative) or for some other world (subjunctive) whereas Tense relates the event or situation referred to by the clause to a time line. Finiteness, finally, anchors the event in time and space, by identifying a point on the time line with the speaker's here and now. In other words, a finite utterance is referring to an event in the speaker's world or some other world [...].

I want to exploit this idea by assuming that finiteness is an inherent part of a statement or *assertion* (this idea will be refined and modified below). That is, I want to invoke a distinction between producing an *assertion,* which I define to be"'stating the actual or potential existence of an event (in the wide sense; encompassing states)", and a *proposition,* which I define to consist solely in a subject-predicate relation[68]. Thus, (117)a is a proposition but no assertion, whereas (117)b is both a proposition and an assertion because of the presence of a finite verb[69]:

(117)

     a. Unicorns (to be) in the garden.
     b. Unicorns are in the garden.

One crucial difference between a *proposition*, as defined above, and an *assertion* is that the latter has a truth value, unlike the former. The linguistic expression *Unicorns (to be) in the garden* does not have a truth value, because it is not anchored w.r.t. the moment of utterance, neither by means of Tense, which would anchor the event on a time line, nor by means of

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[68] In fact, this statement needs further refinement, since I take a predication *relation* to hold between a thematic subject and a predicate only. An expletive subject+ a predicate still constitute a proposition, although there is no predication relation between them, cf. Åfarli and Eide (2001).

[69] The notion of assertion may be seen as taking part in another opposition not addressed here, notably the opposition between questions, assertions and commands (cf. e.g. Stenius 1967).

Mood, which would anchor the event w.r.t. reality[70]. It is of course not a novel idea that a truth value depends on the presence of Tense, cf. e.g. Higginbothham (1997:27):

> [...] it is attractive to take the logic peculiar to tenses as intentional, so that sentences of natural languages can be evaluated as true or false only relative to moments or intervals of time [...].

A similiar statement is found in Larson and Segal (1995:510):

> Tense thus brings in an important element of deixis or indexicality. Tenses force sentences to be evaluated relative to the moment of utterance.

I will combine the assumption mentioned in the quote from Higginbotham above with the assumptions of Platzack and Rosengren (1998) that finiteness is what endows the event described by a proposition with referentiality. I want to claim that this referentiality is what turns a proposition into an assertion and gives rise to a truth value. In what follows, we will concentrate on Tense as the expression of finiteness, since Norwegian does not employ Mood (except as relics). But one should bear in mind that even Mood provides a proposition with finiteness and by assumption, turns a proposition into an assertion.

Now, recall from section 2.1 that Norwegian root modals behave much like other verbs w.r.t. displaying a full paradigm of finite and non-finite forms (with the exception that all modals lack present participles). On the other hand, it was stated that epistemic modals are much less comfortable with non-finite forms than are root modals. A much stronger version of this statement is found in Denison (1993:311), referring to Old and Middle English: "[T]he modal in the infinitive is non-epistemic[71]."

Moreover, Plank (1984:314), objecting to Lightfoot (1979), states that

> [P]remodals when used epistemically in general do not seem to have occurred non-finitely in OE and ME in the first place. (Note that an identical finiteness requirement characterizes epistemic modals also in other Germanic languages where there can be no question of modals not being verbs; in fact, a requirement to this effect can presumably claim general rather than language particular validity.)

Furthermore, according to Roberts and Roussou (2000), Vikner (1988) and van Kemenade (1985) make similar claims for epistemic modals in Danish and Dutch, respectively. If this is correct, it is tempting to speculate what it is about epistemic modals that forces them to occur

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[70] In taking *Mood* to anchor the event w.r.t. reality, I gloss over the fact that several recent approaches to Mood suggest that the *realis/irrealis* division is inadequate and impressionistic and, at the very best, is too coarse-grained to account for the observed interpretations of e.g. the subjunctive; cf. Quer (1998).

[71] He does however comment on three examples that show a slight possibility of an epistemic interpretation although the modal is infinite.

in finite forms only. I want to assume here that the reason for this is that epistemic modals partake in assertions[72]. Epistemic modals qualify the truth value of an embedded assertion, i.e. the assertion expressed by the modal's complement (including the subject). By doing so, they express an assertion about this truth value. An assertion about the truth value of an another assertion could be argued to require that both are finite[73], cf. the following contrast:

(118)

       a. It is absolutely true/false/likely that Elvis has left the building.

       b. *To be absolutely true/false/likely that Elvis has left the building.

       c. *It is absolutely true/false/likely for Elvis to have left the building.

However, it is easy to find examples that contradict this claim. Epistemic modals exclusively take infinitival complements, i.e. non-finite complements, cf. (119):

(119)

       a. Jon må være på kontoret.
         Jon must be in officeDEF
        'Jon must be in his office.'

       b. *Det må at Jon er på kontoret.
         it must that Jon is in officeDEF

       c. Det må være sant at Jon er på kontoret.
         it must be true that Jon is in officeDEF
        'It must be true that Jon is in his office.'

Note that even in (119)c, the complement of the modal is an infinitive. Thus we need to refine our hypothesis. This is possible by means of the system of tense-chains developed above.

       Recall that an infinitive, by assumption, contains the tense element [-PAST,-FIN]. The tense element of a non-finite verb takes as its first argument the event argument of the closest c-commanding verb and the event argument contained in the infinitival verb as its second argument. The tense element of the infinitive furthermore encodes a non-past relation; i.e. $\neg(e_1 > e_2)$. If the verb is stative (as is in general the case with the complement of epistemic modals; cf. section 5.3.2), the non-past relation is taken to be one of simultaneity. Now, the

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[72] Again, this is a simplification, since epistemic modals may be employed in questions as well:
     (i) Ok, so John is a thief. Must he therefore be a murderer?
In this case, the truth value of the 'modal assertion' is left open; thus, the sentence could be paraphrased as follows: What is the truth value of [it is neccesary true [that John is a murderer]?
[73] I will modify this view below.

closest c-commanding verb in the cases under consideration is the epistemic modal. This modal is finite, and a finite tense element takes S as its first argument and the event argument of the modal as its second argument. Since the finite tense in this case is the present, the relation between S and the event argument of the modal is the non-past relation, i.e. $\neg(S > e_1)$. Again, this non-past relation is construed as simultaneity, since the modal is stative. This gives the following relations:

(120)

> Jon må være på kontoret.
> Jon must be in officeDEF
> 'Jon must be in his office'

> *må*   [-PAST,+FIN] $\neg$ (S > $e_{MÅ}$); $e_{MÅ}$ is stative -> simultaneity
> *være*   [-PAST, -FIN] $\neg$ ($e_{MÅ}$ > $e_{VÆRE}$) $e_{VÆRE}$ is stative -> simultaneity

This amounts to saying that the complement of the modal is in fact "finite by inheritance"; i.e. it is explicitly anchored on the time-line w.r.t. S, via its relation to $e_{MÅ}$, the event argument of the modal. To maintain our hypothsis that epistemic modals constitute assertions about assertions, we need to say that this explicit semantic temporal anchoring w.r.t. S suffices to give the complement of a modal a truth value; i.e. converts it from a proposition to an assertion. Thus, the generalization we are looking for is not that a proposition must be endowed with a finite verb in order to be interpreted as an assertion, but that a proposition must contain at least one member of a tense-chain in order to be interpreted as an assertion. A sentence becomes the member of such a tense-chain by means of an overtly expressed Tense element; i.e. finite or non-finite. If the sentence contains a finite tense element, the assertion is directly linked to S; if it contains a non-finite tense element, it is *indirectly* linked to S by means of at least one intermediate member of the tense-chain, where the topmost tense element relates to S.

Now, for a proposition to become an assertion, then, it must contain a tense element which is the member of a tense-chain with a finite verb as its topmost member. In Norwegian, only verbs carry such tense elements, and it is possible to claim that verbs are inherently temporal at least in Norwegian, which does not employ Mood as a productive grammatical category. Thus, verbs in Norwegian cannot *not* express tense, since there is no verb form that does not carry a finite or non-finite tense element. The only way to express a seemingly tense-less verb is to employ a non-finite verb which is not member of a tense-chain with a finite verb as its topmost member. In this latter case, there would be nothing to instantiate the first

event argument of the tense element, since non-finite tense elements cannot relate directly to S, they require the event argument of a c-commanding verb as their first argument. In short, for an embedded clause to be interpreted as an assertion, it must contain a verb.

This hypothesis would straightforwardly explain the ban on non-verbal small clauses as the complement of an epistemic modal. Only verbs are equipped with tense elements; thus, non-verbal small clauses do not contain a tense element. Thereby, they cannot be interpreted as assertions, only as propositions. But propositions as defined above consist solely in a subject-predicate relation and do not give rise to a truth-value. Thus, the bracketed parts of these sentences are propositions, not assertions, because of their lacking a tense element:

(121)

     a. Marit$_I$ skal [t$_I$ hjem].
       Marit shall home
      'Marit intends to go home.'

     b. Jon$_I$ må [t$_I$ på butikken].
       Jon must   in storeDEF
      'Jon must go to the store'

     c. Greina$_I$ vil ikke [t$_I$ av].
       branchDEF wants not off
      'The branch won't come off.'

Since these small clauses lack a tense element[74], which is a requirement in order for a proposition to be interpreted as an assertion, they have no truth value. Since they have no truth value, there is nothing for an epistemic modal to qualify. Thus, the epistemic reading is exluded, and the root reading is the only possibility.

Now, this works quite nicely so far. But how does this prevent an assertion about the truth value of another assertion from having non-finite forms? After all, it seems that all we would need is to embed the 'truth-value' assertion under another predicate, notably, one with a finite tense element, and by the assumptions invoked so far, this would make the truth-value assertion 'finite by inheritance' as well. Thus, we would expect 'truth-value' assertions to show up with a non-finite tense element when embedded under another, finite, predicate. And this is exactly what we find. For instance, the unacceptable (118)b embedded under a finite epistemic verb straightforwardly gives rise to a perfectly acceptable structure, cf. (122):

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[74] Cf also Guéron and Hoekstra (1995:101) who argue, on quite different grounds, that non-verbal small clauses lack an 'independent T(ense)-Operator', either they are resultatives (e.g. John ran [the pavement thin]) or epistemic small clauses (e.g. John considered [students boring]).

(122)

John considered [it to be absolutely true/false that Elvis has left the building].

This type of data support the hypothesis that it is not the finiteness per se, but the *semantically explicit temporal anchoring* of the 'truth-value assertion' (to be true/false that p) which yields the truth-value assertion possible. That is, *to be absolutely true/false,* containing a non-finite tense element, is construed as contemporaneous with *considered,* and this verb is finite. Thus, *considered* is 'past relative to S', whereas *to be absolutely true/false* is construed as contemporaneous to *consider.* Therefore, the truth-value assertion is explicitly temporally anchored, which is why it is possible in (122), as opposed to in (118)b, where there is no embedding verb from which the truth-value assertion may inherit an explicit temporal anchoring[75].

However, if this is on the right track, we would expect that epistemic modals too should be able to surface in a non-finite form exactly in the same type of configuration as (122). Even if epistemic modals function as assertions about truth-values of embedded assertions, this would not explain their lack of non-finite occurrences. On the contrary, we have already seen that a non-finite truth-value assertion is acceptable when embedded under a finite verb. Moreover, resorting to an explanation where 'epistemic modals belong to the out-most functional layer of a clause' (which they evidently do, since they e.g. always scope over root modals and not the other way around) would not suffice either; we would still expect epistemic modals to be able to turn up as non-finite complements of at least certain predicates, namely, as the non-finite complement of a finite epistemic or evidential predicate. Thus, regardless of the claims in Plank (1984) that epistemic modals are finite in Germanic languages, we would expect there to exist non-finite epistemic modals in this specific configuration. Incidentally, our expectations are indeed borne out, cf. the following rasing constructions[76]:

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[75] Admittedly, this would still not explain why (118)c is unacceptable: **It is absolutely true/false for Elvis to have left the building..* However, note that raising predicates behave just as predicted, e.g. *Elvis is likely/unlikely/supposed/presumed to have left the building.*I have no explanation to offer for this difference at present, except for resorting to pointing out the obvious syntactic difference between these two constructions.

[76] Confer also Faarlund et al. (1997: 578), where there are two examples where the modal *skulle* occurs in the infinitive and still has an epistemic reading, where the modal is the leftmost verb in an infinitival clause:

De påstås å skulle ha reist (= ...at de skal ha reist)
'They are claimed to be supposed to have left' (= Present claim: that they supposedly have left)
De ble påstått å skulle ha reist (=... at de skulle ha reist)
'They were claimed to be supposed to have left' (Past claim: that they supposedly have left)

(123)

    a. Marit påstås å skulle være morderen.
      Marit claimPASS to shall be the killer
    'Marit is claimed to be supposed to be the killer.'

    b. Jon antas å måtte være ungkar.
      Jon supposePASS to must be bachelor
      'Jon is supposed to have to be a bachelor.'

    c. Ti tusener blir rapportert å kunne være drept.
      Ten thousands reportedPASS to may be killed
      'Tens of thousands are reported to possibly have been killed.'

    d. Dette fryktes å kunne bli et stort problem.
      this fearPASS to may become a big problem
    'This is feared to potentially become a big problem.'

The natural reading of the modal in all these sentences is the epistemic reading, although in (123) d, a root reading is possible in addition to the epistemic reading. Crucially, though, these modals are all non-finite, i.e. they are infinitives, and nevertheless, they undoubtedly have an epistemic reading. That is, the generalization made in Plank (1984) above that Germanic epistemic modals are subject to a finiteness requirement does not hold. Instead, the relevant generalization is that epistemic modals must be explicitly temporally anchored, i.e. member of a tense-chain whose topmost member is a finite verb, in order to function as assertions. This property is common to epistemic modals and root modals alike; neither root modals or any other verb may partake in an assertion if not explicitly temporally anchored.

One crucial difference between epistemic modals and root modals, though, is that the former qualify truth values; specifically, the truth value of the complement of the modal (where the complement includes the subject trace). Since epistemic modals qualify truth values, they require their complement to be explicitly temporally anchored as well, since explicit temporal anchoring is the distinguishing feature between a proposition and an assertion, and only the latter may function as the complement of an epistemic modal. Since only verbs are able to provide a tense element which performs this explicit temporal anchoring, this amounts to saying that epistemic modals require their complement to contain a verb.

Moreover, given the system of tense-chains alluded to in this discussion, it seems futile at best to seek the once-and-for-all ordering of epistemic modals w.r.t. to one or two fixed tense projections, as is the approach chosen in several recent proposals, e.g. Cinque

(1999), Stowell (2000) and Roberts and Roussou (2000). The reason why this seems futile is that the behavior, requirements and interpretations of root and epistemic modals and their complements vis-á-vis tense marking suggest instead that every verb comes with its own tense-package, which orders the event argument of the verb on a temporal line relative to the verb c-commanding it (if it carries a non-finite tense-package) or to the speech event S (if it carries a finite tense-package). In fact, this is so irrespective of the relevant verb's status as an epistemic or root modal, a metaphysical predicate, the matrix verb of a generic sentence or a plain lexical verb in any old sentence.

5.5   Modals and negation

This discussion on modals and negation will not be concerned with the entire spectrum of data and previous analyses on the subject, although several analyses exist (cf. e.g. Öhlscläger 1989:80 ff and the references given there, in particular fn. 54 p. 84). Instead, I would like to present a set of intriguing Norwegian data consisting of sentences containing modals and negation. These data display a surprising asymmetry as regards the modal's scope relative to negation, seemingly depending on the placement of the subject. As far as I know, this is a novel observation for Norwegian, and I have no knowledge of a corresponding observation for any other language either.

Although I present a sketchy analysis to account for the observed facts, I want to point out that this is work in progress which makes no claim of telling the whole story. First and foremost, the discussion focusses on the discussion of the interaction between the modal *kunne* 'can' and the clausal negation *ikke* 'not'; the other Norwegian modals are mentioned just briefly at the end. Moreover, I have concentrated on the root reading of *kunne* and do not investigate to which extent these claims hold for the epistemic reading of *kunne,* not to mention the epistemic readings of all the other modals.

5.5.1 The data

I take as my point of departure the data listed in (124). Crucially, some of these sentences are ambiguous w.r.t. the relative scope of the modal and the negation, whereas others are unambiguous. The possible readings are indicated by means of the "diamond" encoding 'possibility' and the negation sign. The relative ordering of the two encodes the relative scope of the two operators in the reading at hand, such that $\neg\Diamond$ paraphrases as 'it is **not possible** for the medicine to work', whereas $\Diamond\neg$ means 'it is **possible** for the medicine **not** to work'.

(124)

a.   Dermed kan medisinen ikke virke.
       thus   can mediscineDEF not work
       'Thus, the medicine can not work (ambiguous: ◊ ¬/ ¬◊).'

b.   ...fordi medisinen ikke kan virke.
       because mediscineDEF not can work
       '...because the medicine cannot work (unambiguous: ¬◊).'

c.   Dermed kan ikke medisinen virke.
       thus cannot medicineDEF work
       'Thus, the medicine cannot work (unambiguous: ¬◊).'

d.   Dermed kan ikke medisinen ikke virke.
       thus cannot medicineDEF not work
       'Thus, the medicine cannot not work (unambiguous: ¬◊ ¬).'

e.   */??...fordi medisinen ikke ikke kan virke.
       because mediscineDEF not not can work

f.   */??...fordi medisinen ikke kan ikke virke.
       because mediscineDEF not cannot work

g.   */??...fordi ikke medisinen ikke kan virke.
       because not mediscineDEF can not work

It is not a new obeservation that Mainland Scandinavian (sentence) adverbials may appear to the right of the subject, as in (124)a, or to the left of the subject, as in (124)c. Holmberg (1993) explains this phenomenon as the optional movement of the subject phrase from [Spec,TP] to [Spec,AgrSP], assuming that the adverbial has a fixed position in the structure. Note also that weak (i.e. unstressed) subject pronouns are assumed to move obligatorily, since the data suggest that weak subject pronouns cannot surface to the right of the sentence adverbial, unlike non-pronoun subjects and stressed (i.e. strong) pronoun subjects. (cf. also Vikner 1995:45, Platzack 1986:45). Åfarli (1997), on the other hand, rejects the hypothesis that the adverbial occupies a fixed position on the basis of the observation that a sentence adverbial may occur simultaneously to the immidate right and left of the subject, cf. (125):

(125)

a.   Har *möjligen* **nogon student** *inte* läst boken? (Sw.)
       has possibly any student not read the book

b.   Bøker har *faktisk* **studentane** *aldri* lese. (Norw.)
       books have in fact the students never read

Åfarli assumes instead that the adverbial may "float" to the left of the subject because of one property specific to adverbials: Adverbials originate in a third dimension of phrase structure, cf. (126):

(126)
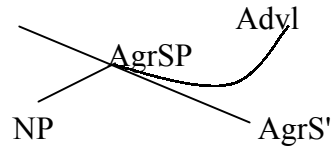
Åfarli too assumes that AgrSP[77] is what licences the sentence adverbial, but since adverbials are 3D elements, they have to be forced into a linear ordering w.r.t. the other elements in the string, a process referred to as "bending". A leftward bending will result in the adverbial occurring to the left of the subject, a downward bending results in the adverbial occurring to the right of the subject, and finally, a rightward bending results in a sentence-final adverbial.

Now, compare the two strings in (124) a. and (124)c, repeated here for convenience as (127) a and b :
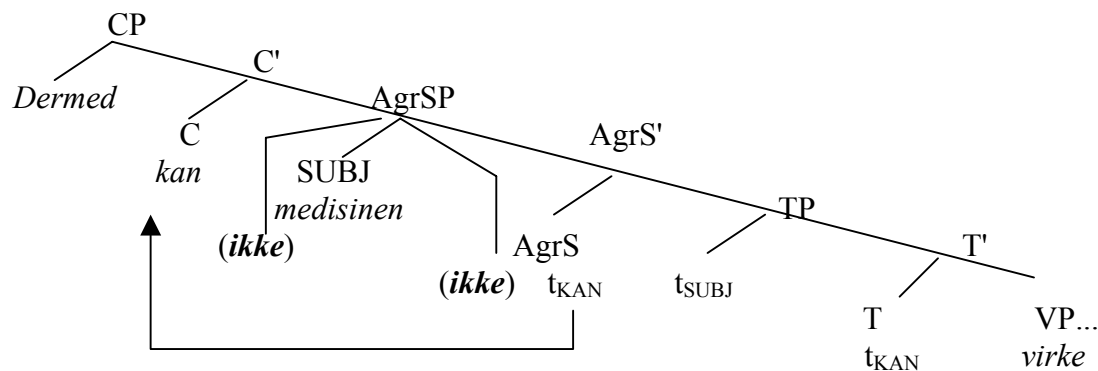
(127)

a.   Dermed kan **medisinen** *ikke* virke.
     thus   can mediscineDEF not work
     'Thus, the medicine can not work (ambiguous: $\Diamond \neg / \neg \Diamond$).'

b.   Dermed kan *ikke* **medisinen** virke.
     thus cannot medicineDEF work
     'Thus, the medicine cannot work (unambiguous: $\neg \Diamond$).'

Although both Holmberg's and Åfarli's analyses are able to derive these two word orders, none of them are able to explain the fact that whereas (127)b is unambiguous (' It is not possible for the medicine to work'), (127)a has two possible readings ('It is not possible for the medicine to work' vs. 'It is possible for the medicine not to work). On the contrary, on both these analyses, one would expect the scope possibilities of the negation w.r.t. the modal to be identical. To exemplify, the analysis of Åfarli would give us something like the figure in (128).

---

[77] He also mentions that AgrIOP may serve as an attachment site for adverbials.

(128)

```
        CP
           C'
Dermed        AgrSP
        C           AgrS'
      kan               TP
        SUBJ                   T'
        medisinen
        (ikke)       AgrS
             (ikke)  tKAN   tSUBJ
                                  T        VP...
                                  tKAN     virke
```

thus   can   (not)   the medicine (not)   work

On Holmberg's analysis, the optional movement of the subject from [Spec, TP] to [Spec, AgrSP] derives the right word orders. But it seems hard to relate this optional movement of the subject to a change in the relative scope possibilities of negation w.r.t. the modal – why should this movement influence the possible scope of negation? Likewise, another important question emerging from the data in (124) remains unanswered on these two analyses: Why doesn't the embedded sentence in (124)b give rise to the same ambiguity? In my approach, I will seek an answer to both questions.

First of all, let us investigate the possible relative ordering of full subject phrases versus subject pronouns relative to sentence adverbials in MSc main clauses and embedded clauses. We will employ two sentence adverbials, since, as pointed out by Åfarli (1997), a sentence adverbial may occur simultaneously to the immediate right and left of the subject.

(129)

Main clauses:

a. Dermed har *sannsynligvis* **studentene** *aldri* lest boka.
b. Dermed har **studentene** *sannsynligvis aldri* lest boka.
c. Dermed har **de** *sannsynligvis aldri* lest boka.
d. *Dermed har *sannsynligvis* **de** *aldri* lest boka[78].

'Thus, the students/they have probably never read the book'

---

[78] Note that this sentence is fine when the pronoun is stressed. Here, we are only concerned with the unstressed pronouns.

Embedded clauses:

e. ...fordi **studentene** *sannsynligvis aldri* har lest boka.
f.* ...fordi *sannsynligvis* **studentene** *aldri* har lest boka[79].
g. ...fordi **de** *sannsynligvis aldri* har lest boka.
h. *...fordi *sannsynligvis* **de** *aldri* har lest boka.

' because the students/they probably never have read the book'

The relevant generalization for embedded clauses is that even a full subject phrase cannot intevene between the two adverbials, as opposed to main clauses, where this is possible. In fact, the data suggest that weak pronoun subjects occur in the same position as full subject phrases in embedded clauses. On the other hand, in main clauses, full subject phrases and weak pronoun subjects are seemingly subject to different restrictions, since full subject phrases may occur to the left of both adverbials, just like weak pronouns, but in addition, full subject phrases may intervene between the two adverbials. That is, in main clauses, the full subject phrase may intervene between the two adverbials, whereas *nothing* may intervene between these two adverbials in embedded clauses.

5.5.2 The analysis

Now, throughout this dissertation, I have confessed my attraction to the Real Minimalist Principle, as stated in Thráinsson (1996: 261):

Assume only those functional categories that you have evidence for.

Thráinsson goes on to admit that "what counts as "evidence" in this connection is by no means obvious", and I agree. In my view, the postulation of a functional projection should preferably correspond to some kind of morphological marker, as is envisaged by Åfarli (1995: 140, his (6)). However, I want to argue here that the word order patterns in (129) constitute evidence for a functional projection present in Norwegian main clauses and absent from some Norwegian embedded clause types.

Thus, I want to argue that it is possible to explain the word order patterns observed in (129) by making the following assumptions/stipulations.

---

[79] The sentence is possible with a paranthetical reading of *sannsynligvis.* The paranthetical reading is characterized by a 'comma-intonation' in speech and a comma on each side in written text. This means that *fordi, sannsynligvis,* **studentene** *aldri har lest boka* is perfectly fine. Now, crucially, this comma-intonation in speech or punctuation in written text is not at all required for (109) a to be acceptable. Paranthetical readings of adverbials, characterized by comma-intonation are typically taken to "signal that [the adverbial] is not actually part of the syntactic representation"; cf. Browning (1996:238, n.2) and Cinque (1999: 181, n. 87).

a. Main clauses contain one functional projection which is absent from embedded clauses. Let us dub this projection ForceP[80].

b. ForceP provides an additional adjunction site for sentence adverbials, which means that main clauses contain *two* possible adjunction sites for sentence adverbials, (let us dub the other one FinP) whereas embedded clauses contain only one adjunction site for such adverbials (namely FinP). Each adjunction site may contain more than one adverbial, and the adverbial is adjoined to Fin'/Force'.

c. Weak pronoun subjects move to <Spec, ForceP> when possible (i.e. when this position is present), whereas full subject phrases remain in <Spec, FinP>.

Now, let us see whether or not these assumptions do in fact account for the observed patterns.

(130)

		CP	C/V2	[Spec,ForceP]	SA	[Spec,FinP]	SA	V_{MAIN}	DO
a.		Dermed	har	*sannsynligvis*	**studentene**		*aldri*	lest	boka.
b.		Dermed	har			**studentene**	*sannsynligvis aldri*	lest	boka.
c.		Dermed	har	**de**	*sannsynligvis*		*aldri*	lest	boka.
d.	*Dermed	har		*sannsynligvis*	**de**		*aldri*	lest	boka.

		CP	C/V2	[Spec,ForceP] Ø	SA Ø	[Spec,FinP]	SA	$V_{AUX/MAIN}$	DO
e.			fordi			**studentene**	*sannsynligvis aldri*	har lest	boka.
f.	*		fordi	*sannsynligvis*	**studentene**		*aldri*	har lest	boka.
g.			fordi		**de**		*sannsynligvis aldri*	har lest	boka.
h.	*		fordi	*sannsynligvis*	**de**		*aldri*	har lest	boka.

Now, if we make these assumptions, we see that (129)d is unacceptable because the weak pronoun has failed to move to <Spec, ForceP>, whereas (129)f and h are unacceptable because the adverbial *sannsynligvis* 'probably' is adjoined to a functional projection that does not exist in embedded clauses. The weak pronoun subject does not move to <Spec,ForceP> in (129)g because this position simply does not exist in embedded clauses[81].

---

[80] I will not argue here that these labels are the only conceivable lables for the functional projections involved. However, invoking the label ForceP is meant to signal that this projection may be connected to basic sentence modality (e.g. statement vs. command), whereas FinP corresponds to the old 'unsplit' IP, containing e.g. Tense. Thus, I have assumed (Eide 2001) that Norwegian imperatives contain a ForceP but no FinP, that some embedded clause types contain a FinP but no ForceP, and that main clauses contain both.

[81] One should be aware here that there exist types of embedded clauses that does not behave this way, e.g. embedded conditionals seem to employ ForceP in addition to FinP, and *at* 'that'- clauses, when complements of

Now, to our next mission. Are we in a position to explain the relative scope of modals and negation if we make these assumptions? I will argue that this is so. Before we proceed however, we need to make another assumption about the syntactic category of negation in Norwegian. Following Zanuttini (1996, p. 191) I will propose that the negation *ikke,* 'not', is an adverbial in Norwegian. Furthermore, I will assume that it typically behaves as a sentence adverbial (except in those instances where it negates lexical constituents). Since, by assumption, Norwegian has two possible adjunction sites for sentence adverbials in main clauses, there exist exactly two positions in a main clause where the Norwegian negation *ikke* may occur; adjoined to Force' and adjoined to Fin'. The choice between these two adjunction sites for *ikke* will give us the two strings in (127)a and b, repeated here as (131), where the different projections are indicated:

(131)

a.　　　$[_{CP}$ Dermed $[_C$ kan$_i$ $[_{ForceP}$ $[_{Force}$ t$_i$ $[$ $_{FinP}$ medisinen $[_{Fin'}$ ikke$[_{Fin}$ t$_i$ $[_{VP}$virke$]]]]]]]$.
　　　　　thus　　　　can　　　　　　　mediscineDEF　not　　　　work
　　　　　'Thus, the medicine can not work (ambiguous: $\Diamond \neg / \neg \Diamond$).'

b.　　　$[_{CP}$ Dermed $[_C$ kan$_i$ $[_{ForceP}$ $[_{Force'}$ ikke $[_{Force}$ t$_i$ $[$ $_{FinP}$ medisinen $[_{Fin}$ t$_i$ $[_{VP}$virke$]]]]]]]$.
　　　　　thus　　　　can　　　　　not　　　　　medicineDEF　　　work
　　　　　'Thus, the medicine cannot work (unambiguous: $\neg\Diamond$).'

As additional evidence for this structure, recall the sentence in (124) d, repeated as (132):

(132)

　　　　　Dermed kan ikke medisinen ikke virke.
　　　　　thus cannot medicineDEF not work
　　　　　'Thus, the medicine cannot not work (unambiguous: $\neg\Diamond \neg$).'

Here, we see that both adjunction sites are occupied at once. The result is a string which is unambiguous w.r.t. the relative scope of the two instances of negation and the modal. However, we still have to explain the ambiguity vs. the unambiguity of the strings in (131)a and b respectively. This is what we turn to next.

Roberts (1985) claims that Modern English modals are directly inserted into I(nfl)^0, as opposed to Middle English modals, that were inserted in V and subsequently raised to I^0. Roberts (1993) further claims that Mainland Scandinavian modals behave like Middle English modals e.g. because they supposedly have theta-assigning properties, but I will reject this

---

bridge verbs (factive verbs and verbs of saying and believeing) behave like main clauses w.r.t. the phenomena observed here.

latter assumption here and simply stipulate that Norwegian modals may be inserted directly into I^0 as well, or in the present approach, into Fin[082]. In addition, we will make use of the device *head-adjunction* (Chomsky 1995) to account for the possible readings of (131) a and b respectively. The proposed structure of the ambiguous string in (131)a is depicted in (133).
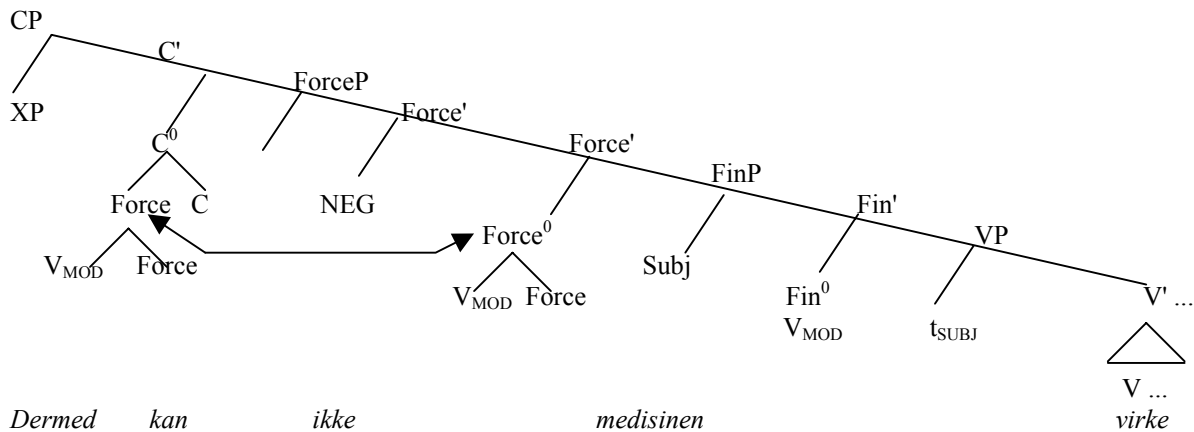
(133)

Dermed   *kan*   *medisinen*   *ikke*   *virke*
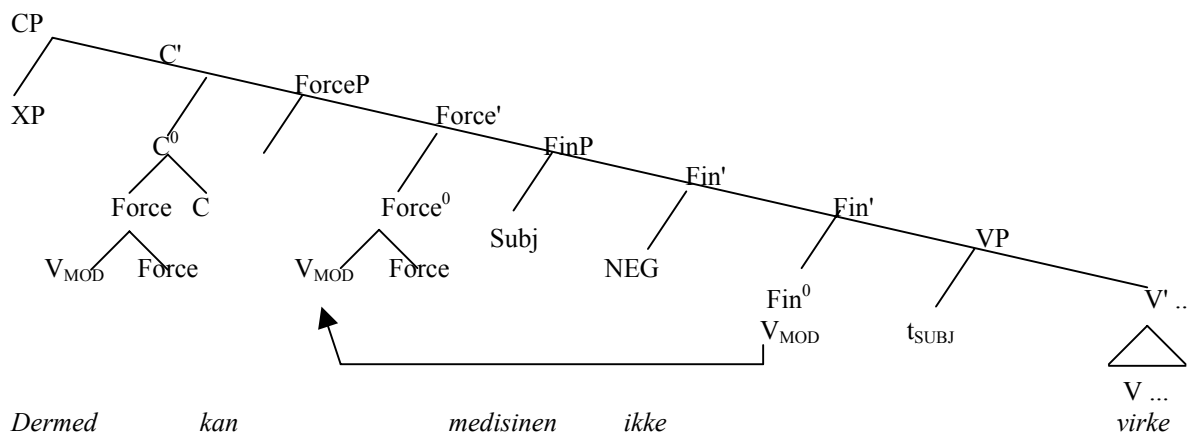
The ambiguity of this structure w.r.t. the relative ordering of the negation and the modal stems from the (sub)chain consisting of the modal's trace in $Force^0$ and the trace in the root position of the modal in Fin^0. At this point, the chain envelopes the negation and gives rise to the ambiguity, depending on the possibility to interpret the tail (the lower trace) of the modal chain or the intermediate trace in $Force^0$. In the latter case, the modal will scope over the negation. In the former case, negation will scope over the modal. The subject is stuck in [Spec,FinP], since [Spec,CP] hosts a topicalized element, and the subject being a full noun phrase, it cannot raise to [Spec,ForceP] either. So the subject constitutes a clear indicator of where negation is adjoined, Fin'; i.e. the lower adjunction site is the relevant one. And as the structure shows, employing the lower adjunction site gives rise to the scopal ambiguity. Now, let us see what happens in the other proposed structure. Making use of the upper adjunction site available for sentence adverbials/negation apparently does not give rise to this scopal ambiguity. The proposed structure of the string in (131) b is depicted in (134) below.

---

[82] A Norwegian modal also may be embedded under a perfective/aspectual auxiliary. In these cases, the modal may of course be part of the VP. The point here is that a finite auxiliary *may* be directly inserted into Fin^0, whatever its status as modal or aspectual may be. This would not work for main verbs, though. If it is a sound assumption that VP is the lexical domain where theta-properties and theta-relevant principles like the projection principle are monitored, cf. e.g. Brody (1993), a lexical verb with theta-properties would have to leave a trace in V^0 to uphold these properties and principles.

(134)

```
CP
 ├─ XP
 └─ C'
     ├─ C⁰
     │   ├─ Force
     │   │   ├─ V_MOD
     │   │   └─ Force
     │   └─ C
     └─ ForceP
         └─ Force'
             ├─ NEG
             └─ Force'
                 ├─ Force⁰
                 │   ├─ V_MOD
                 │   └─ Force
                 └─ FinP
                     ├─ Subj
                     └─ Fin'
                         ├─ Fin⁰
                         │   └─ V_MOD
                         └─ VP
                             ├─ t_SUBJ
                             └─ V' ...
                                  └─ V ...
```

Dermed   kan   ikke   medisinen   virke

In this structure, employing the upper adjunction site for the modal, we likewise have a head-chain enveloping the negation. But this subchain does not consist of the modal and its trace. It consists of the $Force^0$ head and *its* trace. The attributive semantic properties of the modal as an operator encoding 'possibility' are irrelevant at this point, and too deeply embedded in the adjunction structure of the complex head to provide any semantic input to the C head. The modal functions solely as a phonetic matrix, a syntactic head fulfilling the requirements of the principle responsible for the V2 phenomenon. Thus, the lack of scopal ambiguity in this string stems from the lack of a *relevant* head-chain enveloping the negation. There is no chain in this structure that will allow us to intepret the modal as scoping over the negation.

Recall that I proposed some specific properties of [Spec,ForceP] as well, claiming that it hosts weak or unstressed pronouns. This proposal is easy to test against this structure. Assume we replace the subject DP *medisinen* 'the medicine' with an unstressed pronoun *den* 'it'. If unstressed pronouns obligatorily move to [Spec,ForceP], we would predict that this replacement ought to result in an unambiguous string, just like the structure above. This expectation is indeed fulfilled, cf. (135).

(135)

> Dermed   kan-den-ikke   virke.
> thus   can-it-not   work
> 'Thus, it cannot work ($\neg\Diamond$).'

The modal, the pronoun and the negation forms one item prosodically, which clearly indicates that they are structurally adjacent. This prosodic indicator suffices to supply the language user with the relevant information to form the scopally unambiguous string: The modal sits in

Chapter 5

C/V2, the pronoun is unstressed and therfore it occupies [Spec,ForceP], and the negation must be adjoined in the upper adjuction site to be able to partake in this prosodic item[83].

Now, ls take a closer look at those data in (124) that regard embedded sentences in Norwegian. For starters, these data suggest that Norwegian embedded sentences headed by *fordi* 'because' do not allow for double negation; (124) e, f and g, repeated here as (136) a, b and c are all attempts to force the embedded structure to accept two instances of negation. Neither works; they are all ungrammatical[84].

(136)

a. */??...fordi medisinen ikke ikke kan virke.
    because mediscineDEF not not can work

b. */??...fordi medisinen ikke kan ikke virke.
    because mediscineDEF not cannot work

c. */??...fordi ikke medisinen ikke kan virke.
    because not mediscineDEF not can work

This supports the assumption that embedded clauses contain only one adjuction site for the sentence adverbial/negation. However, if embedded clauses contain only FinP and not ForceP, why is it that embedded clauses do not exhibit the kind of ambiguity found in main clauses (cf. (124)b)? Recall that employing the lower adjuction site, Fin', was the move that gave rise to the ambiguity in main clauses, and embedded sentences are obviously scopally unambiguous, cf. (137):

---

[83] Notice that a pause between the weak pronoun subject and the negation allows for the other reading; as expected. The pause indicates that negation does not form a prosodic item with the verb+subject; in which case it is not structurally adjacent to the subject, but adjoined to Fin', the lower adjuction site.

[84] A couple of comments are in order here. Firstly, the negation *ikke* is typically less restricted in its distribution than are many of the other sentence adverbials. Hence, we may encounter embedded clauses where the negation *ikke* occurs between the complementizer and the subject of the embedded clause. Secondly, as mentioned previously (fn.81), some types of embedded clauses more readily accept an adverbial in what appears to be an 'upper adjuction site', whether this adverbial is the negation *ikke* or not. Seemingly, clauses headed by the complementizer *fordi* 'because' belong to the more restrictive clause types w.r.t. allowing an adverbial between the complementizer and the subject. Thirdly, one of my linguist informants judges (136) b to be dramatically worse than either a. or c., although all are judged to be unacceptable. Interestingly, my non-linguist informants reach the exact opposite conclusion about this sentence, and judge it to be slightly better than the other two. I believe the reason for this discrepancy to be as follows. The linguist informant knows that no adjuction site for sentence adverbials exist to the right of a finite verb, which may influence on this person's judgments. My non-linguist informants, on the other hand, find (136)b better than the other two because they construe the sequence *ikke-virke* as a verb, meaning rougly 'avoid working'. These informants find this sentence more acceptable because the scope of the two instances of negation is logically easier to construe; notably as 'not-possible' and 'not-work'.

(137)

> ...fordi medisinen ikke kan virke.
> because mediscineDEF not can work
> '...because the medicine cannot work (unambiguous: ¬◊).'

It is correct that employing the lower adjunction site gives rise to the ambiguity in main clauses. But recall also that the ambiguity witnessed in main clauses stems from *two* different properties of the relevant main clauses, notably adjoining the negation to Fin' pluss the modal-chain created by the modal's movement from Fin^0 to $Force^0$. In embedded clauses, however, no movement of the modal to $Force^0$ can take place, since $Force^0$ does not exist in embedded clauses. Hence, there is no modal chain to give rise to the scopeal ambiguity; hence, the negation will always scope over the modal. This is depicted in (138):

(138)

> *fordi   medisinen   ikke   kan   virke*
> because medicineDEF not   can   work
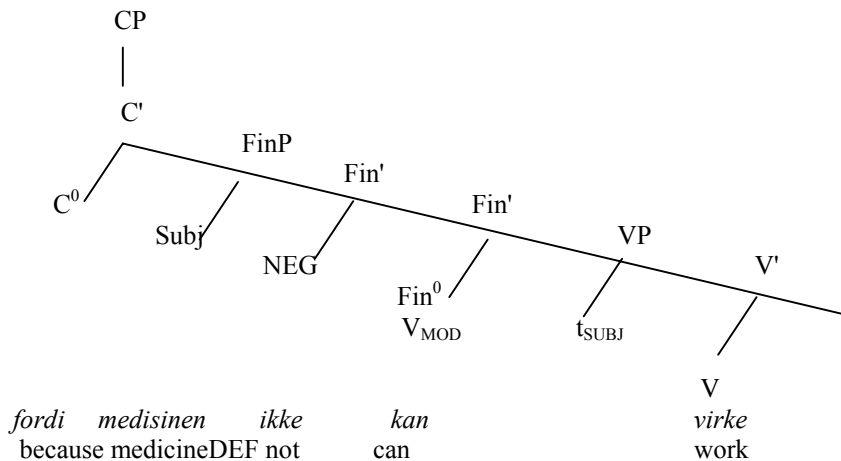
It seems that the observed pattern could be accounted for along these lines. If this theory holds up against closer scrutiny, then, the interaction of modals and negation may give important cluse to the functional outfit of Norwegian main and embedded clauses.

As mentioned in the introduction to this subsection, I have not taken on an investigation of all the other modals w.r.t. the phenomena discussed here. However, it seems that the modals *skulle* 'will' and *måtte* 'must' behave differently from *kunne* 'may, can' at least in embedded clauses. For instance, when these modals co-occur with negation in embedded sentences, they seem to be ambiguous, unlike *kunne:*

(139)

> a. ...ettersom vi ikke skulle/måtte åpne den døra
>   since   we not should/mustPAST open that door
>   I'...since we were not obligated to open that door'
>   II...since we were obligated not to open that door'

I have no explanation to offer at present as to why other modals should behave differently from *kunne* in this respect. However, Palmer (1995), who investigates the scopal possibilities for modals and negation in various languages, shows that the 'necessary-not' form typically gives rise two an 'irregular construal'; i.e. scope inversion, in a range of these languages. By contrast, the 'not-possible' form is usually regular. He notes that even elsewhere in language the scope of negation is not accurately indicated by the grammar, as shown e.g. by the example *I don't think he will come* (= I think he won't come), but he does not provide any explanation for the differences between modals encoding possibility and those encoding necessity w.r.t. scope possibilies relative to negation. I leave this question for future research.

5.6   Summing up

The subject of this chapter has been how modals interact with other categories. We have studied how modals relate to aspectuals, to stative and dynamic complements, to tense and finally, to negation. Our investigation of modals and aspectuals revealed that modals may precede or follow an aspectual, and contrary to wide-spread assumptions, the position of the modal relative to an aspectual is not decisive for the reading of the modal as epistemic or root. Furthermore, we have seen that epistemic modals prefer stative complements whereas root modals prefer dynamic complements in the sense that an epistemic reading arises much more easily with a stative complement, whereas a root reading arises much more easily with a dynamic complement.

As regards the temporal properties of the complement of a modal, we have seen that root modals prefer future-denoting complements, whereas epistemic modals accept past-denoting complements. To give a systematic account of the temporal properties of the complements of a modal, we constructed a new model of tense-assignment wherein temporal relations are determined by tense elements encoded in any Norwegian verb-form. Norwegian employs four different tense elements; [+PAST,+FIN] encoded by the preterite, [-PAST, +FIN] encoded by the present, [+PAST,-FIN] encoded by the perfect participle and finally [-PAST,-FIN] encoded by the infinitive. All and only verbs encode tense elements, which means that e.g. small clauses do not take part in the construction of a tense-chain.

In our investigation of modals and tense, we reached the conclusion that a once-and-for-all ordering of modals and tense in a universal hierarchy of functional projections (as suggested by e.g. Cinque 1999, Stowell 2000) cannot be maintained because each modal, like
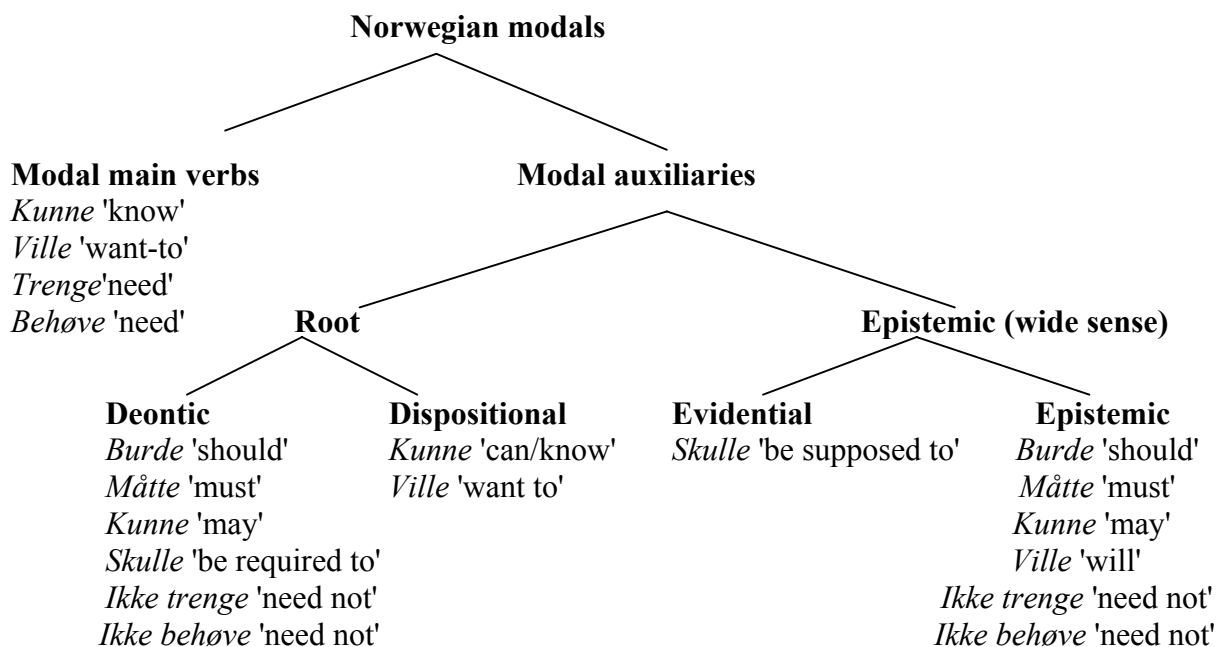
any other verb, comes with its own tense package. Thus, the number of tense elements (or T-projections, in Cinque's terminology), will be determined by the number of verbs present in a clause, and each verb carries one tense element. Furthermore, we found that the widely assumed finiteness-requirement on epistemic modals does not hold. This finiteness requirement should be replaced with a requirement that the epistemic modal must be explicitly temporally anchored by means of being member of a tense-chain with a finite verb as its topmost member.

Finally, we looked at some interesting data concerning modals and negation in Norwegian. To explain the observed interpretational asymmetry of these sentences, we assumed that Norwegian main clauses contain a projection absent from (most) Norwegian embedded clauses. It was shown that this assumption, along with some auxiliary hypotheses, does account for the observed patterns.

6 Conclusions

In this dissertation, I have systematized the inventory of Norwegian modals with respect to their syntactic and sematic properties. Based on these properties, I have divided this inventory into two main types, namely modal main verbs and modal auxiliaries. Furthermore, I have made a further subdivision of the modal auxiliaries into root modals and epistemic modals, where the set of root modals consists of deontic and dispositional modals, whereas the set of (wide sense) epistemic modals consists of evidential and (narrow sense) epistemic modals, as follows.

(1)

Norwegian modals

Modal main verbs
Kunne 'know'
Ville 'want-to'
Trenge 'need'
Behøve 'need'

Modal auxiliaries

Root

Epistemic (wide sense)

Deontic
Burde 'should'
Måtte 'must'
Kunne 'may'
Skulle 'be required to'
Ikke trenge 'need not'
Ikke behøve 'need not'

Dispositional
Kunne 'can/know'
Ville 'want to'

Evidential
Skulle 'be supposed to'

Epistemic
Burde 'should'
Måtte 'must'
Kunne 'may'
Ville 'will'
Ikke trenge 'need not'
Ikke behøve 'need not'

Considering the argument-taking properties of Norwegian modals, we find that the modal main verbs behave like transitive lexical verbs, assigning one external and one internal theta-role, i.e. they take a subject and a direct object. Dispositional modals are different from other modal auxiliaries in not accepting expletive subjects, whereas all other modal auxiliaries do. The two dispositional modals are also the only modal auxiliaries that do not allow for their subject to scope under them, and they are always construed as two-place relations; i.e. they always assign an external theta-role.

Deontic root modals may be construed as one-place relations or two-place relations, and we reached the conclusion (chapter 3) that these modals are optional assigners of an

external theta-role. Epistemic and evidential modals never assign an external theta-role, and they are always construed as one-place relations.

It has often been claimed that there exist a range of formal differences between root modals on one hand and epistemic modals on the other. In subjecting these claims to scrutiny, however, we find that most of these alleged differences between root modals and epistemic modals do not exist. Thus, root modals and epistemic modals alike take non-argument subjects (e.g. expletives), none of them passivize, and both groups have non-finite forms, contrary to the wide-spread claim that epistemic modals are subject to a finiteness-requirement.

Furthermore, it has sometimes been claimed that modals get an epistemic reading when they precede an aspectual, whereas they get a root reading when they follow an aspectual. We have seen that this is not correct. Both epistemic and root readings are available when the modal precedes an aspectual (this was shown to hold for English and Dutch in addition to Norwegian). Moreover, non-standard Norwegian dialects also allow for an epistemic reading, in addition to a root reading, of a modal following an aspectual.

However, there do exist certain differences between root modals and epistemic modals as regards their complement-taking properties. Firstly, root modals accept, whereas epistemic modals reject a non-verbal small clause complement. I have suggested (section 5.4.3) that epistemic modals take *assertions* as their complements. Assertions are propositions with a truth-value. A prerequisite for a truth-value is explicit temporal anchoring, and this anchoring is provided by a verb. Thus, non-verbal small clauses are propositions with no truth-value, since they do not contain a verb. As such, they cannot function as the complement of an epistemic modal.

Secondly, root modals accept, whereas epistemic modals reject a pro-predicate *dette* 'this' as a complement (this is pointed out by Lødrup 1994). Interestingly, it turns out that only subject-oriented root modals; i.e. root modals construed as two-place relations, are felicitous in this construction, cf. (2)a, where we have a subject-oriented modal vs. (2)b, where we have a proposition-scope modal:

(2)

    a. Jon må spise puddingen ==> Jon må dette.
      'Jon must eat porridge-DEF ==> Jon must this.'

    b. Det må komme noen straks =|=> Det må dette.
    ' There must come someone immediately =|=> There must this.'

Thus, this property of root modals is evidently related to their ability to be construed as two-place relations; a property which epistemic modals do not possess. Note however, that this is not a property which separates all epistemic modal from all root modals, since proposition-scope root modals do not accept *dette* as their complement either, as observed above.

One difference between root modals and epistemic modals that seems to hold universally, is the fact that root modals can never scope over epistemic modals, it is always the other way around. I account for this fact by adhering to the assumption that there exists a universal relative semantic scope of semantic operators (cf. section 5.1) as described e.g. in Muysken and Smith (1995:11ff). I suggest that root modals and epistemic modals instantiate two different semantic operators, where the operator instatiated by an epistemic modal scopes over an operator instantiated by the root modal. I am of course aware that this amounts to a stipulation which in a sense consists solely in restating the facts, but at least this stipulation captures what seems to be a universal restriction on the relative scopes of root and epistemic modals.

On the other hand, I have objected to the assumption made in several recent proposals, e.g. Cinque (1999), Stowell (2000) and Roberts and Roussou (2000), that there exists a once-and-for-all ordering of root and epistemic modals w.r.t. *tense* in a universal hierarchy of functional categories. Instead, I suggested that each verb comes with its own tense-package, which orders the event-argument of the verb on a temporal line relative to the verb c-commanding it (if it carries a non-finite tense-package) or to the speech event S (if it carries a finite tense-package). In fact, I have suggested that there are no non-tensed verbs in Norwegian, each and every verb comes with a non-finite tense-package or a finite tense-package. Furthermore, I reached the conclusion that the Norwegian tense system employs a past vs. non-past distinction only. The different verb forms employed in the Norwegian tense-system is displayed in the following table.

(3)

	+Finite	-Finite
+Past	**preterite**	**participle**
-Past	**present**	**infinitive**

The system of tense-chains developed in chapter 5 represents one theoretically innovative model that I had to construct in order to account for specific properties of root and epistemic modals.

Another theoretical innovation of this kind is the proposal in section 4.6. that modals are always construed as two-place relations on a certain semantic level; i.e. on the level of Conceptual Structure. The idea of a two-level semantics for (certain) linguistic expressions was adopted from Bierwisch and Lang (1989), who assume that there exist one semantic level which is relevant to syntax, namely Semantic Form (SF), and another semantic level closer to conceptual organization; i.e. Conceptual Structure (CS). My contribution consists in applying this idea to modals and showing that certain combinations of CS and SF arguments give rise to specific readings of modals, e.g. 'obligation', 'promise', 'permission' etc. This allows us to describe the core semantics of any given modal by means of a more abstract representation and the various nuances in meaning as a result of specific combinations of CS and SF arguments.

A certain assymetry w.r.t. interpretational ambiguity observed with modals and negation lead me to propose that Norwegian main clauses typically contain a functional projection which is absent from certain types of finite embedded clauses (section 5.5). This "extra" functional projection provides an additional adjunction site for adverbials in main clauses as compared to the relevant embedded clauses.

Moreover, the behavior of modals in pseudoclefts, as compared to raising verbs and control verbs, lead me to a rejection of the wide-spread assumption (stemming from May 1977, 1985) that wide-scope and narrow-scope readings e.g. of indefinites are encoded in subject positions of raising structures. Instead, what is known as wide-scope and narrow-scope readings of indefinites was shown to amount to two in part different phenomena. Firstly, there is the specific/non-specific ambiguity that I suggest (following Enç 1991) is an inherent property of indefinites which is not encoded in syntactic positions. Secondly, there is the "no supposition of existence" effect, which I suggest results from the occurence of an indefinite within the scope of an intensional predicate. Nor this effect is encoded in specific syntctic positions, since it arises with all indefinites in any syntactic position, provided they semantically belong to a proposition within the scope of an intensional predicate. This intensional predicate may even be an adverbial (e.g. *allegedly*), which serves to show that this is not a phenomenon confined to raising constructions.

In suggesting that the Case-assigning properties of a certain raising verb may vary independently of its property of assigning an external theta-role, I signal a radical opposition

to Buzio's generalization, which states that there is a biunique relationship between these two properties. For instance, the Norwegian dispositional root modal *ville* 'want-to' was claimed to be a raising verb which does assign an external theta-role without assigning Case to a DP that it governs.

I see as one main contribution of this dissertation that it presents a range of data which serve as counterevidence to a number of myths about modals existing in the literature. To take one example, although there have been a number of proposals throuhgout the years suggesting that root modals in fact share as many properties with raising verbs as they do with control verbs, these proposals have not gained enough attention to discredit the control versus raising analysis, which still seems to be the "null hypothesis" for analyzing root and epistemic modals. Thus, a number of recent works on Scandinavian modals, e.g. Thráinnson (1986), Vikner (1988), Thráinnson and Vikner (1995), Lødrup (1996) and Dyvik (1999) employ this analysis in one form or other. Hopefully, the present work serves to nuance this picture and make a case for a different view.

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