

**Adverb Climbing as Evidence for the Structure of Non-Finite  
Complements in English**

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## **Adverb Climbing as Evidence for the Structure of Non-Finite Complements in English**

### **ABSTRACT**

This paper looks at Adverb Climbing (AC), a syntactic configuration in which an adverb preceding a verb with an infinitival complement modifies the non-finite complement verb rather than the matrix verb (e.g. *He intentionally seemed to insult her*). Assuming Wurmbrand's analysis of Restructuring, I argue that the availability of AC with Raising verbs in English (e.g. *seem*) indicates that they take non-finite complements which lack a CP projection. In contrast, the non-finite complements of Control verbs (e.g. *try*) are full CPs. Following a comparison to Neg-Raising, with particular attention given to Klooster's (2003) approach, I will also argue that AC with a limited set of T-modifying adverbs is possible for English Control verbs that select 'temporally independent' infinitives (e.g. *want*) because these verbs have T-to-C movement within their non-finite complement clauses (cf. Landau 2003). This analysis will lead to a general proposal regarding the limitations on adverb distribution in English.

## 1 INTRODUCTION

Certain verbs in English take non-finite clauses as complements. These verbs can be categorised as Control predicates, which assign an external  $\theta$ -role to their subjects, and Raising predicates, which do not.

- (1) a. George seemed to insult Jane. (RAISING)  
 b. George tried to insult Jane. (CONTROL)

Many languages exhibit effects of ‘Restructuring’ with infinitival complements: operations that would normally be confined to a single clause appear to apply across the finite and embedded non-finite clause together. Recent approaches, most notably that of Wurmbrand (2001), have taken these ‘transparency effects’ to indicate that Restructuring predicates select for reduced non-finite complements lacking certain syntactic projections. Crosslinguistically, the distinction between Restructuring and Non-Restructuring verbs corresponds at least partially to that between Raising and Control verbs. However, no transparency effects have been attested in English.

Adverb Climbing (AC) refers to a syntactic configuration in which an adverb preceding a verb with an infinitival complement modifies the non-finite complement verb rather than the matrix verb. The literature contains some limited consideration of AC constructions in French (Kayne 1975; Bok-Bennema and Kampers-Manhe 1994; Cinque 2006), but no mention is made that English also exhibits this phenomenon.

- (2) George intentionally seems to have insulted Jane  
 = George seems to have intentionally insulted Jane

In this paper I will argue that AC in English is a transparency effect, in that the availability of AC with Raising verbs can be explained if they select for non-finite complements lacking a CP projection. In other words, English Raising and Control verbs don’t just differ in terms of  $\theta$ -role assignment, but have different types of infinitival complement. I will also posit that in instances where AC occurs with Control verbs it indicates head movement within the non-finite complement. This look at AC will include a proposal regarding the limitations on adverb distribution in English.

Section 2 of this paper will discuss the differences between Raising and Control verbs, and present a selection of data showing that AC of agent-oriented adverbs in English is limited to Raising verbs. I will then demonstrate that this restriction cannot be attributed to differences in  $\theta$ -role assignment. Section 3 will look at the reduced complement approach to Restructuring. I will make an initial proposal regarding the distribution of adverbs, and argue that, despite the non-occurrence of other transparency effects in English, the availability of AC with Raising verbs indicates that they select for smaller non-finite complements than Control verbs. Section 4 will present instances in which AC does occur with a particular set of Control verbs. I will consider approaches to Neg-Raising, arguing that, although AC appears similar, it is not the same phenomenon. I will then propose that AC with Control verbs can be accounted for if there is T-to-C movement within the non-finite complement. Section 5 will propose an additional constraint on adverb distribution. Section 6 will summarise the findings of the paper.

## 2 INITIAL DATA

### 2.1 *Diagnostics for Control and Raising*

Since Rosenbaum (1967), verbs which take infinitival complements have been distinguished according to whether they are ‘Control’ or ‘Raising’ predicates. Although superficially similar, Control and Raising verbs behave differently with respect to a number of diagnostics.

- (3)     a. George seemed to insult Jane. (RAISING)  
           b. George tried to insult Jane. (CONTROL)

The essential difference between these verbs is thematic: Control predicates assign an external  $\theta$ -role, whereas Raising predicates do not. As a result, passivisation of the infinitive changes the meaning of Control but not Raising constructions (Rosenbaum 1967).

- (4) a. The doctor tried to examine John  
       ≠ John tried to be examined by the doctor  
    b. The doctor seemed to have examined John  
       = John seemed to have been examined by the doctor

Additionally, Raising constructions allow idiomatic and expletive subjects, which are never assigned a  $\theta$ -role. Control constructions are ungrammatical with nonthematic subjects (Postal 1974).

- (5) a. The jig seems to be up  
       b. \*The jig wants to be up  
       c. It seems to be raining  
       d. \*It wants to be raining

Within the Government and Binding framework of Chomsky (1981) the contrasts between Control and Raising were explained as a difference between the types of empty categories which serve as the subjects of the infinitival complements, and the way the referents of these subjects are assigned. In Raising the infinitival subject is a trace  $t$ , left by movement to the subject position of the higher predicate. In Control the infinitival subject is PRO, a silent pronominal element that is co-indexed with the higher subject. As the head of an A-chain, PRO can bear a  $\theta$ -role; a trace cannot, as it is part of the A-chain headed by the matrix subject. The matrix subject and PRO are therefore assigned  $\theta$ -roles separately.

Assignment of a  $\theta$ -role to PRO prevents violation of the  $\theta$ -Criterion, which specifies that each argument may have only one  $\theta$ -role (and each  $\theta$ -role may be assigned to only one argument). In Raising constructions the subject is assigned its  $\theta$ -role in the infinitival complement before it moves to the matrix subject position. This is not a  $\theta$ -position, as Raising predicates do not assign  $\theta$ -roles to their subjects, and this movement therefore does not violate the  $\theta$ -Criterion.

- (6) a. George<sub>i</sub> seemed [  $t_i$  to insult Jane ]  
       b. George<sub>i</sub> tried [ PRO<sub>i</sub> to insult Jane ]

## 2.2 Adverb Climbing with Agent-Oriented Adverbs

Adverb Climbing presents another potential way to differentiate between Raising and Control verbs. The clearest instances of AC are those in which the main verb and the preceding adverb are thematically incompatible, as in (7): *seem* assigns no external theta-role to its subject, while the agent-oriented adverb *intentionally* requires an agent. *Intentionally* thus is unambiguously interpreted as modifying the embedded verb *insulted*.

- (7) George intentionally seems to have insulted Jane  
 = George seems to have intentionally insulted Jane

Sentences of this type sound awkward to some speakers, but are not ungrammatical. The Internet offers a number of examples apparently produced by native English speakers.

- (8) a. He intentionally seems to have left the minister in the dark.  
 b. The legislature quite intentionally appears to have elevated "labor" to the stature of a property.  
 c. ... his Lordship... intentionally appears to have obfuscated the facts of the meeting.  
 d. ... unless they... intentionally proceeded to publish the story to damage [his] reputation ...  
 e. A 'Facebook Troll' is a man or woman who intentionally tends to make inflammatory remarks...

The verbs that permit AC with *intentionally* (*seem*, *appear*, *proceed*, *tend*, etc.) are all Raising predicates. Control verbs preceded by *intentionally* do not allow for an AC reading.

- (9) a. He intentionally {appeared / proceeded / tended} to insult her  
 'He {appeared / proceeded / tended} to intentionally insult her'  
 b. He intentionally {wanted / tried / promised / forgot} to insult her  
 ≠ 'He {wanted / tried / promised / forgot} to intentionally insult her'

Instances where a Raising verb does not allow an AC interpretation may result from the impossibility of embedding a particular adverb under a particular Raising predicate. For example, because *happen* implies chance, *intentionally* rarely occurs in its complement; an AC interpretation will also be unavailable.

- (10) a. ?\*George happens to have intentionally insulted Jane  
 b. ?\*George intentionally happens to have insulted Jane

AC interpretations also occur with epistemic and deontic modal verbs taking bare infinitives. The possibility of AC with both types of modals is in accord with the idea that all modal auxiliaries are Raising verbs (Wurmbrand 1999)<sup>[1]</sup>.

- (11) (Adapted from examples found on the Internet)
- a. I unknowingly must have rolled my ankle (EPISTEMIC)  
 b. He voluntarily should resign from his position (DEONTIC)

These data suggest that the distinction between Raising and Control is the relevant one for the availability of AC interpretations in English.

Cinque (2006) claims that the availability of AC in French depends on irrealis context, but, as seen in (9)b, Control verbs that induce irrealis interpretation of their complements (e.g. *want* and *try*) do not permit AC readings with adverbs such as *intentionally*. AC readings are also not possible with subjunctive finite complements in English, as has been claimed for French (Cinque 2006).

- (12) I (willingly) asked (willingly) that he help with the washing up  
 ≠ 'I asked that he willingly help with the washing up.'

In fact, AC interpretations never occur with finite clauses, even with otherwise acceptable Raising predicates.

- (13) \*It intentionally {seemed / appeared} that George had insulted Jane

### 2.3 AC and $\theta$ -Role Assignment

Given that the divide between AC and non-AC verbs appears to align with the distinction between Raising and Control (but see §4 for instances of AC with Control verbs), initial examination of these examples points to the possibility that the availability of AC depends on  $\theta$ -role assignment.

As shown in the above data, agent-oriented adverbs (e.g. *(un)intentionally*, *(un)willingly*, *(un)knowingly*) allow for obvious examples of AC interpretation. In her examination of agent-oriented adverbs, Zubizarreta (1982) proposes the ‘Adjunct  $\theta$ -Criterion’, based on the observation that these adverbs are sensitive to agentivity distinctions. She claims that they have an ‘adjunct  $\theta$ -role’, which must combine with an ‘argument  $\theta$ -role’ in order to be assigned. Following this theory, AC interpretations would occur because Raising verbs lack the argument  $\theta$ -role required by these adjunct  $\theta$ -role assigning adverbs, forcing the agent-oriented adverb to modify the closest verb with an external argument.

However, although an agentivity mismatch between Raising verbs and agent-oriented adverbs sometimes blocks a matrix interpretation of the adverb, it cannot be the sole determining factor for the occurrence of AC. First, if agent-oriented adverbs simply sought the closest verb that assigned an external argument, there would be no reason for sentences with finite complements, such as (13), not to allow an AC reading

Second, AC interpretations occur with subject-oriented adverbs that are not agentive (e.g. *stupidly*, *quickly*)<sup>[2]</sup>. They are also available with frequency adverbs (e.g. *rarely*, *always*), although constructions of this type may be ambiguous between an AC reading and one in which the adverb modifies the matrix verb.



- (14) a. George stupidly seems to have answered the wrong questions  
       ‘George seems to stupidly have answered the wrong questions.’  
       b. George quickly seemed to grasp difficult concepts  
       ‘It quickly seemed that George grasped difficult concepts  
       ‘George seemed to quickly grasp difficult concepts.’ (AC)  
       c. George rarely seemed to have answered the right questions  
       ‘It rarely seemed as if George has answered the right questions’  
       ‘George seemed to have rarely answered the right questions.’  
       (AC)

Third, even non-agentive Control verbs do not permit AC interpretations with agent-oriented adverbs.

- (15) \*George intentionally managed to insult Jane

Finally, AC interpretations are only available when an adverb directly precedes the matrix predicate in a Raising construction. An adverb preceding an auxiliary will not have an AC interpretation, resulting in ungrammaticality if there is a thematic mismatch with the matrix verb. The same adverb may otherwise be grammatical in pre-auxiliary position.

- (16) a. George intentionally has insulted Jane  
       b. \*George intentionally had seemed to insult Jane  
       c. \*George intentionally must seem to insult Jane

I will return to AC with other types of adverbs in §4. For the moment, it is sufficient to note that this evidence indicates AC does not simply result from differences in  $\theta$ -role assignment, but must be subject to additional syntactic constraints. The following sections will show that the availability of AC interpretations depends on the size of the infinitival complement selected by the matrix predicate, which crucially differs for Raising and Control verbs.

### 3 AC AND RESTRUCTURING

#### 3.1 Restructuring Crosslinguistically

‘Restructuring’ refers to constructions in which an otherwise multiclausal structure exhibits monoclausal behaviour. The term originated with the idea that such constructions resulted from deletion of material in a full complement clause so that it was ‘restructured’ (Rizzi 1982). In other words, all complement clauses began as CPs, regardless of whether they were finite or non-finite, and regardless of what verb they were selected by.

Indicators of Restructuring, operations that seem to apply across two clauses when they would normally be limited to a single clause, are known as ‘transparency effects’. For example, the object clitic of an embedded infinitive may precede a matrix verb in Spanish and Italian, seemingly appearing outside the clause in which it originates (and is interpreted). Only certain predicates allow these ‘Clitic Climbing’ configurations.

(17) ITALIAN (Cinque 2001:1)

- a. *Lo volevo vedere subito*  
 him wanted.1SG to-see immediately  
 ‘I wanted to see him immediately.’
- b. \**Lo detesto vedere in quello stato*  
 him hate.1SG to-see in that state

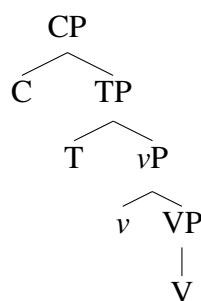
In German, Restructuring may be indicated by, among other phenomena, a Long Passive configuration, in which the matrix verb is passivised so that its subject corresponds to the embedded object in the equivalent active sentence.

(18) (Wurmbrand 2001: 19)

- a. *dass der Traktor zu reparieren versucht wurde*  
 that the tractor-NOM to repair tried was  
 ‘that they tried to repair the tractor’
- b. *dass die Traktoren zu reparieren versucht wurden*  
 that the tractors-NOM to repair tried were  
 ‘that they tried to repair the tractors’

The idea that Restructuring constructions are actually ‘restructured’, i.e. structure in the complement clause is deleted, has recently given way to theories in which they are never fully multiclausal. Within the Minimalist framework (Chomsky 1995), clauses are typically seen to consist of at least a Complementiser Phrase (CP), a Tense Phrase (TP), and a split Verb Phrase, comprising a *v*P and VP. Many authors have proposed that these should be split into additional projections, but these basic layers of structure will suffice for the current analysis.

(19) *Basic Clause Structure*



In approaching AC, then, I will base my arguments on Wurmbrand’s (2001) approach to Restructuring. Wurmbrand argues that certain non-finite complements lack some of the projections outlined above. Each transparency effect is pertinent to the structure of the complement clause: the more layers of structure are missing, the more transparency effects are possible.

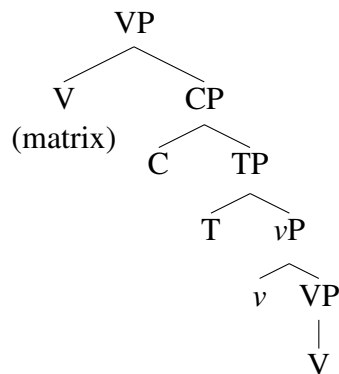
These effects do not always occur or fail to occur en masse (e.g. some German verbs permit Long-Distance Scrambling, another transparency effect, but not Long Passivisation). Wurmbrand therefore rejects a binary Restructuring/Non-Restructuring distinction as not sufficiently nuanced. She concludes that verbs taking infinitival clausal complements can be identified as belonging to four classes: Functional Restructuring, Lexical Restructuring, Reduced Non-Restructuring, and Full Non-Restructuring predicates.

The two Restructuring categories are divided according to whether they are in the ‘thematic domain’. Lexical Restructuring predicates assign external theta roles, and appear lower down in the clause, as they are not part of its functional structure. Functional Restructuring predicates are non-thematic, appearing higher in the clause as part of its functional structure. Both types of Restructuring verb take a reduced clausal complement, consisting of a bare VP, which

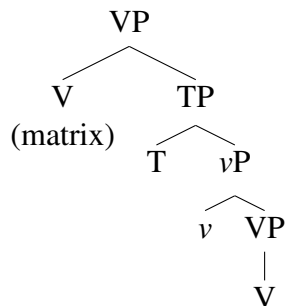
lacks TP and  $vP$  projections. Reduced Non-Restructuring predicates have complements which lack CP, but may have a  $vP$  and TP.

(20) *Types of Infinitival Complement*

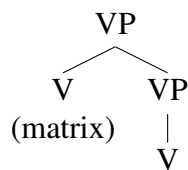
Non-Restructuring



Reduced Non-Restructuring



Restructuring



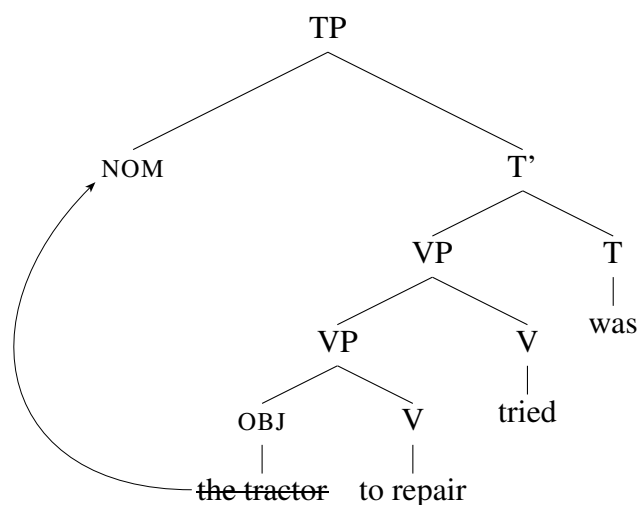
This hypothesis diverges from traditional approaches to Restructuring, which arrive at monoclausal structures by generating full CP complements and then excising unnecessary projections. Generating structure that has no meaning during any part of the derivation is unparsimonious and unmotivated, especially if syntax is not to be ‘templatic or vacuous’ (Wurmbrand 2001: 136). Restructuring is thus a matter of selection: different classes of verb select for specific types of infinitival complement.

Clitic Climbing and Long Passives fall out easily under this reduced complement approach. With Clitic Climbing, the infinitival complements of verbs

such as Italian *volere* ‘want’ lack the  $\nu$ P and TP projections present in the non-finite complements of verbs such as *detestare* ‘hate’. The embedded object must cliticise to one of these projections. When the relevant projection is unavailable in the complement clause the object clitic cliticises to the equivalent projection preceding *volere*. Clitic Climbing does not occur with *detestare* because the relevant projection for cliticisation of the object (TP and/or  $\nu$ P) is present in the non-finite complement clause.

The Long Passive follows straightforwardly if there is no  $\nu$ P in the embedded infinitive, forcing the embedded object to move up to Spec, $\nu$ P of the matrix predicate for case assignment. As a result, the embedded object is nominative instead of accusative, and undergoes agreement with the matrix verb. Long Passives do not occur with Non-Restructuring verbs because their complements have at least a  $\nu$ P layer, and the concomitant case-assigning positions, that Restructuring predicates lack.

(21) (Adapted from Wurmbbrand 1999: 22)



Neither of these phenomena exists in English, but the failure of these (and other) transparency effects to occur does not rule out the possibility that English non-finite complements vary in size. Lack of Clitic Climbing is not informative, given that English lacks object clitics entirely. Other diagnostics for Restructuring are unavailable for similar reasons. While Spanish and Italian show Auxiliary Change (from ‘have’ to ‘be’) in certain Restructuring contexts, this is impossible in English, which has no perfect auxiliary alternation. Likewise, while German permits Long-Distance Scrambling with Restructuring constructions, English has no form of scrambling at all. As for Long Passives, they

will be ruled out if reduced non-finite complements in English still have a *vP* projection. I will posit an analysis in which this is the case.

The most compelling evidence for differences in infinitival complement size comes from instances in which it is possible to have an overt complementiser with a non-finite clause. The fact that non-finite Control complements can occur with an overt complementiser in a variety of languages (e.g. Swedish, Icelandic, Hebrew, Welsh) has led to proposals that Control predicates take CP complements while the complements of Raising predicates lack a CP layer: based on this observation Landau (2003: 488) makes the ‘presumably universal’ generalisation that ‘Control complements may be introduced by complementizers; raising complements are never introduced by complementizers’.

For instance, Kayne (1981) argues that French *de* (and Italian *di*) is not analogous to infinitival *to* in English, but instead appears in C. He bases this claim on distributional differences between *de* and *to*: *to* co-occurs with *wh*-phrases while *de* does not, and though negation often precedes *to* in English, it must follow *de* in French. He also notes that the French *de* of infinitival complements is, unlike English *to*, incompatible with Raising. Dutch also permits an overt complementiser with Control verbs, but not Raising verbs.

(22) FRENCH (Adapted from Kayne 1981: 351f)

- a. *Jean a { essayé / oublié / décidé } de*  
 John has { tried / forgotten / decided } COMP  
*partir*  
 to leave
- b. *Jean { semble / paraît / se trouve / s'avère }*  
 John { seems / appears / happens / turns out }  
 (\**d'*) *être parti*  
 COMP to be left

(23) DUTCH (Koster and May 1982: 134)

*John hat geprobeerd om het boek te lezen*  
 John has tried COMP the book to read

Though some dialects allow overt *for* with infinitival complements (e.g. *I want for to leave*), Standard English does not (Landau 2000: 33). The impossibility of an overt complementiser with a Control complement means that one

important argument for a difference in the size of Control and Raising complements does not apply: with no overt instantiation of C in English, both could lack a CP layer.

In the following section I will posit that, although English does not show the differences between these verb classes that are apparent crosslinguistically, it nevertheless has some non-finite complements that are not full CPs. Specifically, I will take as a starting point the idea that the infinitival complements of Raising verbs lack a CP projection; this assumption will allow me to make a proposal about the limitations on adverb distribution which will explain the differences in AC between Control and Raising verbs in English.

### 3.2 *AC with Respect to Adverb Distribution*

There have been a number of theories about the limitations on adverb distribution crosslinguistically, and the way in which adverbs are licensed remains a point of contention. While extensive consideration of the numerous advantages and disadvantages of the most prominent hypotheses is beyond the scope of this paper, a brief discussion should be sufficient to demonstrate that they cannot account for AC.

Cinque's (1999) cartographic approach to adverb distribution has garnered a great deal of attention (cf. Alexiadou 1997). In essence, he argues that every clause (in every language) consists of a fixed, invariant structure composed of a multiplicity of functional projections. Adverbs undergo specifier-head agreement with the heads of these projections; particular adverbs occur in the specifiers of particular projections, depending on their semantic category. This hierarchy of projections is ordered, thereby accounting for the fact that adverbs of different types also seem to be ordered.

(24) CINQUE'S HIERARCHY (1999: 106)<sup>[3]</sup>

[ *frankly* Mood<sub>speech act</sub> [ *fortunately* Mood<sub>evaluative</sub> [ *allegedly* Mood<sub>evidential</sub> [ *probably* Mod<sub>epistemic</sub> [ *once* T(Past) [ *then* T(Future) [ *perhaps* Mood<sub>irrealis</sub> [ *necessarily* Mod<sub>necessity</sub> [ *possibly* Mod<sub>possibility</sub> [ *usually* Asp<sub>habitual</sub> [ *again* Asp<sub>repetitive(I)</sub> [ *often* Asp<sub>frequentative(I)</sub> [ *intentionally* Mod<sub>volitional</sub> [ *quickly* Asp<sub>celerative(I)</sub> [ *already* T(Anterior) [ *no longer* Asp<sub>terminative</sub> [ *still* Asp<sub>continuative</sub> [ *always* Asp<sub>perfect(?)</sub> [ *just* Asp<sub>retrospective</sub> [ *soon* Asp<sub>proximative</sub> [ *briefly* Asp<sub>durative</sub> [ *characteristically(?)* Asp<sub>generic/progressive</sub> [ *almost* Asp<sub>prospective</sub> [ *completely* Asp<sub>SgCompletive(I)</sub> [ *tutto* Asp<sub>PICompletive</sub> [ *well* Voice [ *fast/early* Asp<sub>celerative</sub> [ *again* Asp<sub>repetitive(II)</sub> [ *often* Asp<sub>frequentative(II)</sub> [ *completely* Asp<sub>SgCompletive(II)</sub>

From an adverb distribution perspective, the evidence on AC contradicts Cinque's proposal. According to his hierarchy of functional projections it should not be possible for a volitional adverb such as *intentionally* to appear above the evidential predicate *seem*, as the evidential head is located higher than the volitional one. *Intentionally* would have to move from its base position in the specifier of the volitional phrase in order to precede *seem*. While it allows verbs to raise over adverbs, though, Cinque's system does not license independent adverb movement. The specific hierarchy of functional projections he proposes is closely tied to data on the order of adverbs and verbal morphology; any deviation from this hierarchy therefore presents a fundamental challenge to his theory as a whole.

AC does not fare better under the the alternative analysis proposed by Ernst. He argues for a Fact-Event-Object calculus, in which an adverb may adjoin to any functional projection that provides correct semantic 'input'; particular adverbs are limited to particular types of semantic input.

## (25) (Ernst 2002: 53)

FEO-Calculus

Speech-Act > Fact > Proposition > Event > Specified Event

This semantic hierarchy does not map onto specific syntactic projections. The position of a given adverb is thus more flexible than in Cinque's proposal.



That said, under Ernst's analysis the adverb must take scope over any projection it precedes, as any projection it adjoins to contributes a specific type of semantic input. Contrary to this apparent requirement, AC adverbs have inverse scope with respect to the matrix verb. This proposal on adverb placement is therefore also inadequate for explaining the availability of AC readings.

### 3.3 AC for Raising Verbs

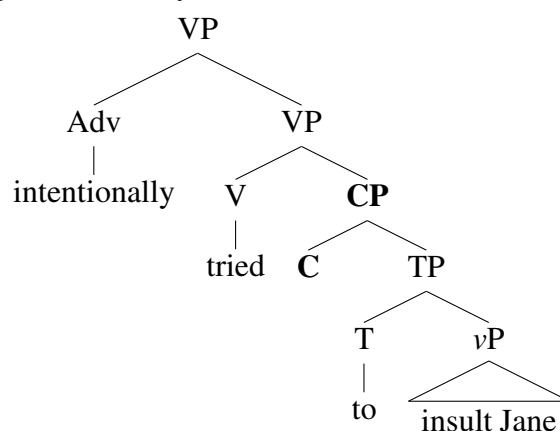
If non-finite Control complements are full clauses and Raising complements lack a CP layer, it becomes possible to explain why Raising verbs allow AC interpretations and Control verbs do not. This difference can provide more general insight into the limitations on adverb distribution, at least for English.

*Intentionally* is an agentive adverb. Unlike unequivocally verb-modifying manner adverbs, it can appear in a pre-auxiliary position.

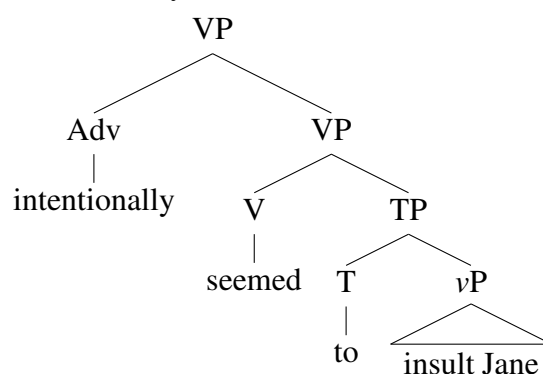
- (26) a. George intentionally has answered the questions  
 b. George cleverly has answered the questions  
     ≠ 'George answered the questions in a clever way'  
     (Verb-modifying manner reading)  
     = 'George was clever to answer the questions'  
     (Subject-oriented reading)

I take these characteristics to show that *intentionally* is a 'sentence-modifying' adverb, meaning that it modifies a sentential functional projection such as TP<sup>[4]</sup>. Presumably, this projection must be accessible to the adverb in order for the adverb to modify it. Under the assumption that the non-finite complements of Raising verbs do not have a CP projection, there is a clause boundary between the adverb and the lower TP when it precedes a Control verb, while no such boundary intervenes when it precedes a Raising verb.

- (27) a. George intentionally tried [CP [TP to insult Jane]]



- b. George intentionally seemed [TP to insult Jane]



If it is sufficient for an adverb to be in the same clause as the projection it modifies (rather than having to adjoin directly to that projection), then the interference of the clause boundary explains the basic distinction between Control and Raising in terms of the availability of AC interpretations.

This difference in the size of the infinitival complement does not account for the unavailability of AC interpretations when the adverb is above an auxiliary in the matrix clause.

- (28) \*George intentionally might seem to insult Jane.

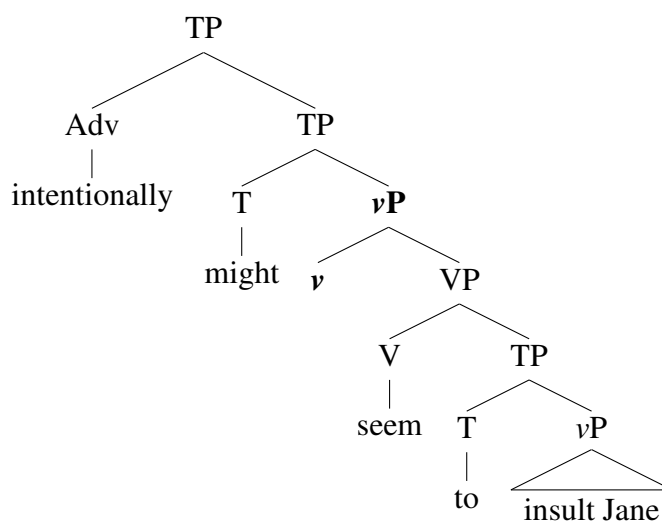
It must therefore be not just the clause boundary, but the phase boundary that is pertinent in terms of an adverb having access to the projection it modifies. A phase is a specific unit of syntax proposed as part of the Minimalist Programme (Chomsky 2001). Phases consist of CPs and  $v$ Ps, and are spelled out successively as the syntax is generated. A phase is sent to PF and only elements at its edge (in CP or  $v$ P) remain active in the syntax once generation of the

next phase begins. Phases account for successive cyclic effects, e.g. evidence that elements do not move across clauses indiscriminately, but apparently stop at certain points when undergoing cross-clausal movement.

Chomsky (2001), proposes that Raising verbs (along with other non-transitive verb forms such as passives and unaccusatives) do not constitute strong phases, i.e. are not  $\nu$ P. In the current analysis I will follow Legate (2003, 2005), who argues that Raising verbs do project  $\nu$ P, demonstrating that binding reconstruction effects, quantifier raising, and parasitic gap licensing all indicate that these verb phrases are phases. Inasmuch as my account of AC is successful it provides another argument in support of this conclusion.

In directly preverbal position an adverb will be adjoined to  $\nu$ P, allowing it to modify projections within that phase. When it appears before any preceding auxiliaries it will be outside the  $\nu$ P phase that minimally contains the infinitival TP.

- (29) a. George [ $\nu$ P intentionally seemed [ $\text{TP}$  to insult Jane]]  
 b. \*George intentionally might [ $\nu$ P seem [ $\text{TP}$  to insult Jane]]



With the AC interpretation unavailable, (29)b is unacceptable due to the agentivity mismatch between *intentionally* and *seem*, discussed in §2. Frequency adverbs may modify *seem*, and thus are grammatical with a matrix verb reading. As shown in (14)c (repeated in 30), they can be interpreted either as modifying the matrix predicate or the embedded predicate when directly preceding a Raising verb.

(30) George rarely seemed to have answered the right questions.

‘It rarely seemed as if George has answered the right questions’

‘George seemed to have rarely answered the right questions.’ (AC)

AC interpretations therefore result from an unusual configuration created by the reduced complement size of Restructuring infinitives. In a matrix clause, or one with a full CP complement, a TP will be minimally contained by a CP phase. When a predicate selects for a TP complement the TP will be minimally contained by a  $\nu$ P phase.

This data allow for a preliminary proposal regarding the distribution of adverbs in English:

(31) **An adverb must appear in the same phase as the projection it modifies.**

It also possible from this analysis to classify English verbs according to Wurmbrand’s (2001) Restructuring categories. English Control verbs are Non-Restructuring predicates, as they take a full CP complement. English Raising verbs are Reduced Non-Restructuring verbs, as they select for non-finite complements that lack a CP projection, but nevertheless have a  $\nu$ P and TP projections. English thus does not show transparency effects other than AC because the  $\nu$ P and TP layers are present in all non-finite complements.

In the next section I will consider further data which shows AC with Control verbs. I will compare these to Neg-Raising constructions and argue that these apparent exceptions do not show that Control verbs can also select for reduced non-finite complements. Rather, other characteristics that are limited to those Control verbs which allow AC will lead me to posit T-to-C movement within the complement CP.

#### 4 AC WITH CONTROL VERBS

AC interpretations with Control predicates are unavailable with agent-oriented adverbs, but this limitation does not extend to all adverbs. The sentence in (32)a is a counterexample to the generalisation that Control verbs do not allow AC, as it may be synonymous with (32)b<sup>[5]</sup>.

- (32) a. I always want to be with you  
 b. I want to always be with you

It is possible to show that (32)a permits a matrix interpretation by including an additional instance of *always* in the infinitival complement, thus forcing the matrix reading of the higher adverb.

- (33) I always want to always be with you  
 ‘I always have the desire to always be with you.’

Other contexts favour the lower reading.

- (34) I’m giving you this ring because *I always want to be with you*, for ever and ever

*Never* also permits AC interpretations with *want*.

- (35) I never want to see you again  
 ‘I want to never see you again.’

As shown by Horn (1978: 151), who quotes the poetry of Gelett Burgess, *never* permits an AC interpretation with *hope* as well.

- (36) I never saw a Purple Cow  
 I never hope to see one

In addition, *Hope* allows an AC interpretation with *always*.

- (37) I always hope to be with you  
 ‘I hope to be with you always’

*Hope* and *want* also permit AC interpretations with *soon*.

- (38) a. I soon hope to finish my book  
 b. ?I soon want to finish my book

*Expect* shows a similar pattern.

- (39) a. I always expect to be with you (for ever and ever)  
 b. I never expect to see you again (so we should say our final goodbyes)  
 c. I soon expect to see her

The AC interpretation is much less readily available with frequentative adverbs and these Control verbs.

- (40) I {usually / frequently / rarely} {hope / want / expect} to be with you  
 ??= I have a {hope / desire / expectation} to {usually / frequently / rarely} be with you

The AC interpretation also does not occur with other Control verbs, even with the same adverb and complement.

- (41) I {always / never / soon} {try / manage / forget} to be with you  
 ≠ 'I try to always be with you.'

Furthermore, when the matrix verb is not in the present tense it becomes more difficult to have an AC reading, though not impossible.

- (42) a. ?He had long lived in Edinburgh, and always wanted to stay there  
 b. ?He had never seen a Purple Cow, and never hoped to see one  
 c. ?He had never eaten haggis, but soon expected to try some

There are also restrictions specific to the different adverbs with *want*, *hope*, and *expect*.

#### 4.0.1 Always

If the verb in the infinitival complement is changed, the AC interpretation may not be available. (The following findings for *want* also apply with *hope* and *expect*.)

- (43) I always want to {eat cake / jump up and down / discuss syntax}  
 ≠‘I have a desire to always eat cake.’, etc.

That said, all complement stative verbs do allow an AC interpretation with *always* and *want*.

- (44) I always want to {love you / know you / have a book handy}  
 ‘I want to always love you.’, etc.

There is a requirement with *always want* that the state described in the complement clause is pre-existing. Thus (45) has only a matrix reading.

- (45) I live in Aberdeen, but I always want to live in Schenectady

Dynamic verbs can become acceptable with AC readings for *always want* if they describe an already established, repeated action, as in (46) (though a matrix reading is still possible as well).

- (46) I enjoy having cake every Monday. I always want to eat cake on Mondays!

This evidence highlights the fact that *always* has two possible interpretations, only one of which is available in AC with *want*. The matrix reading of *always* preceding *want* has the interpretation ‘all the time’, whereas the AC interpretation means ‘forever’. As such, it bears a closer relationship to *never* than to frequentative adverbs such as *usually*, *rarely*, etc., though these (including the other interpretation of *always*) are unequivocally acceptable in AC constructions with Raising verbs.

#### 4.0.2 Never and Soon

*Never* does not require a stative complement, or a pre-existing state. Rather, the complement of an AC construction with *never* and a Control verb must be irrealis. If the event has previously occurred, *again* appears in the embedded complement.

- (47) a. I never hope to see a Purple Cow  
 b. I never expect to see you (again)

*Soon* also requires an irrealis complement.

- (48) I soon hope to visit him.

Horn's 'Purple Cow' example is in fact cited as an instance of Neg-Raising, suggesting that these examples are actually just special cases of this other effect. I will explore this possibility in the following subsections, and conclude that although AC and NR are not the same, they can be analysed in a similar way.

#### 4.1 Neg-Raising

Neg-Raising (NR), in which *not* preceding a matrix verb negates the verb in the embedded clause, bears a strong resemblance to Adverb Climbing; both phenomena consist of an upstairs modifier with a downstairs reading.

- (49) Horn (1978: 129)  
 a. I don't think he has come  
 b. I think he has not come

In the surface interpretation of (49)a *think* is negated. Under the NR interpretation, which is often preferred, (49)a is semantically equivalent to (49)b.

Early treatments of NR dubbed it 'Not-Transportation', based on the idea that the negation in the matrix clause must have moved from the embedded clause (R. Lakoff 1969; Lindholm 1969; G. Lakoff 1970 and others). Arguments for this transformation depended on the licensing of NPIs in the embedded clause, the formation of tag questions, and the use of replacement by *it*.

R. Lakoff (cf. Klima 1964) observes that the NPI nondurative *until* may occur in the embedded clause with NR.



- (50) a. \*Mary would arrive until midnight  
 b. Mary wouldn't arrive until midnight  
 c. I didn't think that Mary would arrive until midnight

In order for the NPI to be licensed, R. Lakoff claims, *not* must have originated in the embedded clause. Otherwise, the clause boundary should preclude NPI-licensing.

Furthermore, NR sentences also permit positive tag questions.

- (51) I don't suppose the Yankees will win, will they?

Positive tag questions only apply to negative statements (and vice versa). Because the one in (51) questions the embedded complement rather than the whole sentence, R. Lakoff argues that the positive tag must have formed prior to movement of the negation out of the embedded complement.

Lindholm (1969) suggests that *it* pronominalisation also constitutes evidence for NR as a syntactic transformation (cf. G. Lakoff 1970).

- (52) I don't think Bill paid his taxes, and Mary is quite sure of it

He argues that *it* replaces constituents. In order for *it* in (52) to have the interpretation 'Bill didn't pay his taxes', *not* must have originated in the embedded clause.

However, as Jackendoff (1971) observes, embedded *until* is licensed not just in NR contexts, but also in sentences such as (53), where there is no overt negation in the matrix clause. In order for this example to be consistent with Lakoff's analysis of Neg-Raising, a negative element moved from the embedded clause would somehow have had to be incorporated into the matrix predicate *doubt*.

- (53) (Jackendoff 1971: 292)

I doubt that John will arrive until 4:00

This evidence undermines the claim that *until* (and other NPIs) may only be licensed in the same clause as negation.

Jackendoff also questions the idea that tag questions indicate constituency. He points out that if NR consists of movement of negation out of the embedded clause the acceptability of (54)a is unexpected given the ungrammaticality of (54)b.

(54) (Jackendoff 1971: 294f)

- a. I don't {think/?believe} they'll win, will they?
- b. I {\*think/?\*believe} they won't win, will they?

Horn (1978) re-examines the evidence from pronominalisation, suggesting that *it* does not have to replace constituents. He offers as a counterexample (55), from Cornulier (1974: 29).

(55) *Je ne sache pas qu' elle soit jamais venue, et tu t'*  
 I NE know not that she is ever come, and you REF  
*en doutes aussi bien que moi*  
 of-it doubt also well as me  
 'I don't know that she ever came, and you doubt it as much as I do.'

Although French *savoir* 'to know', like its English equivalent, does not allow Neg-Raising, pronominal *en* apparently replaces *qu'elle ne soit jamais venue* 'that she never came', meaning that pronominalisation of this type does not require constituency.

It has in fact been argued that NR is a purely semantic phenomenon. On one view, even in their different interpretations, NR constructions and their non-NR equivalents are synonymous by way of logical equivalence (Jackendoff 1971; Partee 1973). Thus the two interpretations are interchangeable, so that the higher one implies the lower.

Alternatively, the idea that NR constructions and their non-NR equivalents are not exactly synonymous has been used to argue against a syntactic account. Dwight Bollinger, quoted in R. Lakoff (1969), suggests that the further a negation is from the predicate it negates, the weaker its force. If a Neg-Raising construction and its corresponding embedded negation are not exactly semantically equivalent, then there is the question of how one can be derived from the other by movement of the negation (Horn 1978).

#### 4.1.1 A Selectional Solution for Neg-Raising

Klooster (2003) frames NR as a matter of selection. He argues that in cases of NR the matrix predicate takes as its complement a CP specified as negative. Especially compelling is his evidence from Basque, in which it is possible to

have a negative complementiser. In NR constructions in Basque, the negative complementiser must be realised. Otherwise, the negation will have a matrix interpretation. For example, (56)a has the negative complementiser *enik*, giving it an NR interpretation, while (56)b has the declarative complementiser *ela*, and lacks an NR reading.

(56) (Klooster 2003: 11)

- a. *Galileok ez zuen sinisten [ eguzika lurrari inguruka  
Galileo no had believed [ sun-the earth-to turns-in  
zebilenik ]  
went-that ]*  
'Galileo did not believe that the sun revolved around the earth'
- b. *Galileok ez zuen sinisten [ eguzkia lurrari inguruka zebilela ]*

An updated version of Klima's (1964) neg-absorption hypothesis, in which negation was generated in both the matrix and complement clauses before the lower one was deleted, Klooster's analysis eliminates the difficulties of treating NR as movement. It also accounts for the apparent idiosyncrasy of which predicates allow NR noted by Horn and Bayer (1984; cf. Horn 1978, 1989). If NR results from selection, then it is unsurprising that nearly equivalent predicates may differ in whether they allow it (e.g. German *hoffen* is a neg-raiser, but English *hope* is not; cf. Fischer 1999).

This account of Neg-Raising mirrors Wurmbrand's (2001) account of Restructuring, inasmuch as it depends on predicates' selecting for particular types of non-finite complement. There is similar crosslinguistic variation regarding what size of infinitival complement 'equivalent' verbs select for. Verbs that allow particular degrees of Restructuring do appear to form loose semantic classes, but these are subject to a great deal of variation, especially crosslinguistically. German *versuchen* 'try', for instance, is a Restructuring verb; English *try* does not even permit AC.

#### 4.1.2 Adverb Climbing as Neg-Raising?

Even with the *want* examples discussed above, there are significant differences between AC and NR. As shown in §2, AC does not apply across finite clause boundaries, even with verbs that otherwise allow an AC interpretation.

(57) It soon seemed that he had answered the questions

≠‘It seemed that he soon had answered the questions.’

Furthermore, NR is apparently limited to *not*. Negative adverbs such as *never* do not produce NR interpretations with typical NR predicates.

(58) I never thought he had any friends

≠‘I thought he never had any friends.’

Klooster classifies Horn’s (1978) *I never hope to see one* as a ‘pseudo-NR’ construction, because it does not have *not*. As Horn points out, *hope* is also not normally a Neg-raiser.

(59) I don’t hope that I will see a Purple Cow

≠‘I hope that I will not see a Purple Cow.’

*Never* is generally possible with AC interpretations with Raising verbs.

(60) He never seems to have answered the questions

‘He seems to have never answered the questions.’ (AC)

Klooster’s solution to the ‘Purple Cow’ exception is to claim that *never hope* is purely idiomatic. Given the extent of exceptions to the prohibition against AC with Control verbs such an explanation is unsatisfactory. Nor can this case be classed as an instance of NR, given that it not only has a non-NR predicate, but an analogous rule of ‘Pos-Raising’ would have to be instantiated in order to account for the possibility of *always* and *soon* in this construction

It is therefore unlikely that the negativity of *never* is significant. Rather, the important characteristic that groups *never* with *always* and *soon* is their status as temporal adverbs. In order to show this, it will first be necessary to look more closely at which Control verbs allow AC with these adverbs.

#### 4.2 Temporally Independent Infinitives

While Raising versus Control is the broadest distinction that can be made among verbs that take non-finite clausal complements, Control verbs can be divided into several subcategories. Among these are the class of verbs which allow Partical Control (PC), in which the matrix subject ‘controller’ is singular with an embedded predicate that requires a plural subject.

- (61) a. \*John met at 6  
b. John wanted to meet at 6

Landau (2003: 493) observes that ‘partial readings are not found in raising contexts’. Moreover, he notes that not all Control verbs permit PC.

- (62) a. \*John managed to meet at the cinema  
b. John wanted to meet at the cinema (PC)

Landau (2000, 2003, 2006, 2007) considers these Control verbs in terms of the tense of their complements. He argues that particular Control verbs select for ‘tensed’ infinitives (cf. Stowell 1982). Exhaustive Control (EC) predicates, which require PRO to be identical to the controller, lack independent tense specification, whereas PC infinitives do not. Thus *manage*, an EC verb, disallows use of contradictory time adverbs, as the temporal interpretation of the infinitive is dependent on that of the matrix clause. In contrast, contradictory temporal adverbs are acceptable with *want*, a PC verb, which selects for a temporally independent non-finite complement.

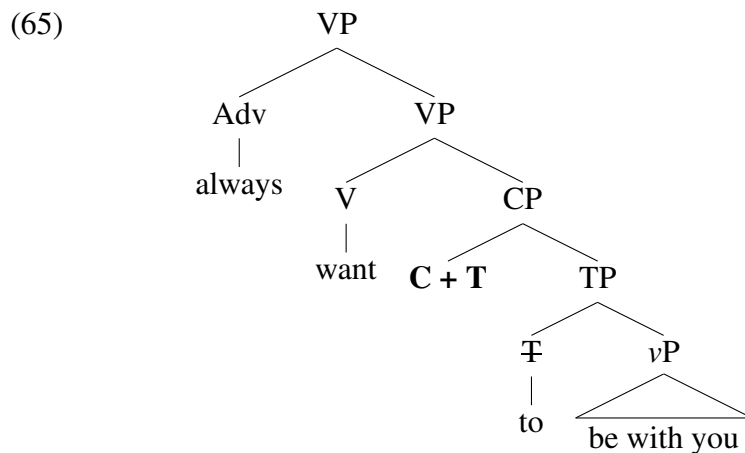
- (63) (Landau 2000: 6)  
a. \*Yesterday, John managed to solve the problem tomorrow  
b. Yesterday, John wanted to solve the problem tomorrow

Landau assumes that tense features are specified on C, such that it shares the features of the tense head. This concurrence of tense features is accomplished via T-to-C movement which, in untensed infinitives, fails to occur. Landau thus reduces the correlation between tense and Partial Control to an agreement operation: in EC the matrix subject agrees with PRO, while in PC it agrees with the tense head, which has raised to C.

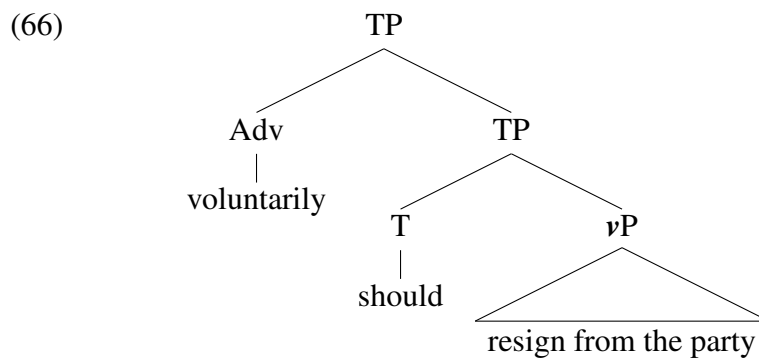
As it turns out, this correlation is relevant to AC. *Want*, *hope*, and *expect* are PC predicates; *try*, *manage*, and *forget* are not. PC predicates are therefore the same as those that permit AC readings with temporal adverbs and select for complements that have independent tense specification.

- (64) a. John {wanted / hoped / expected} to meet at 6  
b. \*John {managed / tried / forgot} to meet at 6

This correlation opens up the possibility that T-to-C movement in the temporally independent complements of verbs such as *want* can also offer an explanation for AC. If the tense features of the embedded clause are present in C, then they will be available at the phase edge when the rest of the phase is sent to PF. This should allow them to be visible to a temporal adverb preceding the matrix verb, allowing for an AC interpretation.



The analysis here requires a slight modification of the proposal regarding agent-oriented adverbs such as *intentionally*. Namely, they must modify some projection other than T, as otherwise Control verbs with ‘tensed’ non-finite complements would allow AC with these adverbs as well. The most likely candidate among the limited set of projections discussed in this paper is  $v$ . Classifying agent-oriented adverbs as  $v$ -modifying makes no difference to my previous proposal regarding the differences between Raising and Control constructions. It also better explains the availability of AC with modal verbs if the modal itself is in T, given that in these instances the adverb is modifying the lexical verb rather than the auxiliary.



The account of AC with Control predicates in this section also necessitates an addition to the criteria for adverb distribution proposed in (54). It allows an adverb to be interpreted if the projection it modifies has moved so that its features are visible at the phase edge. This specification is entirely in line with other arguments regarding the availability of elements at the phase edge once the rest of the phase has been sent to PF. In fact, it would be unexpected for the phase edge to be inaccessible only for adverbs. The modified criteria for adverb distribution are as follows:

- (67) a. **An adverb must appear in the same phase as the projection it modifies.**  
 OR  
 b. **An adverb must have access to the features of the projection it modifies at the edge of a lower phase.**

## 5 FURTHER RESTRAINTS ON ADVERB DISTRIBUTION

A requirement that a sentence-modifying adverb must be in the same phase as  $\nu$ P or TP does not actually account for all adverb distribution. This condition predicts that any sentence-modifying adverb should occur in any position within its minimally containing phase.

Many speakers have limitations, though, on how low certain ‘high’ adverbs can appear. While *cleverly* can directly precede the matrix predicate, evaluative (speaker-oriented) adverbs such as *fortunately* and *frankly* tend to be sentence-initial, and are marginal in lower positions.

- (68) (Fortunately) George (?fortunately) will (??fortunately) have  
 (??fortunately) eaten the cake.

Given that not all sentence-modifying adverbs have the same lower bound, there must be an additional constraint on their distribution. Without going to the extremes of an extensive clausal cartography of the type proposed by Cinque (1999), it is plausible that the CP phase may minimally contain multiple ‘sentential’ functional projections, and that different types of adverbs are sensitive to different semantic notions encoded in these projections.

Following Svenonius (2002), who suggests that an adverb must c-command the projection relevant to its interpretation, and that irrelevant intervening nodes will have no effect on its position or interpretation, it is possible to explain adverb distribution in terms of the criteria in (31).

- (69) a. (i) **An adverb must appear in the same phase as the projection it modifies.**  
 OR  
 (ii) **An adverb must have access to the features of the projection it modifies at the edge of a lower phase.**  
 AND  
 b. **The adverb must c-command the projection it modifies.**

While the phase determines the upper boundary for adverb position, the lower boundary is determined by what projection the adverb modifies, so that not all sentential adverbs necessarily have exactly the same distribution. A projection may be modified by an adverb if it has the feature required by that adverb for its interpretation. This analysis is thus similar to Cinque's in that specific types of adverbs relate to specific projections. It differs in that it would be possible for different adverbs to modify the same projections, or the same adverb to modify different projections. Furthermore, under the current approach the adverb does not have to be in the specifier of the projection that it modifies.

## 6 CONCLUSION

In this paper I have argued that Adverb Climbing in English, which has received no mention in the literature that I can find, can provide insight into the structure of non-finite clausal complements, as well as constraints on the distribution of adverbs. Adverb Climbing provides evidence for three types of infinitival complement.

This analysis follows Wurmbrand's (1999) approach to Restructuring, according to which transparency effects are situated on an implicational hierarchy which reflects different sizes of infinitival complement. English generally lacks transparency effects because it selects for complements with at least vP



<b>Matrix Verb</b>	<b>Non-Finite Complement</b>	<b>AC</b>
Raising	TP	Yes
Control: Tenseless Infinitive	CP	No
Control: Tensed Infinitive	CP with T-to-C movement	T-modifying adverbs

and TP projections. English Raising verbs, though, occur in Reduced Non-Restructuring constructions.

It is also comparable to Klooster's (2003) analysis of Neg-Raising. Although AC is a different phenomenon, it may obtain in a similar way. In AC constructions with Control verbs the relevant features for the interpretation of temporal adverbs appear at the clause edge (as the result of T-to-C movement), much in the way Klooster proposes that for NR to take place negative features must occur in C.

The account of AC proposed in this paper thus offers a more nuanced view of English complement structure than has previously been given. It has often been assumed either that English Raising and Control complements differ in size because this is the case crosslinguistically or, alternatively, that these complements do not differ in size because English does not exhibit transparency effects. Adverb Climbing offers some evidence in favour of the former conclusion. It also serves as additional data regarding the restrictions on distribution of adverbs in English. Further investigation will be necessary to determine whether the criteria for adverb distribution posited here hold up to broader scrutiny, both within English, and crosslinguistically.

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## FOOTNOTES

[1] Wurmbrand (1999) observes that although deontic modals may attribute obligation/permission to the subject, they need not, as in (i) (example from Wurmbrand 1999: 610).

- (i) The old man must fall down the stairs and it must look like an accident

The interpretation in (i) is that some person not mentioned is obliged to make these events happen, rather than the subject *the old man*. Wurmbrand thus argues that deontic modals do not assign external  $\theta$ -roles, and any direction of obligation/permission toward the subject results from context rather than  $\theta$ -role assignment.

[2] Subject-oriented adverbs describe the behaviour of the subject, but not in terms of agency, and thus can be used with non-volitional actions.

- (i) Jane stupidly tripped and fell over  
(ii) George quickly had become confused

[3] This ‘approximation’ of the universal syntactic hierarchy of functional projections contains 30 categories, with the implication that there are likely far more.

[4] I will revise my hypothesis about which projection such adverbs modify in the final section. For the moment, the exact identity of the projection modified has no bearing on the analysis.

[5] I am grateful to an anonymous reviewer from CGSW 25 for bringing this to my attention.