A Phase-Based Analysis of Adverb Licensing

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Abstract: This paper offers a phase-based analysis of adverb licensing, focusing on speech-act adverbs and epistemic adverbs in English, within the minimalist framework developed by Chomsky (2000, 2001, 2005, 2007). Although recent studies have tried to explain the remarkable properties of adverbs with regard to their distribution in terms of licensing, existing approaches such as the specifier-based analysis of Cinque (1999) and the scope-based analysis of Ernst (2002) are problematic. As an alternative, I propose a phase-based analysis of adverb licensing. Specifically, I argue that adverbs are locally c-commanded by their licensers to be properly licensed; and furthermore, that adverbs cannot be licensed by their licensers beyond phases. I show how, based on these arguments, the phase *v*P affects the distribution of both speech-act adverbs and epistemic adverbs in declarative sentences, and the phase CP plays a crucial role for the distribution of the adverbs in interrogatives. I also consider word order in adverb usage in light of the proposed analysis.*

Key words: phase, c-command, licensing, epistemic adverbs, speech-act adverbs

1. Introduction

As many have observed, adverbs ending in –*ly* have a number of remarkable properties. For example, some –*ly* adverbs have relatively, though not completely, free distributions in the sentence, as in (1), whereas others change meaning according to their position, as in (2).

(1) (Probably) they (probably) will (probably) have (*probably) read the book (*probably).

(2) a. Honestly, John has spoken about the truth to his mother.

   (speech-act / *manner)

   b. John has spoken about the truth to his mother honestly.

   (*speech-act / manner)

Moreover, –*ly* adverbs are extremely restricted with respect to their position relative to other adverbs, as in (3).

(3)   a. *Honestly*, he had *probably* had his own opinion of the matter.
       b. **Probably*, he had *honestly* had his own opinion of the matter.

A number of studies have attempted to explain such properties in terms of adverb licensing. In particular, Cinque (1999) proposes what is called a specifier-based analysis, in which adverbs are licensed by an appropriate head in a spec-head configuration. However, restricting adverb positions to the specifier is problematic in that the distribution of many adverbs is much freer than this approach indicates. Ernst (2002) takes a different approach, arguing that adverbs freely adjoin to any category in a clause structure, and that the distribution of adverbs is determined by scope. Scope-based analyses, as such approaches are known, seem to predict a freer distribution of adverbs than specifier-based analyses, but have their own short-comings, as discussed below.[1]

This paper presents an alternative approach to the syntax of adverbs within the minimalist framework advocated by Chomsky (2000, 2001, 2005, 2007). Specifically, I propose what I call a *phase-based analysis* predicated on the following principle:

(4)   Phase-based analysis of adverb licensing
       Adverbs are licensed when they are locally c-commanded by their licensers within a phase domain.

I assume that adverbs can basically be merged anywhere in a clause. In this respect, my proposal is akin to scope-based analyses. However, what restricts the distribution of adverbs in this approach is phase-based locality, not scope. Since Chomsky (2000), the notion of phase has been understood to play a crucial role in the framework of the minimalist program, in which syntactic structures form derivationally phase by phase. Recent studies exploring the phase domain have attempted to extend the effects of phase not only to derivation but also to semantic interpretation. Focusing here on speech-act adverbs (such as *frankly*, *honestly*, and *strictly*) and epistemic adverbs (such as *probably*, *possibly*, and *obviously*), I argue that the phase domain also plays a crucial role in adverb licensing.

This paper is organized as follows. In Section 2, I discuss the limitations and shortcomings of previous analyses of the licensing of adverbs. In Section 3, I propose phase-based licensing, the alternative introduced above. In Section 4, I provide supporting evidence for phase-based licensing, discuss the crucial role of c-command relations and phases in adverb licensing, and analyze word order in the use of speech-act adverbs and epistemic adverbs. In Section 5, I conclude with a summary of the central points of my argument.

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[1] For discussion of specifier-based analyses, see Alexiadou (1997), Laenzlinger (2004), Haumann (2007). For discussion of scope-based analyses, see Costa (2004), Geuder (2004). In the 1980s and 1990s, other approaches were pursued, including the theory of predication, against which Laenzlinger (2004) argued.

2. Problems with Previous Analyses
2.1. Specifier-based analyses

Specifier-based analyses of adverbs basically assume that adverbs are licensed in the specifier position of semantically related functional projections such as Mood and Mod, which are fixed in clauses. In such analyses, restricted distributions of adverbs, as in (5), are easily explained.

(5)   a. [_MoodP_ *Honestly* Mood [he had [_ModP_ *probably* Mod [had his own opinion of the matter]]]]
       b. *[_MoodP_ *Probably* Mood [he had [_ModP_ *honestly* Mod [had his own opinion of the matter]]]]

The sentence of (5a), in which the speech-act adverb *honestly* precedes the epistemic adverb *probably*, is grammatical because *honestly* is in the specifier position of the appropriate head, Mood, and *probably* is in the specifier position of the appropriate head, Mod. In contrast, (5b) is ungrammatical since the adverbs in question do not occupy the specifier positions of their appropriate heads.

However, such an analysis raises a number of questions. As Ernst (2002) and others have pointed out, specifier-based analyses cannot explain relatively free adverb distributions such as that in (1) since they assume that an adverb must be licensed at the specifier position of the licenser. Cinque argued that variations in adverb distribution are derived from V and DP movement around adverbs, but this argument leaves unanswered the question of why Vs and DPs move in some cases but not in others. Furthermore, the claim that the landing site of Vs and DPs varies depending on the surface position of adverbs is questionable. The motivation for movement and the determination of landing sites are unclear. Thus, the optional movement of Vs and DPs to various positions is theoretically inadequate.

Cinque offers a different explanation of free distributions of adverbs such as that in (6).

(6)   Howard (foolishly) may (foolishly) have (foolishly) been trying to impress you.

Ernst (2002) pointed out that specifier-based analysis of V-movement leads to violation of the Head Movement Constraint (HMC) in sentences with more than one auxiliary.[2] To resolve this problem, Cinque (2004: 706) posits two positions for functional heads that host *foolishly*, as in (7).

(7)   … <foolishly> may have <foolishly> been trying

A basic motivation for positing two positions is that the adverbs in question have slightly different interpretations with regard to scope, and can occur simultaneously in a clause (e.g. *She frequently was suddenly [being] frequently rejected by publishers*). However, a crucial problem with this explanation is that the assumption of two positions does not hold for every adverb in the relevant classes. For example,

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[2] Since Chomsky assumes that traces do not count as interveners, though, a technical question remains as to whether crossing the trace of another head leads to a violation of HMC.

the assumption holds in the case of *frequently* but not that of *foolishly*. The licenser of *foolishly* cannot have a distinct position since the adverb can neither be interpreted differently according to position, nor appear simultaneously in different positions, as shown in (8).[3]

(8)   *Howard foolishly may have foolishly been trying to impress you.

In this regard as well, Cinque's two-positions-proposal is inadequate.

The problems with specifier-based analyses discussed thus far all arise from the assumption that adverbs are rigidly merged to the specifier position of the licenser: if adverbs have to be merged at the specifier position, some additional mechanism, such as V-movement or two licenser positions, is needed to explain the variety in distributions, and the alternatives available are unconvincing.

2.2. Scope-based analyses

Unlike specifier-based analyses, scope-based analyses assume that adverbs, in principle, can adjoin to any category. What restricts their distribution is scope, according to semantic rules such as those of the Fact-Event Object (FEO) Calculus proposed by Ernst (2002: 53).

(9)   FEO Hierarchy
      Speech act > Fact > Proposition > Event > Specified Event
(10) Any FEO type may freely be converted to any higher FEO type, but not lowered.

Let us consider the sentences of (3) again. Under scope-based analysis, the order of adverbs in (3a) is legitimate, since *probably* takes a Proposition as its argument, and this is within the scope of the Speech act taken as the argument of *honestly*, i.e., the scope requirement is met. On the other hand, the order of *probably* and *honestly* in (3b) does not meet the scope requirement in (9); and thus the sentence is ungrammatical.

While scope-based analysis can account for the relative order of adverbs, it does not explain why the interpretation of adverbs varies depending on their positions, as in (2), repeated here as (11).

(11) a. *Honestly*, John has spoken about the truth to his mother.
                                        (speech-act / *manner)
      b. John has spoken about the truth to his mother *honestly*.
                                        (*speech-act / manner)

The simple question arises of why *honestly* in (11a) cannot be interpreted as a man-

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[3] The adverbs in (8) can co-occur if they are interpreted as speaker-oriented and as having manner meanings. In such cases, they are licensed in different functional heads. As mentioned in the Introduction, this paper focuses on speech-act and epistemic adverbs, and thus does not address subject-oriented/manner adverbs such as *foolishly* in detail. For a brief discussion of manner adverbs, see footnote 9.

ner adverb like *honestly* in (11b) under scope analysis. Ernst (2002, 2004) stipulates that an adverb can be interpreted as a manner adverb only when it is adjoined to PredP; since *honestly* in (11a) is not adjoined to PredP, it cannot be interpreted as a manner adverb. However, this explanation shows clearly that scope does not provide a sufficient account of the distribution of adverbs, but that some structural specification is needed.

3. Basic Assumptions

In this paper, I propose an alternative, phase-based analysis of adverb licensing predicated on the principle shown in (4), repeated here as (12).

(12) Phase-based analysis of adverb licensing
      Adverbs are licensed when they are locally c-commanded by their licensers within a phase domain.

In (12), I use the term "locally c-commanded" to indicate that there are no other adverbs between the licenser and the adverb being licensed. (See Section 4.3 for discussion of this point.)

    An important implication of (12) is that adverbs can be merged anywhere in a clause as long as they are licensed, i.e. locally c-commanded, by their appropriate licenser.[4] The c-command relation is the most essential and only available relation in the minimalist program (cf. Chomsky 2007: 9). Much research posits the c-command relation as the minimal search within the probe-goal system of Chomsky's recent works, in which it falls under the computational (i.e. agree/ move) part of the language faculty. However, note that the mechanism of adverb licensing hypothesized here falls under the interpretive part, such as binding relations, and thus it does not involve Agree and Move, which require feature-checking.[5]

    Furthermore, under the principle set forth in (12), phases restrict the distribution of adverbs. Following Chomsky (2000), I assume that phases are CP and *v*P. Chomsky moreover assumes the *Phase Impenetrability Condition (PIC)*, shown in (13), which allows computational operations to be accessible to the edge.[6]

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[4] Chomsky suggests that *pure* Merge (or external Merge) is not totally free but imposed by requirements such as a thematic requirement (Chomsky 2000: 103), an edge feature (Chomsky 2007: 11), and an EPP feature. Thus, the question arises as to what licenses the free merger of adverbs advocated here. Requirements, however, hold for arguments, but not adjuncts such as adverbials. The present analysis does not impose any requirement at the time adverbs are merged with syntactic objects; but it requires adverbs to follow the licensing condition of (12). Nonetheless, the issue of Merge of adjuncts requires extensive further discussion as a subject of future research (cf. Boeckx 2008).

[5] See Watanabe (2005), who suggests that there should be interpretational conditions that utilize the c-command relation.

[6] This paper adopts the stricter version of the PIC introduced in Chomsky (2000).

(13) *Phase-Impenetrability Condition (PIC)*
     In phase α with head H, the domain of H is not accessible to operations
     outside α, only H and its edge are accessible to such operations.

                                                                (Chomsky 2000: 108)

I assume that the PIC is also available for interpretational operations, i.e., that the
adverb in the edge of phases can be licensed by their licensers.

     Finally, I assume that adverbs are licensed by a semantically related functional
head, with speech-act adverbs and epistemic adverbs being licensed, respectively,
by $Mood_{speechact}$ and $Mod_{epistemic}$, and that clause structure is as follows (cf. Cinque
1999):

(14) $[_{MoodP} Mood_{speechact} [_{CP} C [_{ModP} Mod_{epistemic} [_{TP} T [_{vP} v [_{VP} V]]]]]]$

In (14), I assume with Ernst (2002) and Laenzlinger (2004) that $Mod_{epistemic}$ is pro-
jected between C and T. Although it has been generally agreed that $Mood_{speechact}$ is
projected at the top-most position of the clause structure, few studies discuss the
relative position of C and $Mood_{speechact}$. I assume that $Mood_{speechact}$ is higher than C,
and remains in the top-most-position of the clause structure. The discussion below
offers empirical support for the clause structure shown in (14).

4. Phases and Their Effects on Adverb Licensing
4.1. *v*P and its effects

In this section, I discuss the various distributions of speech-act and epistemic
adverbs in declaratives from a phase-based perspective. Let us begin with the
distribution of epistemic adverbs shown in (1). Given that adverbs can be merged
anywhere in a clause, *probably* in the sentence-initial position can be merged at
the specifier of TP, where it is c-commanded by the licenser $Mod_{epistemic}$. Thus, it is
properly licensed, as shown in (15).

(15) $[_{ModP} Mod_{epistemic} [_{TP}$ probably $[_{T'}$ they $[_{T'}$ will $[_{vP}$ have read the book]]]]]

          c-command $\Rightarrow$ licensing

     Probably in the pre-auxiliary position is merged at the inner specifier of T,
which is followed by the merge of the subject *George*. The adverb is c-commanded
by $Mod_{epistemic}$, as in (16), and is thus properly licensed.

(16) $[_{Mod} Mod_{epistemic} [_{TP}$ they $[_{T'}$ probably $[_{T'}$ will $[_{vP}$ have read the book]]]]]

     Next, consider the case in which the adverb is positioned between the auxilia-
ries. As shown in (17), the adverb is merged to the edge of *v*P.

(17) $[_{Mod} Mod_{epistemic} [_{TP}$ they $[_{T'}$ will $[_{vP}$ probably $[_{v'}$ have read the book]]]]]

Although *v*P is a phase, an adverb in the edge of a phase is by definition accessible
(see (13)); thus *probably* in (17) can be licensed by $Mod_{epistemic}$.

Finally, when *probably* appears in the VP-initial and VP-final positions, it is merged within a phase vP, where no operation is accessible, as in (18a–b).
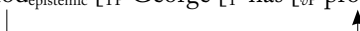
(18) a. *[$_{Mod}$ Mod$_{epistemic}$ [$_{TP}$ they [$_{T'}$ will [$_{vP}$ have probably read the book]]]]
      b. *[$_{Mod}$ Mod$_{epistemic}$ [$_{TP}$ they [$_{T'}$ will [$_{vP}$ have read the book probably]]]]

Hence, the adverbs cannot be licensed by the appropriate licenser, though Mod$_{epistemic}$ c-commands the adverbs in question.

Let us turn to sentences with one or no auxiliary, in which epistemic adverbs can occupy the VP-initial position, as in (19).

(19) a. George probably read the book.
      b. George has probably read the book.

In such cases, it can be assumed that *probably* is merged to the edge of vP, and thus that the licenser can license the adverb. Such sentences are therefore grammatical.[7]

(20) a. [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ George [$_{vP}$ probably [$_{v'}$ read the book]]]]

      b. [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ George [$_{T'}$ has [$_{vP}$ probably [$_{v'}$ read the book]]]]]

Next, consider how the phase vP affects the distribution of speech-act adverbs. Like epistemic adverbs, speech-act adverbs can appear in the sentence-initial, pre-auxiliary, and mid-auxiliary positions, but not in the VP-initial and VP-final positions, as shown in (21).

(21) (Frankly) they (frankly) will (frankly) have (*frankly) read the book (*frankly).

As I have already argued, adverbs can appear anywhere in a clause, and hence, adverbs in the sentence-initial, pre-auxiliary, and mid-auxiliary positions are appropriately licensed by the licenser, as shown in (22a-c).[8]

(22) a. [$_{MoodP}$ Mood$_{speechact}$ [$_{TP}$ *Frankly* [$_{T'}$ George will have read the book]]]

      b. [$_{MoodP}$ Mood$_{speechact}$ [$_{TP}$ George [$_{T'}$ *frankly* [$_{T'}$ will [$_{vP}$ have read the book]]]]]

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[7] Notice that *has* occupies T in (20b). In contrast to (15)–(18), in which T has already been occupied by *will* and *has* has to remain within vP, T is available for *has* in (20b).

[8] According to an anonymous reviewer of this study, there is a significant preference for speech-act adverbs to be located at the very beginning of sentences such as (22a). The reviewer moreover maintains that the sinking of such adverbs into the post-subject position, as in (22b–c), sounds awkward at best. He or she suggests that such a limited distribution of speech-act adverbs might provide support for the specifier-based analysis. The phase-based analysis, however, can account for such judgments satisfactorily. See footnote 11. In any case, the difficulty of obtaining consistent judgments of data remains a challenge, especially when it comes to data involving adverb placement. See also footnotes 13 and 14 for discussion of variation in judgment of grammaticality.

c. [$_{\text{MoodP}}$ Mood$_{\text{speechact}}$ [$_{\text{TP}}$ George will [$_{v\text{P}}$ *frankly* [$_{v'}$ have read the book]]]]

In contrast, adverbs in the VP-initial and VP-final positions fall within vP; hence, the PIC forbids Mood$_{\text{speechact}}$ from licensing them, as shown in (23).

(23) a. *[$_{\text{MoodP}}$ Mood$_{\text{speechact}}$ [$_{\text{TP}}$ George will [$_{v\text{P}}$ have *frankly* read the book]]]
      b. *[$_{\text{MoodP}}$ Mood$_{\text{speechact}}$ [$_{\text{TP}}$ George will [$_{v\text{P}}$ have read the book *frankly*]]]

Accordingly, the sentences are ungrammatical.[9]

    I assume that when the functional projections in a sentence are not filled with lexical materials, the projections are not necessarily present.[10] As in (22) and (23), declarative sentences thus may not project CP.[11] In the next section, I discuss the behavior of adverbs in interrogative sentences, where CP is filled with lexical materials and thus is clearly projected in a clause.

4.2. CP and its effects
4.2.1. Interrogatives
In this section, I explore how the distributions of speech-act and epistemic adverbs are affected by the phase CP. First, consider the distribution of speech-act adverbs in interrogative sentences. As many have observed, speech-act adverbs can only occur in the sentence-initial position, as shown in (24) and (25).

(24) a. *Frankly*, why would they do such a thing? (Ernst 2002: 98)
      b. *Briefly*, what did you say the plan was? (*ibid.*: 425)
(25) a. *Why would they *frankly* do such a thing? (*ibid.*: 99)
      b. *Why *briefly* did Sebastien hold the pistol? (*ibid.*: 429)

The speech-act adverbs in (24) are merged to the specifier of CP, as in (26).

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[9] Adverbs in VP-initial and VP-final positions are acceptable when they are interpreted as manner adverbs, i.e. "in a frank manner." Detailed discussion of the licensing of manner adverbs, however, is beyond the scope of this paper. I would mention only that they are licensed by v, which can be assumed to be a licenser of manner adverbs. Granted this assumption, the adverbs in question can be interpreted as manner adverbs, as in (i), since they are appropriately licensed by v within a vP phase.

  (i) [$_{\text{TP}}$ George will [$_{v\text{P}}$ have-v [$_{v'}$ (frankly) [$_{v'}$ read the book (frankly)]]]]

More detailed discussion must await future research.

[10] For independent arguments for this assumption, see Bošković (1997) for discussion of CP, and Rizzi (1997) for discussion of TopP and FocusP.

[11] If the intuitions about the data discussed in footnote 8 are correct, it would suggest that declaratives project CP. Furthermore, speech-act adverbs in the post-subject position would be blocked by the phase, as in (ii).

  (i) [$_{\text{MoodP}}$ Mood$_{\text{speechact}}$ [$_{\text{CP}}$ *Frankly* [$_{\text{C'}}$ C [$_{\text{TP}}$ George will have read the book]]]] (=(22a))
  (ii) *[$_{\text{MoodP}}$ Mood$_{\text{speechact}}$ [$_{\text{CP}}$ C [$_{\text{TP}}$ George (frankly) will (frankly) have read the book]]]
                                                                         (=(22b, c))

(26) [$_{MoodP}$ Mood$_{speechact}$ [$_{CP}$ *frankly* [$_{C'}$ why [$_{C'}$ would [$_{TP}$ they do such a thing]]]]]

By definition, the edge of a phase CP is accessible, and thus the adverb in question is appropriately licensed by Mood$_{speechact}$. On the other hand, since the speech-act adverbs in (25) fall within a CP-phase, Mood$_{speechact}$ cannot access them, and thus cannot license the adverbs, as shown in (27).[12]

(27) a. *[$_{MoodP}$ Mood$_{speechact}$ [$_{CP}$ why [$_{C'}$ would [$_{TP}$ they *frankly* do such a thing]]]]
  b. *[$_{MoodP}$ Mood$_{speechact}$ [$_{CP}$ why [$_{C'}$ *briefly* [$_{C'}$ did [$_{TP}$ Sebastien hold the pistol]]]]]

Next, consider the distribution of epistemic adverbs in interrogative sentences. Epistemic adverbs can follow subjects but cannot precede subjects, as in (28) and (29), respectively.[13]

(28) a. What has John *probably* done?
  b. Where had the dog *apparently* gone?   (Ernst 2002: 429)
  c. Have any students *probably* read the book?   (Svenonius 2002: 222)
(29) a. **Possibly*, who would you pick as the winner?   (Ernst 2002: 351)
  b. *Where *apparently* had the dog gone?   (ibid.: 429)
  c. *What has *probably* John done?

The phase-based analysis affords an explanation of the differing grammaticality of these cases. Epistemic adverbs following subjects can be assumed to appear at the edge of *v*P, in which Mod$_{epistemic}$ can license *probably*, as in (30).

(30) [$_{CP}$ what [$_{C'}$ has [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ John [$_{vP}$ *probably* [$_{v'}$ done]]]]]]

In contrast, epistemic adverbs in (29a–c) are merged at the following positions:

(31) a. *[$_{CP}$ *Possibly* [$_{C'}$ who [$_{C'}$ would [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ you [$_{vP}$ pick as the winner]]]]]]
  b. *[$_{CP}$ Where [$_{C'}$ *apparently* [$_{C'}$ had [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ the dog [$_{vP}$ gone]]]]]]
  c. *[$_{CP}$ what [$_{C'}$ has [$_{ModP}$ *probably* [$_{Mod'}$ Mod$_{epistemic}$ [$_{TP}$ John done]]]]]

Since all of the adverbs in question are higher than Mod$_{epistemic}$ and thus are not in

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[12] Notice that the present analysis defines edge as constituting only the outermost specifier, whereas in most derivational approaches, edge includes all specifiers. Although further argument is needed to support this, it bears mentioning that this might result from the difference between derivational and interpretational operations.

[13] In earlier literature (cf. Greenbaum 1969, Jackendoff 1972, Bellert 1977), epistemic adverbs following the subject as in (28) have been regarded as unacceptable. However, recent studies agree that epistemic adverbs can indeed follow the subject in interrogatives (Ernst 2002, Svenonius 2002, Engels 2004, Haumann 2007). Furthermore, my own informants find (28) acceptable, and find a clear contrast in acceptability between (28) and (29). I therefore maintain that epistemic adverbs can follow the subject. If the judgments in earlier literature were correct, diachronic changes in distribution may have occurred. See Haumann (2007: 397 note 50), who also notes this problem with the judgment of acceptability in earlier literature.

the c-command domain of $Mod_{epistemic}$, they cannot be licensed.

One might raise the counterpoint that it should be possible for *probably* in (31c) to be merged below $Mod_{epistemic}$, as is possible in declarative sentences (see (15)), and that *probably* is appropriately licensed by $Mod_{epistemic}$, which is contrary to the fact.

(32) *[CP what [C' has [ModP $Mod_{epistemic}$ [TP probably [T' John done]]]]]

Although future research is needed to resolve this problem, the existence of C or movement of a syntactic object to C may tentatively be understood as an additional and causal factor giving rise to the structural differences in interrogatives, such that epistemic adverbs are merged below $Mod_{epistemic}$ in declaratives, but above $Mod_{epistemic}$ in interrogatives, as in (31c).

4.2.2. Embedded clauses

Another piece of evidence that adverb licensing is phase-based comes from the distribution of epistemic adverbs in embedded clauses. Namely, epistemic adverbs cannot precede the complementizer *that* that introduces embedded clauses, but can follow it, as shown in (33).

(33) a. *Agatha said *probably* that Sebastien held the pistol.
     b. Agatha said that *probably* Sebastien held the pistol.   (ibid.: 427)

Based on the conventional assumption that *that* occupies C, *probably* in (33a) can be understood to be merged as in (34).

(34) *… [vP said [CP *probably* [C' that [ModP $Mod_{epistemic}$ [TP Sebastien held the pistol]]]]]

Again, since the adverb in question is not in the c-command domain of $Mod_{epistemic}$, it cannot be licensed. In contrast, *probably* in (33b) can be in the c-command domain, and thus can be licensed, as in (35).

(35) … [vP said [CP that [Mod $Mod_{epistemic}$ [TP probably [T' Sebastien held the pistol]]]]]

Let us turn to speech-act adverbs, which can neither precede nor follow *that*, as shown in (36).

(36) a. *I know *frankly* that she should be concerned.
     b. *I know that *frankly* she should be concerned.   (Haumann 2007: 340)

Example (36a) might seem to contradict the present analysis, which if applicable would incorrectly indicate that the speech-act adverb in (36a) is appropriately licensed by $Mood_{speechact}$, as shown in (37).

(37) … know [Mood $Mood_{speechact}$ [CP frankly [C' that [TP she should be concerned]]]]…

However, the distribution of speech-act adverbs is not the issue in such cases. Speech-act adverbs cannot appear with embedded contexts at all (cf. Okada 1985 and Amano 1999). Given this, it is reasonable to assume that the functional

category Mood cannot appear in the embedded CP-periphery, but only in the root CP-periphery, as in (38).

(38) $[_{Mood}$ Mood $[_{CP}$ C $[_{TP}$ T $[_{vP}$ v $[_{CP}$ C $[_{TP}$ T ….

Since there is no functional category that licenses speech-act adverbs in embedded clauses, speech-act adverbs cannot appear with embedded clauses. Thus, as a natural consequence of the present analysis, examples such as (36a) and (36b) are ruled out.

Furthermore, speech-act adverbs cannot appear with relative clauses either. An example of a non-restrictive relative clause is shown in (39a). An example of a restrictive relative clause is shown in (39b).[14]

(39) a. *On the way down I fell over a man hiding in a dark corner, who roughly
         ran away immediately.   (Haumann 2007: 339)
      b. *A girl who frankly is a doll is leaving.

Assuming that relative clauses are embedded CPs, it follows that speech-act adverbs do not co-occur with relative clauses since there is no Mood$_{speechact}$ to license them.

4.2.3. Split CPs and the distribution of adverbs

Let us consider sentences involving topicalized and focalized constituents, such as those in (40).

(40) a. *Honestly, these books,* (*honestly*) I cannot recommend.
      b. *Briefly*, ONLY WITH USE OF INTRAVENOUS CONSCIOUS SE-
         DATION (*briefly*) access into the pelvic collection was attained.
                                                    (cf. Haumann 2007: 340)

In (40), speech-act adverbs can precede, but cannot follow, topicalized and

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[14] While the literature entirely agrees that speech-act adverbs cannot appear with restrictive relative clauses, some research insists that they are allowed to occur with non-restrictive relative clauses, as in (i).

(i) John, who, frankly was incompetent, was fired.   (Okada 1985: 155)

My informant insightfully observed, however, that for *frankly* to occur in non-restrictive relative clauses, it needs to be set off by commas (thus pauses), i.e. *John, who, frankly, was incompetent, was fired*, and furthermore, that if the adverb in question is set off by commas, it can precede non-restrictive clauses, i.e. *John, frankly, who was incompetent, was fired* (cf. Okada 1985: 155). If these observations are correct, it would suggest that separating adverbs by commas affects the judgment of acceptability, although I leave it for future research to investigate why it would improve acceptability.

That speech-act adverbs and epistemic adverbs can appear in the sentence-final position if they are set off by commas (contra (1) and (2b)) supports these observations.
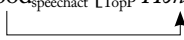
(ii) They will have read the book, probably.
(iii) John has spoken to his mother, honestly. (speech-act/*manner)

See also footnote 15.

focalized constituents, as shown in (40a) and (40b), respectively. According to Rizzi (1997), CP is an abbreviation for a rich functional domain, as in (41), wherein topicalized elements occupy TopP and focalized elements occupy FocP.

(41) [ForceP [TopP [FocP … [FinP   [IP ….   (Rizzi 1997: 297)

CP-domain

The present analysis assumes that Mood$_{speechact}$ is projected above CP; the further assumption naturally follows that Mood$_{speechact}$ is projected above CP-domain, which also plays the role of CP-phase. Granted these assumptions, the topicalized element *these books* in (40a) occupies the inner spec of Top, and *honestly* is merged to the edge of Top. Mood$_{speechact}$ can access and thus appropriately license *honestly*, as in (42).

(42) [$_{MoodP}$ Mood$_{speechact}$ [$_{TopP}$ *Honestly* [$_{Top'}$ *these books* [$_{TP}$ I cannot recommend them]]]]

In contrast, when *honestly* follows *these books*, it is projected below TopP; since *honestly* is within a CP-phase, the licenser Mood cannot access it, as shown in (43).

(43) *[$_{MoodP}$ Mood$_{speechact}$ [$_{TopP}$ *these books* [$_{TP}$ *honestly* [$_{T'}$ I cannot recommend them]]]]

CP-domain

The same argument holds for (40b). As in (44), a focalized element occupies Foc and *briefly* is at the edge of FocP, where the licenser Mood$_{speechact}$ accesses it and thus licenses *briefly*. Hence, *briefly* can precede the focalized element.

(44) [$_{MoodP}$ Mood$_{speechact}$ [$_{FocP}$ *Briefly* [$_{Foc'}$ ONLY WITH … [$_{TP}$ access into the pelvic ….
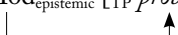
On the other hand, if *briefly* follows the focalized element as in (45), it is within FocP, i.e. the CP-domain, and thus Mood$_{speechact}$ cannot access it beyond a phase.

(45) [$_{MoodP}$ Mood$_{speechact}$ [$_{FocP}$ ONLY WITH … [$_{TP}$ *briefly* [$_{T'}$ access into the pelvic …

Interestingly, epistemic adverbs behave differently from speech-act adverbs. Epistemic adverbs can follow topicalized elements, but cannot precede focalized constituents, as in (46).

(46) a. *This program, probably* we should download.
       b. **Possibly*, DRINKS* he complained about this time, not food.
                                        (Haumann 2007: 359)

Consider the structure of (46a). Under the present proposal, Mod$_{epistemic}$ is projected below CP, and thus is projected below the members of CP-domain. Accordingly, Mod$_{epistemic}$ can appropriately license *probably*, as in (47).

(47) [$_{TopP}$ *This program* [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ *probably* [$_{T'}$ we should download]]]]

In the case of (46b), *possibly*, which is merged above FocP, is not in the c-command domain of the licenser, and the adverb in question cannot be licensed, as shown in (48).

(48) *[$_{FocP}$ *Possibly* [$_{FocP}$ *DRINKS* [$_{ModP}$Mod$_{epistemic}$ [$_{TP}$ he complained about this time …

4.3. Relative order

Finally, let us consider the rigid ordering of speech-act adverbs and epistemic adverbs that co-occur in a sentence. When speech-act adverbs and epistemic adverbs co-occur in a sentence, the former must precede the latter, and not vice versa, as in (49).

(49) a. *Honestly*, he had *probably* had his own opinion of the matter.
      b. **Probably*, he had *honestly* had his own opinion of the matter.   (= (3))

In the present analysis, *honestly* is merged to Mod$_{epistemic}$; it is licensed by Mood$_{speechact}$, as in (50). Furthermore, *probably* merged at the edge of *v*P is licensed by Mod$_{epistemic}$.

(50)   [$_{MoodP}$ Mood$_{speechact}$ [$_{ModP}$ *Honestly* [$_{Mod'}$ Mod$_{epistemic}$ [$_{TP}$ he had [$_{vP}$ *probably* [$_{v'}$had

his own opinion the matter]]]]]]

Both adverbs are correctly licensed, and (49a) is therefore grammatical.

In contrast, although *probably* in (49b) is appropriately licensed by Mod$_{epistemic}$, *honestly* is not locally c-commanded by Mood$_{speechact}$, since *probably* intervenes between Mood$_{speechact}$ and *honestly*, as in (51).

(51) *[$_{MoodP}$ Mood$_{speechact}$ [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ *Probably* [$_{T'}$ he had [$_{vP}$ *honestly* [$_{v'}$had his …

The same argument holds for the ungrammatical sentence shown in (52).

(52) *He *probably* will *honestly* have his own opinion of the matter.

The present analysis rules out the sentence shown in (52) since the intervening element, i.e. *probably*, blocks the licensing of *honestly* by Mood$_{speechact}$, as in (53).[15]

(53) *[$_{MoodP}$ Mood$_{speechact}$ [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ he [$_{T'}$ *probably* will [$_{vP}$ *honestly* [$_{v'}$had his …

Interestingly, my informants question the acceptability of (54), though the adverbs conform to the required rigid order *honestly* > *probably*.

(54) ?He *honestly* had *probably* had his own opinion of the matter.

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[15] One might point out the grammatical sentence (i) as a counterexample of the present analysis, since *probably* intervenes between Mood$_{speechact}$ and *frankly*.

(i)   For most of us, we're *probably* bankrupt, *frankly*.

However, notice that the speech-act adverb is set off by a comma in this case. See footnote 14.

The present analysis explains the intuition of my informants. As shown in (55), *honestly* intervenes between Mod$_{epistemic}$ and *probably*, which would be expected to cause problems in licensing.[16]

(55) ?[$_{MoodP}$ Mood$_{speechact}$ [$_{ModP}$ Mod$_{epistemic}$ [$_{TP}$ he *honestly* will [$_{vP}$ *probably* [$_{v'}$ have his …

Notably, the informants who judged (54) to be unacceptable judged it to be as completely unacceptable as (49b) and (52), which supports the present analysis.

5. Concluding Remarks

In this paper, I have proposed a phase-based analysis of the syntax of adverbs within the minimalist framework, offering several new ideas relating to phase for the study of adverbs. In short, I have argued that adverbs can be merged anywhere in a clause as long as they are licensed, i.e. locally c-commanded, by their appropriate licensers. In addition, I have proposed that licensers cannot license adverbs beyond phases. Several problems remain for future research, and other types of adverbs, such as subject-oriented adverbs and VP adverbs, remain to be investigated, but the phase-based analysis presented here is worth pursuing as a working attempt at a new type of adverb licensing within the minimalist framework.

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[16] My informants agree that a rigid order is most natural when speech-act adverbs occupy the sentence-initial position, as in (49a).

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【要　旨】

副詞認可のフェイズに基づく分析

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　副詞の分布についてはよく知られているように興味深い特徴がある。このような特徴に対して多くの研究が認可の観点から説明を与えようと試みてきているが，それぞれに問題点も指摘されている。本論では，特に Cinque（1999）の指定辞に基づく分析（specifier-based analysis）と Ernst（2002）の作用域に基づく分析（scope-based　analysis）の問題点を指摘し，代案として新たにフェイズに基づく副詞の認可方法を提案する。具体的には，（i）副詞はその認可子に局所的に c 統御されることによって認可される，（ii）認可子はフェイズを超えて副詞を認可できない，という 2 点を提案する。そして英語の発話行為副詞と認識様態副詞の分布に焦点を当て，この提案の妥当性について論じる。