Phasing the Domain of Adverb Licensing

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It has often been claimed that adverbs are freely distributed within a sentence (Keyser (1968), Emonds (1976), Baltin (1982)). However, as pointed out by linguists such as Jackendoff (1972), Travis (1988), and Cinque (1999), the free distribution of adverbs is only apparent, that is, the distribution of adverbs is in fact fairly restricted, apart from some residual cases of free distribution. The purpose of this paper is to explain the distributional restriction and freedom of adverbs.

We propose that the distribution of adverbs can be well-captured by a local condition on the adverb licensing based on the Phase Theory (Chomsky (1998, 1999)). Our analysis can explain the distribution of Class V and VI adverbs as well as other adverbs, which have not been given a deep research since Jackendoff (1972). The AspP phase was hypothesized to capture the distribution of Class VI adverbs. We provided an independent evidence for the AspP phase. The distributional difference between Class V adverbs and other adverbs is captured in the light of the complement-vs-adjunct distinction.

We critically reviewed two different types of approaches to the adverb distribution in comparison to our analysis: adverbs as heads (Travis (1984)) and adverbs as specs (Laenzlinger (1993), Rijkhoek (1994), Alexiadou (1997), Cinque (1995, 1999)). We have shown that treating adverbs as heads or specs is not right in consideration of Relativized Minimality and several other points and that neither the head analysis nor the spec analysis can explain the whole range of adverb distribution data.

1. Introduction

It has often been claimed that adverbs are freely distributed within a sentence (Keyser (1968), Emonds (1976), Baltin (1982)). However, as pointed out by linguists such as Jackendoff (1972), Travis (1988), and Cinque (1999), the free distribution of adverbs is only apparent, that is, the distribution of adverbs is in fact fairly restricted, apart from some residual cases of free distribution. The purpose of this paper is to explain the distributional restriction and freedom of adverbs.

We will first go over the relevant data. The main thrust of the present
study is that the distributional differences under investigation are best captured in the light of the complement-vs-adjunct distinction and can be explained in what seems to be a straightforward way by a local condition on adverb licensing that draws on the Phase Theory (Chomsky (1998, 1999)). We will show how the analysis advanced here compares with the previous ones.

II. Adverb Distribution

1. Distributional Restriction

Sentences in (1) below may suggest that adverbs can occur in various positions of a sentence without restrictions.

(1) a. Cleverly, John has been answering their questions.
    b. John cleverly has been answering their questions.
    c. John has cleverly been answering their questions.
    d. John has been cleverly answering their questions.
    e. John has been answering their questions cleverly.

However, Jackendoff (1972), classifying adverbs into six major types with respect to their possibilities of occurrences in a sentence, observes that the free distribution in fact applies only to some types of adverbs and further that even these types of adverbs exhibit meaning change depending on the position in which they occur. That is, according to him, only Class I and II adverbs exhibit free distribution as in (3) and (4).

(2) Class I : Initial, Aux, VP-final (meaning change)

   cleverly, clumsily, carefully, carelessly, happily, truthfully

Class II : Initial, Aux, VP-final (no meaning change)

   quickly, slowly, reluctantly, sadly, quietly, frequently

(3) a. Clumsily, John dropped his cup of coffee.
    b. John clumsily dropped his cup of coffee.
    c. John dropped his cup of coffee clumsily.
(4) a. *Slowly, John dropped his cup of coffee.
b. John slowly dropped his cup of coffee.
c. John dropped his cup of coffee slowly.

For Class III and IV adverbs, it is not the case that they may appear anywhere in a sentence. Class III adverbs can appear in the Initial position and in the Aux position only as illustrated in (6), whereas Class IV adverbs can be located in the Aux position and in the VP-final position only as shown in (7).

(5) Class III: Initial, Aux
   evidently, probably, certainly, unfortunately, naturally

Class IV: Aux, VP-final
   completely, easily, totally, handily, badly, mortally

(6) a. Evidently George read the book.
b. George evidently read the book.
c. *George read the book evidently. (without comma intonation)

(7) a. *Completely George read the book.
b. George completely read the book.
c. George read the book completely.

Rochette (1990) notes that the distribution of Class III and IV adverbs is in fact more restricted than what Jackendoff (1972) observes. Consider the data in (8).

(8) a. George probably/*completely has read the book.
b. George will probably/*completely have read the book.
c. George will have *probably/completely read the book.
d. George has probably/completely read the book.

While the data in (6) and (7) seem to show that both Class III and IV adverbs can occur in the Aux position, the data in (8) which involve auxiliary verbs indicate that the Aux position should be redefined along the different adverb classes. The adverbs of Class III, like probably, can appear immediately to the left or to the right of the first auxiliary, but they cannot appear after the second auxiliary. On the other hand, the adverbs of Class
IV, like completely, can appear only in the position that immediately precedes the main verb, but not in the Aux position that is separated from the main verb.

The distribution of Class V and VI adverbs is much more restricted than that of Class III and IV adverbs. As illustrated below, Class V adverbs can appear only VP–finally, while Class VI adverbs can be located only in the Aux position.

(9) Class V: VP-final
    
    hard, well, more, less, early, fast, home, slow, terribly

Class VI: Aux

    truly, virtually, merely, simply, hardly, scarcely

(10) a. *Hard John hit Bill.
    b. *John hard hit Bill.
    c. John hit Bill hard.

(11) a. *Simply Albert is being a fool.
    b. Albert is simply being a fool.
    c. *Albert is being a fool simply.

The data from our informant below show that Class VI adverbs cannot precede the first auxiliary. That is, the Aux position of Class VI adverbs excludes the left of the first auxiliary.

(12) a. *Albert simply has been being a fool.
    b. Albert has simply been being a fool.
    c. Albert has been simply being a fool.
    (thanks to Kari Eline Schenk (p.c.))

(13) a. *He merely will be having the most exciting time of his life.
    b. He will merely be having the most exciting time of his life.
    c. He will be merely having the most exciting time of his life.
    (thanks to Kari Eline Schenk (p.c.))

Even for the adverbs of Class I and Class II, which seem to enjoy free distribution, Jackendoff (1972) and many other linguists (Thomason and Stalnaker (1973), McConnell-Ginet (1982), Travis (1988), Rochette (1990),
Cinque (1999)) argue that these adverbs exhibit meaning change depending on the position in which they occur.\(^1\) Consider (1), the example of Class I adverb, again.

(1) a. *Cleverly*, John has been answering their questions.
    b. John *cleverly* has been answering their questions.
    c. John has *cleverly* been answering their questions.
    d. John has been *cleverly* answering their questions.
    e. John has been answering their questions *cleverly*.

Despite the apparent free distribution of the adverb *cleverly* illustrated in (1), the sentences in (1 a, b, c) have the subject-oriented interpretation (14a) only, while the manner interpretation (14b) only is possible in the cases of the sentences in (1 d, e).

(14) a. It was clever of John to have answered their questions.
    b. The way John answered their questions was clever.

A similar sort of meaning change depending on the position can be found with Class II adverbs as well. Consider (15).

(15) a. *Quickly*, John will be arrested by the police.
    b. John *quickly* will be arrested by the police.
    c. John will be *quickly* arrested by the police.
    d. John will be arrested *quickly* by the police.

Even though the adverb *quickly* shows the apparent free distribution in (15), it receives different interpretations depending on its position; in (15 a, b) it modifies the event of arrest, while in (15 c, d) it modifies the process of the arrest. In other words, in (15 a, b) the arrest will happen right away, while in (15 c, d) the manner of the arrest will be hurried.

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\(^1\) More correctly, as for Jackendoff (1972), he claimed that only Class I adverbs show the meaning difference depending on the positions. Other linguists later argued that not only Class I but also Class II adverbs show the meaning difference.
2. Distributional Freedom

The previous section has shown that the distribution of adverbs is fairly restricted despite the apparent free distribution. However, there still remains some distributional freedom of adverbs. This can be found in the alternation of the initial position, the pre-aux position, and the post-aux position (Class I adverbs: (1a), (1b), and (1c), Class II adverbs: (15a) and (15b), Class III adverbs: (6a) and (6b)) and in the alternation of the pre-verbal position and the post-verbal position (Class I adverbs: (1d) and (1e), Class II adverbs: (15c) and (15d), Class IV adverbs: (7b) and (7c)).

In what follows, we will explore the way to capture the distributional restriction and freedom of adverbs. We will argue that this can be done by a local condition based on the Phase Theory of Chomsky (1998, 1999) and the complement-vs-adjunct distinction.

III. Phasing the Domain of Adverb Licensing

Before delving into a possible local condition on adverb licensing, a brief survey of Chomsky’s (1998, 1999) Phase Theory seems to be in order.

1. The Phase Theory

Chomsky (1998, 1999) introduces the notion of phase. Phases are propositional syntactic objects, i.e., either a verb phrase in which all theta roles are assigned or a full clause including tense and force. Derivations proceed phase by phase; at each stage of the derivation the computation extracts a subset LAi, which contains an occurrence of C or v, determining clause or verb phrase. For example, (16) has the four phases bracketed.

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2 Computational derivation selects a lexical array LA from LEX (Lexicon), dispensing with further access to LEX. At each stage of the derivation a subset LAi is extracted from LA.

3 v is a light verb over the lexical verb V. Chomsky (1998, 1999) suggests that v is Φ-complete only in a construction with full argument structure, i.e., a transitive or experiencer construction, calling this v v+. Only v vP but not vP is a strong phase relevant for the EPP features, movement, and the PIC, etc. In this paper we will not distinguish them unless the distinction is relevant.
(16) \[ \text{CP}_1 \text{ John } [\text{VP}_1 \text{ t thinks } [\text{CP}_2 \text{ Tom will } [\text{VP}_2 \text{ t win the prize}]]]] \]

Phases satisfy a cyclicity condition (17).

(17) The head of a phase is inert after the phase is completed, triggering no further operations.

That is, a phase head cannot trigger Merge or Agree\(^4\) in a later phase. Therefore, all selectional requirements (including the EPP for T and for v/C and selection of the external argument for v if required) must be satisfied at the phase that are currently being derived. Otherwise, the derivation crashes at the phase level.

The phase-impenetrability condition (the PIC) (18) mandates that the non-final stages of successive-cyclic movement (A⁻ or A'-'movement) target the edge of every phase.

(18) In phase \(a\) with head H, the domain of H is not accessible to operations outside \(a\), but only H and its edge (= specs or adjoined elements).

According to the PIC (18), no element in the complement domain of a phase head can undergo Merge, Agree, or Move once a phase \(a\) is completed. Therefore, given the PIC, which article in (19), for example, can move to the current position only when it has moved to the spec of \(\text{VP}_1\) before the phase \(\text{VP}_1\) is completed. In turn, it can move to the spec of \(\text{VP}_1\) only when it has moved to the spec of \(\text{CP}_2\), to which it can move again only when it has moved to the spec of \(\text{VP}_2\).

(19) \[ \text{CP}_1 \text{ Which article do you } [\text{VP}_1 \text{ think } [\text{CP}_2 \text{ that John will } [\text{VP}_2 \text{ t read t}]]]]? \]

\(^{4}\text{Merge}\) is an operation that takes two syntactic objects \((\alpha,\beta)\) and forms \(K(\alpha,\beta)\) from them. \textit{Agree} is an operation that establishes a relation (agreement, Case-checking) between a lexical item and a feature in some restricted search space. Combining \textit{Merge} and \textit{Agree} leads to the operation \textit{Move}. The operation \textit{Move} establishes agreement between \(\alpha\) and F and merges P(F) to \(\alpha P\), where P(F) is a phrase determined by F and \(\alpha P\) is a projection headed by \(\alpha\). P(F) becomes \text{SPEC}-\(\alpha\).
In short, the PIC requires that an element move successive-cyclically through the spec of each phase head, having the effect of the economy condition short movement.

2. A Local Condition on Adverb Licensing

As was already mentioned, the local condition on adverb licensing can be best formulated within the framework of the Phase Theory. As a preliminary to the relevant formulation, let me first sketch the basic notion of adverb licensing that I am driving at.

2.1. Adverb Licensing

Let us consider what licenses adverbs. Travis (1988) and Tang (1990) argue that it is heads that license adverbs. Then, which head licenses which adverb? On this matter, we assume that a head can be a licensor of an adverb if the projection of the head is the domain the adverb can modify or have the scope over (Tang (1990)). For example, manner adverbs can have the scope over VP – the syntactic counterpart of action (or state) – and thus V is a licensor of these adverbs. Subject-oriented or event adverbs can modify IP and speaker-oriented adverbs are CP-modifiers. Therefore, I is a licensor of subject-oriented or event adverbs and C is a licensor of speaker-oriented adverbs. Notice that different adverbs may be licensed by the same head since they may have the scope over the same domain and that the same adverbs may be licensed by different heads, for some adverbs (like temporal and locative expression) can modify different domains.

Next, let us consider the structural status of adverbs: what are adverbs licensed as? Adverbs are generally assumed to be licensed as adjuncts (Chomsky (1986, 1995, 1998, 1999), Zubizarreta (1982, 1987), Sportiche (1988, 1994) among others), i.e., elements that are not lexically selected by a predicate and do not obligatorily appear in a sentence. We will take this general assumption. As for the adjunction direction, we assume that adverbs are always left-adjointed in English.\footnote{Unless the adverbs have the comma intonation in the sentence–final position, in which case adverbs are right-adjointed.} As for the adjunction site, we assume that adverbs cannot be base-adjointed to XP if XP has a semantic role at LF or more correctly if XP is theta-related (an argument or a predicate) (Chomsky (1995)).
2.2. A Local Condition

Given the assumption of the previous section that adverbs are licensed as adjuncts by a head whose projection can be modified by the adverbs, one might wonder how far adverbs can be away from the licensing head. We propose the following local condition on adverb licensing.

(20) Local Condition on Adverb Licensing
Adverbs and the licensing head are in the same phase.

According to (20), an adverb can be licensed by a head only when they are in the same phase. (20) requires that manner adverbs should be in the same phase as the licenser V. Subject-oriented or event adverbs should be in the same phase as I and speaker-oriented adverbs should be in the same phase as C.

IV. Explaining the Distribution of Adverbs

Having proposed a local condition on adverb licensing based on the Phase Theory, we are now to show how the local condition captures the distributional restriction and freedom of adverbs.

1. Class I and II Adverbs

First, let us consider the meaning change of Class I and II adverbs depending on the position. We have seen that Class I adverb *cleverly* has a subject-oriented interpretation in (1 a, b, c), whereas it has a manner interpretation in (1 d, e). We have also seen that Class II adverb *quickly* has an event reading in (10 a, b), while it has a process reading in (10 c, d).

(1) a. *Cleverly*, John has been answering their questions.
    b. John *cleverly* has been answering their questions.
    c. John has *cleverly* been answering their questions.
    d. John has been *cleverly* answering their questions.
    e. John has been answering their questions *cleverly*.

(10) a. *Quickly*, John will be arrested by the police.
    b. John *quickly* will be arrested by the police.
c. John will be *quickly* arrested by the police.

d. John will be arrested *quickly* by the police.

The meaning change can be explained well by the local condition in the following way: *cleverly* in (1) can have scope over either IP or VP. To modify IP, it must be licensed by I. To be licensed by I, it must be in the same phase as I, i.e., the CP phase. On the other hand, to be a modifier of VP, it must be in the same phase as the licenser V, i.e., the vP phase. It is in the phase CP in (1 a, b, c) - being adjoined to CP or IP in (1a), to I' in (1b), and to AspP⁶ in (1c). Since it is in the same phase as the licenser I, the adverb can be licensed by I in these three sentences, having a subject-oriented interpretation. However, it cannot have the manner interpretation here since it is not in the same phase with V. On the other hand, *cleverly* is in the phase vP in (1 d, e) - being adjoined to vP in (1d) and being in the V-complement position in (1e). Therefore, it can be licensed by the licenser V here, having a manner interpretation.

(21)⁷

<table>
<thead>
<tr>
<th>CP phase</th>
<th>vP phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP or IP- adjoined <em>cleverly</em> in (1a), I'-adjoined <em>cleverly</em> in (1b), and AspP-adjoined <em>cleverly</em> in (1c) all belong to CP phase.</td>
<td>vP-adjoined <em>cleverly</em> in (1d) and <em>cleverly</em> in the V-complement position in (1e) both belong to vP phase.</td>
</tr>
</tbody>
</table>

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⁶ See the footnote 9 for the internal structure of AspP. In (1c), *have* raised to Asp and then to I, passing over the Asp-adjoined *cleverly* (we assume *have* and *be* in English raise at PF or at shallow structure).

⁷ Chomsky (1998, 1999) divides the tree into two phases as shown (IP here = Chomsky’s TP). We will argue below that the tree should be divided into three phases: note that the borderline of two phases (e.g., the vP adjoined position in the tree on the left) belongs to both phases due to the PIC. Therefore, vP-adjoined *cleverly* in (1d) in fact belongs to CP phase as well as vP phase, which means that *cleverly* in (1d) should be able to have a subject-oriented interpretation as well as a manner interpretation. However, the fact is that *cleverly* in (1d) can have only a manner interpretation. Hypothesizing the AspP Phase solves this problem as will be discussed below.
Next, consider *quickly* in (10). It also can have scope over either IP or VP. To modify IP, it must be in the same phase as the licenser I, i.e., the CP phase. On the other hand, to be a modifier of VP, it must be in the same phase as the licenser V, i.e., the vP phase. It has an event reading in (10 a, b) since it is in the phase CP (adjoined to CP or IP in (10a) and to I’ in (10b)) and is licensed by I here, while it has a process reading in (10 c, d) since it is in the phase vP (adjoined to vP in (10c) and being a complement in (10d)) and is licensed by V here.

2. Class III and IV Adverbs

Next, let us consider the cases of Class III and IV adverbs. Class III adverbs can be located sentence-initially, sentence-medially, but not sentence-finally, while Class IV adverbs occurs sentence-medially, sentence-finally, but not sentence-initially.

(6) a. *Evidently* George read the book.
   b. George *evidently* read the book.
   c. *George read the book *evidently*. (without comma intonation)

(7) a. *Completely* George read the book.
   b. George *completely* read the book.
   c. George read the book *completely*.

This distributional fact can also be well-captured by the local condition in the following way; an evidential adverb *evidently* in (6), as one of speaker-oriented adverbs, should be in the phase CP to be licensed by C. It is in the phase CP in (6a) (adjoined to CP or IP) and (6b) (adjoined to I’), satisfying the condition (20). (6a) and (6b) are thus grammatical. On the other hand, it is in the phase vP in (6c) (being a complement). Due to the violation of the condition (20), (6c) is ruled out. A manner adverb *completely* in (7) should be in the phase vP to be licensed by V. It is in the phase vP in (7b) and (7c) (adjoined to vP in (7b) and being a complement in (7c)) but in the phase CP in (7a) (adjoined to CP or IP). Hence, the ungrammaticality of (7a).
3. Class VI Adverbs and Aspectual Phrase Phase

Even though the local condition (20) has captured the distribution of other class adverbs very well so far, class VI adverbs pose problems to the condition. We will argue that these problems can be solved by positing the phase AspP in addition to the phase CP and the phase vP. We will point out a consequence of this proposal and provide independent evidence for the phase AspP.

3.1. Problems Raised by Class VI Adverbs

We have seen above that Class VI adverbs can only appear sentence-medially but not to the left of the first auxiliary verb.

(11) a. *Simply Albert is being a fool.
    b. Albert is simply being a fool.
    c. *Albert is being a fool simply. (Jackendoff(1972))

(12) a. *Albert simply has been being a fool.
    b. Albert has simply been being a fool.
    c. Albert has been simply being a fool.
       (thanks to Kari Eline Schenk (p.c.))

(13) a. *He merely will be having the most exciting time of his life.
    b. He will merely be having the most exciting time of his life.
    c. He will be merely having the most exciting time of his life.
       (thanks to Kari Eline Schenk (p.c.))

How can we capture this fact? The distribution of Class VI adverbs has been put aside by linguists since Jackendoff (1972). Our local condition (20) cannot explain it either; The deviance of (11c) indicates that the licensor for Class VI adverbs is not in the vP phase. Is it then in the CP phase? The grammaticality of (b) sentences seems to indicate that it is. However, if the licenser is in the CP phase, (a) sentences should be grammatical too. But (a) sentences are ungrammatical. In which phase is then the licenser?

In the next section, we will claim that the current paradoxical problems can be solved by postulating the AspP phase.
3.2. A Solution: The AspP Phase

Phases are propositional syntactic objects. vP is a propositional object in which all theta roles are assigned. CP is a propositional object that adds tense and force to the propositional vP. In the same vein, AspP can also be claimed a propositional object that supplements aspect\(^8\) to the propositional vP.

Let us then suppose that we have the AspP\(^9\) phase in addition to the CP phase and the vP phase.\(^10\) It is now clear-cut why (11c) and (a) sentences of (11–13) are both ungrammatical at the same time: if the licensor for Class VI adverbs is in the AspP phase,\(^11\) then these adverbs should also be in the AspP phase given the local condition (20). (11c) is ruled out because *simply* is in the vP phase and (a) sentences of (11–13) are deviant at the same time since *simply* and *merely* are in the CP phase. On the other hand, (b) sentences of (11–13) are grammatical since *simply* and *merely* are in the AspP phase (being adjoined to AspP). (12c) and (13c) are grammatical since *simply* and *merely*, being adjoined to vP, can be licensed by Asp thanks to the PIC.

In short, the paradoxical problems of Class VI adverbs can be resolved by postulating the AspP phase. The current analysis can apply to other

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\(^8\) Aspect (more correctly, viewpoint aspect in contrast to situation aspect) refers to the particular way in which the speaker presents the event or situation, through grammatical means. Smith (1991) distinguishes between perfective and imperfective. Cinque (1999) postulates the following eleven different types of viewpoint aspect: habitual, repetitive/frequency, celerative, terminative, continuative, perfect/imperfect, retrospective and proximate, durative, generic/progressive, prospective, completive.

\(^9\) We assume the following internal structure for AspP.

\[
\text{AspP} \quad \text{Just as v selects V, the functional head Asp selects a (null or phonetic) viewpoint-aspectual verb that denotes perfect/imperfect, generic/progressive, \ldots, or habitual.}
\]

\[
\text{have} \quad \text{In the tree on the left, Asp selected a perfect verb *have* (which, we assume, also selected a progressive verb *be* in this particular case).}
\]

\[
\text{be -en} \quad \text{vP}
\]

\[^{10}\] By claiming that AspP is a phase, we mean that AspP is another cyclic node of operations such as Merge, Agree, Move, and Spell-out. As far as we can see, this does not raise any problem.

\[^{11}\] We assume that Class VI adverbs such as *merely*, *simply* are licensed by Asp, just as other aspectual adverbs are (cf. the footnote 12), since they also refer to the particular way in which the speaker presents the event or situation.
aspectual adverbs\(^\text{12}\) such as *just, almost, still, always,* and *usually* which show the same distributional facts (James Seasholtz (p.c.)) as Class VI adverbs as illustrated below.

(22) a. *Just I have arrived.*  
    b. *I just have arrived.*  
    c. I have just arrived.  
    d. *I have arrived just.*

(23) a. *Almost it was raining.*  
    b. *It almost was raining.*  
    c. It was almost raining.  
    d. *It was raining almost.*

We will show in the next section that positing the AspP phase is also necessary to solve the problems raised by other adverbs.

3.3. Problems Raised by Class I, II, and III Adverbs

Even though the local condition (20) seemed to capture the distribution of Class I, II, III adverbs very well, a close look at the data reveals problems. First, let us reconsider (1d) and (10c), the cases of Class I and II adverbs.

(1) d. John has been *cleverly* answering their questions.  
(10) c. John will be *quickly* arrested by the police.

We have mentioned above that *cleverly* and *quickly* are adjoined to vP here and thus are in the vP phase. Hence, they can be licensed by V and have a manner interpretation. So far so good. The problem is that these adverbs can also be in the CP phase thanks to the PIC without assuming the AspP phase. Then, since they are in the same phase as I, they should be able to be licensed by I, having a subject-oriented interpretation and an event

\(^{12}\) The adverbs that express the aspectual difference are named as aspectual adverbs. Alexiadou (1997) classifies aspectual adverbs into two different types; durative/ indefinite frequency adverbs such as *usually* and *regularly* and cardinal count/definite frequency adverbs such as *just, immediately, * and *twice.* Cinque (1999) posits eleven different types of aspectual adverbs which, she argues, are the specs of the eleven different aspectual heads mentioned in the footnote 8.
interpretation, respectively. However, the fact is that they can have only a manner interpretation.

Class III adverbs also raise problems in sentences involving auxiliary verbs. Consider (24).

(24) a. George *probably* will have been reading the book.
    b. George will *probably* have been reading the book.
    c. George will have *probably* been reading the book.
    d. George will have been *probably* reading the book.
      (due to Kari Eline Schenk (p.c.))

*Probably* in (24 a, b), being in the CP phase (being adjoined to I' in (24a) and to AspP in (24b)), is licensed by C and therefore these two sentences are correctly predicted to be grammatical. The problematic case is (24c). Without assuming the AspP phase, *probably* here is in the CP phase-adjoined to the projection of be [progressive] - and thus should be able to be licensed by C. However, the sentence is ungrammatical. (24d) and (25d) below are also problematic just as (1d) and (10c) above are.

(25) a. *Probably* George will have read the book.
    b. George *probably* will have read the book.
    c. George will *probably* have read the book.
    d. *George will have *probably* read the book.

*Probably* is adjoined to vP in these cases. Given the PIC, the two sentences are supposed to be grammatical since *probably* in the adjunction position of vP can be licensed by C at the next phase, without assuming the AspP phase. However, the two sentences are ungrammatical.

Now if we assume the AspP phase, all these problems can be solved. In (1d) and (10c) *cleverly* and *quickly* in the vP adjoined position cannot be licensed by I in the CP phase even with the PIC since the AspP phase intervenes between the vP adjoined position and the CP phase. (24c) is deviant since *probably* here is not in the CP phase but within the complement domain of Asp and therefore cannot be licensed by C in the CP phase. In the case of (24b), *probably*, being adjoined to AspP, can be licensed by C at the next phase thanks to the PIC. (24d) and (25d) are ungrammatical since *probably*, being adjoined to vP, cannot be licensed by C in the CP phase across the AspP phase.
In sum, we have shown in this section that positing the AspP phase helps to solve the problems raised by the distribution of other Class adverbs.

3.4. Evidence for the AspP Phase: Quantifier Floating

In the previous sections we have shown that positing the AspP phase is crucial to capture the distribution of adverbs in the aspectual sentences. In this section we will show a piece of evidence for positing the AspP phase.

Koopman and Sportiche (1985, 1987) argue that a subject is base-generated VP-internally (V*-internally in their term) and is moved to the spec of I. Sportiche (1988) claims that certain properties of the floating quantifiers receive an explanatory account if Koopman and Sportiche’s (1985, 1987) argument is on the right track. A relevant property of the floating quantifiers is the fact that the floating quantifiers can occur to the left of a main verb and of the second auxiliary verb as in (26a) and (26b).

(26) a. The carpets will have been being all dusted for two hours.
    b. The carpets will all have been being dusted for two hours.
    c. All the carpets will have been being dusted for two hours.

Sportiche (1988) assumes that Qs may appear in NP-initial position. Given this assumption, the possibility of the occurrences of all in (26 a,b), she argues, indicates that all the carpets starts VP(V*)-internally, drops by the spec of have (which is a raising verb according to her), and lands in the spec of I (will, another raising verb), being able to strand all at each stage of movement. That is, floating of all reflects the movement history of the subject.

Translating her analysis into ours, the grammaticality of (26b) sentence indicates that the subject stops by the edge of AspP on the way to the IP spec. What does this mean? We have mentioned above Chomsky’s (1998, 1999) claim that movement targets the edge of every phase due to the PIC. If we take this claim, the grammaticality of (26b) sentence then implies that AspP constitutes a phase. That is, the subject has to stop by the edge of AspP on the way to the IP spec due to the PIC since AspP constitutes a phase.

In sum, in this section we have shown that the distribution of Class VI adverbs can be well-captured by positing the AspP phase and the presence of the AspP phase is also needed in solving the problems raised by other
adverbs. We provided a piece of evidence for the proposal. Before we go on to Class V adverbs, let us summarize our argument made up to now with the following tree and diagram.

\[
(27)
\]

The diagram on the left of the arrows in (27) shows that when we assume just two phases, Class I, II, III, VI adverbs pose distributional problems to the local condition (20); Firstly, Class I and II adverbs are incorrectly predicted to have subject-oriented and event readings, respectively, in the vP-joined position. Next, Class III adverbs in the vP joined position are incorrectly ruled in. Finally, it is not clear why Class VI adverbs cannot occur to the left of the first auxiliary verb while it can to the right.

On the other hand, the right diagram shows that once we take the phase AspP, the distribution of adverbs neatly falls under the local condition (20); vP joined positions do not belong to CP phase any longer due to the intervening AspP. Therefore, Class I and II adverbs in the vP joined position will not have subject-oriented or event readings. A desired result. Class III adverbs will not be allowed in the vP joined position. Another welcoming result. Class VI adverbs are correctly predicted not to occur to the left of the first auxiliary verb.

4. Class V Adverbs

We have shown above how the local condition based on the Phase Theory, together with the AspP hypothesis, can explain the distribution of adverbs. In this section we will argue that the distribution of Class V adverbs is more restricted than other class adverbs since they are not adjunctive but complemental.
4.1. A Problem Raised by Class V Adverbs
Consider the following sentences with Class I adverbs.

(28) a. John has been cleverly answering their questions.
    b. John has been answering their questions cleverly.

In (28) cleverly, with a manner interpretation, can be located to the left or
the right of the main verb. We have argued above that in both cases
cleverly is in the vP phase (being adjoined to vP in (28a) and being a
complement in (28b)) and thus is licensed by V. By analogy, if the Class
V adverb hard in (10) is licensed by V, it should be able to be located to
the left or the right of the main verb.

(10) a. *Hard John hit Bill.
    b. *John hard hit Bill.
    c. John hit Bill hard.

However, hard can be located only to the right of the verb as illustrated.
That is, they must be postverbal. Why is this so?

In the next section we will argue that the fact that Class V adverbs
cannot occur to the left of the main verb is due to the complemental
character of Class V adverbs.

4.2. Complemental Adverbs
Even if generally adverbs are not lexically selected by a predicate, this is
not always true. There are several verbs which lexically select for an
adverbial. Verbs of situation and behavior are some of the most well known
cases as shown in (29).

(29) a. He behaved *(awfully).
    b. John resides *(close to my house).
    c. John dresses *(well).

The subcategorization data from Bowers (1993: 606) and Cinque (1999: 19)
in (30–33) also indicate that adverbs can be selected by a predicate.

(30) a. John has worded the letter carefully.
    b. *John has carefully worded the letter.
    b. *John perfectly learned French.

(32) a. Bill recited his lines poorly.
    b. *Bill poorly recited his lines.

(33) a. Mary played the violin beautifully.
    b. *Mary beautifully played the violin.

What the data in (30–33) indicate is that adverbs can function as complements as well as adjuncts.\textsuperscript{13}

Let us then say that Class V adverbs are selected by a verb and thus their distribution is restricted as much as that of other verb complements are. That is, the structural condition on complements (34) restricts the distribution of Class V adverbs.

(34) Complements are in the c-domain of a head.

Class V adverbs, being selected by a verb, then is subject to (34) as well as (20); they should be in the same phase as a licensor and at the same time in the c-domain (=c-command domain) of the selector head. (10b) is then ruled out since hard here is not in the c-domain of the verb hit, even if it is in the same phase as the verb. Likewise, the (b) sentences in (30–33) are ungrammatical due to a violation of (34). Class V adverbs are thus postverbal.

(34) could apply to the so called circumstantial adverbs (place, time, manner, means, company, reason, purpose, etc.) of Cinque (1999). These circumstantial adverbs never occur to the left of a verb even though they can occur to the right of a verb.\textsuperscript{14} The reason why these circumstantial adverbials cannot occur there could be because they are not adjunctive but complemental when their modification domain is vP and thus they are

\textsuperscript{13}In fact, there are some linguists who treat adverbs as complements. McConnel-Ginet (1982) proposes that adverbs are arguments of the verb and they are licensed through theta-role assignment. Larson (1988, 1990) and Stroik (1990) also argue that adverbs are the innermost complements of V.

\textsuperscript{14}These adverbs can occur sentence-initially, which, we think, is possible since these adverbs can have the scope over a sentence as well as vP.
subject to the condition (34) as well as (20). That is, they are complements (in a purely structural term in Larson (1988) and Stroik (1990)'s sense) of V and thus they should be in the c-domain of V. Hence, they are postverbal.

In sum, we have shown in this section that the distribution of Class V adverbs, probably of the so called circumstantial adverbs, is restricted not only by the condition (20) but also by the condition (34) due to the complementary (probably including purely structurally complementary) character.

V. Previous Approaches to the Distribution of Adverbs

In the previous two parts, we have shown how the distribution of adverbs can be captured by a local condition based on the Phase Theory and the adjunct/complement distinction. In this part, we will critically review two previous approaches to the distribution of adverbs, i.e., adverbs as heads (Travis (1984)) and adverbs as specs (Laenzlinger (1993), Rijkhoek (1994), Alexiadou (1997), Cinque (1995, 1999)). We will focus on how well they capture the distribution in comparison to our analysis and how appropriate it is to treat adverbs as heads or specs.

1. Adverbs as Heads

1.1. Head Feature Licensing

Travis (1988) argues that adverbs do not project to a phrasal category, that is, they remain simply as heads. Due to this head status of adverbs, the licensing condition for adverbs, she claims, should be different from that for maximal projections (theta-marking for arguments and predication for elements in predication structure). Proposing the head feature-licensing as a licensing condition for adverbs, she argues that this condition captures the distribution of adverbs well.

First, let us consider her account for the restricted distribution of adverbs. The core of the head feature-licensing is that adverbs are licensed by the designated feature of a head, which they should govern; epistemic or sentential adverbs are licensed by the event feature of I and therefore

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15Epistemic Adverbs are those adverbs which express the speaker's degree of confidence about the truth of the proposition (based on the kind of information he/she has) such as probably, likely, presumably, supposedly.
epistemic or sentential adverbs are licensed only when they govern I. Manner adverbs are licensed by the manner feature of V. Hence, manner adverbs are licensed only when they govern V. With this in mind, let us reconsider the restricted distribution of Class III and IV adverbs in (6) and (7). (6c) is ungrammatical since the epistemic adverb *evidently* in the current position cannot govern I even though it should be licensed by the event feature of I. On the other hand, (7a) is ungrammatical since the manner adverb *completely* cannot govern V even though it should be licensed by the manner feature of V.

(6)  
  a. *Evidently* George read the book.
  b. George *evidently* read the book.
  c. *George read the book *evidently*. (without comma intonation)

(7)  
  a. *Completely* George read the book.
  b. George *completely* read the book.
  c. George read the book *completely*.

The meaning difference of Class I and II adverbs depending on the position also follows from the head feature-licensing; an adverb will have the subject-oriented or event reading when it govern I which bears the AGR and event features, whereas it will have the manner interpretation when it govern V which bears the manner feature. The adverbs *cleverly* in (35) and *quickly* in (36) govern I. The former is licensed by the AGR feature of I and has the subject-oriented reading. The latter is licensed by the event feature of I and has the event reading. On the other hand, the second adverb in each case, i.e., *stupidly* and *slowly*, governs V and thus has the manner interpretation.

(35) John *cleverly* has been answering their questions *stupidly*.
(36) John *quickly* will be arrested *slowly* by the police.

The residual free distribution, Travis (1988) argues, follows from the head status of adverbs and the proposed feature percolation. That is, adverbs in English can appear anywhere along the projection line of the licensing head as in (37) and (38) since features percolate from the head to the maximal projection in English and thus adverbs as heads can adjoin to anyplace along the head projection line, i.e., to X°, X', and XP as in (37); *probably*
can adjoin to IP as in (37a), to I’ as in (37b), to I as in (37c) and slowly
can adjoin to V as in (38a), to V’ as in (38b), to VP as in (38c).

(37) a. Probably George has read the book.
   b. George probably has read the book.
   c. George has probably read the book.

(38) a. Mary will have slowly put the book on the table.
   b. Mary will have put the book slowly on the table.
   c. Mary will have put the book on the table slowly.

(39)

So far we have shown Travis’s (1988) account for the distribution of
adverbs. The idea of feature-licensing is very intuitive one, especially in
consideration of the recent feature-checking/agreeing theory (Chomsky
(1995, 1988, 1999)). However, treating adverbs as heads is inappropriate in
several respects and furthermore this head analysis in fact fails to capture
the distribution of adverbs in many cases as will be discussed in the next
section.

1.2. Reconsidering the Head Analysis

1.2.1. How Appropriate Is It To Treat Adverbs As Heads?

Even though treating adverbs as heads seems to be attractive, there are
some counter evidence against this claim. First of all, adverbs do not block
verb movement. Adverbs can be crossed by verbs as discussed in Pollock
(1989) and Belletti (1990) among others. Moreover, adverbs do show the
properties of maximal projection, even though mostly when adverbs occur
sentence-initially or post-verbally (unless with comma intonation): they can take complements as in (40a, b) contrary to Jackendoff and Travi's observation, they can be modified as in (40c), and they have comparative forms as in (40d).

(40) a. They will decide independently of my view.
    b. Unfortunately for us, the man has already left.
    c. He dances very beautifully.
    d. He runs more quickly than we expected.

Given the above counter evidence, it seems that it is not appropriate to treat adverbs as heads. Even if we would assume the head analysis despite the counter evidence, the head analysis still falls apart in explaining the adverb distribution as will be discussed below.

1.2.2. How Well Can the Head Analysis Capture the Adverb Distribution?

We have just shown that it is problematic to treat adverbs as heads. Given this, Travis's (1988) account for the residual free distribution should be reconsidered since this account crucially relies on the head status of adverbs.

Furthermore, her proposal to capture the residual free distribution in fact makes her analysis lose the account for the restricted distribution of adverbs. She claims that adverbs as heads can adjoin to anyplace along a head projection line. Crucially, she allows adverbs to either left-adjoin or right-adjoin, not distinguishing left-adjunction from right-adjunction. This accounts for the residual free distribution as in (37) and (38). However, exactly because of this, she loses the account for the restricted distribution as in (6c). That is, since there is no rule regulating the adjunction-direction, nothing prevents evidently from right-adjoining to IP or I in (6c) and then (6c) cannot be ruled out any more.

(6) c. *George read the book evidently. (without comma intonation)

Likewise, any Class I and II adverbs in the sentence-final position as in (3c) and (4c) will be incorrectly allowed to have the subject-oriented or event reading, being licensed by the feature of I in the I'– or IP-right adjoined position.
(3) c. John dropped his cup of coffee clumsily.
(4) c. John dropped his cup of coffee slowly.

Moreover, she does not clearly specify how to capture the contrast between Class IV adverbs and Class V adverbs: Class IV adverbs can appear pre-verbally as in (7b) but Class V adverbs cannot as in (10b). Why is (10b) ungrammatical?

(7) a. *Completely George read the book.
   b. George completely read the book.
   c. George read the book completely.

(10) a. *Hard John hit Bill.
   b. *John hard hit Bill.
   c. John hit Bill hard.

According to her head analysis, hard as a head should be able to left-adjoin to V or VP as much as completely can do so. That is, her analysis incorrectly predict that (10b) is grammatical as much as (7b) is. To rule out (10b), some condition like our (34) is in need.

The final problem of her analysis is that it is not clear how to treat Class VI adverbs in her head analysis. If Class VI adverbs as heads can adjoin to anyplace along the I projection line, (11a) and (12a) pose problems; that is, there is no reason why Class VI adverbs cannot left-adjoin to IP as in (11a) and to I' as in (12a). On the other hand, if Class VI adverbs can adjoin to anyplace along the V projection line, (11c) remains as a problem; simply in (11c) is right-attached to V' or VP and thus (11c) should be grammatical contrary to the fact. Note that assuming AspP as we did in our analysis does not help. Suppose that Class VI adverbs can adjoin to the Asp projection line. (11c) still remains as a problem; simply in (11c) could be right-attached to AspP and then (11c) is incorrectly predicted to be grammatical.

(11) a. *Simply Albert is being a fool.
   b. Albert is simply being a fool.
   c. *Albert is being a fool simply.
(12) a. *Albert simply has been being a fool.
    b. Albert has simply been being a fool.
    c. Albert has been simply being a fool.
       (thanks to Kari Eline Schenk (p.c.))

In sum we have shown that the head analysis fails to capture the adverb distribution in many cases, which are handled by our analysis. In the next section, we will discuss the spec analysis as an alternative approach to the distribution of adverbs.

2. Adverbs as Specs

While Travis (1984) counts adverbs as heads, other linguists (Laenzlinger (1993), Rijhoff (1994), Alexiadou (1997), Cinque (1995, 1999)) argue that adverbs are best analyzed as specifiers. In this section, we will discuss Cinque's (1999) spec analysis of adverbs among others.

2.1. Relative Sequencing of Adverbs and the Universal Hierarchy of Clausal Functional Projections

Adverbs are strictly ordered with respect to each other. Even if several linguists (Travis (1988), Bowers (1993), Alexiadou (1977), Cinque (1995, 1999)) has discussed this relative sequencing effect since Jackendoff (1972), Cinque (1999) is the one who gives the most elaborate picture to this relative order; she claims that pre-verbal adverbs\(^{16}\) are divided into lower adverbs and higher adverbs and among higher adverbs speaker-oriented adverbs precede subject-oriented adverbs. Speaker-oriented adverbs are ordered as in (41c). (41d) shows an example of how pre-verbal adverbs are ordered.

(41) a. higher adverbs > lower adverbs
    b. speaker-oriented adverbs > subject-oriented adverbs
    c. domain > pragmatic > evaluative > modal (evidential > epistemic > tense) > irealis
    d. politically > honestly > fortunately > allegedly > probably >

\(^{16}\)Postverbal adverbs are ordered as in (i). Refer to Cinque (1999) for detail.

(i) circumstantial adverbials (place, time, manner, means, company, reason, purpose, etc.: unordered) > focused lower adverbs > de-accented material (higher/circumstantial)
once/then > perhaps > wisely > usually > already > no longer > always > completely > well

Cinque (1999) observes that not only adverbs enter a rigidly ordered sequence but also the order of head morphemes is rigidly fixed. Furthermore, the hierarchy of adverbs and that of functional heads, she argues, matches systematically from left to right. Based on these, she proposes that each adverb is the spec of the phrase projected by the corresponding functional head morpheme. (42) is the hierarchical structure of clausal functional projections the specs of which are filled with adverbs.

(42) The Universal Hierarchy of Clausal Functional Projections

[ frankly Mood\_speech act [ fortunately Mood\_evaluative [ allegedly Mood\_evidential
[ probably Mod\_epistemic [ once T(past) [ then T(Future) [ perhaps Mood\_realis
[ necessarily Mod\_necessity [ possibly Mod\_possibility [ usually Aspect\_habitual
[ again Asp\_preative(I) [ often Asp\_frequentative(I) [ intentionally
Mod\_volitional [ quickly Asp\_eceptive(I) [ already T(Anterior) [ no longer
Asp\_terminative [ still Asp\_continuous [ always Asp\_perfect [ just Asp\_retrospective
[ soon Asp\_proximate [ briefly Asp\_durative [ characteristically Asp\_generic/progressive
[ almost Asp\_prospective [ completely AspSG\_complete(I) [ tutto AspPL\_complete [ well Voice [ fast/early Asp\_eceptive(I) [ again Asp\_preative(I) [ often
Asp\_frequentative(I) [ completely AspSG\_complete(I) ... ]]]]]]]]]]]]]]]]]]]]]]]]]]

Cinque (1999) argues that the same, rich, hierarchy of functional projections is present in all languages and in every sentence of each language, even when no morphological material overtly realizes the corresponding head or specifier.

2.2. Reconsidering the Spec Analysis

In the previous section, we have shown the relative sequencing effect and the spec analysis based on this effect. In this section, we will consider how well this spec analysis captures the adverb distribution and how appropriate it is to treat adverbs as specs.

2.2.1. How Well Can the Spec Analysis Capture the Adverb Distribution?

The spec analysis, at first glance, seems to capture the adverb distribution somehow. However, as in the case of the spec analysis, a further thought on this spec analysis reveals many problems as will be discussed
below.

2.2.1.1. Adverb Distribution

First of all, the relative sequencing effect of adverbs naturally follows from (41), i.e., positing the strictly ordered hierarchy of functional projections and assuming that adverbs are the specs of these strictly ordered functional projections. Or more correctly, (41) is set up to capture the relative sequencing effect.

However, the residual free distribution as in (43 a, b, c) cannot be explained by (42).

(43) a. *Probably George will have read the book.
   b. George probably will have read the book.
   c. George will probably have read the book.
   d. *George will have probably read the book.

To capture the residual free distribution, Cinque (1999) needs to assume the existence of the DP-related functional projections in addition to the adverb-related ones, and the movement of arguments and verbs. That is, Cinque (1999) argues that the residual free distribution as in (43) indicates that there are two subject-related functional projections, one over and the other below the probably-related one. The subject then can move to the spec of either subject-related functional projections depending on the intended reading on the assumption that each DP-related positions are positions specialized for particular readings (e.g., existential, distributive, or specific) or particular scopes (Moltmann (1990), Diesing (1992), Diesing and Jelinek (1995), Beghelli and Stowell (1997)). The first auxiliary but not the second can optionally move to the head of the DP-related functional projection. The residual free distribution in (43 a, b, c) thus follows.

Once we adopt the strictly ordered adverb-related functional projections and the DP-related ones interspersed among them, the restricted distribution of adverbs seems to be easily captured; one could say that the evidently-related functional projection is far higher than the object-related projections to rule out (6c) and the completely-related functional projection is lower than the subject-related projections to rule out (7a).

(6) a. Evidently George read the book.
   b. George evidently read the book.
c. *George read the book evidently. (without comma intonation)

(7)  a. *Completely George read the book.
    b. George completely read the book.
    c. George read the book completely.

2.2.1.2. Problems

In the previous section, we briefly went over how the spec analysis captures the adverb distribution. As we have mentioned above, a deeper thought reveals that the spec analysis has many problems in explaining the adverb distribution.

First, consider the explanation of the residual free distribution. To capture the residual free distribution in (43), Cinque (1999) assumes i) two subject-related functional projections in addition to the probably-related ones in (41), (ii) the movement of the subject to the spec of either subject-related functional projections, and iii) the optional movement of the first auxiliary. All of these assumptions have problems as discussed below.

Take first the assumption of two subject-related functional projections. Adding just two subject-related functional projections does not suffice since the subject can be located to the right or the left of any of the higher adverbs. That is, the subject can be located in any V-marked position in (44).

\[(44) \lor \text{honestly} \lor \text{luckily} \lor \text{evidently} \lor \text{probably} \lor \text{now} \lor \text{perhaps} \\
\lor \text{necessarily} \lor \text{willingly} \lor \text{obligatorily} \lor \text{wisely} \lor \text{usually} \lor \text{again} \lor \text{often} \lor \text{quickly} \lor \]

This means that we need to add 15 subject-related functional projections to the 30 adverb-related ones in (42), which is already complicated enough. Moreover, Cinque (1999) argues that Swedish and Norwegian object shift data indicate that there are also object-related functional projections interspersed among the adverb-related ones. We are not quite sure that this move toward a highly complicated clausal structure is truly desirable.\(^\text{17}\) It seems to us that her explanation of the relative sequencing effect costs too

\(^\text{17}\)Cinque (1999) also argues based on the data from Romance languages that a Neg Projection can be base-generated over every single adverb-related functional projection below Mod\textsubscript{epistemic}. \end{quote}
much. That is, she has to pay a highly articulated clausal structure (42) for the relative sequencing effect and, because of that payment, she needs to add DP-related functional projections to (42) when she wants to explain the residual free distribution. We would prefer having a sort of scope principle regulating the relative sequencing of adverbs rather than complicating a clausal structure that much.

Take next the movement of the subject to the spec of a subject-related functional projection. What is the nature of this movement? Even though Cinque (1999) argues that each projection has a specific semantic interpretation, it is not clear to us exactly how the sentences in (43 a, b) are different from each other and what are the exact semantic properties of the various subject positions implicated in (44).

The assumption of the optional movement of the first auxiliary also raises many questions. What is the nature of the movement and why is it optional?

Not only the explanation of the residual free distribution but also that of the restricted distribution bears problems. Apparently, it seems that we only need to manipulate the order of the adverb-related functional projections and the DP-related projections to capture the distribution restriction; the reason why the subject should obligatorily move to the left of Class IV and VI adverb-related functional projection as in (46) and as in (47) while there is an option in the Class III adverb case as in (45) is probably that there is no subject-related functional projection below the Class IV and VI adverb-related functional projection.

(45) a. *Probably George read the book.
   b. George probably read the book.

   b. George completely read the book.

(47) a. *Simply Albert has been being a fool.
   b. Albert has simply been being a fool.

However, this manipulation seems to be pretty much arbitrary; exactly why is there no subject-related functional projection below the Class IV and VI adverb-related functional projection? Is it really true that no particular reading or scope is available to a subject below the Class IV and VI adverb?
This has to be researched. Moreover, this manipulation heavily relies on the highly articulated clausal structure. In spite of this huge cost, the spec analysis still does not seem to capture the contrast between Class III and IV adverbs; Cinque (1999) argues that there is optional movement of the first auxiliary verb in (48b) to capture the residual free distribution. Now, note that the auxiliary verb movement is obligatory in (49). Why is it that the first auxiliary obligatorily has to move to the spec of the subject-related functional projection in (49), while there is an option in (48)? What sort of difference is there between the subject-related functional projection over Class III adverbs and the one over Class VI adverbs?

(48) a. George probably will have read the book.
     b. George will probably have read the book.

(49) a. *Albert simply has been being a fool.
     b. Albert has simply been being a fool.

It seems that explaining the contrast between Class III and IV adverbs is not so easy as much as defining the exact nature of the first auxiliary verb movement. The contrast is captured by the AspP phase hypothesis in our analysis.

In sum, we have shown in this section that the spec analysis has many problems in explaining not only the freedom of the adverb distribution but also the restriction of it, despite the nice shooting at the relative sequencing effect.

2.2.2. How Appropriate Is It To Treat Adverbs As Specs?

In the previous section, we have argued that despite the high cost Cinque’s (1999) spec analysis fails to capture the distribution of adverbs in many cases.

In fact, her spec analysis seems to be hard to maintain, to begin with, if Relativized Minimality in Rizzi (1990) or any theorem along that line is on the right track. That is, treating adverbs as the specs of functional projections does not seem to be quite right, since adverbs never block A’-movement as shown in (50), nor they block A-movement either as in (51).

(50) a. John has been cleverly answering those questions carefully.
     b. How carefully has John been cleverly answering those questions?
(51) a. The riddle has *evidently* been solved by Batman.
    b. John is *unfortunately* likely to be demoted.

In consideration of the problems mentioned in the previous section and the Relativized Minimality argument in this section, we can conclude that the spec analysis is not a proper approach to the distribution of adverbs.

VI. Summary and Conclusion

The distribution of adverbs is fairly restricted, even if there are some residual cases of free distribution (Jackendoff (1972), Travis (1988), and Cinque (1999)).

We proposed that the distributional restriction and freedom of adverbs can be well-captured by a local condition on the adverb licensing based on the Phase Theory (Chomsky (1998, 1999)).

Our analysis could explain the distribution of Class V and VI adverbs as well as other adverbs, which have not been given a deep research since Jackendoff (1972): the AspP phase was hypothesized to capture the distribution of Class VI adverbs. We provided an independent evidence for the AspP phase. We divided adverbs into two types: the complemental adverbs and the adjunct adverbs. The distributional difference between Class V adverbs and other adverbs is captured in the light of the complement-v.s-adjunct distinction. We will leave to further research the investigation into the implications of the AspP phase hypothesis on the whole minimalist program. Further exploration of the complement-v.s-adjunct distinction of adverbs will be useful as well.

We critically reviewed two different types of approaches to the adverb distribution in comparison to our analysis: adverbs as heads (Travis (1984)) and adverbs as specs (Laenzlinger (1993), Rijkhooek (1994), Alexiadou (1997), Cinque (1995, 1999)). We have shown that treating adverbs as heads or specs is not right in consideration of Relativized Minimality and several other points. We have also argued that, even if we accept the treatment of adverbs as either heads or specs, neither the head analysis nor the spec analysis can explain the whole range of adverb distribution data.
References


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