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MODALS AND DOUBLE MODALS in the Scandinavian Languages

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0. Introduction

It is sometimes said that the so-called modal verbs cannot be "stacked" in English whereas they can in the Scandinavian languages. This is in fact a simplification. First, there are dialects of English where double modals are allowed. Second, it is not the case that all modals can be stacked in Scandinavian. Nevertheless it is true that the Scandinavian languages, like Danish (Da) and Icelandic (Ic) for instance, differ from standard English with respect to the "stackability" of modals. This can be seen in (1)-(5) (cf. Vikner 1988:9-10; Roberts 1991, section 3.3.2; Thráinsson 1986:243):

- (1) a. *They shall will build a house.
b. De skal ville bygge et hus. (Da)
'They are said to want to build a house.'
- (2) Der vil let kunne gå noget galt. (Da)
there will easily can go something wrong
'It will easily be possible that something goes wrong.'
- (3) Han skal kunne svømme for at få jobbet. (Da)
he must can swim for to get job-the
'He must be able to swim to get the job.'
- (4) Hann kann að kunna að synda. (Ic)
he can to can to swim
'He may know how to swim.'
- (5) Það mun vilja rigna meðan þið eruð þar. (Ic)
it will want rain while you are there
'It will tend to rain while you are there.'

If we look at the examples in (1)-(5), we see that in (1) and (4) we have instances of root modals embedded under epistemic modals, in (2) and (5) we have epistemic modals embedded under epistemic modals, and in (3) we have a root modal embedded under a root modal. It is apparently not possible to embed epistemic modals under root modals in the Scandinavian languages:

- (6) *De vil gerne skulle have tjent en million. (Da)
they want much shall have made a million
'They would like to be said to have made a million.'
- (7) *Hann verður að kunna að kunna að synda. (Ic)
he must to can to can to swim (cf. (4))

In addition to this, there are several restrictions on the embeddings on epistemic modals under

epistemic modals and root modals under root modals (cf. Vikner 1988:9-10) but these seem to vary within Scandinavian.

The purpose of this paper is to explain some of the observed differences between English and Scandinavian modal verbs and certain differences within Scandinavian with respect to the behavior of modal verbs in general and double modals in particular. For reasons of space (not to mention the native languages of the authors) the discussion will concentrate on Danish and Icelandic as representatives of Modern Scandinavian (Mainland Scandinavian (MSc) and Insular Scandinavian (ISc), respectively) but it will contain occasional references to other Scandinavian languages.

The paper is organized as follows: Section 1 is an attempt to give a language-independent definition of modals and an overview of the types of epistemic and root modals found in Danish and Icelandic. Section 2 shows some of the basic syntactic differences between Scandinavian epistemic modals and root modals, since these differences play an important role in determining their "stackability". Section 3 introduces the basic ideas of our analysis in terms of thematic roles and syntactic structure and explains some of the differences between epistemic modals and root modals observed in section 2. Section 4 gives an overview of double modal constructions in Danish and Icelandic, contrasts these with double modal constructions in English dialects and attempts to explain some of the restrictions on double modals in Scandinavian. Section 5 contains a few notes on double modals in Old Norse (or Old Icelandic) and section 6 is the conclusion.

1. The class of modal verbs

1.1 A definition

(Most) English modal verbs have rather obvious morphological, syntactic and semantic properties. These include the following (for "standard" English, cf. for instance Palmer 1986:33-34; McCawley 1988:249-250):

- (8) 1. They do not show agreement with 3rd person sg. subjects (they have no -s forms):
a. *He wills come.
2. They cannot follow any auxiliary verbs - and (arguably) they have no non-finite forms:
b. *She hopes to can come tomorrow.
c. *She has can/could come in the past.
d. *Canning swim, I was not afraid of the water.
3. They take bare infinitives as complements (except for ought to):
e. She may/can/must/will/shall (*to) come.
4. They express a "modal meaning", typically of two kinds, namely epistemic and root. The epistemic sense "qualifies the truth value of the sentence containing the modal" whereas the root sense expresses "necessity ... obligation, permission, volition, or ability of an agent, which usually, but not necessarily, is expressed by the ... subject of the sentence" (Platzack 1979:44):
f. It must be five o'clock. (epistemic)
g. I must pay my taxes. (root)

With the exception of the fourth item here ("modal meaning") most of these criteria would appear to be language-specific. Yet it is perhaps a good starting point to try to determine to what extent something like 1.-3. in (8) holds for comparable verbs in Scandinavian. This is done in (9):

- (9) 1. Modal verbs show subject-verb agreement in those Scandinavian languages that have subject-verb agreement in general, i.e. in Faroese (cf. Lockwood 1977:74-76, 144 ff.) and Icelandic, and not in those where the finite verb never shows any kind of agreement with the subject (nor with anything else), i.e. Danish, Norwegian, and Swedish:
a. Eg mun / Tú munt / Við munum koma. (Ic)
b. Eg man / Tú manst / Vit munnu koma. (Fa)
c. Jeg vil / Du vil / Vi vil komme. (Da)
'I will / You will / We will come.'
2. There is no general ban on modals following auxiliary verbs in Scandinavian, including other modal verbs as we have seen (see also Platzack 1979:48; Thráinsson 1986:243, 262; Vikner 1988:6-8):
d. Bengt har kunnat tala grekiska. (Sw)
'Bengt has can(supine) speak Greek.'
e. Han har villet tjene mange penge. (Da)
he has would(sup.) earn many money
'He has wanted to earn a lot of money.'
f. Mig hefur viljað vanta peninga. (Ic)
me(A) has would(sup.) lack money
'I have tended to lack money.'
g. Det bør ha kunnet bli flo sjø innen da. (No)
it ought have can(sup.) be high tide by then
'There should have been high tide by then.'
3. Some of the Scandinavian modal verbs take bare infinitival complements, others do not. Which ones do varies from one language to language (cf. Vikner 1988:3):
h. Jeg vil (*at) gå hjem. (Da)
i. Eg vil (*að) fara heim. (Ic)
I will to go home
'I want to go home.'
j. Dette kan (*at) gå galt. (Da)
k. Þetta kann (*að) fara illa. (Ic)
this can to go badly
'This may go wrong.'

It would seem from this that the defining semantic criterion of "modal meaning" in item 4 in (8) is the only criterion that holds both of English and Scandinavian modal verbs.¹ This is not particularly surprising, of course (see also the discussion of German and French modal verbs in Palmer 1986:34 ff. and remarks on German modal verbs in McCawley 1988:250).

It must be admitted that the concept of modal meaning was not defined very carefully above. But on the basis of the preceding discussion, we propose the following tentative "definition" of modal verbs:

- (10) Modal verbs are verbs that can have both an epistemic and a root modal sense.

We have already outlined in item 4 in (8) what we mean by "epistemic" and "root" senses of modal verbs and we will return to the issue in section 1.2. As we will see below, however, the definition in (10) is a little too narrow. The reason is that modal verbs as defined in (10) tend to

have particular syntactic properties, although somewhat different depending on the language, as we have seen. Then a verb in a given language may show these particular syntactic properties and yet only have an epistemic modal sense or only a root modal sense. We could then consider such a verb a modal verb in the language in question and claim that it is basically a historical accident that it is only found in one of the two types of modal senses. Thus while the English modal *will* usually has the epistemic sense of "prediction" and only rather rarely the root sense of "volition" (cf. Coates 1983:25), its historical counterpart *wollen* in German typically has the root sense of "volition"². We will see further examples of this below.

Taking the tentative and informal definition in (10) as our point of departure, we will base the following discussion mainly on the properties of the Danish and Icelandic verbs listed in (11) (cf. Thráinsson (1986) for Icelandic and Vikner (1988) and especially Davidsen-Nielsen (1990:40, passim) for Danish). We do not claim that the list is exhaustive and the glosses are rather misleading since they do not reflect the difference between the epistemic and root senses properly. These distinctions will be clarified in section 1.2.³

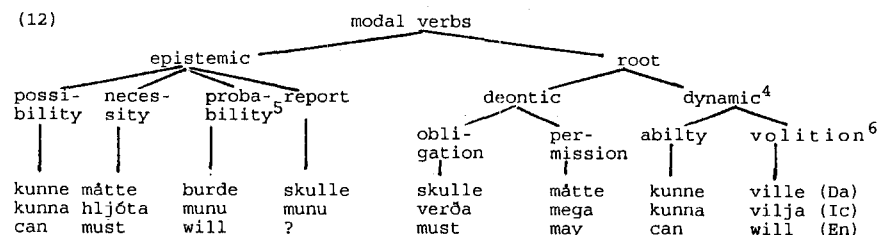
- (11) a. Danish modal verbs:
ville 'will', skulle 'shall', måtte 'must', kunne 'can', burde 'ought (to)', turde 'dare', behøve 'need'
- b. Icelandic modal verbs:
munu 'will', skulu 'shall', mega 'may', vilja 'will', eiga 'ought (to)', hljóta 'must', kunna 'can', verða 'must', þurfa 'need', ætla 'intend', geta 'can'

Having established this, we will now outline some of the further properties of Scandinavian modal verbs and the differences between epistemic and root modals in these languages.

1.2 The epistemic and root senses of Scandinavian modal verbs

Numerous attempts have been made to define the concept of modality philosophically or logically. As shown in Palmer (1986), different types of modality seem to play a role in different languages. Although a simple distinction between epistemic and root (or non-epistemic) senses, as outlined above, will be sufficient for our purposes most of the time, we will sometimes need to refer to subclasses of the epistemic and in particular the root modals for the purposes of further clarification. To be able to do so we must give some examples of these subclasses. That is the purpose of this subsection, which is to a large extent based on Davidsen-Nielsen (1990) and Vikner (1988).

The most important subclasses of epistemic and root modals in Scandinavian are shown in the diagram in (12) with some examples of the relevant modal verbs in Danish and Icelandic (adapted from Davidsen-Nielsen 1990:18, 43ff; Coates 1983:5):



We will now illustrate these distinctions further and deal with the epistemic senses first. While this list is a purely descriptive illustration, intended as a basis for the comparison in section 2 and the theoretical account in section 3, it is of some comparative interest since it shows the similarities between Danish and Icelandic (and English) with respect to the semantic (and syntactic) development of cognate verbs in these languages:

(13) Epistemic sense - possibility:

- a. Det kan være sandt. (Da)
b. Það kann að vera satt. (Ic)
it may to be true
'It may be true.'
- c. Það getur verið satt. (Ic)
it may be(sup.) true
'It may be true.'

(14) Epistemic sense - necessity:

- a. Det må have regnet. (Da)
b. Það hlýtur að hafa rígt. (Ic)
it must to have rained
'It must have rained.'
- c. Það verður að rigna í kvöld. (Ic)
it must to rain tonight
'It must rain tonight.'
- d. Det behøver ikke være sandt. (Da)
e. Það þarf ekki að vera satt. (Ic)
it need not to be true
'It need not be true.'
- f. Það má þá rigna mikið. (Ic)
it must then rain much
'Then it is necessary that it rains a lot.'

(15) Epistemic sense - probability:

- a. Det burde være nok. (Da)
it ought be enough
'It ought to be enough.'
- b. Det skulle være nok. (Da)
it should be enough
'It ought to be enough.'

- c. Það ætti að vera nóg. (Ic)
it ought (pret. subj.) to be enough
'It ought to be enough.'
- d. Mig vill sennilega vanta peninga. (Ic)
me (acc.) will probably need money
'I will probably need money.'
- e. Det turde være en overdrivelse.⁷ (Da)
it will be an exaggeration
'It is probably an exaggeration.'
- f. Það munu vera ýkjur. (Ic)
it will be exaggerations
'It is probably an exaggeration.'
- g. Það ætlar líklega að rigna í nótt. (Ic)
it intends probably to rain tonight
'It looks like it will probably rain tonight.'
- h. Það SKAL hafa verið mús í baðkerinu. (Ic)
there shall have been mouse in bathtub-the
'I'm sure there has been a mouse in the bathtub.'⁸

(16) Epistemic sense - report:

- a. Der skal have været en mus i badekarret. (Da)
b. Það mun hafa verið mús í baðkerinu. (Ic)
there will have been a mouse in bathtub-the
'There is said to have been a mouse in the bathtub.'

(17) Root sense - deontic obligation:

- a. Han skal gå i skole hver dag. (Da)
b. Hann verður að fara í skóla á hverjum degi. (Ic)
he must to go to school on every day
'He must go to school every day.'
- c. Þú skalt ekki stela. (Ic)
'Thou shalt not steal.'⁹
- d. Han má selv tage ansvaret. (Da)
he must self take responsibility-the
'He must take the responsibility himself.'
- e. Ég hlýt að viðurkenna það. (Ic)
I must to admit that
'I must admit that.'
- f. Vi bør opføre os pant. (Da)
g. Við eigum að hegða okkur vel. (Ic)
we ought to behave us well
'We ought to behave.'
- h. Vi behøver ikke gå. (Da)
i. Við þurfum ekki að fara. (Ic)
we need not to go
'We need not go.'

(18) Root sense - deontic permission:

- a. Hun má godt tage min bil. (Da)
b. Hún má vel taka minn bíl. (Ic)
she may well take my car
'It is fine that she takes my car.'
- c. Du kan bo hos mig hvis du vil. (Da)
d. Þú getur búið hjá mér ef þú vilt. (Ic)
'You can stay with me if you want.'

(19) Root sense - dynamic ability:

- a. Han kan ikke svømme. (Da)
b. Hann kann ekki að synda. (Ic)
he knows not to swim
'He cannot swim.'
- b. Hann getur ekki synt. (Ic)
he can not swim (sup.)
'He cannot swim.'¹⁰

(20) Root sense - dynamic volition:

- a. Han vil læse lingvistik. (Da)
b. Hann vill lesa málvísindi. (Ic)
he wants-to read linguistics
'He wants to read linguistics.'
- c. Hún ætlar að lesa málvísindi. (Ic)
'She intends to read linguistics.'
- d. Han tør ikke gå ud alene.¹¹ (Da)
'He dare not go out alone.'

Having given some idea of the semantic possibilities of Danish and Icelandic modals we now turn to some of the syntactic differences between epistemic modals and root modals. In the following sections we will frequently only distinguish between the two major classes, epistemic and root, but the interested reader may want to refer to the more detailed classification just described.

2. Some syntactic differences between epistemic and root modals

2.0 Introduction

In this section we list some of the more obvious syntactic differences between epistemic modals and root modals. It will be seen that many of these differences will follow from a suggestion that goes back at least to Ross (1969), Kiparsky (1970), and Perlmutter (1970), namely that epistemic modals (like raising verbs) do not assign a thematic role to their subject whereas root modals (like control verbs) do. Other differences between and properties of these two types of modal verbs will require a more sophisticated analysis of their argument structure. We will return to those problems in section 3.

2.1 Non-argument subjects

If epistemic modals do not assign a thematic role to their subject whereas root modals do, we might expect the former to occur with expletive subjects, like raising verbs do, whereas the latter might be expected to pattern with control verbs, which do not allow expletive subjects e.g. in English (see also Thráinsson 1986:252-253; Öhlschläger 1989:77; Davidsen-Nielsen 1990:32-35). These expectations are basically borne out, although the general situation is somewhat more complicated than the simplified discussion in this section would seem to indicate, cf. the continuation of this discussion in section 3.4 below.¹²

An expletive is possible with raising verbs, as shown in (21):

- (21) a. Der ser ud til at komme ti studenter til foredraget. (Da)
 there see out for to come ten students to talk-the
 b. Það virðast koma tíu stúdentar á fyrirlesturinn. (Ic)
 there seem come ten students to talk-the
 'It seems that 10 students will come to the talk.'

Comparable structures with control verbs are bad, on the other hand:

- (22) a. *Der próver at komme ti studenter til foredraget. (Da)
 b. *Það reyna að koma tíu stúdentar á fyrirlesturinn. (Ic)
 there try to come ten students to talk-the

Parallel constructions with modal verbs can only have the epistemic reading and the root reading is just as impossible as the control constructions in (22):

- (23) a. Der vil komme ti studenter til foredraget.
 'There will come ten students to the talk.'
 (* **There want to come 10 students to the talk.)
 b. Það kunna að hlusta tíu stúdentar á fyrirlesturinn.
 there may to listen ten students to talk-the
 'Ten students may listen to the talk.'
 (* **There are able to/know how to listen...')

Notice that the following structures with the same modal verbs but without an expletive subject have both epistemic and root readings:

- (24) a. Ti studenter vil komme til foredraget.
 'Ten students will come to the talk.' (Epistemic)
 'Ten students want to come to the talk.' (Root)
 b. Tíu stúdentar kunna að hlusta á fyrirlesturinn.
 ten students can to listen to talk-the
 'Ten students may listen to the talk.' (Epistemic)
 'Ten students know how to listen to the talk.' (Root)

Contrasts similar to those discussed above may be observed with weather *det/það* 'it' (cf. Thráinsson 1986)¹³. A weather verb can be embedded under an epistemic modal but not under a root modal or a control verb. This is illustrated in (25)-(26) where the a-examples and b-examples can only have the epistemic reading and the c-examples and d-examples (with the control verbs) are ungrammatical (see also Thráinsson 1986):

- (25) a. Det kan regne i morgen. (Da)
 b. Það kann að rigna á morgun. (Ic)
 it can to rain to morrow
 'It may rain tomorrow.' (* **knows/is able to...') (Root impossible)
 c. *Det prøvede at regne i går. (Da)
 d. *Það reyndi að rigna í gær. (Ic)
 it tried to rain yesterday (Control verb impossible)
- (26) a. Det vil regne i morgen. (Da)
 'It will rain tomorrow.' (* **wants to') (Root impossible)
 b. Það vill rigna mikið í Reykjavík. (Ic)
 it will rain much in Reykjavík
 'It tends to rain a lot in Reykjavík.' (* **wants to') (Root impossible)
 c. *Det lover at regne i morgen. (Da)
 d. *Það lofar að rigna á morgun. (Ic)
 it promises to rain to morrow¹⁴ (Control verb impossible)

Third, a related contrast can be seen in sentences like the ones in (27b), where the subject of the modal is a non-argumental (or quasi-argumental) "idiom chunk" licensed by the infinitival verb embedded under the modal verb (cf. Chomsky 1981:35-37; Thráinsson 1986:252-253).¹⁵ In such cases only the epistemic reading is possible:

- (27) a. Skörin færist upp í bekkinn. (Ic)
 step-the moves up in bench-the
 'This is going too far.'
 (Lit. 'Those who used to sit in the lower seats (on the skör 'steps') are now sitting in the higher seats (on the bekkur 'bench'.))
 b. Skörin kann að færast upp í bekkinn.
 step-the can to move up in bench-the
 'This may go too far.' (* **this knows to/is able to...') (Root impossible)
- (28) a. Fanden er løs. (Da)
 devil-the is loose
 'There is something seriously wrong.'
 b. Fanden skal være løs.
 devil-the shall be loose
 'There is said to be something seriously wrong.'
 (* **Something is obliged to be wrong.') (Root impossible)
- (29) a. Der ligger hunden begravet. (Da)
 b. Þarna liggur hundurinn grafinn. (Ic)
 there lies dog-the buried
 'This is where the problem is.'
 c. Der må hunden ligge begravet. (Da)
 d. Þarna hlýtur hundurinn að liggja grafinn. (Ic)
 there must dog-the to lie buried
 'This must be where the problem is.' (Epistemic only)

2.2 Quirky subjects

As shown by Thráinsson (1986), epistemic modals can take quirky subjects whereas root modals cannot. Here again the root modals pattern with control verbs. The case of the quirky subject is

determined by the embedded verb (which also assigns thematic role to it). Since Danish does not have any quirky subjects this can only be illustrated by Icelandic examples. First, note that the verbs *vanta* 'lack' and *líka* 'like' take Acc. and Dat. subjects, respectively (for arguments for the subjecthood of these NPs see Sigurðsson 1989:204ff, and references cited there):

- (30) a. Harald/*Haraldur vantar peninga. (Ic)
 'Harold(A/*N) lacks money(A).'
- b. Harald/*Haraldur líkar vel í Stuttgart. (Ic)
 Harold(D/*N) likes well in Stuttgart
 'Harold likes it in Stuttgart.'

Now consider the following:

- (31) a. Harald vill oft vanta peninga. (Ic)
 Harold(A) will frequently lack money
 'Harold frequently tends to lack money.' (* 'H. frequently wants...')
- b. Harald/*Haraldur líkar vel í Stuttgart. (Ic)
 Harold(D) intends to like well in Stuttgart
 'It looks like Harold will like it in Stuttgart.' (* 'H. intends...')

As indicated here, these modal verbs can only have the epistemic sense in this context. It is not easy to embed verbs that take quirky subjects under control verbs but whenever that is possible the case of the subject of the control verb must be nominative (as determined by the control verb itself), not quirky:

- (32) a. Haraldur/*Harald vonast til að vanta ekki peninga. (Ic)
 Harold(N/*A) hopes for to lack not money
 'Harold hopes not to lack money.'
- b. Haraldur/*Haraldi vonast til að líka vel í Stuttgart. (Ic)
 Harold(N/*D) hopes for to like well in Stuttgart
 'Harold hopes to like it in Stuttgart.'

Note, however, that 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. Thus the following are bad with the subject of the root modal in the nominative:

- (33) a. *Haraldur vill vanta ekki peninga. (Ic)
 Harold(N) wants lack not money(A)
 (intended meaning: 'Harold wants not to lack money.')
- b. *Haraldur ætlar að líka vel í Stuttgart. (Ic)
 Harold(N) intends to like well in Stuttgart
 (intended meaning: 'Harold wants to like it in Stuttgart.')

2.3 Pseudo-clefts and (pronominal) complements

As discussed by Thráinsson (1986:255) and Vikner (1988:11; see also Davidsen-Nielsen 1990:25ff.), root modals may occur in the so-called pseudo-cleft construction whereas epistemic modals cannot. The sentences in (34) are all fine with the indicated root modal readings:¹⁶

- (34) a. Det eneste han vil er at svare på spørgsmålet. (Da)
 the only he wants is to answer to question-the
 'The only thing he wants to (do) is to answer to the question.'

- b. Dað eina sem hann vill er að svara spurningunni. (Ic)
 it¹⁷ only that he wants is to answer question-the
 'The only thing he wants to (do) is to answer the question.'
- c. En af de ting han ikke kan er at svømme. (Da)
 one of the things he not can is to swim
 'One of the things he cannot (do) is to swim.'
- d. Eitt af því sem hann kann ekki er að synda. (Ic)
 one of it that he can not is to swim
 'One of the things he cannot (do) is to swim.'

When epistemic readings are forced, pseudo-clefts become impossible:

- (35) a. *Det han vil i morgen er at tabe kampen om mesterskabet. (Da)
 it he will tomorrow is to lose fight-the about championship-the
 (Intended meaning: 'What he will do tomorrow is to lose the fight...')
- b. *Det hun kan er at have sovet over sig. (Da)
 it she can is to have slept over self
 (Intended meaning: 'What is possible is that she has overslept.')
- (36) a. *Dað sem mig vill er að vanta peninga. (Ic)
 it that I will is to lack money
 (Intended meaning: 'What I tend to be is (to be) short on money.')
- b. *Dað sem hún kann er að hafa sofið yfir sig. (Ic)
 it that she can is to have slept over self
 (Intended meaning as in (35b).)

This phenomenon is presumably related to the fact that root modals take objects more readily than epistemic modals, as pointed out by Davidsen-Nielsen (1990:21; see also Thráinsson 1986:250; and Platzack (on Swedish) 1979:45-46).¹⁸ Thus Davidsen-Nielsen claims that the examples in (37) are good in the "non-epistemic" readings in Danish but not in epistemic sense (his glosses):

- (37) Hun kan/vil/ må/ skal en masse.
 she can/wants/ is-allowed-to/ is-about-to a lot
 'She can/wants to/is allowed to/is about to (do) a lot of things.'

The difference is less than crystal clear here, however. First, some of the modal verbs may also function as regular transitive verbs, such as Danish *kunne* and Icelandic *kunna* in the sense 'know by heart', for instance (cf. Vikner 1988:11, n.5). Second, it is usually possible in Danish to get a topicalized object-like *det* 'it, that' with epistemic modal verbs, although it is much worse when it is not topicalized (cf. Vikner 1988:10-11):

- (38) Han vil være hjemme hele dagen.
 'He will be home all day.'

Det vil hun desuden også./*Hun vil det desuden også.
 that will she actually too /*she will it actually too
 'So will she, actually.'¹⁹

3. Accounting for the facts

3.0 Introduction

In this section we suggest a theoretical account of the Scandinavian modal verbs discussed and show how these proposals account for the facts described above. In section 4 we then demonstrate how our proposals explain the possibility of having double modals in Scandinavian and explain the differences between these and their English (dialectal) counterparts. Some of the observed differences within Scandinavian will also be explained.

3.1 Epistemic modals do not assign a thematic role to their subject

As we have seen, it is fairly obvious that the epistemic modals do not assign a thematic role to their subject (or do not take an external argument). Hence they:

- (39) a. Occur freely with non-argument subjects licensed by the embedded infinitival verb, as seen in section 2.1.
 b. Can take quirky subjects (in Icelandic), licensed by the embedded infinitival verb, as seen in section 2.2.

Recall also the difference between epistemic modals and root modals in pseudo-cleft sentences, discussed in section 2.3 above. Let us look at typical pseudo-cleft sentences of the type under discussion:

- (40) a. Det eneste_i [_{CP} (som) Marie købte t_i] var klipfisk. (Da)
 the only (that) Mary bought was dried-fish
 'The only (thing) Mary bought was dried fish.'
 b. Það_i [_{CP} sem María keypti t_i] var harðfiskur. (Ic)
 it that Mary bought was dried-fish
 'What Mary bought was dried fish.'

Schematically, then, we can say that these sentences have the structure in (41) (cf. Vikner 1991b):

- (41) X_i [_{CP} (OP_i) (that) ... t_i ...] was Y

where X is the correlate of the relative clause inside the cleft construction (*det eneste* in (40a) and *það* in (40b)), t_i is the *wh*-trace in the relative clause and Y is the focussed constituent of the construction (cf. Thráinsson 1986:255). What we saw in section 2.3 above was that the complement of root modals could undergo pseudo-clefting (i.e., turn up as Y in a construction like (41)), whereas the complement of epistemic modals could not. Under the standard assumption that *wh*-traces need Case and verbs that do not assign a thematic role to their subject cannot assign structural Case (Burzio's generalization, cf. Burzio 1986:178-179; see also Chomsky 1986:139), the different behavior of root modals and epistemic modals in pseudo-cleft constructions is just what we would expect if epistemic modals do not assign a thematic role to their subject but root modals do.²⁰

So far we have not yet said anything about the thematic nature of the external argument of root modals, nor even whether it is necessary to assume that all root modals assign a thematic role to their subject. Before we consider these questions it is useful to consider what kind of

complement the different types of modal verbs might take. A priori, the possibilities could include at least the following:

- (42) CP (= complementizer projection), IP (= inflectional proj.), VP

With the expansion (or explosion) of IP since Pollock (1989), one could add the following (or, rather, substitute them for IP):

- (43) AgrP (= agreement proj.), MP (= modal proj.), TP (= tense proj.)

In addition, several linguists have argued for various types of the notion of "small clause" (for some discussions relevant to Icelandic see Sigurðsson 1989 and Sigurjónsdóttir 1989; for a more general comparative discussion of Scandinavian infinitives see Thráinsson 1993 and Johnson and Vikner 1994). The discussion of the nature of complements of this sort is sometimes said to have to do with whether they are "clausal" or not. Needless to say, it is quite difficult to find empirical arguments to decide between all these different possibilities. So rather than go through the various possibilities in detail here, we will propose particular analyses for the complements of Danish and Icelandic modal verbs here, epistemic and root, and present the arguments that bear on these proposals. We will return to the question in section 4.1 we will then return briefly to the "clausehood" issue.

3.2 Danish modal verbs as raising verbs

The basic choice of complement type is obviously between a raising complement and a control complement, whatever the categorial status of the complement may be. Following Vikner (1988:13 ff.), we will propose that all Danish modal verbs are raising verbs. This implies that the subject of all modals is base-generated in their complement and moved (raised) into subject position. This is straightforward for epistemic modals, of course, since we have already seen ample evidence for the claim that they do not assign a thematic role to their subject. For epistemic *skulle* 'shall', for instance, this would give a derivation like the following:²¹

- (44) a. [_{NP} e] skal [han_i more sig_i]
 shall he enjoy self
 b. Han_i skal [t_i more sig_i].
 < θ >
 'He is said to enjoy himself.'

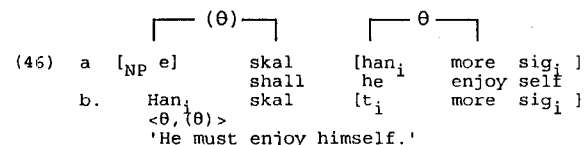
As indicated here, the subject (or, more precisely, the chain (han_i, t_i)) ends up with one thematic role, assigned by the embedded verb *more* to its subject which is then raised to the subject position of the epistemic modal, which is not assigned a thematic role by the modal. Thus this analysis predicts that we should be able to get various kinds of subjects licensed (or subcategorized for) by the embedded verb raised to the subject position of the epistemic modal, such as the weather-*det*, non-argument subjects that are parts of downstairs idiom chunks, etc. This is borne out by the facts, as we saw in section 2.1 above.

As the reader will recall, we have claimed that (at least some) root modals assign a thematic role to their subject. How is that compatible with the claim made here that they are

(45) 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.

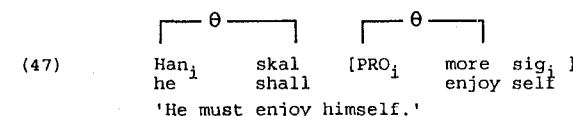
Several linguists have proposed thematic roles that are different from the "normal" thematic roles assigned to arguments. Thus Zubizarreta (1982: 41, 123) argues for the existence of thematic roles that are invisible for the theta-criterion. Grimshaw has also discussed argument adjuncts (e.g. 1990:108 ff.) that are licensed by argument structure but not theta-marked like arguments. She argues further that argument-adjuncts (a-adjuncts) are "licensed only by suppressed argument positions, not by syntactically satisfied a-structure positions" (1990:149). This is because "arguments always completely specify all specifiable information, [and hence] they will always be incompatible with any a-adjunct" (ibid.). But since a-adjuncts can be of different types, they can in principle co-occur.

Based on this, then, the derivation in (46) is appropriate for the sentence *Han skal more sig* with the root sense, and it should be compared to the derivation of the corresponding sentence in the epistemic sense in (44). Note that the additional thematic role is indicated by (Θ):



The difference between epistemic and root modals just outlined explains the observed difference in their behavior with respect to non-argument subjects discussed in 2.1, under the standard assumption that non-arguments cannot be assigned thematic roles. Thus if the verb embedded under a root modal has a non-argument subject (an expletive, a weather-*it*, or a part of an idiom-chunk), this non-argument cannot raise and receive the additional thematic role assigned to the matrix subject position by the root modal, whereas it can be raised to the subject position of an epistemic modal which does not assign any thematic role to its subject. This analysis

A control analysis of the root modals would seem to be an obvious alternative to the raising analysis suggested here. Under such an analysis the sentence *Han skal more sig* would have the following structure in its root sense:



First, observe the difference between the following expressions of state (the left hand column) and event (the right hand column) (cf. Vikner 1988:13):

(48)	State:	Event:
a.	Han har tre biler. 'He has three cars.'	Han får tre biler. 'He gets three cars.'
b.	Hun er professor/rig. 'She is a professor/rich.'	Hun bliver professor/rig. 'She becomes a professor/rich.'

The intuition is "that the event expressions have all the implications of the state ones plus some more" (*ibid.*). This could be expressed by saying that the event verbs assign an additional thematic role to their subject. But now recall that according to (45a) above, no argument may have more than one additional thematic role. Hence this analysis predicts that it should be possible to embed the event expressions in (48) under epistemic modal verbs, since they do not assign any thematic role to their subject, but it should not be possible to embed them under root modals that assign an additional thematic role to their subject. This prediction is borne out. As shown in (49)–(50), the state expressions and event expressions in (48) can easily be embedded under epistemic modals (*cf.* Vikner 1988:15 ff.):

(49)	State:	Event:
a.	Han vil have tre biler i 1995. 'He will have three cars in 1995.'	Han vil få tre biler i 1995. 'He will get three cars in 1995.'
b.	Hun vil være professor/rig. 'She will be a professor/rich.'	Hun vil blive professor/rig. 'She will become a professor/rich.'

It is not possible, on the other hand, to embed the event expressions under these modal verbs in the root sense:

- | | State: | Event: |
|----|--|--|
| a. | Han vil have tre biler i 1995.
'He wants to have three cars in 1995.' | *Han vil få tre biler i 1995.
'he wants get three...' |
| b. | Hun vil være professor/rig.
'She wants to be a professor/rich.' | *Hun vil blive professor/rig.
'she wants become...' |

This can be explained if we assume a raising analysis for Danish root modals and that Danish root modals and Danish event expressions of the type under discussion both assign an additional thematic role to their subject. That would mean that the subject of the root modals in (50) would end up with two additional thematic roles when an event expression is embedded under it but not when a state expression is embedded. Hence the sentences in the right hand column are bad whereas the ones in the left hand column (containing state expressions) are good.²² There is no reason to expect this correlation under a control analysis of the root modals.

Further evidence for the analysis suggested here comes from the Danish *blive*-passive, exemplified in (51):

- (51) Hun blev arresteret af politiet.
'She was arrested by the police.' (Lit.: 'She became arrested...')

Since the semantics of the *blive*-passive is similar to that of the (predicative) *blive*+ NP/AP exemplified above, it would seem natural to suggest that *blive* in the *blive*-passive also assigns an additional thematic role. Such an analysis would predict that it should be possible to embed *blive*-passives under epistemic modal verbs but not under root modals of the type just discussed, and that is exactly the right prediction (cf. Vikner 1988:15 ff.; Davidsen-Nielsen 1990:21):

- (52) Hun vil blive arresteret af politiet.
'She will be arrested by the police.' (Lit.: 'She will become...')
(*'She wants to be...')

The so-called *s*-passive, on the other hand, is grammatical when embedded under root modals, which can be explained if we assume that the *s*-passive construction does not assign an additional thematic role to the passive subject:

- (53) Hun vil arresteres af politiet.
she wants be-arrested by police-the
'She wants to be arrested by the police.'
- (54) Hun skal arresteres af politiet.
she shall be-arrested by police-the
'She must be arrested by the police.'

Thus the difference between the *blive*-passive and the *s*-passive when embedded under root modals is expected under a raising analysis of the root modals, like the one suggested here, but not under a control analysis.²³

3.3 Icelandic modal verbs as raising and control verbs

First, it is clear that the arguments given above for a raising analysis of epistemic modal verbs in

Danish do indeed carry over to epistemic modal verbs in Icelandic. As already explained, such an analysis would explain the facts of section 2.1, where it was shown that non-argument subjects licensed by the downstairs verb can show up in the subject position of an epistemic modal. In addition, a raising analysis of epistemic verbs accounts for the fact that quirky subjects licensed by a verb embedded under an epistemic modal can indeed show up in the subject position of an epistemic modal verb. The relevant facts are illustrated in (55):

- (55) a. [NP e] vill {hana vanta peninga}
will her(A) lack money(A)
b. Hana_i vill {t_i vanta peninga}.
 < θ > θ
 'She tends to lack money.'

As indicated here, the downstairs verb *vanta* 'need, lack' not only assigns a thematic role to its subject but also (quirky or lexical) accusative case.²⁴ The raised subject carries the thematic role and the case along with it to the subject position of the epistemic modal verb, which is not assigned a theta-role by the modal. The pseudo-cleft facts discussed in 2.3 are also explained, of course, just the same way they were in the Danish case: Epistemic modal verbs do not assign a thematic role, hence they do not assign Case to their complement, hence they cannot occur with a *wh*-trace complement, because it needs Case (cf. also Sigurjónsdóttir 1989).

The reader may recall that some of the Icelandic modals take complements with the infinitival *að* whereas Danish modal verbs take bare infinitives. Since the Icelandic infinitival *að* looks (and sounds, pace Holmberg 1986:164, n.7) like the finite clause complementizer *að* 'that', it might seem natural to assume that all infinitival *að*-complements in Icelandic are CPs. That is in fact what Sigurjónsdóttir (1989) argues, whereas Sigurðsson (1989) maintains that the *að*-complements of modal verbs are IPs but the *að*-complements of "regular" control verbs like *reyna* 'try' are CPs. This controversy need not concern us. What is important for our purposes is that the presence of infinitival *að*, even in C-position, would not be expected to block raising out of modal complements because there is no *that*-trace phenomenon in Icelandic, as first shown by Maling and Zaenen (1978; see also Sigurðsson 1989:62). This is shown in (56):

- (56) a. Hver_i heldur þú [að t_i verði næsti forseti] ?
who think you that becomes next president
'Who do you think will be the next president?'
- b. Þessi_i held ég [að t_i sé bestur]
this think I that is best
'I think this one is the best.'

Hence the ECP is not violated in a raising analysis of a grammatical sentence like (57), even if *að* is a complementizer.²⁵

- (57) Haraldur_i kann [að t_i vera bestur]
Harold may to be best
'Harold may be best.' (= 'It is possible that...')

We will return to the categorial status of modal complements in Icelandic in section 4.1.

It seems, however, that none of the arguments given in section 3.2 for a raising (as

opposed to control) analysis of root modals in Danish can be reproduced for Icelandic. In particular, there is no ban against embedding event expressions under root modals in Icelandic:

- (58) a. Hann vill fá þrjá bíla 1995.
he wants get three cars 1995
'He wants to get three cars in 1995.'
- b. Hún vill verða prófessor/rík.
she wants become professor/rich
'She wants to become a professor/rich.'
- (59) a. Hann verður að fá þrjá bíla.
he must to get three cars
'He must get three cars.'
- b. Hún verður að verða prófessor/rík.
she must to become professor/rich
'She must become a professor/rich.'

In addition, there is no dichotomy in passive constructions comparable to the Danish *blive* vs. *s-*passives. In Icelandic the auxiliary *vera* 'be' is the normal passive auxiliary, the auxiliary *verða* 'become' being restricted to expressions with future sense and there is no systematic *s-*passive as in Danish (or other Mainland Scandinavian languages).²⁶ But even the passives with *verða* can be embedded under root modals in Icelandic:

- (60) Hún vill endilega verða kosin forseti.
she wants by-all-means become elected president
'She desperately wants to be elected president.'

Finally, as we will see in section 4, there does not seem to be anything gained from a raising analysis of Icelandic root modal constructions when it comes to explaining restrictions on Icelandic double modals.

The obvious alternative, then, is to assume a control analysis of root modal constructions in Icelandic, as suggested by Thráinsson (1986:260) and Sigurjónsdóttir (1989), for instance. This implies, of course, that root modals assign a regular thematic role to their subject, as illustrated in (61):

- (61)
- | | | | |
|---------------------------|-------|-------------------|----------------|
| [θ] | | [θ] | |
| Hann _i | vill | {PRO _i | græða peningal |
| he | wants | | earn money |
| 'He wants to earn money.' | | | |

Since the root modal assigns a theta-role to its subject, the behavior of the root modals in pseudo-cleft sentences illustrated in section 2.3 is predicted.

A control analysis of the root modals also explains the following set of facts (cf. Thráinsson 1986:253-254). First, it is well known that passive and active sentences have roughly the same truth conditions:

- (62) a. Lögreglan leysti verkefnið.
'The police solved the problem.'

- b. Verkefnið var leyst af lögreglunni.
'The problem was solved by the police.'

Now it should be possible to embed these constructions under a raising verb and get roughly synonymous sentences, whereas no such correlation holds for control verbs, as originally discussed by Chomsky (e.g. 1965:22). Facts of this sort are well known and they have been pointed out in previous discussions of Icelandic (cf. Thráinsson 1979:410):

- (63) a. Lögreglan virðist hafa leyst verkefnið. (raising)
police-the seems have solved problem-the
'The police seems to have solved the problem.'
- b. Verkefnið virðist hafa verið leyst af lögreglunni.
problem-the seems have been solved by police-the
'The problem seems to have been solved by the police.'
- (64) a. Lögreglan reyndi að leysa verkefnið. (control)
'The police tried to solve the problem.'
- b. *Verkefnið reyndi að vera leyst af lögreglunni.
problem-the tried to be solved by police-the

Now note that if epistemic modals in Icelandic are raising verbs but root modals are control verbs, we would expect them to pattern with the raising constructions and control constructions in (63)-(64), and that is exactly what we find (cf. Thráinsson 1986:254):

- (65) a. Lögreglan kann að hafa leyst verkefnið. (epistemic)
police-the can to have solved problem-the
'The police may have solved the problem.'
- b. Verkefnið kann að hafa verið leyst af lögreglunni.
problem-the can to have been solved by police-the
'The problem may have been solved by the police.'
- (66) a. Lögreglan kann vel að leysa svona verkefni. (root)
police-the can well to solve such problems
'The police are perfectly able to solve such problems.'
- b. *Svona verkefni kunna vel að vera leyst af lögreglunni.
such problems can well to be solved by police-the

This can be considered an additional argument for analyzing Icelandic root modals as control verbs.²⁷

3.4 Non-argument subjects revisited

As already mentioned in sections 3.2 and 3.3, the analysis suggested here accounts for why expletive subjects are impossible with root modals, even though they are possible with epistemic modals. Since we have suggested somewhat different analyses for Danish and Icelandic root modals, it is worth looking at this in phenomenon in some detail.

First, consider sentences with control verbs like (22) in section 2.1 above, repeated here for convenience:

- (22) a. *Der próver at komme ti studenter til foredraget. (Da)
b. *Það reyna að koma tíu stúdentar á fyrirlesturinn. (Ic)
there try to come ten students to talk-the

(67) [_{NP} expletive] prøver [komme [_{NP} ti studenter]]

Now consider constructions with modal verbs, as in the sentences in (23) in section 2.1, repeated here for convenience:

- (23) a. Der vil komme ti studenter til foredraget.
'There will come ten students to the talk.'
(* * 'There want to come 10 students to the talk.')
- b. Það kunna að hlusta tíu stúdentar á fyrirlesturinn.
'there can to listen ten students to talk-the'
'Ten students may listen to the talk.'
(* * 'Ten students are able to/know how to listen...')

(68) [_{NP} expletive] vil [komme [_{NP} ti studenter]]

For the root modals, on the other hand, we have suggested different analyses for Danish and Icelandic. For the root interpretation of the Danish modal *ville* the relevant structure would be the same as in (68). The only difference would be that Danish root modals have an additional theta-role to assign. Since they cannot assign the additional theta-role to a semantically empty expletive, sentences like (23a) cannot have the root sense. But since Icelandic root modals are control verbs, the reason why the root sense is impossible in the Icelandic sentence (23b) is exactly the same as the one given for the control verbs in (22) and (67) above: The root modal cannot assign its thematic role to the semantically empty expletive and it cannot assign it either to the indefinite NP that follows the infinitive verb because it is too far down in the structure.

(69) a. *Der kan ti studenter komme til foredraget. (Da)
 there can ten students come to the talk
 b. Það kunna tíu studentar að hlusta á fyrirlesturinn. (Íc)
 there can ten students to listen to the talk
 'There may be 10 students who will listen to the talk.' (Epistemic)
 'There are 10 students who know how to listen to the talk.' (Root)

70

We see, then, that the discussion in 2.1 was somewhat simplified since there we only considered cases with expletives where the indefinite NP could not possibly be licensed by the finite modal (or control) verb. When the cases are taken into consideration where the modal verb itself is the licenser (via its moving into or through I^o, in the system assumed here), the picture is more complex. Nevertheless, we hope to have shown that all the cases can be accounted for in a way compatible with the analysis proposed in the preceding sections.

4.1 Differences between English and Scandinavian

(70) a. Ég mun / Tú munt / Hann mun / Við munum koma. (Ic)
 b. Eg man / Tú manst / Hann ran / Vit munnu koma. (Fa)
 'I will/ You will / He will / We will come.'

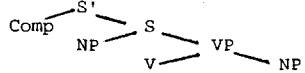
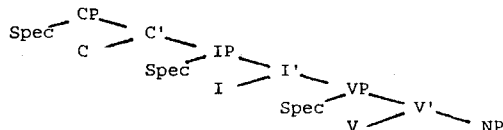
(71) a. Bengt har kunnat tala grekiska. (Sw)
 Bengt has could(supine) speak Greek
 'Bengt has been able to speak Greek.'
 b. Han har villet tjene mange penge. (Da)
 he has would(sup.) earn many money
 'He has wanted to earn a lot of money.'
 c. Mig hefur viljað vanta peninga. (Ic)
 me(A) has would(sup.) lack money
 'I have tended to lack money.'
 d. Det bør ha kunnet bli flo sjø innen da. (No)
 it ought have can(sup.) be high tide by then
 'There should have been high tide by then.'

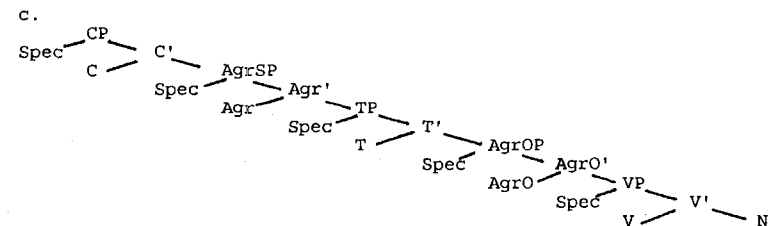
It should also be noted that the double modal constructions in Scandinavian are of a very different nature than those that can be found dialectally in English. As implied by our analyses so far, the first modal verb looks like a regular finite verb whereas the second modal in a double modal construction seems to behave like any other non-finite (embedded) verb²⁹. Thus while the special status of the English double modal constructions is very evident in question inversion, as shown in (72) (cf. Battistella 1992), only the first modal can precede the subject in direct yes/no questions in Scandinavian, as illustrated in (73)-(74):

- (72) a. You might could buy that at Bruno's.
 b. *Might you could buy that at Bruno's?
 c. Could you might buy that at Bruno's?
 d. Might could you buy that at Bruno's?
- (73) a. De skal ville bygge et hus. (Da)
 'They are said to want to build a house.'
 b. Skal de ville bygge et hus?
 'Are they said to want to build a house?'
 c. *Ville de skal bygge et hus?
 d. *Skal ville de bygge et hus?
- (74) a. Hann verður að kunna að synda. (Ic)
 he must to can to swim
 'He has to be able to swim.'
 b. Verður hann að kunna að synda?
 must he to can to swim
 'Does he have to be able to swim?'
 c. *Kunna hann verður að (að) synda?
 d. *Verður að kunna hann að synda?

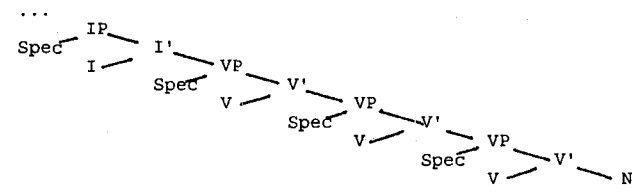
This indicates that the Scandinavian double modal construction is very different from the dialectal double modals of Modern English.

One question that could be raised here is to what extent modal complements are "clausal" in nature in different languages. In other words, do the two modal verbs belong to different clauses or are they members of the same clause? Is there, for instance, a difference in "clause-hood" between English and Scandinavian modal complements? As the reader has undoubtedly noticed, we have been fairly non-committal about the categorical status of the Scandinavian modal complements discussed here. The main reason for this is that we did not want to complicate the argumentation since most of the arguments we have considered are to some extent independent of the exact phrasal category of these complements and also independent of the framework assumed. But whether or not a given type of complement is considered "clausal" will depend very heavily on the framework chosen. Consider the following partial structures:

- (75) a. 
- b. 



In a framework like (75a), it is fairly clear that a clausal complement would be either S' or S. A VP-complement would not be "clausal" in any sense, as it would not even have a syntactic subject at any stage of the derivation (cf. the controversy on the VP-complement analysis of infinitives exemplified by Andrews (1976) and Koster and May (1982), for instance). If we, on the other hand, assume something like (75b), together with the so-called "VP-Internal Subject Hypothesis", (see e.g. Burton and Grimshaw 1992 and references cited there), the difference between VP and the higher (functional) projections in terms of clausal properties is not as clear as before. More specifically, a raising analysis of modal complements, for instance, does not necessarily imply that they are "more clausal" than a VP under this hypothesis. A partial derivation of a Danish raising modal, consistent with this hypothesis, could look like (76):

- (76) ... 
- de_i t_i skal t_i ville t_i bygge et hus
 they shall want build a house
 'They are said to want to build a house.'

Under an analysis like this, the subject of a Danish double modal construction of this type would be base-generated in the lowest SpecVP and assigned a thematic role by the non-modal main verb, raised to SpecVP of the root modal (where it would acquire an additional thematic role (cf. the discussion in 3.2 above)), then raised again to SpecVP of the higher modal (which is epistemic in this case and thus does not assign any thematic role) and then moved to the canonical SpecIP position.³⁰

It is frequently assumed that English modal verbs and (other) auxiliaries are base-generated in the I-position in structures like (75b) rather than under a V-node like regular verbs. This is meant to reflect their special status. One could, of course, assume a similar analysis of epistemic modals in Danish. That would mean leaving out the topmost VP in (76) and base-generate *skall* under I instead of the topmost V. The problem with such an analysis is that modal verbs are just like any 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 build a house
 '... that they shall not want to build a house.'

If negation is adjoined to VP in Danish, as is frequently assumed (cf. Vikner 1994, fn. 5; see also Thráinsson 1994), then the modal verb *skal* should precede it in embedded clauses of the type exemplified in (77) if it were base generated under I. But if epistemic modals in Danish are base generated under V like other verbs and Danish has no V-to-I movement in embedded clauses (except in the complements of bridge verbs, cf. Vikner 1991a and 1994), then the word order in (77) is just as expected. As can be seen from the gloss, on the other hand, the English modal *shall* would precede the negation. That would be consistent with its being base generated under I or moved to I in English. But nothing in our analysis indicates that there is any difference in "clausehood" between, say, English modal complements and the complements of Danish epistemic modals.

We have argued elsewhere, on the other hand, that complements of Icelandic control verbs contain more "functional projections" and are in that sense more clausal than the (raising) modal complements in Danish. Thus Johnson & Vikner (1994) argue (as does Vikner 1992) that Icelandic control complements are CPs. Thráinsson (1993), on the other hand, has argued that there is even a difference between complements of regular control verbs and complements of modals in Icelandic, which can be accounted for assuming an expanded IP as in (75c). It would not directly serve our present purposes, however, to go further into the syntactic details of these analyses here. Hence we will instead turn to restrictions on the Scandinavian double modals. We will review these and see which ones can be explained syntactically in terms of the analyses suggested here and which ones must await further investigation.

4.2 Restrictions on double modals in Scandinavian

4.2.1 Root modals under root modals

The analyses outlined in section 3 only make one prediction as to restrictions on double modals in Danish and Icelandic: It should be impossible to embed root modals under root modals in Danish under the raising analysis suggested for these, because of the additional theta-role assigned by Danish root modals and the restriction that a given argument can only carry one additional thematic role. This prediction is borne out in examples like the ones in (78) (cf. Vikner 1988:10):

- (78) a. *Hán vil turde gå op i Eiffeltáarnet.
 he wants dare go up in Eiffel-Tower-the
 (Intended meaning: 'He wants to dare to go...')
 b. *Hún má ville gå på indkøb.
 she must want go on shopping
 (Intended meaning: 'She must want to go shopping.')

As pointed out by Vikner (1988:9-10), however, the root modal *kunne* 'can, be able to' appears to be an exception here in that it can be embedded under other root modals:

- (79) a. Hón skal kunne svømme for at få jobbet.
 he must can swim for to get job-the
 'He must be able to swim to get the job.'

- b. Hún vil kunne forstå fransk.
 she will can understand French
 'She wants to be able to understand French.'

This is clearly unexpected, assuming the same analysis for *kunne* as other Danish root modals. But there is actually independent evidence that *kunne* is different from other root modals in Danish. Recall that event expressions with *få* 'get' and *blive* 'become' typically cannot be embedded under Danish root modals, as illustrated in section 3.2 above. This restriction does not hold for the root modal *kunne*, as shown in (80) (cf. Vikner 1988:18):

- (80) a. Hún kan få tre biler i 1995.
 'She can get three cars in 1995.'
 b. Hún kan blive professor/rig.
 'She can become a professor/rich.'

The verb *kunne* in these examples may have the root sense of permission or ability. It seems therefore that we need a different analysis of the root modal *kunne*. One possibility would be to say that root *kunne* is like epistemic verbs in that it does not assign any theta-role to its subject (cf. Vikner 1988:22-23). That is not entirely satisfactory, however, since root *kunne* patterns with other root modals and not with epistemic modals in the pseudo-cleft construction, as we saw in section 2.3 above. This is also illustrated in (81) (cf. Vikner 1988:11):

- (81) a. Det eneste han godt kan er at låne min cykel.
 the only he well can is to borrow my bicycle
 'The only thing he is allowed to is to borrow my bicycle.'
 b. En af de ting han ikke kan er at svømme over Kanalen.
 one of the things he not can is to swim over the Channel
 'One of the things he is not able to do is to swim across the Channel.'

Another possibility would be to analyze root *kunne* as a control verb, along the lines suggested above for Icelandic root modals. Such an analysis would obviously be compatible with the pseudo-cleft facts in (81) and should not create problems for an account of the double modal constructions in (79) or the event expressions in (80) since no clash of two additional thematic roles would be involved. But such a solution has its problems too, as pointed out in footnote 28.

Although it is not the case that all root modals can be combined with each other in Icelandic, there is no evidence for a pattern like the Danish one just described. Observe the following, for instance, where the root sense seems possible in all cases:

- (82) a. Hún vill verða að fara.
 she will have to go
 'She wants to have to go.'
 b. Hún verður að vilja fara.
 she must to will go
 'She has to want to go.'
 c. Hann á að kunna að synda.
 he ought to can to swim
 'He ought to be able to swim.'
 d. Hann verður að eiga að gera eitthvað.
 he must to ought to do something
 'He must have to do something.'

Some unacceptable combinations are given in (83) (these are out in the root interpretation, as indicated):

- (83) a. *Hann kann að eiga að synda.
he can to ought to swim
(Intended meaning: 'He is able to ought to...')
b. *Hún á að hljóta að fara.
she ought to must to go

We do not have any particular solution to offer under the control analysis of root modals suggested here. But we emphasize that these restrictions are not really unexpected since there are also known to be restrictions on embeddings under "regular" control verbs. Note the examples in (84), for instance:

- (84) a. *Hann reyndi að eiga að synda.
he tried to ought to swim
b. *Hún vonast til að hljóta að fara.
she hopes for to must to go

4.2.2 Epistemic modals under epistemic modals

Since we have suggested here that epistemic modal verbs are like "regular" raising verbs in not assigning any thematic role to their subject, there is no clear syntactic reason to expect restrictions on double epistemic modals in Scandinavian. Non-modal raising constructions can be embedded under raising verbs in English, Icelandic and Danish, as shown in (85):

- (85) a. He seems to be believed to be smart.
b. Hann virðist vera talinn vera gáfaður. (Ic)
he seems be believed be smart
'He seems to be believed to be smart.'
c. Han ser ud til at forekomme hende at være begavet. (Da)
he looks out to to seem her to be clever
'He seems to appear (to) her to be clever.'

Thus it is not surprising from a syntactic point of view to find epistemic modal verbs embedded under epistemic modals in Icelandic:

- (86) a. Það mun vilja rigna meðan þið eruð þar. (Ic)
it will want rain while you are there
'It will tend to rain while you are there.'
b. Strákana ætlaði að vilja reka á land. (Ic)
boys-the intended to want drift to land
'It looked like the boys tended to drift ashore.'

There are, however, restrictions on the embedding of epistemic modals under epistemic modals in Scandinavian. As shown in Vikner (1988:9-10), it seems that epistemic + epistemic combinations are only good if the second verb is *kunne*:

- (87) a. Det må kunne stå på en side.
it must can stand on one page
'It must be possible to fit it onto one page.'
b. Der vil let kunne gå noget galt.
there will easily can go something wrong
'It will easily be possible that something goes wrong.'

Otherwise double epistemic modals tend to be ungrammatical in Danish:

- (88) a. *Han vil skulle have læst bogen.
he will shall have read book-the
(Intended meaning: 'He will be said to have read the book.')
b. *Han skal ville opføre sig pænt.
he shall will behave self nicely
(Intended meaning: 'He is said to be going to behave.')

It is totally mysterious under our analysis why *kunne* should again behave in a special way.³¹

While there is no general ban against combining epistemic modals in Icelandic, it should be noted that not all combinations are allowed. In particular, the modals *munu* 'will' and *skulu* 'shall' have a special status in Icelandic in that they can never follow any auxiliary verbs nor any modal verbs, root or epistemic (cf. Thráinsson 1986:243). This is not because they do not have any non-finite form since they can occur in ECM complements, complements of Icelandic -*st*-verbs and in raising constructions, as shown in (89) (cf. Thráinsson 1986:242):³²

- (89) a. Ég tel Harald munu fara.
I believe Harold(A) will(inf.) go
'I believe that Harold will go.'
b. Haraldur segist skulu fara.
Harold says-self shall(inf.) go
'Harold says that he will go.'
c. Haraldur virðist munu fara.
Harold seems will(inf.) go
'It seems that Harold will go.'

Despite this, all combinations of epistemic modal verbs with *munu* and *skulu* as the second element seem to be bad:

- (90) a. *Mig mun skulu reka á land.
I(A) will shall drift to land
b. *Það skal munu rigna.
it shall will rain
c. Mig skal vilja reka á land.
I(A) shall will drift to land
'It is certain that I will tend to drift ashore.'
d. *Mig vill skulu reka á land.
I(A) will shall drift to land

We have no syntactic explanation to offer for this at present.

4.2.3 Root modals under epistemic modals

There do not seem to be any particular restrictions on embedding root modals under epistemic modals in Scandinavian, and none are expected under our analyses. Thus the following are all fine (cf. Vikner 1988:9):

- (91) a. De skal ville bygge et hus. (Da)
they shall want build a house
'They are said to want to build a house.'
b. Þau munu vilja byggja hús. (Ic)
they will want build house
'They are said to want to build a house.'
c. Han vil kunne svømme over Kanalen. (Da)
he will can swim over Channel
'He will be able to swim over the Channel.'

- d. Hann kann að verða að selja húsið. (Ic)
 he can to must to sell house-the
 'It is possible that he will have to sell the house.'

This is probably the most common and natural type of double modals in Scandinavian.

4.2.4 Epistemic modals under root modals

Finally, we have not been able to come up with decent examples of epistemic modals embedded under root modals. The following, for instance, are all bad (cf. Vikner 1988:9):

- (92) a. *De vil gerne skulle have tjent en million. (Da)
 they want much shall have made a million
 (Intended meaning: 'They would like to be said to have made a million.')
 b. *Han bør ville komme i morgen. (Da)
 he ought will come in morning
 (Intended meaning: 'He ought to be coming tomorrow.')
 c. *Hann verður að kunna að kunna að synda. (Ic)
 he must to can to can to swim
 (Intended meaning: 'He has to may be able to swim.')
 d. *Ég verð að vilja reka á land. (Ic)
 I must to will drift to land
 (Intended meaning: 'I have to tend to drift ashore.')

This is hardly surprising from a semantic point of view. 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.³³ But there does not seem to be any structural reason why a raising construction could not in principle be embedded under a control verb. Thus it should be noted in this connection that it is not the case that all raising constructions are unacceptable under control verbs in Danish and Icelandic although some are less than perfect, depending on the semantics of the control verb and the raising construction involved (cf. also Thráinsson 1979:280 ff.):

- (93) a. Jeg prøvede at se ud til at være ophidset. (Da)
 I tried to see out for to be excited
 'I tried to seem to be excited.'
 b. Ég reyndi að virðast vera æstur. (Ic)
 I tried to seem be excited
 'I tried to seem (to) be excited.'
 c. ?Jeg lovede at blive arresteret. (Da)
 'I promised to be arrested.'
 d. ?Ég lofaði að verða tekinn fastur. (Ic)
 I promised to be taken fast
 'I promised to be arrested.'
 e. Jeg prøvede at blive arresteret. (Da)
 'I tried to be arrested.'
 f. ?Ég reyndi að vera tekinn fastur. (Ic)
 I tried to be taken fast
 'I tried to be arrested.'
 g. Jeg håbede at blive arresteret. (Da)
 'I hoped to be arrested.'
 h. Ég vonaðist til að verða tekinn fastur. (Ic)
 I hoped for to be taken fast
 'I hoped to be arrested.'

The fact that the judgments seem to vary somewhat between Danish and Icelandic may indicate that the verbs in question do not have exactly the same meaning in the two languages.

5. Double modals in Old Norse

Finally, it would be interesting to study the development of modal verbs in general and double modals in particular in the Scandinavian languages from the common Old Norse language to the present. While we have not undertaken a diachronic analysis of that kind we have studied a collection of double modals from the Icelandic Sagas, provided by Eiríkur Rögnvaldsson. The data is drawn from a recent edition of the Sagas (*Íslendinga sögur* 1985-1986), which will soon be available to linguists and other researchers in a computer accessible form on a CD (cf. Rögnvaldsson 1991). The language of the Sagas may be considered to be representative of Old Icelandic prose from the 13th - 14th centuries, depending on individual Sagas and the manuscripts preserved. It is likely that all the Scandinavian languages or dialects were similar at this point with respect to the phenomena under discussion. What follows are just a few remarks on the modals and double modals found in the corpus mentioned above.

First, it should be noted that at least some of the modal verbs appear to have had epistemic sense in Old Icelandic. Note the following, for instance (cf. Rögnvaldsson 1991:374 - the name of the Saga in question and a page reference to the edition used is given in parentheses after the gloss):

- (94) Ei mun þig hér mat skorta.
 not will you(A) here food(A) lack
 'You are not going to lack food here.'
 (Svarfdæla saga, p. 1806)

If we accept Rögnvaldsson's conclusion that "there seems to be no reason for assuming that the status of quirky subjects is different in Old Icelandic than in Modern Icelandic" (1991:377), then we have here a case of a quirky subject of a modal verb and we have seen that this would seem to suggest a raising-type epistemic modal (cf. section 2.2 above).

Second, it seems that most of the examples of double modals in the Sagas are instances of root modals embedded under the epistemic modals *munu* 'will' and *skulu* 'shall'. As we saw above, the epistemic + root combination is the most common and natural type of double modals in the modern languages and it is possible that the verbs *munu* and *skulu* developed epistemic sense earlier than the other modals or are more common in the epistemic sense than other modal verbs. A few representative examples are given in (95):

- (95) a. að þú skalt eigi kunna frá tíðindum að segja...
 that you shall not can from news to tell
 'that you will not be able to tell any news.'
 (Njála, p. 129)
 b. Fleiri munu kunna að höggva stórt en þú einn...
 more will can to hew big than you alone
 'More people than you will be able to strike great blows.'
 (Njála, p. 165)

- c. því að menn munu vilja hitta þig.
for that men will will meet you
'because some men will want to meet you.'
(*Hansa-Þóris saga*, p. 1420)
- d. að Ólkofri skyldi eigi lengi þurfa síns hluta að biða...
that O. should not long need self's share to wait
'that Ólkofri would not have to wait long for his share.'
(*Ólkofra saga*, p. 2076)

There are, however, a few subjectless ("impersonal") constructions with double modals that could perhaps be interpreted as epistemic + epistemic. This is illustrated in (96):

- (96) a. ef ekki skal mega sjá á ykkur að þið hafið í bardaga verið.
if not shall may see on you that you have in fight been
'if it is not going to be possible to see that you have been fighting.'
(*Njála*, p. 199)
- b. að þig mun mega fara nauðigan á konungs fund...
that you(A) will may bring unwilling to king's meeting
'that it will be possible to take you unwillingly to the king'
(*Þorvalds þáttur Tasalda*, p. 2319)

Finally, it should be noted that the second modal verb in double modal constructions sometimes follows its complement. This is not surprising since OV order is quite frequent in Old Icelandic texts (cf. Sigurðsson 1988). This is illustrated in (97):

- (97) a. eigi veit eg hvort þeir munu taka vilja sættir.
not know I whether they will take will settlement
'I don't know whether they will want to reach a settlement.'
(*Njála*, p. 231)
- b. Þaðan mun sigla mega inn til Drangeyjar...
from-there will sail may in to Drangey
'From there it will be possible to sail to Drangey.'
(*Grettis saga*, p. 1077)

We conclude, then, that epistemic + root and apparently also epistemic + epistemic double modal constructions can be found in the language of the Sagas, and probably also in other types of Old Icelandic or Old Norse texts.

6. Concluding remarks

In this paper, we have given an overview of the semantic and syntactic properties of modal verbs in Scandinavian (even if we had to limit ourselves to Danish and Icelandic for the most part).

In the introduction and in section 4, we tried to show in what respects Scandinavian modals differ from their English counterparts, whereas elsewhere in the paper, particularly in section 3, we discussed the respects in which Danish and Icelandic modals differ from each other.

In section 1 we attempted to define the class of modal verbs, and here we found particularly relevant the semantic distinction between epistemic and root readings. In section 2, we discussed some syntactic consequences of this semantic distinction, especially with respect to non-argument subjects, subjects with quirky case, and pseudo-clefts.

Section 3 suggested a syntactic analysis of the distinction between epistemic and root. According to this analysis, epistemic modals do not assign any thematic roles at all whereas root modals do: Root modals assign a "normal" theta-role in Icelandic and an "additional" theta-role in Danish. In other words, epistemic modals are like raising verbs in both languages, root modals are like control verbs in Icelandic, but root modals in Danish have a status somewhat in-between these two categories: Danish root modals are like control verbs in that they do assign a theta-role, but they are like raising verbs in that an argument which is base-generated as an argument of the embedded main verb is moved into the subject position of the modal verb (where it is then assigned an "additional" theta-role). It was furthermore shown how these proposals could account for a wide range of data concerning not only the phenomena discussed in section 2 but also e.g. the difference between state and event predicates as well as various constructions involving passive main verbs.

We addressed the possible and impossible combinations of two (or more) modals in section 4, and found that a number of facts fall out as expected on the basis of the syntactic properties of the analysis proposed, for others a plausible semantic account suggested itself (such as for the impossibility of embedding epistemic modals under root modals), but some had to be left unaccounted for here. This section discussed some differences between modal combinations in Scandinavian and those found in various dialects of English, e.g. that the second of two modals is always an infinitive in Scandinavian whereas it would seem to be (and behave like) a finite verb in the English construction.

Finally, section 5 gave some examples of modal combinations in Old Norse, the common ancestor of Danish and Icelandic, and we found no reason to assume that the properties of Old Norse differ significantly from the modern languages with respect to combinations of modals.

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Endnotes

*. This paper was originally written in the summer of 1992 and revised in the summer of 1993. It was written for a volume on double modals, but for reasons mysterious to us this volume has never materialized. The paper is partially based on two earlier papers of ours, namely Thráinsson 1986 and Vikner 1988, but we have had to change our previous ideas to some extent, especially in light of the comparative evidence that our recent work has uncovered. We have also benefited greatly from the work of various colleagues, especially Davidsen-Nielsen (1990), whose influence should be particularly evident in the first sections of the paper. We also owe special thanks to Eiríkur Rögnvaldsson for providing us with examples of double modals from the Icelandic Sagas. - Parts of this material were presented in classes at Harvard University in the fall of 1992 and spring of 1993, and to the Jersey Syntax Circle in December 1992 and the audience deserve thanks for many useful comments. Special thanks also to Carl Vikner, Sabine Iatridou, Akira Watanabe, Erich Groat, Jóhannes Gísli Jónsson, Samuel D. Epstein, Carole Chaski, Joan Maling, and Rex Sprouse for comments, judgments and suggestions. None of these people should be held responsible for the ways in which we have (or have not) made use of their ideas, but we should.

1. Palmer (1986:34) also points out that English modal verbs "have no imperatives". If we interpret that statement to mean that sentences with verbal complexes beginning with a modal verb cannot be used as imperatives then this is probably also true of Scandinavian modal verbs. But that property is shared with some (other) auxiliaries in Scandinavian:

- (i) a. *Hav drukket øllet når jeg kommer tilbage! (Da)
b. *Hafðu drukkið bjórinn þegar ég kem aftur! (Ic)
have drunk beer-the when I come back

As the gloss indicates, this appears to be true for English *have*-constructions too.

2. It has been observed that *wollen* has a more "subjective" meaning than *sollen* in examples like the following (cf. Öhlschläger 1989:233):

- (i) a. Emil soll glücklich gewesen sein.
'It is said that Emil was happy.'
b. Emil will glücklich gewesen sein.
'Emil claims that he was happy.'

Hence one could argue that even here *wollen* does not occur in a "real" epistemic sense. But see also Østkjær Jensen (1987:170) for an epistemic-like sense of *wollen* (necessity):

- (ii) Kirschwasser ... will allein genossen sein.
'Cherry brandy must be enjoyed all by itself.'

3. Although we are trying to stick to the definition in (10) above, this list contains the Danish verb *turde*, which is hardly used in epistemic meaning in Modern Danish and the Icelandic verb *munu* which probably does not have any root sense. Further "irregularities" will be noted below.

4. This class is sometimes called "subject oriented" since "the source of the modality is the referent of the subject noun phrase" (Davidsen-Nielsen 1990:44).

5. There are, of course, different degrees of probability and these are reflected to some extent in the different epistemic modals in the languages under discussion. See Davidsen-Nielsen (1990:45) for discussion.

6. The label "volition" here is not only meant to cover pure volition like Danish *vill* and Icelandic *vilja* 'will, want to' but also "intentional" verbs like Icelandic *ætla* 'intend' and "courage" verbs like Danish *turde* 'dare'. A more detailed subclassification is irrelevant for our purposes, however.

7. As pointed out in Vikner (1988:6, n.2), the epistemic use of *turde* in Danish is archaic but we include it just for the sake of illustration.

8. The difference between Icelandic epistemic *skulu* in (15h) and *hljóta* in (14b) is rather subtle. The classification here is meant to indicate difference between necessity and very strong probability. Note that the *skulu* here is pronounced with special emphasis. Dialectally (South-Eastern Iceland) it is also possible to find epistemic unstressed *skulu* which has

similar "reportive" meaning as Danish *skulle*: *Hann skal víst vera skemmtilegur* 'I think he is said to be interesting.'

9. This is intended as a quote from the Ten Commandments. Usually the "obligation" involved in *skulu* is much weaker, more of a suggestion in fact. Note also that a promise as in Danish *Jeg skal nok rydde op efter mig* and Icelandic *Ég skal taka til eftir mig* 'I shall clean up after myself' is a sort of obligation. What we have here are differences that could be further defined in terms of speech acts (cf. Searle's distinction between directives and commissives (1983:166 and in earlier work)).

10. (19b) and (19c) are not exactly synonymous in Icelandic. (19b) means 'does not how to' (i.e., he has never learned it) whereas (19c) means 'cannot do it' (which may be a temporary thing). Hence (i) is fine:

- (i) Jón kann að synda en hann getur ekki synt núna.
John can to swim but he can not swim now
'John knows how to swim but cannot swim now.'

(i) would be true, for instance, if John had hurt himself and hence was unable to swim. (ii), on the other hand, does not make any sense (under the root interpretation of *kunna*) under any circumstances:

- (ii) *Jón kann að synda en hann kann ekki að synda núna.
John can to swim but he can not to swim now
(would mean: '...knows how to swim but does not know how to swim now')

11. The Icelandic cognate *þora* is not included here since it does not have an epistemic sense, cf. the definition in (10).

12. Notice that we are here referring to whether an expletive may be the subject of a raising verb or a modal which has an infinitival complement. It is also possible for raising verbs to have an expletive subject when the complement is a finite clause. This is neither possible for root nor epistemic modals. Thus there is a certain asymmetry between epistemic modals and (other) raising verbs, as illustrated here with Danish examples:

- (i) a. Han ser ud til at have sovet. (Raising verb w. infinitive)
'He seems to have slept.'
b. Han skal have sovet. (Epistemic modal w. infinitive)
'He is-said (to) have slept.'
(ii) a. Det ser ud til at han har sovet. (Raising verb w. finite)
'It seems that he has slept.'
b. *Det skal at han har sovet. (Epistemic modal w. finite)
it is-said that he has slept

13. For a detailed analysis of expletives and weather *það/det* in Scandinavian see Vikner (1995, chapter 7). He argues, for instance, that the "weather words" are arguments rather than true expletives. Such differences are not crucial here, nor are the differences in behavior between overt expletives in Icelandic and Mainland Scandinavian discussed in Vikner and references cited there. What matters is that weather words are licensed by weather expressions and can be raised to a position that is not assigned a thematic role.

14. Note that although English *promise* can be used as an epistemic modal (or at least a raising verb), Danish *love* and Icelandic *lofa* 'promise' cannot. Hence these verbs are not considered modals here (cf. also that Danish *love* takes an infinitival complement with *at* whereas Danish modal verbs in general do not).

15. Again, the potential distinction between non-arguments and quasi-arguments is not important for our purposes.

16. Note, however, that in all these cases the infinitival "complement" has the infinitival marker *at/ad*. This is both true in Danish where the complements of modals do not have the infinitival *at* and in complements of Icelandic modal verbs like *vilja* 'will' which also do not take infinitival *ad* as a rule. We have no explanation to offer for this phenomenon.

17. In this case and some of the following, (the demonstrative pron.) 'that' might be a more appropriate gloss than (the personal pron.) 'it' for *það*. The same holds for some of the instances below where *det* is glossed as 'it'. There is no morphological difference between a demonstrative and personal pronouns in the neuter in Icelandic or Danish.

18. As Jóhannes Gísli Jónsson has pointed out to us, some root modals seem more reluctant than others to occur in the pseudo-cleft construction. Thus (ib) seems rather unnatural:

- (i) a. Jón verður að selja bílinn.
J. has-to to sell the-car
'John has to sell the car.'
b. Það sem Jón verður að selja bílinn.
it that J. has-to is to sell the-car
'What John has to (do) is to sell the car.'

It seems necessary to add the verb *gera* 'do' to make (ib) good:

- (ii) Það sem Jón verður að gera er að selja bílinn
it that J. has to do is to sell the-car
'What John has to do is to sell the car.'

We have no explanation to offer for this.

19. Whatever the reason for this topicalization requirement, we note that something similar holds in English in constructions like these:

- (i) Will you help me with my homework tomorrow?
That I certainly will.
*It I certainly will.
*I certainly will that.
*I certainly will it.
I certainly will do that.

20. The *wh*-trace in a pseudo-cleft construction can also show up in subject position or in the position of a prepositional object, both of these being case marked positions:

- (i) a. Den eneste_i [der t_i kan redde os nu] er Superman. (Da)
the only that can save us now is Superman
b. Det eneste_i [som han ikke var forberedt på t_i] var
the only that he not was prepared for was
[at du ville dukke op] (Da)
that you would show up

21. Since the choice of an AgrP or TP or even CP complement is not really important for our purposes here, we have left the complement unlabelled. For some discussion of Scandinavian infinitival complements see Johnson and Vikner (1994), Thránsson (1993) and references cited there. See also the discussion in section 4.1 below.

22. Interestingly, however, the state-expressions are ambiguous when embedded under the root modals: in addition to the state meaning they can take on the event meaning. If the event meaning follows from the additional thematic role, as suggested in the text, then one would expect the event meaning itself to be incompatible with the root modals, not just the event expression (cf. Vikner 1988:20). We recognize this as a potentially serious problem for our analysis, but we do not know what to do about it. - In Swedish, on the other hand, it seems that comparable event expressions are not ungrammatical when embedded under root modals so the additional thematic role analysis does not seem to work for such cases in Swedish. But Swedish state expressions take on event interpretations in the same context as their Danish counterparts. Again, some more work must obviously be done if we want to extend our analysis of modals to other Scandinavian languages. We realize that we have only scratched the surface in many respects.

23. As Vikner (1988:23-24) points out, however, it is not entirely clear how to explain the fact that *s*-passives are ungrammatical with epistemic modals (cf. also Davidsen-Nielsen 1990:21; Skjumb-Nielsen 1971:73):

- (i) *Hun vil udnævnes til professor, men hun ved det ikke endnu.
she will be-appointed professor but she knows it not yet

24. It does not matter here whether we assume that the subject of *vanta* 'lack' is generated in [Spec, VP] position, like regular subjects, or whether we assume with Sigurðsson (1989:210 ff.) that it originates in object position and that verbs taking quirky subjects are unaccusative (or ergative). It is obvious that it is the embedded verb that determines the case and the thematic role of the quirky subject, not the epistemic modal verb. Where, when or how the embedded verb does this is immaterial.

25. Sigurðsdóttir (1989) assumes that the complementizer *að* properly governs the empty category in sentences like this - and that is why we do not get a ECP violation here.

26. The so-called *-st*-verbs in Icelandic correspond historically to the Mainland Scandinavian *s*-passives, but these only rarely have a passive sense, the more typical senses being anti-causative, reflexive or reciprocal (cf. Anderson 1990; Ottósson 1986).

27. It should be pointed out that Danish seems to differ from Icelandic here. Thus compare the following examples to (65)-(68), respectively:

- (i) a. Politiet ser ud til at have løst problemet. (raising)
'The police seems to have solved the problem.'
b. Problemet ser ud til at være blevet løst af politiet.
'The problem seems to have been solved by the police.'
(ii) a. Politiet prøvede at løse problemet. (control)
'The police tried to solve the problem.'
b. *Problemet prøvede at blive løst af politiet.
the problem tried to be solved by the police
c. *Problemet prøvede at løses af politiet.
the problem tried to be-solved by the police
(iii) a. Politiet kan have løst problemet. (epistemic)
'The police may have solved the problem.'
b. Problemet kan være blevet løst af politiet.
'The problem may have been solved by the police.'
(iv) a. Politiet kan godt løse den slags problemer. (root)
the police can easily solve this type problems
'The police can easily solve such problems.'
b. Den slags problemer kan godt løses af politiet.
this type problems can easily be-solved by the police
'Such problems can easily be solved by the police.'

The important thing to note here is that the passives of the control construction in (ii) are bad, just like their Icelandic counterpart (recall that there are two types of passive in Danish - both types are out here as shown). Yet the passive of the root modal construction in (iv) is good, whereas its counterpart in Icelandic is bad. Note also that in (iv) we have the *s*-passive, which is the passive we get in root modal complements in general but not in the complements of epistemic modals (cf. section 3.2). This supports the claim that we do indeed have some sort of a root modal reading in (iv). The grammaticality of (ivb) thus argues against analyzing Danish root modals as control verbs.

28. The licensing differences between Danish and Icelandic just discussed can also be seen in examples like the following:

- (i) a. Der er blevet spist et æble her. (Da)
there is been eaten an apple here
b. *Der har nogen spist et æble her. (Da)
there has somebody eaten an apple here
(ii) a. Það hefur verið borðað epli hér. (Ic)
there has been eaten apple here
b. Það hefur einhver borðað epli hér. (Ic)
there has somebody eaten apple here
(iii) a. *Der prøvede nogen at stjæle et æble. (Da)
there tried somebody to steal an apple
b. Það reyndi einhver að stela epli. (Ic)
there tried somebody to steal apple
'Somebody tried to steal an apple.'

(ia) is fine in Danish since there is no NP to be licensed in the I' position, but (ib) is bad where such a licensing would be required. Both (iia) and (iib) are fine in Icelandic, on the other hand, since the relevant NP can be licensed by I' in (iib). Similarly, if we look at the sentences with control verbs in (iii), we see that (iiia) is bad in Danish but the corresponding (iiib) is fine in Icelandic, as expected.

29. One could argue, of course, that the Icelandic modals are more "verbal" than their Danish counterparts since they do not only show tense distinctions but also person and number distinctions (cf. Groat 1993), but that is a more general difference between verbs in Icelandic (and to some extent also Faroese) on the one hand and Danish (and Norwegian and Swedish) on the other.

30. We are not considering the V2 effects here since they are irrelevant for the points being made.

31. It is interesting to note that the English modal *can/could* figures prominently as the second element of many of the attested double modal constructions in Modern English. - Note also that although it is sometimes said that epistemic modals must precede all auxiliaries (or aux-like verbs) in Swedish (cf. Platzack 1979:46), sentences like the following are acceptable in Swedish (cf. Thráinsson 1986:262, n.13):

(1) Det lär kunna hända att flygplan kolliderar i luften.
 it is-said can happen that airplanes collide in air-the
 'It is said that it may happen that airplanes collide in mid air.'

Note that here too the second modal is *kunna* 'can'. Thus it seems that *can* and its cognates may have some special properties worth investigating in more detail.

32. They do not, however, have a past participle (or supine) form, although it is reported that *skulu* 'shall' may have a supine dialectally, as evidenced by the example *hefði skulað* 'had should' from Northern Iceland, cited by Guðmundsson (1977:323, n.7; see also Rögnvaldsson 1983:18, n.11).

33. As Sabine Iatridou has pointed out to us, it would be interesting to investigate the scopal interaction between tense and epistemic vs. root modals (cf. also Iatridou 1990), but such investigations are beyond the scope of this paper.

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