On the Structure of Infinitival Complements

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0. Introduction[1]

This paper represents a preliminary attempt at exploring some of the properties of infinitival complements. Different types of infinitival complements are compared to finite complements and to each other. The main focus of the paper is complements of control verbs and modal verbs in Icelandic and these will occasionally be compared to their Mainland Scandinavian, English and German counterparts. This study is part of a larger project investigating the structural differences between finite and non-finite clauses with particular attention to the role of functional projections in these different clause types.

This paper argues that infinitival complements in general have a more limited set of functional projections than do finite complements and this is reflected by differences concerning e.g. movement, case marking and agreement. In addition, it is argued that certain infinitival complements differ from others with respect to the nature and number of functional projections. These claims are not new, but it is shown here that the relevant differences are not predictable on the basis of the presence or absence of the so-called infinitival markers, as has sometimes been argued. The reason is not only that these may have different roles in different
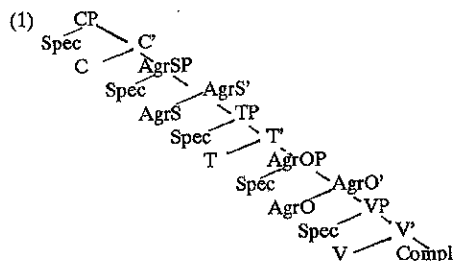
languages (see for instance Johnson and Vikner (in preparation) and references cited there) but also that the (complementizer-like) infinitival markers may occupy different positions (and thus play different roles) within a given language (see Sigurdsson (1989), pace Sigurjónsdóttir (1989), and Johnson and Vikner (in preparation)).

The paper is organized as follows: Section 1 outlines some basic ideas about the role of functional projections with respect to case checking and agreement. Section 2 reviews some facts about Germanic infinitival complements that need to be accounted for, with special emphasis on Scandinavian in general and Icelandic in particular. Section 3 outlines the analysis presented in this paper, concentrating on the differences between finite complements, control complements and modal complements in Icelandic and lists the predictions made. All these complement types are introduced by the lexical element *að* in Icelandic, but it is argued that it occupies different functional head positions and this explains the observed differences between the complement types. Section 4 then demonstrates head properties of Icelandic *að*, Section 5 illustrates different verb movement possibilities in the complements under discussion, and Section 6 discusses the relationship between verb movement and Object Shift. Section 7 then considers some additional differences between control and modal complements in terms of case and agreement properties and Section 8 illustrates differences between finite and infinival complements with respect to Topicalization. Finally, Section 9 contains concluding remarks.

1. Some Background Assumptions

This paper adopts the basic assumptions of Chomsky's (1992) influential paper "A Minimalist Program for Linguistic Theory" (henceforth MPLT). Thus the basic structure of a finite complement clause is taken to to be (1), following Chomsky's (1992) adaptation of Pollock's (1989) original ideas:

(1)
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        CP
    Spec    C'
        C      AgrSP
          Spec    AgrS'
             AgrS    TP
               Spec    T'
                  T      AgrOP
                    Spec    AgrO'
                       AgrO    VP
                         Spec    V'
                            V      Compl
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In addition, the checking approach to case and agreement is assumed. This will be spelled out in more detail below, but it means briefly that "Case properties depend on characteristics of T and the V head of VP" (Chomsky (1992, 10)) and "agreement is determined by the ϕ-features of the AGR head of the AGR complex" (Chomsky

(1992, 11). But where relevant, I will assume that TP in Icelandic has the properties argued for in Jonas (1992) and Jonas and Bobaljik (1993). This means in particular that Spec-TP is an (intermediate) A-position in Icelandic where subjects can have their case checked.[2]

Much current syntactic work tries to explain apparent "movement" of heads and maximal projections. A central idea of the feature checking approach of Chomsky (1992) is that syntactic movement is driven by morphology in the sense that morphological features need to be checked by LF and that the relevant constituents move to their checking positions either overtly in the syntax or covertly in the LF component. The inflectional heads, Agr (Agreement) and T (Tense) are thought of as having two sets of features, verbal features (V-features) and nominal features (N-features) (Chomsky (1992, 40)). The V-features include tense and agreement features (person and number) whereas N-features include case and agreement features. It is further assumed in checking theory that "strong" features need to be checked before "spell-out", i.e. in overt syntax.

2. Some Germanic Facts to be Accounted For

Some verbs take infinitival complements introduced by infinitival markers in Germanic whereas others take "bare" infinitives. Thus the infintival complements of control verbs are introduced by the infinitival marker in Danish, English and German, whereas modal verbs in these languages take bare infinitival complements (cf. Thráinsson & Vikner 1992). This difference is illustrated in (2) where the "infinitival complements" are enclosed in brackets:

(2) a.	Harald	próver	[at synge]	(Da.)
	Harold	tries	[to sing]	
	Harald	versucht	[zu singen]	(Ge.)
b.	Harald	må	[synge]	(Da.)
	Harold	must	[sing]	
	Harald	muß	[singen]	(Ge.)

Despite the cross-linguistic similarities observed in (2), we shall see that there are some differences between Germanic languages with respect to which types of infinitival complements are introduced by infinitival markers. This bears on the question of what the syntactic function and structural position of infinitival markers may be. Second, I will show that complements that look superficially alike, such as complements of control verbs in the Scandinavian languages, which are generally introduced by infinitival markers, may differ syntactially with respect to word order.

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[2]The relationship between morphological case and licensing of subjects and objects has been discussed recently in various publications. It is not a major concern in this paper (but see Section 7 below). For references and overview of the discussion see Schütze (1993) and Jonas & Thráinsson (in preparation).

Third, we will see that Topicalization is allowed in finite complements in Icelandic but not in control complements, although both types are introduced by phonologically identical elements.

While outlining the facts in sections 2.1 - 2.3 I will review briefly some theoretical accounts of these. It will be shown that these accounts typically make use of theoretical concepts not available in MPLT (such as various notions of government). In addition, it will be argued that important similarities and differences between finite and non-finite complements are difficult to state in under these accounts. Having summarized the relevant facts and pointed out problems with previous analyses, I will then list some of the properties that a minimalist account of these facts must have. Such an account will then be outlined in Section 3.

2.1   Some Inter-Germanic Differences

Given cross-linguistic similarities like those observed in (2) we might expect that the presence vs. absence of infinitival marker would give important clues about the nature of infinitival complements. We might even assume that a given type of infinitival complements would always have an infinitival marker in the all Germanic languages whereas another type consistently would not. This is not the case, however, as illustrated in table (3) (the columns give the elements that introduce finite complements and complements of control, ECM and raising verbs (cf. the references in (4) and also Lockwood (1977, 138-139) for Faroese):

ECM ?

(3)	finite	control	modal	ECM	raising
English	that	to	∅	to	to
German	daβ	zu	∅	∅	zu
Dutch	dat	te	∅	∅	te
Danish	at	at	∅	∅[3]	at
Norwegian	at	å	∅	å	å
Swedish	att	att	∅	(att)	(att)
Faroese	at	at	∅	∅	∅
Icelandic	að	að	að/∅[4]	∅	∅

Note that control complements are introduced by an overt infinitival marker in all the languages cited. In all other types of infinitival complements there is some cross-linguistic variation within Germanic with respect to the presence vs. absence of infinitival markers. This indicates that either the infinitival markers do not have a consistent role in Germanic languages or the nature of "corresponding" complements

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[3]German, Dutch and Danish apparently only have ECM (or AcI) constructions with perception verbs ('see', 'hear').

[4]Most modal verbs take *að*-complements but three common ones take "bare" infinitives: *munu* 'will', *skulu* 'shall', *vilja* 'will, want'.

may vary crosslinguistically.

In (4) we see a simplified overview of a number of analyses of the infinitival markers in the Germanic languages. The abbreviations +f and -f stand for finite and non-finite (infinitival), respectively. Faroese is omitted from the list since I am unaware of any detailed syntactic analyses of infinitival complements in that language.[5]

(4)

English 1:	that(+f)	to(-f)	(Haegeman (1991))
English 2:	that(+f), to(-f)		(Lencho (1992))
German 1:	daβ(+f)	zu(-f)	(Giusti (1991), Zwart (1993))
German 2:	daβ(+f), zu(-f)		(Wilder (1988))
Dutch:	dat(+f)	te(-f)	(Beukema & den Dikken (1989))
Danish:	at(+f)	at(-f)	(Platzack (1986))
Norwegian:	at(+f)	å(-f)	(Holmberg (1986))
Swedish 1:	att(+f, -f)		(Platzack (1986))
Swedish 2:	att(+f)	att(-f)	(Vikner (1992b))
Swedish 3: att(-f)	att(+f)		(Kayne (1991))
Icelandic 1:	að(+f, -f)		(Holmberg (1986), Sigurjónsdóttir (1989))
Icelandic 2:	að(+f,-f)	að(-f)[6]	(Sigurðsson (1989))
Icelandic 3: að(-f)	að(+f)		(Kayne (1991))

Note that many of these analyses maintain that the infinitival markers (the lexical elements introducing infinitival complements) occupy a lower structural position than the finite complementizer. Kayne's (1991) suggestions about the structural position of the infinitival markers in Icelandic and Swedish are an exception in this respect.[7]

For reasons of space the different analyses listed in (4) will not be discussed in any detail here. Instead I will concentrate on some similarities and differences between infinitival markers in Scandinavian. Let us just notice at this point that some of these analyses try to "minimize ambiguity" by maintaining that infinitival markers that are homophonous with the complementizers of tensed clauses do indeed occur

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[5]This simplified structural diagram disregards possible left/right differences in headedness (cf. Zwart (1993) vs. Schwartz & Tomaselli (1990) with references).

[6]The first non-finite *að* here is supposed to introduce control complements, the second modal complements.

[7]Kayne (1991) actually only says that the Icelandic infinitival marker "might be" in SpecCP and leaves open the possibility that it might be in C°. He maintains, however, that the Swedish infinitival *att* "must ... be" in SpecCP. He does not, in fact, discuss the structural position of the finite complementizers, and the same is true of many of the other linguists referred to in (4). I am just assuming that they would accept the standard analysis of these.

in complementizer position (C°) (cf. Icelandic 1 and Swedish 1).[8] Other analyses "maximize ambiguity" in that they assume that even phonologically identical infinitival markers may occupy different structural positions (cf. Icelandic 2). Although this may initially seem unattractive, it will be the kind of analysis advocated here. It will also be seen that the child acquiring Icelandic will have ample evidence to distinguish between these complement types, despite the phonological identity of the elements introducing them.

2.2 More on Inter-Scandinavian Differences

First, observe the differences between Icelandic, Swedish, Danish and Norwegian control complements illustrated in (5) (cf. Platzack (1986), Holmberg (1986), Vikner (1992b)):

(5) a. María lofaði   að   lesa   ekki   bækur   (Ic)
        Mary promised to[9]   read   not   books
   b. Maria lovade   att   inte   läsa   böcker   (Sw)
        Mary promised to   not   read   books
   c. Marie lovede   ikke at læse bøger   (Da)
        Mary promised   not to read books
   d. Marie lovet   ikke å lese bøker   (No)
        Mary promised   not to read books

The differences can be summarized like this: In Icelandic and Swedish the infinitival marker precedes the negation whereas it follows the negation in Danish and Norwegian (as it normally does in English too). But in Icelandic the non-finite verb also precedes the negation whereas it follows it in Swedish.

Within the frameworks assumed by Platzack (1986), Holmberg (1986) and Vikner (1992b), the differences observed in (5) could be accounted for in the following ways:

(6) a. The languages might differ in terms of overt syntactic movements allowed in infinitival complements.
    b. The languages might differ in terms of underlying structures of clauses of this type, in particular with respect to the structural position of the infinitival markers or the negation.

Both types of analyses have been suggested in the literature. An analysis of the first type accounting for the observed differences between Icelandic (cf. (5a)) and Swedish (cf. (5b)) is sketched in (7):

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[8]Platzack (1986) does not extend this approach to Danish, where he assumes that the infinitival marker *at* occurs in I° although it is phonologically identical to the finite clause complementizer.

[9]Although I will be arguing below that the *að* in control complements and the *að* in modal complements in Icelandic occupy different structural positions, I will gloss both as 'to'. I am not making any claims about the structural position of infinitival *to* in English by doing so.

(7) a. María lofaði [$_{CP}$ að [$_{IP}$ lesa$_i$ ekki   [$_{VP}$ t$_i$ bækur]]] (Ic)
    b. Maria lovade [$_{CP}$ att [$_{IP}$ inte   [$_{VP}$ läsa böcker]]] (Sw)

Here it is assumed that the infinitival marker in control complements in both languages occurs in C° (cf. Platzack (1986, 123), Holmberg (1986, 154), Beukema & den Dikken (1989, 66), Sigurðsson (1989, 52)) and the non-finite verb moves to I° (and thus across the VP-adjoined negation) in Icelandic but not in Swedish. Hence the observed difference in word order.

Now it is obviously not enough to claim that Icelandic allows verb movement in (control) infinitives but Swedish does not. The question is why that should be. Sigurðsson (1989, 79) gives the following account: The infinitival verb in control complements in Icelandic must move to I° to assign Case to PRO.[10] Since Case assignment in Swedish works differently (involving "reanalysis of Infl and V", (Sigurðsson 1989, 40; see also pp. 42-43, 79)), no such movement is allowed there. While it is not difficult to translate Sigurðsson's account of the verb movement in Icelandic control infinitives into a case checking framework of the type assumed here (cf. Chomsky (1992); see also Section 7 below), I see no obvious way of doing the same for his account of why the Swedish non-finite verb does not move so I will not go any further into that analysis here. Instead I will argue below that the observed difference between verb movement in Icelandic and Swedish control complements can be accounted for in terms of feature strength (cf. section 5 below).

Kayne (1991), on the other hand, wants to maintain the common assumption that PRO cannot be governed and thus is lead to propose that the infinitival marker occupies SpecCP rather than C°. Vikner (1992b) uses still another mechanism to avoid government of PRO, as we shall see in section 2.3 below. In a framework like the present one, where government does not play any role, such accounts are not available and I will argue below that they are not necessary. Instead, I will adopt a case checking analysis which involves reference to null case (cf. Chomsky & Lasnik (1991), Martin (1992), Watanabe (1993)) and (agreement with) morphological case (cf. Sigurðsson (1991) and references cited there). This means that PRO may need to move, like other NPs, for case checking purposes, as suggested by Chomsky & Lasnik (1991). We will also see that it is only possible to find evidence for morphological case marking or agreement in some kinds of infinitival complements in Icelandic and not others, a fact that will need to be explained.

But Icelandic and Swedish differ with respect to syntactic movement of finite verbs too, as illustrated in (8) (cf. Holmberg & Platzack (1990), Vikner (1991, 1992a)):

(8) a. Það var   óvænt   [$_{CP}$ að   Olafur les$_i$ ekki [$_{VP}$ t$_i$ bækur]] (Ic.)
        it   was unexpected that   Olaf reads not   books

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[10]Hornstein (1990) also discusses verb raising in control infinitives in Icelandic and maintains that the verb must move to I° to properly govern PRO. Otherwise (his version of) the ECP would be violated.

b. Det var ovräntad [$_{CP}$ att   Olav   inte [$_{VP}$ läser böcker]]   (Sw.)
   it   was   unexpected   that   Olav   not   reads books

Since Danish and Norwegian pattern with Swedish rather than Icelandic here, linguists have tried to relate the observed differences in (8) to some other differences between the two language groups (sometimes referred to as Insular Scandinavian (which is supposed to include Faroese in addition to Icelandic, cf. Holmberg & Platzack (1990))[11] A common account of this is to try to relate to the rich verbal agreement in Icelandic (vs. the poor verbal agreement in Mainland Scandinavian), assuming that the finite verb in Icelandic has to move to I° in the syntax to "pick up" agreement features (cf. Vikner (1991, 1992a); see also the discussion in Holmberg & Platzack (1990)). But since there will be no such agreement features to pick up in infinitival complements, such an account is not available for the observed verb movement in Icelandic control infinitives. Thus it is not clear how "richness of agreement" approach could explain these differences between Icelandic and Swedish. I will return to this question in sections 5 and 6 below. There I will also discuss the fact that there is only evidence for verb movement in some infinitival complements and not others, as originally observed by Thráinsson (1984), and I will try to relate this to facts that have to do with the so-called Object Shift in Icelandic (cf. Jonas & Bobaljik (1993) and references cited there).

While several linguists have tried to account for the differences between Icelandic and Swedish control infinitives in terms of movement, it is usually assumed that there are underlying structural differences between Danish and Norwegian control complements on the one hand and their Icelandic and Swedish counterparts on the other. One analysis of Danish and Norwegian control infinitives assumes the structures in (9) (see Platzack (1986), Christensen (1983), Sigurðsson (1989, 52)):

(9) a. Marie lovede   ikke [$_{IP}$ at [$_{VP}$ læse bøger]]   (Da)
     Mary   promised   not   to   read books
   b. Marie lovet   ikke [$_{IP}$ å [$_{VP}$ lese bøker]]   (No)
     Mary   promised   not   to   read books

According to this analysis, the infinitival markers occupy I°, and not C°. Furthermore, the negation *ikke* 'not' is adjoined to IP in (9) rather than to VP, as assumed in previously outlined analyses for Icelandic and Swedish. Another possibility would be to retain the similarity in the adjunction of negation to VP and assume that the infinitival markers in Danish and Norwegian are sitting in some lower head position. If one does not assume an expanded IP analysis, this head position would have to be V° (cf. Vikner (1992b)), however that could be argued for. But in an expanded IP-analysis, like the one assumed in this paper, there are other possibilities. I shall return to these in due course.

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[11]As Barnes (1989) has observed, Faroese does not fit very well into this proposed classification, being like Icelandic in some respects but similar to Mainland Scandinavian in others. See also the discussion in Vikner (1991, 1992a).

2.3   Embedded Topicalization in Icelandic

Finally, consider the fact that Topicalization is allowed in finite *að*-complements in Icelandic but not in infinitival ones, as illustrated in (10):

(10)a. Risarnir segja [að   þeir   éti ríkisstjórnina   á morgun]
     the-giants say   that   they   eat the-government   to-morrow
     'The giants say that they will eat the government tomorrow.'
   b. Risarnir segja [að   á morgun$_i$ éti þeir   ríkisstjórnina t$_i$]
     the-giants say   that   to-morrow   eat they   the-government
     'The giants say that tomorrow they will eat the government.'
   c. Risarnir lofa   [að   éta ríkisstjórnina   á morgun]
     the-giants promise   to   eat the-government   to-morrow
   d. *Risarnir lofa   [að   á morgun$_i$ éta ríkisstjórnina t$_i$]
     the-giants promise   to   to-morrow   eat the-government

It is frequently assumed that topicalized constituents move to SpecCP. Such an analysis immediately predicts that Topicalization should (normally) not occur in embedded clauses since there should not be a SpecCP position following the complementizer (C°) position in such clauses. Hence it has been suggested that in those cases where embedded Topicalization nevertheless does occur, we have CP-recursion (i.e. two CPs).

In most Germanic languages, embedded Topicalization seems to be restricted to complements of particular verbs, such as 'say, believe, think' (the so-called bridge verbs originally discussed by Erteschik (1993)). Where that is the case it could be argued that CP-recursion is limited to particular complement types (bridge verb complements, cf. Vikner (1991, 1992a), Thráinsson (1992), Iatridou & Kroch (1992)). But since it seems more general in Icelandic, Vikner (1991, 1992a) assumes "gereral CP-recursion" in Icelandic, giving a structure like (11) for embedded clauses. Relevant parts of the examples in (10) are inserted for illustration:

(11)

a.   að þeir   éti...
b.   að á morgun éti   þeir...
c.   að PRO   éta...
d.   *að á morgun éta   PRO...

The verb always moves to (the lower) C° in clauses of this type (the V2 phenomenon according to Vikner) and the (lower) SpecCP can either be filled by the subject (including the infinitival subject PRO) or by a Topicalized element (in which case the subject stays in SpecIP). But the reason Topicalization is bad in infinitival clauses like (10d) is that then the PRO subject would have to remain in SpecIP and then it would

be governed by the verb in the lower C°. And since Vikner (1992b) assumes that PRO cannot be governed, (10d) is ungrammatical. (10c) is grammatical, on the other hand, although *að* is a (potential) governor. The reason is that the lower CP is a barrier, according to Vikner, so PRO in the lower SpecCP is not governed. But in MPLT where the notion of government does not play any role, this kind of analysis cannot be adopted. We will thus have to look for a different way to block Topicalization in embedded infinitival clauses.

2.4   What Needs to Be Accounted For?

So far, then, we have seen that an analysis of infinitival complements should attempt to answer questions like the following:

(12)a. What is the structural position of the infinitival markers? Can it vary from one language to another or even from one type of infinitival complement to another (cf. the tables in (3) and (4) above)?

  b. Why do we find evidence for verb movement in infinitival (control) complements in some languages but not others (cf. the discussion of Icelandic and Swedish control complements above)?

  c. Why do we find evidence for verb movement in some infinitival complements in languages like Icelandic but not others?

  d. Why is it possible to find evidence for Object Shift in some infinitival complements in Icelandic but not in others?

  e. Why is Topicalization possible in finite complements in Icelandic but not in infinitival ones?

  f. To what extent is it possible to relate the observed differences between complement types to the number and nature of functional projections in these?

Although I have not gone into any detail about the previous accounts sketched above, it is fair to say that none of them have tried to answer all of the questions listed in (12). In addition, they tended to rely on various theoretical concepts not available in MPLT, in particular various concepts of government. Hence it seems that a rather different approach is called for. I will outline such an approach in the next section.

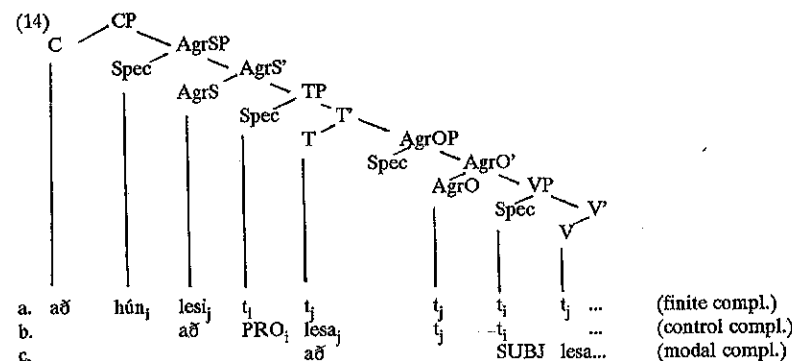### 3. The Analysis: Basic Properties and Predictions

For the remainder of this paper I will present arguments for a new analysis of infinitival complements. Although most of the data will be taken from Icelandic, it should be possible to extend the analysis to other languages and occasional remarks will be made to indicate how such an extension could work.

First, compare the following Icelandic sentences:

(13)a. Hann segir   [að   hún   lesi   bækur]   (finite complement)
       he   says   that   she   reads   books

  b. Hann lofar   [að   lesa   bækur]   (control complement)
       he   promises to   read   books

  c. Hann verður [að   lesa   bækur]   (modal complement)
       he   must   to   read   books
       'He must read books.'

As seen in (13), all the complements are introduced by the lexical element *að*. I have referred to this element above as a complementizer when it introduces a finite complement as in (13a) but called it an infinitival marker when it marks the left edge of infinitival complements as in (13b,c). As seen above, some linguists have argued that this element always occurs in C°, others have maintained that it sometimes occurs in C° and at other times in I°, whereas still others have claimed that it may be in SpecCP when introducing infinitival complements (cf. the overview in (4) above). According to the hypothesis advocated here, on the other hand, it occupies three different structural positions in the three examples in (13), as sketched in (14):

(14)

a. að   hún$_j$ lesi$_j$ t$_j$ t$_j$ t$_j$ t$_i$ t$_j$ ...   (finite compl.)
b.   að   PRO$_i$ lesa$_j$ t$_j$ -t$_i$ ...   (control compl.)
c.   að   SUBJ   lesa...   (modal compl.)

Several explanatory comments must be made here. First, I am assuming that finite complements "are CPs", control complements "are AgrSPs" and modal complements "are TPs".[12] I take that to mean that the functional projections above $AgrS^\circ$ do not "exist" in control complements and functional projections above T° do not "exist" in modal complements. Second, although the traces in (14) would seem to indicate simple verb raising from V to AgrS, through the intervening functional heads, I am actually assuming that the verb first raises and adjoins to $AgrO^\circ$, forming the complex head $[_{AgrO} V + AgrO]$, then this complex head moves on and adjoins to T°, forming a new complex head, and so on. This is explained in sections 5 and 6 below. Third, note that since I will argue that PRO has case, it will need to move for case checking purposes like other NPs (cf. Chomsky & Lasnik (1991), Martin (1992), Watanabe (1993); cf. also Sigurðsson (1991) on Icelandic), as will be discussed in Section 7. Fourth, note that the subject of modal complements is labeled SUBJ rather than

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[12]As we will in Section 6 below, it is also possible that modal complements are even "smaller", i.e. do not contain a T-projection at all. I will ignore this possibility for the moment.

PRO here. The reason is that modal verbs appear to pattern with raising verbs rather than control verbs, at least in their epistemic reading (cf. Thráinsson & Vikner (1992); see also Thráinsson (1986)). We will return to this question in Section 6 below.

Given the assumptions of MPLT, in particular the checking approach to case and agreement, this analysis makes the following predictions:

(15)a. Since it is assumed here that *að* occupies a head position in all the complement types under discussion, it should exhibit head properties (such as being implicated in the Head Movement Constraint (cf. Travis (1984, 131)) or its successors in other formulations).

b. We should be able to find evidence for movement of the verb[13] to T° in control complements but not to AgrS because AgrS is occupied by the infinitival *að* in those complements. There should be no evidence for verb movement to T° in modal complements since there T° is occupied by the infinitival *að*. In finite complements, on the other hand, the verb should move through T° to AgrS°.[14]

c. If Object Shift (movement of the object to SpecAgrO) depends on the availability of SpecTP, as argued by Jonas & Bobaljik (1993) (see also Bures (1993)), then we should be able to find evidence for Object Shift in control complements. No such predictions are made for modal complements (although the analysis is not entirely straightforward as we shall see in Section 6 below).

d. Since the functional heads T° and AgrS° are implicated in (the checking of) case and agreement, it should be possible to find case and agreement differences between the different complement types involved.

e. If Topicalization is movement of a maximal projection to some specifier position (or adjoined position) above AgrS, as standardly assumed, then this analysis predicts that Topicalization should be impossible in all infinitival complements.

In the following sections it will be argued that all these predictions are borne out empirically.

4. Head-like Properties of *að* in Icelandic

In this section I will present data showing that infinitival *að* in Icelandic has head properties, as predicted by the analysis advocated here. This prediction is actually shared by most of the analyses outlined above (cf. the overview in (4)). Kayne's (1991) idea that *að* occupies SpecCP is an exception.

If Icelandic infinitival *að* is a head, we might expect it to block head movement, assuming that all head movement obeys (some version of) the Head Movement Constraint (HMC, cf. Travis (1984, 131)). Travis' original formulation is given in (16):

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[13]Here and elsewhere I will talk about "movement" of the verb through various head positions as a shorthand for movement and adjunction, as assumed in the MPLT.

[14]I am following Jonas (1992) and subsequent work on Icelandic within the MPLT in assuming that the verb (or rather the complex verbal head, as explained in sections 5 and 6 below) adjoins to T° "before" T° raises (and adjoins) to AgrS° in Icelandic.

(16)   An X° may only move into the Y° which properly governs it.

This formulation of the HMC includes a concept not available in MPLT, namely proper government. Chomsky's (1986, 71) reformulation of it also refers to government, and so does Rizzi's (1990, 7) definition of Relativized Minimality, which also captures the relevant generalizations (Rizzi (1990, 11)). I will assume here that the HMC phenomena are real, whatever the proper formulation of the constraint itself, and that the basic descriptive generalization is that "a moved head cannot skip an intervening head between its base position and its landing site" (Rizzi (1990, 11)).

With respect to head-properties of the Icelandic *að*, then, the so-called Stylistic Fronting (SF) would seem to provide a test case. SF was first discussed in a generative context by Maling (1980) but more recent discussions include Jónsson (1991) and Poole (1992). Maling's original descriptive generalization was that SF requires a "subject gap". Hence it can occur in relative clauses where the subject has been relativized, as illustrated in (17):

(17)a. Þetta er maður [sem   hefur lesið margar bækur]
    -this-   is man   that   has   read- -many   -books
b. Þetta er maður [sem lesið₁ hefur t₁   margar bækur]
    this   is man   that   read   has   many   books
    'This is a man that has read many book.'

In (17b) we see that the non-finite main verb *lesið* 'read' has been moved to a position in front of the finite auxiliary *hefur* 'has'. Both Jónsson (1991) and Poole (1992) argue that this kind of movement is best interpreted as an instance of head movement. I will return to the nature of this movement and the landing site of SF below.

Maling (1980) originally claimed that SF was "clause bounded" (see also Sigurjónsdóttir (1989), Sigurðsson (1989)). The sentences in (18)-(19) give some relevant data to support that claim:

(18)a. Þetta er stelpan   sem   sagði [að þú   hefðir stolið bókinni]
    this   is the-girl that   said   that you had   stolen the-book
b. *Þetta er stelpan   sem stolið₁ sagði [að þú   hefðir t₁   bókinni]
    this   is the-girl that stolen   said   that you had   the-book

(19)a. Þetta er maðurinn sem   spurði [hvort ég hefði séð   myndina]
    this   is the-man that   asked whether I had   seen   the-film
b. *Þetta er maðurinn sem séð₁   spurði [hvort ég hefði t₁   myndina]
    this   is the-man that seen   asked whether I had   the-film

Before I can account for this apparent "clause-boundedness", I need some theory of how SF works in general. Note that in examples like (17b) it appears that the non-finite verb has moved across the finite verb, which is also a head, in apparent violation of the HMC. Note also that according to most recent analyses of Icelandic, the finite verb will itself have moved out of its VP through AgrO° and T° to AgrS° (or out of the VP to I° at least, if a non-expanded IP is assumed). This has been

extensively discussed in the literature (cf. e.g. Vikner (1992a), Thráinsson (1992), Jonas (1992), and most recently Jonas & Bobaljik (1993)). I will assume here, for the sake of concreteness, that the non-finite verb in sentences like (17b) moves first, adjoins to the finite verb and moves with it to its "destination". Hence it has not really "skipped" the head occupied by the finite verb but adjoined to it.

This head-movement account of SF immediately explains the ungrammaticality of (18b) and (19b) where the non-finite verb has obviously skipped at least the head positions occupied by the finite verbs *hefðir* 'had' in (18b) and *hefði* 'had' in (19b). Thus there is reason to believe that SF obeys (some version of) the HMC.[15]

With this in mind, let us turn to SF in and out of infinitival complements. As illustrated in (20), we get an ungrammatical sentence if we try to do SF out of a control complement across the infinitival marker *að*:

(20)a. Þetta er maðurinn sem   lofaði [að lesa allar bækurnar]
       this is the-man that   promised to read all the-books
   b. *Þetta er maðurinn sem lesa$_i$ lofaði [að   t$_i$ allar bækurnar]
       this is the-man that read   promised to   all the-books

In (20b) the stylistically fronted non-finite verb is adjacent to the finite (control) verb, which is where it should be if SF adjoins elements to the finite verb, as assumed here (cf. above). Yet the sentence is ungrammatical. But if the infinitival marker *að* occupies a head position in the control complement, namely AgrS° as argued here, the stylistically fronted head will have to have 'skipped' that head and violated the HMC.[16] As shown in (21), we get exactly the same pattern in complements of modal verbs:

(21)a. Þetta er maðurinn sem   kann [að lesa allar bækurnar]
       this is the-man that   can to read all the-books
       'This is the man that can read all the books.'
   b. *Þetta er maðurinn sem lesa$_i$ kann [að t$_i$ allar bækurnar]
       this is the-man that read   can to   all the-books

More interestingly, however, (20b) and (21b) become grammatical if the infinitival *að*

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[15]As demonstrated by Jónsson (1991), partially based on data originally discovered by Maling (1980), the interaction of SF and the HMC is far from straighforward. The reason is that there seems to be some sort of hierarchy of elements that undergo SF. We will ignore that problem here and concentrate on SF of non-finite verb forms.

[16]This analysis assumes that SF cannot adjoin heads to heads and then "disjoin" them again to move on, thus avoiding 'skipping' them. I am assuming that the proper formulation of the HMC would rule this out, cf. Rizzi's (1990, 11) discussion of cases like the ones in (i):
(i) a. They   could have left.
    b. Could$_i$ they t$_i$ have left?
    c. *Have$_i$ they could t$_i$ left?

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is omitted as in (22) and (23):[17]

(22)a. ?Þetta er maðurinn sem   lesa$_i$ lofaði [t$_i$ allar bækurnar]
       this is the-man that   read   promised   all the-books
       'This is the man that promised to read the books.'
   b. (?)Sá sem lyfta$_i$ reyndi [t$_i$ steininum] gafst upp
       he that lift   tried   the-stone gave up
       'The one who tried to lift the stone gave up.'

                                        (cf. Jónsson (1991,15))

(23)a. Þetta er maðurinn sem   lesa$_i$ kann [t$_i$ allar bækurnar]
       this is the-man that   read   can   all the-books
   b. Sá sem lyfta$_i$ vildi [t$_i$ steininum] gafst upp
       he that lift   would   the-stone gave up
       'The one who wanted to lift the stone gave up.'

Thus the data in (20)-(23) support the claim made here that infinitival *að* occupies a head position, both in control complements (AgrS° according to the analysis defended here) and modal complements (T° if my suggestion in (14) is correct). These results are not predicted, on the other hand, if infinitival *að* occupies SpecCP-position in Icelandic, as suggested by Kayne (1991).

The account just given makes further predictions, however: If the ungrammaticality of (20b) and (21b) results from violations of the HMC, as suggested, the present analysis predicts that fronting of maximal projections out of these infinitival complements should not be sensitive to the presence or absence of the infinitival marker, since it occupies an X° position and not an XP position. First note that it is possible to front NPs in relative clauses with a "subject gap" (as originally shown by Rögnvaldsson (1982)):

(24)a. Þetta er maður [sem   hefur lesið margar bækur]
       this is man that   has   read many   books
   b. Þetta er maður [sem margar bækur$_i$ hefur lesið t$_i$]
       this is man that many   books   has   read
       'This is a man that has read many books.'

As shown in (25) below, it is perfectly acceptable to front an NP out of control complements and modal complements with the infinitival marker *að* in place:[18]

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[17] The fact that SF out of modal complements becomes grammatical if the infinitival *að* is left out was originally observed by Sigurjónsdóttir (1989) and Sigurðsson (1989). They did not make the same observations about control complements, however, probably because *að*-deletion is frequently very difficult or impossible for some reason in the case of control complements. That is probably also the reason why Jónsson (1991) maintains that (22b) is quite unnatural and gives it two question marks.

[18]Actually, it is much worse to omit the infinitival marker in sentences like these. Thus (i) is quite unnatural:
(i) ?*Þetta er maðurinn sem   allar bækurnar$_i$ kann [lesa t$_i$]
     this is the-man that   all the-books   can   read
   'This is the man that can read all the books.'

(25)a. Þetta er maðurinn sem   allar bækurnar$_i$ lofaði [að   lesa t$_i$]
       this   is the-man   that   all the-books   promised to read
       'This is the man that promised to read all the books.'

b. Þetta er maðurinn sem   allar bækurnar$_i$ kann [?*(að)   lesa t$_i$]
   this   is the-man   that   all the-books   can   read
   'This is the man that can read all the books.'

This supports the present analysis, namely that the infinitival marker *að* in control complements and modal complements occupies head position and hence it blocks head movement out of these complements but not movement of maximal projections. Assuming that infinitival *að* occupies SpecCP, on the other hand, along the lines of Kayne (1991), would seem to make the wrong predictions here, especially under the common assumption that movement out of complements typically goes through the Spec-position associated with their head.

5. Verb Movement in *að*-Complements

Much of the literature on the Germanic verb-second phenomenon discusses the nature of Germanic verb movement (cf. Vikner (1992a,b), Jonas (1992), Thráinsson (1992)). In this literature it is usually assumed that certain adverbs, such as *aldrei* 'never', *oft* 'frequently', *stundum* 'sometimes', the negation *ekki* 'not', may be left-adjoined to VP (although it is also possible that some of them can also be left-adjoined to IP (assuming a non-expanded IP) or to TP in an articulated IP-structure like the one assumed here). Hence it is taken as evidence for movement of verbs out of their VPs if they precede any of these adverbs.

The explanations for this verb movement vary, depending on the framework adopted, and so does the actual mechanism assumed. There is no particular reason for us to go into any details of previous analyses here. For the sake of concreteness, however, it is necessary to review the assumptions about verb movement made in MPLT. Consider the simplified, partial structure in (26):

The fact that (i) is bad but examples where stylistic fronting out of *að*-less infinitival complements is good could be some sort of an ECP-phenomenon: The head position of the infinitival complement cannot be left empty (as in (i)) but moving a head through it and thus leaving a trace in it, as in (23a) above, saves it. I have no minimalist account to offer for this at present.

(26)
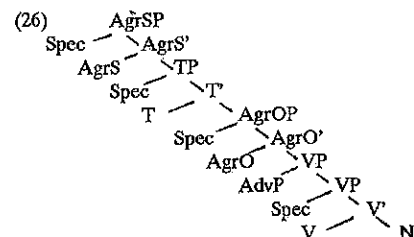
In MPLT it is assumed that the verb moves from the head position inside the VP to the AgrS-position, moving through and adjoining to the intermediate functional heads "on the way". Thus it "first" moves to AgrO° and adjoins to it, forming the complex head [$_{AgrO}$ V + AgrO]. Then this complex head moves to T° and adjoins to it, creating the new complex head [$_T$ [$_{AgrO}$ V + AgrO] + T], which then moves to AgrS° and adjoins to it in the same fashion. We will return to the relevance of this in the next section.

In MPLT it is assumed that all movement is driven by morphology in the sense that the motivation is the checking of morphological features. The V-features and N-features of the functional heads can be either strong or weak. Once a feature has been checked, it disappears. Strong features are visible at PF but uninterpretable whereas weak features are invisible at PF. This means that if a strong feature is not checked "before spellout", the derivation will crash because there will be an uninterpretable (visible) feature at PF. Thus the strong/weak dichotomy is basically a timing device: If a feature is strong, it needs to be checked before spellout and hence it will "trigger" overt syntactic movement for checking purposes. If a feature is weak, it does not need to be checked by spellout and hence it will not trigger overt syntactic movement.

Verbs (like other lexical elements) are assumed to emerge from the lexicon in fully inflected form and they must check their inflectional features against the verbal features (V-features, such as tense and agreement) of the functional heads. If the V-features of a given functional head are strong, it means that a verb must move (and adjoin) to that head to check these features. Thus if we say that the V-features of the AgrS-projection are strong in Icelandic, we are claiming (correctly, it seems) that the verb (of a finite clause) must move (and adjoin) to AgrS° to check agreement features (cf. Jonas (1992), Jonas & Bobaljik (1993, 70)). I the case of Icelandic, it is generally assumed that it moves through (and adjoins to) the intervening functional heads (AgrO° and T°) on the way, as described above. In English, where it is assumed that SpecTP is not available but the N-features of T are strong (and the V-features of T and AgrS weak), it is assumed that T° "raises independently" and overtly and adjoins to AgrS° and case (and agreement) features of the subject are then checked in SpecHead relationship of that complex head after overt movement of the subject to SpecAgrSP (cf. Jonas & Bobaljik (1993, 70-71)). The verb in English then raises at LF and adjoins to the complex head in AgrS°. - In addition, it must be assumed that the verb carries with it information about any idiosyncratic

morphological case it licenses in subject or object position.

While most of the literature on Germanic verb movement concentrates on verb movement in finite clauses, it has also been observed that verb movement seems to occur in certain types of infinitival complements, as already pointed out in Section 2.2 above (cf. also Thráinsson (1984), Sigurjónsdóttir (1989), Sigurðsson (1989), Hornstein (1990)). Now recall that under the hypothesis advocated here, the infinitival marker occupies the AgrS° position in control complements. I propose tentatively that AgrS° of control clauses bears a null agreement feature which can be checked off against this default að-head.

I propose further that T° in Icelandic carries strong verbal features. Hence finite as well as non-finite verbs have to move there to check the relevant V-features, presumably tense (cf. Stowell (1982)). But since T° is occupied by the infinitival að in modal complements, under the present analysis, there can be no movement of the verb to T° in these complements. We could then argue that að in T° is a "default" head which can only check off a null tense feature of T. This is initially plausible since I do not know of any evidence showing that modal complements have tense properties similar to those found in control complements, according to Stowell (1982).[19]

Third, we need to consider the question whether the the verb should move (and adjoin) to AgrO° in all of the complement types under discussion. If the V-features of AgrS and T in Icelandic strong, we could argue that the "original" movement of the verb through (and adjunction to) AgrO° was just a by-product and not motivated independently by strong V-features of AgrO. But if we accept Chomsky's (1992, 44) suggestion that there is in general no feature distinction between AgrS and AgrO, then it would seem that strong V-features of AgrS imply strong V-features of AgrO, forcing overt V-movement to AgrO° even when the verb cannot move any further, as in Icelandic modal complements. It is an interesting empirical question, however, whether this similarity between AgrS and AgrO can be maintained and we will suggest below that it cannot.

Now if verb movement plays a role in checking of case and agreement, differences between complement types with respect to verb movement should not only show up as mere differences of word order. They should also be reflected in case and agreement facts. We will see that this is indeed so in Icelandic. In this section, however, we will concentrate on the predicted word order differences, returning to case marking (checking) and agreement facts in sections 6 and 7.

Some relevant word order facts are illustrated in (27). In (27a) we see that the main verb étið 'eaten' follows the adverb stundum 'sometimes' and is (presumably)

sitting inside its VP since the finite auxiliary has occupied T° and moved to AgrS°.[20] In (27b) the finite main verb éti 'eat' has moved across the adverb, in (27c) we have similar movement of the infintival main verb éta 'eat', but in (27d) it is shown that this movement is impossible in modal complements:

(27)a.	Risarnir	segja	[að	þeir	hafi	stundum	[VP	étið	ríkisstjórnir]
	the-giants	say	that	they	have	sometimes		eaten	governments
b.	Risarnir	segja	[að	þeir	éti$_i$	stundum	[VP	t$_i$	ríkisstjórnir]]
	the-giants	say	that	they	eat	sometimes			governments
c.	Risarnir	lofa	[að		éta$_i$	oft	[VP	t$_i$	ríkisstjórnir]]
	the-giants	promise to			eat	frequently			governments
d.	*Risarnir	eiga	[að		éta$_i$	oft	[VP	t$_i$	ríkisstjórnir]]
	the-giants	ought to			eat	frequently			governments

Now it must be admitted that it is quite tricky for various reasons to use adverbial positioning as evidence for movement. One of these reasons is that certain adverbs do not appear to be semantically compatible with all types of infinitival complements, especially not the modal ones. But the adverb oft 'frequently' seems to be semantically compatible with modal complements. This adverb can occur VP-finally whereas many (sentential) adverbs, such as sennilega 'probably', cannot. This is illustrated in (28):

| (28) | Jón | hefur | hitt | nokkra | stúdenta | *sennilega/oft |
| | John | has | met | some | students | probably/frequently |

As shown in (29) below, oft can occur VP-finally in modal complements, so the ungrammaticality of (27d) cannot be due to semantic incompatibility of this adverb with the modal complement of eiga 'ought':

(29)	Risarnir	ættu	[að	éta	ríkisstjórnir	oftar]
	the-giants	ought to		eat	governments	more-frequently
	'The giants should eat governments more frequently.'

Hence the contrast between the control complement in (27c) and the modal complement in (27d) does not appear to be semantically-based. Rather, it must have to do with adverbial positioning and verb movement. If the relevant verb movement is movement to T°, which is possible in control complements but not in modal complements, because in the latter T° is occupied by the infinitival marker, then we have an account for this difference. But if the V-features of AgrO were strong in Icelandic, like the V-features of AgrS, then the verb should also move across the VP-adjoined adverb in modal complements. The fact that it does not indicates that AgrS

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[19]Actually, Stowell (1982) assumes that the tense feature (or property) is located in C° and Watanabe (1993, 288) adopts this proposal (see also Martin (1992)). This is meant to explain that ECM complements do not appear to have any tense properties, and the argument is that they do not contain a complementizer either. We cannot adopt this account since we are assuming that control complements do not have a C° either.

[20]The auxiliary could be "base generated" in T° and moved from there to AgrS° - or it could be base generated in its own V-projection and moved through all the intermediate functional heads on its way to AgrS°. Nothing hinges on the choice here, but in Section 6 below we will present an analysis of Object Shift facts assuming base generation of the auxiliary in T°.

and AgrO may differ.[21]

Finally, recall the difference between Icelandic and Swedish control complements observed in Section 2.2 above: evidence for verb movement in the Icelandic control complements, no such evidence in the Swedish ones. Now we have suggested that the relevant movement is to $T°$ and this can be expressed in MPLT by saying that the V-features of T are strong in Icelandic. The obvious solution would then be to say that the V-features of T are weak in Swedish, as has in fact been suggested by Jonas (1993).

6. Verb Movement and Object Shift

As originally observed by Holmberg (1986), Object Shift in Icelandic appears to be dependent on verb movement (cf. also Sigurjónsdóttir (1989), Déprez (1989), Jonas (1992), Jonas & Bobaljik (1993)). This is usually demonstrated by giving examples like (30), where the traces are intended to show movement of the subject, the finite verb and the object from their VP-internal positions:

(30)a. Risarnir$_i$ átu$_j$ ríkisstjórnina$_k$ ekki [$_{VP}$ t$_i$ t$_j$ t$_k$].
      the-giants ate   the-government   not
   b. *Risarnir$_i$ hafa$_j$ ríkisstjórnina$_k$ ekki [$_{VP}$ t$_j$ [t$_i$ étið   t$_k$]].
      the-giants have   the-government   not   eaten

In (30a) the main verb and its object have shifted out of the VP and across the sentential negation. In (30b) this is not possible. The standard assumption is that this is related to movement vs. non-movement of the main verb. In (30b) the auxiliary verb has presumably moved out of its VP (through $T°$ to AgrS$°$) and the main verb stays in its VP. An alternative analysis would be to say that the auxiliary is base generated in $T°$ and moves there to AgrS$°$. I will return to these alternatives below. In any case, it is clear that the main verb cannot move to $T°$ and AgrS$°$ in examples that contain an auxiliary.

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[21] Interestingly, however, the version where the adverb precedes the infinitival verb in a modal complement is no good either:
(i) *Risarnir eiga... [að.. oft   [$_{VP}$ éta-ríkisstjórnir]]
   the-giants ought to   frequently   eat governments
I have no explanation for this fact. It might suggest that the VP in the modal complements is defective in some sense, possibly only a (subjectless) V' and hence no adjunction is possible. We will return to that question in Section 7 below. - Note also that nothing can intervene between initival marker að and the relevant non-finite (infinitival) verb in Icelandic. This is what we would expect in control complements, given the verb movement analysis suggested above, but this is unexpected in the case of the modal complements where no verb movement seems possible. This might seem to suggest that the infinitival að is adjoined to the non-finite verb in modal complements. Then we would, however, expect that adjunction structure to move as a whole in Stylistic Fronting, but it does not:
(ii)   *Þetta er maðurinn er að lesa$_i$ kann [t$_i$ allar bækurnar]
     this   is   the-man   that to read   can   all   the-books

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The correlation between verb movement and Object Shift was explained in the following way by Holmberg (1986, 176): The trace of a shifted object is not allowed to bear case. "Non-empty" verbs obligatorily assign case to their object whereas traces of verbs do so only optionally. Hence there is a good derivation of (30a), namely one where the verb trace "chooses not to assign Case to its object" but no such derivation is available for (30b) since the non-empty verb must assign case to the trace of the shifted object, in violation of the principle that it cannot bear case.

It should be obvious that this kind of analysis is not available within MPLT. In that framework the object is shifted to SpecAgrO and has its case checked in a SpecHead relationship with the AgrO-head, either at LF or in the overt syntax. Examples like (30a) indicate that Object Shift can occur in the overt syntax in Icelandic, as Holmberg (1986) showed, but this is blocked where the main verb does not move, such as in constructions with auxiliary verbs like (30b). But how can this relationship between verb movement and Object Shift be accounted for in MPLT?

Jonas & Bobaljik (1993) suggest an answer to this in terms of the principle of Shortest Movement (SM). Consider the simplified partial structure given in (31), showing an intermediate stage in the derivation of (30a) (based on Jonas & Bobaljik (1993, 67)):

(31)
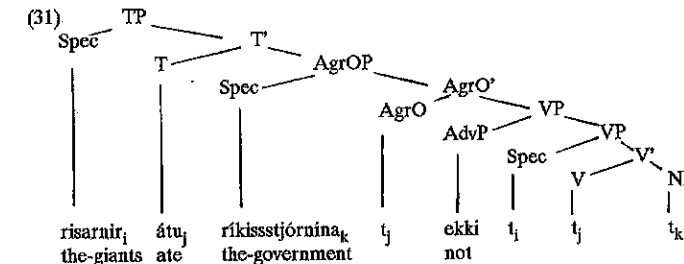
The derivation proceeds as follows:

First, the verb raises and adjoins to AgrO$°$, forming a chain {[V + AgrO]], t$_j$}, where the head is in AgrO$°$ and the foot in the head position of VP. Now there are two specifiers that stand in the relationship SpecHead to this chain, namely SpecVP (the base position of the subject) and SpecAgrOP. Thus these two specifier positions can be said to be equidistant with respect to this chain, e.g. from its complement, namely the object NP.

Second, since the verb has moved to AgrO and thus made the SpecAgrOP position an available landing site for the object (by making the filled SpecVP and the unfilled SpecAgrOP positions equidistant from the object), the object can now shift across the subject in SpecVP to the higher SpecAgrOP position without violating the principle of SM (cf. Jonas & Bobaljik (1993, 65)).

Third, the verb (or rather the complex head [$_{Agro}$ V + AgrO]) raises and adjoins to $T°$, creating a new chain where the head is this new complex head in $T°$ and the foot is the trace in AgrO$°$ (cf. (31)). This has the effect of making SpecTP and

SpecAgrOP equidistant from the subject in SpecVP. Hence the subject can now raise to SpecTP across the raised object in SpecAgrOP without violating the principle of SM. If the V does not raise to T°, SpecTP and SpecAgrOP would not be equidistant from SpecVP. Hence movement of the subject to SpecTP, 'skipping' the SpecAgrOP position, would be a violation of the principle of SM if the verb had not moved (and adjoined) to T°. Similarly, moving the subject directly to SpecAgrSP across a shifted object in SpecAgrOP would also be a violation of SM since SpecAgrSP and SpecAgrOP would not be equidistant from SpecVP, even if the verb had moved and adjoined to T°. On the basis of this, Jonas & Bobaljik (1993, 69) argue that overt OS is only possible in languages where SpecTP is available as a landing site (at least an intermediate one) for the subject. Otherwise there would be no way of "getting the subject out" of the VP across a shifted object in SpecAgrOP without violating SM.

We see, therefore, that Object Shift crucially depends on verb movement in this framework. Note, however, that Jonas & Bobaljik (1993) do not say explicitly how Holmberg's original observation about the impossibility of OS in auxiliary structures follows in their framework. This is not entirely simple since Holmberg did not assume an AgrO-projection at all and was thus only talking about movement of the verb to I° (i.e. T° or AgrS° in the present framework). The following is a possibility: Assume a structure like (32) for an example with an auxiliary verb:

(32)
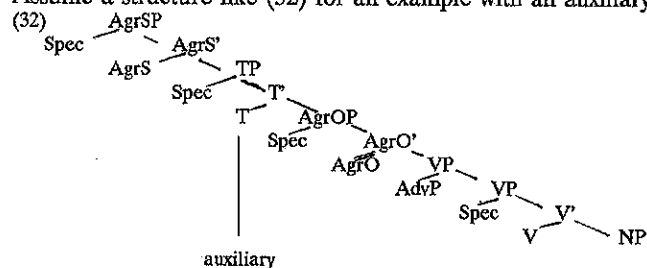
Assume, as before, that the verb adjoins to AgrO°. Now SpecAgrOP and SpecVP are equidistant from the object NP so the object can shift to SpecAgrOP without violating SM. But now the main verb cannot move further to T° since T° is occupied by the auxiliary. Hence SpecTP and SpecAgrOP will not be equidistant from the subject in SpecVP, by the definition of equidistance given above, so the subject cannot move to SpecTP to have its case checked without violating SM. This means, in effect, that "the first intervening filled specifier will always count as "the first appropriate landing site" and Shortest Movement will preclude movement to any position farther than this" (Jonas & Bobaljik (1993, 67)). The only instance where an intervening filled specifier can be 'skipped' is when head movement (adjunction) (or chain formation, rather, cf. above) has rendered "the specifier of the next phrase above this landing site equidistant from the starting point of movement" (ibid.). Crucially, it is only the "next specifier up" that is rendered equidistant by the chain formation involved in each head movement. Thus it would not "help" the subject to "cross" a shifted object if the auxiliary verb were to move from T° to AgrS°, creating

a chain with the complex head [_{AgrS} T + AgrS] and the tail in T°. Such a move would render the specfiers SpecTP and SpecAgrSP equidistant from the relevant starting point of movement but SpecAgrOP and SpecTP or SpecAgrOP and SpecAgrSP would not be rendered equidistant. Hence the subject in SpecVP would still be "trapped" - it could not move across the filled SpecAgrOP without violating shortest movement.

Note, on the other hand, that if the object does not move in overt syntax (which it does not have to do since OS is optional in Icelandic, as described by Jonas and Bobaljik (1993)), the subject can move directly to SpecTP for case checking purposes, since SpecAgrOP will not be filled and non-filled specifier positions are "non-existent" and thus "do not count for purposes of the "first appropriate landing site"" (Jonas & Bobaljik (1993, 67)). Hence no SM violation is involved. This way Holmberg's (1986) generalization is captured neatly in this framework without any additional stipulations or assumptions.

It has commonly be assumed in pre-MPLT frameworks that the verb in sentences like (30a) is simply movement to I°, (a part of) the reason being the need to pick up inflectional features.[22] As explained in Section 5 and in the discussion above, the verb moves in the present framework through various functional head positions, successively adjoining to these. Now given the dependency between verb movement and Object Shift just explained, we predict on the basis of the facts illustrated in Section 5 that Object Shift should be possible in finite complements (evidence for verb movement) and the infinitival complements of control verbs (evidence for verb movement) but not in modal complements (no evidence for verb movement). This prediction is borne out, as shown in (33):

(33)a. Risarnir sögðu   [að   þeir ætu_j   ríkisstjórnina_i   sennilega [_{VP} t_j t_i]]
         the-giants said   that   they ate   the-government   probably
         'The giants said that they would probably eat the government.'
     b. Risarnir lofuðu [að   éta_j ríkisstjórnina_i   ekki [_{VP} t_j t_i]
         the-giants promised to   eat   the-government   not
         'The giants promised not to eat the government.'

As expeced, no examples comparable to (33b) can be constructed with modal complements since there we have no evidence for verb movement. Hence Object Shift should be impossible there too.

But now consider the following: What if the verb in modal complements simply moves to AgrO° and thus makes SpecAgrOP and SpecVP (the subject position) equidistant from the object position? Should that not make OS in modal complements possible? In the preceding section we saw that there is indeed some reason to believe that there is no verb movement to AgrO° in modal complements. If that is true, then we cannot have OS since it would violate SM, as explained above.

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[22]Holmberg (1986) also wants to explain verb movement in terms of his system of categorial features, where predicate heads, like I° must be verbal ([+V]) and hence a verb must move to I°. We will not go further into this type of account here.

In addition, if the verb could move to AgrO° in modal complement and thus allow OS, we might expect sentences like the following (cf. (29) above):

(34)   *Risarnir   ættu $[_{TP}$ að $[_{AgrOP}$ ríkisstjórnirnar$_i$ étaj $[_{VP}$ SUBJ t_j t_i]]]
        the-giants ought   to   the-governments   eat

Here we have shifted the object across the verb and the strucure indicates that we assume verb movement out of the VP (and to AgrO°) to be a necessary condition for this. The ungrammaticality of (34) can be explained in various ways. First, it could be that overt verb movement to AgrO° really is ungrammatical in modal complements. Although it would be string vacuous in examples like (34), the object shift indicates that it must have taken place. Second, under a raising analysis of modal complements, as argued for in Thráinsson & Vikner (1992) for epistemic modals (at least), we have an alternative explanation for this: If the object moves, the subject (in this case *risarnir* 'the giants') cannot move across the filled SpecAgrOP without violating SM. This is exactly parallel to the case involving auxiliaries discussed above: No higher specifier position is made equidistant by head movement since the modal verb cannot move to T° and is thus "stuck" in AgrO°. Under a PRO-subject analysis, it is not entirely clear how this can be explained. The reason is that there is no obvious place for such a subject to get its (null) case checked anyway. We will return to these case checking questions in the next section.

7. Case and Agreement in Infinitival Complements

First, recall that we are assuming that PRO has case that needs to be checked. This would seem to be consistent with the null case analysis proposed by Chomsky and Lasnik (1991, Section 4.3) and further developed by Martin (1992) and Watanabe (1993). Watanabe argues, for instance (1993, 284), that infinitival T° bears the null case feature. Within the case checking system assumed here, this would seem to imply that PRO has to move to SpecTP to have its (null) case checked, just like other subjects in Icelandic, as originally argued by Jonas (1992). This is what we have been assuming for the PRO subject of control complements above. The analysis seems straightforward: The non-finite (infinitival) verb moves (through) AgrO° to T°, because of the strong V-features of T°, and the PRO-subject from SpecVP to SpecTP, as described in sections 5 and 6 above.

This account is not available for modal complements, however, under the analysis advocated here. The reason is that we have been assuming that the infinitival marker occupies T° in modal complements, there is no verb movement to T° and no SpecTP is available in these complements. Now if epistemic modals are raising verbs, as argued by Thráinsson & Vikner (1992), this seems to be the situation we want: The subject cannot check its case within the complement so it has to raise. The derivation (with a radically simplified structure) is sketched in (35):

(35)a. [e]   kann $[_{TP}$ $[_T$ að] $[_{VP}$ hann   fara]]
            may   to   he   go
    b. Hann$_i$ kann $[_{TP}$ $[_T$ að $[_{VP}$ t_i fara
        'He may go.'

This is a plausible analysis for epistemic modals since they do not assign a thematic role to their subject. It is not as plausible for root modals since they arguably assign a thematic role to their subject (cf. Thráinsson & Vikner (1992); see also Thráinsson (1986)).[23] Hence we might want to look for an alternative analysis of these.

Before turning to some relevant data, I will consider two possible alternatives here. One is to say that the PRO subjects of root modals need not move at all in the overt syntax for case checking purposes although PRO subjects of control complements do. Since there is no SpecTP (nor SpecAgrSP) for the PRO subjects of root modals to move to to have their case checked, they can just stay in SpecVP (and possibly have their null case checked in situ at LF). And although it is usually assumed in MPLT that the N-features of T are strong and thus must be checked off against a subject in overt syntax (the reflection of the Extended Projection Principle (EPP) in MPLT, cf. e.g. Jonas & Bobaljik (1993, 70)), a TP with an *að*-head is arguably a defective TP. Hence it is possible that it need not check its features in the overt syntax. The other alternative is that modal complements do not have a subject at all. I will leave the resolution of this problem for future research and turn instead to some data that indicate clear difference between control complements and modal complements in terms of case marking and agreement properties.

Recall that we have not discussed the relationship between case checking and licensing of (partially idiosyncratic) morphological case features. It is well known that Icelandic has so called quirky case marked subjects (see, for instance, Sigurðsson (1991), Schütze (1993) and references cited there). These subjects have the same "privileges of occurrence" as other subjects, i.e., they occur in all normal subject positions. They are, however, licensed by special verbs only. It would therefore seem natural to assume that a quirky subject verb that moves to T° may license a quirky subject in SpecTP. This is well known from finite clauses but it has been known for for a long time that this also holds in a sense for control complements to. The relevant data have been discussed in considerable detail by Sigurðsson ((1991), see also earlier references cited there). The basic facts involve quantifiers and quantifier-like elements that can float off of subjects (or be stranded in basic subject position, cf. Sporliche (1988)) and yet show agreement with the subject. This is illustrated in (36) where the subjects occur in different cases (cf. Sigurðsson 1991):

(36)a. Strákarnir   komust   allir   í   skóla
        the-boys(Npl,f) got   all(Npl,m) to school
        'The boys all managed to get to school.'

---

[23]Vikner (1988) argues, however, that (some) root modals do not assign a regular thematic role but rather an "additional" one. Hence they allow raising since an argument may have one regular thematic role and one additional thematic role.

b. Strákana   vantaði   alla   í   skólann
   the-boys(Apl,m) lacked   all(Apl,m) to school
   'The boys were all absent from school.'
c. Strákunum   leiddist   öllum   í   skóla
   the-boys(Dpl,m) bored   all(Dpl,m) in school
   'The boys were all bored in school.'
d. Strákanna   var   allra   getið   í   ræðunni
   the-boys(Gpl,m) was   all(Gpl,m) mentioned in the-speech
   'The boys were all mentioned in the speech.'

As shown by Sigurðsson (1991) and others, we get a similar agreement pattern in control complements where it would seem that the quantifiers are agreeing with the infinitival subject PRO:

(37)a. Strákarnir   vonast til [að PRO   komast   allir   í skóla]
       the-boys(Npl,m)   hope for to   get   all(Npl,m) to school
       'The boys hope to make it all to school.'
b. Strákarnir   vonast til [að PRO   vanta   ekki   alla   í skólann]
   the-boys(Npl,m)   hope for to   lack   not   all(Apl,m) in school
   'The boys hope not to be all missing from school.'
c. Strákarnir   vonast til [að PRO   leiðast ekki   öllum   í skóla]
   the-boys(Npl,m)   hope for to   bore   not   all(Dpl,m) in school
   'The boys hope not to be all bored in school.'
d. Strákarnir   vonast til [að PRO   verða allra   getið   í ræðunni]
   the-boys(Npl,m)   hope for to   be   all(Gpl,m) mentioned   in the-speech
   'The boys hope to be all mentioned in the speech.'

Interestingly, it seems impossible to find comparable evidence for case properties of PRO in modal complements. It would not be "fair" to test this with sentences that form "minimal pairs" with those in (37) since they could be ungrammatical for other reasons, such as attempted verb movement or the like. But secondary predicates like *einn* 'alone' also show comparable agreement with subjects and they can apparently occur VP-finally, as illustrated in (38):

(38)a. Stelpurnar   hafa   alltaf [VP unnið   verkið   einar]
       the-girls(Npl,f) have   always   done   the-job   alone(Npl,f.)
b. Stelpunum   hefur   alltaf [VP verið   leyft   þetta   einum]
   the-girls(Dpl,f) has   always   been   allowed   this   alone(Dpl,f)

As Andrews (1976) originally showed, secondary predicates like *einn* 'alone' show similar agreement pattern in infinitival control complements as observed in (37) for the quantifier *allur* 'all'. But it appears to be impossible to construct examples where a secondary predicate seems to agree in case with an infinitival PRO in modal complements:

(39)a. Strákarnir   eiga   [að   komast   þangað   einir]
       the-boys(Npl,m)   ought   to   get   there   alone(Npl,m)
b. *Strákarnir   eiga   ekki   [að   vanta   eina]
    the-boys   ought   not   to   lack   alone(Apl,m)

c. *Strákarnir   eiga   ekki   [að   leiðast   einum]
    the-boys   ought   not   to   be-bored   alone(Dpl,m)

d. *Strákarnir   eiga   ekki   [að   vera   getið   einna]
    the-boys   ought   not   to   be   mentioned alone(Gpl,m)

In (39a) we have Nom.pl. of the secondary predicate *einir* 'alone' in the infinitival complement but it could be agreeing with the matrix subject. All the examples where we have attempted to make the secondary predicate agree with a non-nominative PRO are ungrammatical, in contrast with comparable examples with the control complement in (37).[24]

We can conclude, then, that there are clear differences between control complements and modal complements in terms of case and agreement features. Some of these follow straightforwardly from the analysis presented here while others still await a satisfactory explanation.

8. Embedded Topicalization

Finally, recall that the analysis advocated here predicts that Topicalization should not be possible in infinitival complements even if it is possible in tensed complements in Icelandic. Consider the facts about embedded Topicalization. Consider first the basic clause structure assumed here, repeated in (40):

---

[24] The facts are actually more complicated than this. The sentences in (39b)-(39d) are also grammatical without the faulty agreement of the secondary predicate. The following, on the other hand, are good:

(i) a. Strákana   á   ekki   [að   vanta   eina]
       the-boys(Apl,m)   ought   not   to   lack   alone(Apl,m)
    b. Strákunum   á   ekki   [að   leiðast   einum]
       the-boys(Dpl,m)   ought   not   to   be-bored alone(Dpl,m)
    c. Strákanna   á   ekki   [að   vera   getið   einna]
       the-boys(Gpl,m)   ought   not   to   be   mentioned alone(Gpl,m)

Here the case of the matrix subject is determined by the verb in the infinitival complement and the secondary predicate agrees with it. As discussed by Thráinsson and Vikner (1992), this kind of "transparency" to downstairs case is only possible in epistemic modals, not root modals. Thus the modal verb in (i) has the epistemic reading in all instances and does not say anything about the obligation of the boys. Assuming a raising analysis of epistemic modals, we must say that the quirky case is determined by the infinitival verb but it can be licensed in subject position of the matrix verb, just as it can if it is an auxiliary or a 'seem'-type raising verb. But it cannot be licensed within the complement of a root modal, although it can be in the complement of a control modal.

(40)
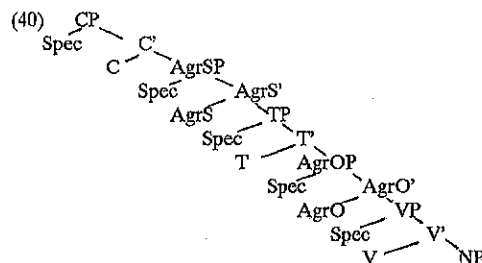
There are at least three different hypotheses around about the position of fronted XPs in Icelandic. These are listed in (41), together with references to some of their proponents:

(41) a. SpecCP   (Vikner (1992a, 1992b)).
     b. SpecAgrSP   (Jonas (1992), Thráinsson (1992). See also Rögnvaldsson & Thráinsson (1990)
                     (XP-fronting to SpecIP)).
     c. SpecFP   i.e., fronting to (the specifier position of) a special focus projection between CP
                     and AgrSP (Bobaljik & Jonas (1992), cf. Branigan (1992, section 4.2).

(41a) is the "standard" analysis of Topicalization. The reason that something like (41b) has been entertained for Icelandic (and Yiddish) is that Topicalization seems to be less restricted in embedded clauses in Icelandic than in most Germanic languages. While (41a) predicts that Topicalization should only occur in embedded clauses under special circumstances, such as in the case of CP-recursion, (41b) and (41c) predict that fronted XPs should be able to follow a complementizer in C^o quite freely.

Now if it is assumed that infinitival $að$ occupies C^o, just like the finite complementizer, fronted XPs might be expected to occur equally freely in infinitival complements as in finite complements in Icelandic (unless we adopt something like (41a) and have a motivated analysis of restrictions on CP recursion).[25] Under the hypothesis adopted here, on the other hand, where the infinitival markers occupy AgrS^o (in control complements) and T^o (in modal complements), fronted XPs should not be able to follow infinitival $að$ at all, since the position to which the XPs are fronted would be above the infinitival marker in any case. This prediction is borne out, as illustrated in (42)-(44) (cf. also (10) above):

(42)   Topicalization in finite complements:
   a. Risarnir   segja [að   þeir   éti ríkisstjórnina   á morgun]
       the-giants say   that   they   eat the-government   to-morrow
       'The giants say that they will eat the government tomorrow.'

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[25] For a discussion of restrictions on CP-recursions see Iatridou & Kroch 1992.

   b. Risarnir   segja [að   á morgun$_i$ éti   þeir   ríkisstjórnina t$_i$]
       the-giants say   that to-morrow eat   they   the-government
       'The giants say that tomorrow they will eat the government.'

(43)   Topicalization in control complements:
   a. Risarnir   lofa   [að   éta ríkisstjórnina   á morgun]
       the-giants promise to   eat the-government   to-morrow
   b. *Risarnir lofa   [að   á morgun$_i$ éta   ríkisstjórnina t$_i$]
       the-giants promise to   to-morrow   eat   the-government

(44)   Topicalization in complements of modals:
   a. Risarnir   eiga   [að   éta ríkisstjórnina   á morgun]
       the-giants ought   to   eat the-government   to-morrow
       'The giants are obliged to eat the government tomorrow.'
   b. *Risarnir eiga   [að   á morgun$_i$ éta   ríkisstjórnina t$_i$]
       the-giants ought   to   to-morrow   eat   the-government

This suggests that there is no topic/focus position available after $að$ in infinitival complements but there is one in finite $að$-complements, just as predicted by our analysis.

9. Conclusion

The purpose of this paper was to investigate the structure of infinitival complements, compare them to each other and to finite complements. After some basic facts had been outlined in introductory sections, an analysis was proposed that adopted the basic assumptions of Chomsky's (1992) MPLT. It was then shown that by making these assumptions and claiming that the infinitival marker in Icelandic occupies AgrS^o in control complements and T^o in modal complements, we could account for a wide range of facts in a straightforward way.

Since the infinitival marker is homophonous with the finite complementizer in Icelandic (and some other Scandinavian languages too, cf. the table in (3) above), many linguists have been tempted to assume that they are "the same" element and occupy the same structural position, namely C^o (cf. the overview in (4) above). The results presented in this paper argue strongly against such an analysis.

It is also interesting to note in this connection that Icelandic children appear to "acquire" the infinitival marker earlier than the (phonologically identical) complementizer - or infinitival complements before finite complements. Thus the Icelandic child Birna produced a variety of modal $að$-complements from age 2;0:19 to 3;1:28 (17 recordings of spontaneous speech with regular intervals), a few control complements towards the end of that period but not a single example of finite $að$-complement. Yet she could perfectly well produce finite forms of verbs (Sigríður Magnúsdóttir, p.c.). This can be interpreted as support for the analysis advocated here, namely that these different complement types are really structurally different.

Although we considered some basic facts from other Germanic languages at the beginning, most of the crucial data in the paper were taken from Icelandic. The next

task is obviously to try to extend this kind of analysis to other languages and to other types of infinitival complements, such as the complements of raising verbs and ECM verbs. While this will have to wait for further research, it seems clear that the preliminary results are promising. Further investigation in this are should shed new light on the nature and role of functional projections, case marking and agreement.

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