論叢現代語・現代文化 2009 Vol. 2 pp. 27 - 52

A Minimalist Analysis of Left-Peripheral PP Adjuncts*

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This paper investigates the so-called left periphery and left-peripheral PP adjuncts (LPPPAs) in English by resurrecting Reinhart's (1983) classification between verb phrasal and sentential PP adjuncts (VPPPAs and SPPAs). Contra some previous studies claiming that left-peripheral adjuncts in general must be hosted in a specific functional projection, this paper proposes a syntactic analysis which distinguishes between left-peripheral VPPPAs and SPPAs regarding the necessity of a specific functional projection. Adopting Chomsky's (2000, 2001) mechanism, this paper claims that left-peripheral VPPPAs as well as topicalized elements move to Spec-CP by virtue of topic feature matching, whereas left-peripheral SPPAs can be base-adjoined to left-peripheral projections without topic feature matching. The present analysis rather than previous studies provides a precise account for syntactic differences between the two types of LPPPAs.

1. Introduction

This paper investigates PP adjuncts in English that occur in the so-called left periphery, as exemplified in (1).

(1) a. With the knife, John cut an apple.
b. Under normal circumstances, we would start our meeting at 5.

This paper defines the left periphery as pre-IP positions and thus the discussion is concerned with PP adjuncts in pre-IP positions including the clause-initial position, as in (1). I refer to these PP adjuncts as left-peripheral PP adjuncts (hereafter, LPPPAs) and to adjuncts in general in these positions as left-peripheral adjuncts (hereafter, LPAs).

In the literature of LPAs, some researchers assume a specific functional projection for LPAs. For example, Kayne (1994) and Rizzi (1997) claim that each LPA must be hosted in a functional projection which is typically targeted by negative adjuncts or topicalized elements. Their analyses predict that all LPAs should share the same syntactic properties and distributions as negative adjuncts and topicalized elements. Contrary to the prediction, however, a close scrutiny of LPPPAs reveals that a certain type of LPPPAs shows contrastive syntactic properties and distributions.

This paper takes a critical view for the claim that all LPPPAs must be located in some specific functional projection(s) and provides a Minimalist account for LPPPAs by resurrecting Reinhart's (1983) classification between verb phrasal and sentential PP adjuncts (hereafter, VPPPAs and

SPPAs). Specifically, it is proposed that left-peripheral VPPPAs need a specific functional projection CP and must be located in the specifier, while left-peripheral SPPAs do not need such a specific projection and are base-adjoined to clause-initial projections of C and T. I claim that this derivational difference originates from whether or not LPPPAs undergo A'-movement accompanied with topic feature matching. The present analysis is preferred over Kayne and Rizzi in that it accounts for a number of sharp syntactic differences between the two types of LPPPAs more precisely with respect to the presence versus absence of topic feature matching and A'-movement.

This paper is organized as follows. Section 2 will review Kayne (1994) and Rizzi (1997). It will be argued that their analyses fail to capture a number of syntactic properties of LPPPAs, and that LPPPAs should receive a more refined analysis. Section 3 will be devoted to clarifying five syntactic differences between the two types of LPPPAs. After classifying PP adjuncts into VPPPAs and SPPAs in section 3.1, I will argue in section 3.2 that left-peripheral VPPPAs have the same properties as topicalized elements, but left-peripheral SPPAs do not. Finally, section 4 will propose an alternative analysis for LPPPAs based on Chomsky's (2000, 2001) framework. I will claim that left-peripheral VPPPAs are base-generated within VP for adverbial licensing and that they move to Spec-CP after participating in topic feature matching with C in the same way that topicalized elements do. On the other hand, I will claim that left-peripheral SPPAs do not participate in topic feature matching and that they are base-adjoined to projections of T or C for adverbial licensing. Finally, section 4.2 will argue based on the Minimalist framework that the presence of topic feature matching and the concomitant A'-movement to Spec-CP induces the same properties between topicalized elements and left-peripheral VPPPAs, while the absence of these distinguishes left-peripheral SPPAs.

2. Previous Studies of LPAs

This section takes a critical view of previous studies on LPAs conducted by Kayne (1994) and Rizzi (1997). It is pointed out that their analyses fail to capture a number of syntactic properties of LPPPAs, and that LPPPAs require a more refined analysis.

Kayne (1994) claims that there is a functional projection above IP and that LPAs such as *yesterday* in (2a) must be located there, while the head is not phonetically realized, as in (2b).

(2) a. Yesterday Peter danced.
b. $[_{FP}$ yesterday F $[_{TP}$ Peter danced]]

His analysis is motivated by the existence of Negative Inversion in English and the syntax of the German matrix clause as exemplified in (3).

(3) a. Never have I seen the movie before.

b. Gestern hat Peter getanzt.
Yesterday-Top has Peter-Nom danced
'Yesterday John danced'

As is well known, when negative adjuncts forcing sentential negation appear in the clause-initial position, Subject-Aux-Inversion (hereafter, SAI) must be applied in English. Similarly, clause-initial elements including adjuncts must be immediately followed by the verb in the German matrix clause for the so-called Verb Second rule, while these elements function as a topic as with topicalized elements in English. Given that the subject position is Spec-IP, the adjuncts and the verbs in (3) are in a Spec-head relation within a projection above IP (see Müller and Sternefeld (1993) and Vikner (1995) for the German example). This analysis can be extended to English examples such as (2a), except that SAI is not triggered in this case for stipulation.

A similar approach is proposed in Rizzi (1997). Exploiting the Split-CP structure of (4a), he claims that each LPA is hosted in an independent TopP, while maintaining that TopP is the typical projection for topicalized elements. In his analysis, for example, the adjunct *next year* in (4b) stands in TopP, as sketched in (4c).

(4) a. ForceP – TopP* – FocP – TopP* – FinP – IP

b. I think that, next year, John will win the prize.

c. $[_{\text{ForceP}}\ \text{Force}^{0}_{\text{that}}\ [_{\text{TopP}}\ \text{next year}\ \ \text{Top}^{0}\ \ldots\ [_{\text{IP}}\ \text{John}\ \ldots\ ]]]$

So far this section has briefly overviewed the analyses of Kayne and Rizzi for LPAs. The remainder of this section demonstrates how their analyses are problematic with respect to LPPPAs. For Kayne and Rizzi, the position of LPAs is a specific functional projection like FP and TopP which is taken to be the typical position of negative adjuncts and topicalized elements. A prediction drawn from their analyses is that LPAs share the same properties and distributions as negative adjuncts and topicalized elements. However, this prediction is not borne out. A close scrutiny of LPPPAs demonstrates that not all sorts of LPPPAs are parallel to negative adjuncts and topicalized elements. One of the circumstances in which such a point becomes clear is the matrix *Wh*-question. Consider (5):

(5) a. * Where on no account should I go? (Haegeman (2000: 27))

b. * To whom, a book like this, would you give? (Koizumi (1995: 145))

c. * What, with the professor, did John argue?

d. What in spite of the heavy rain did John do?

The above paradigm shows that the negative adjunct, the topicalized element and the LPPPA in (5b) cannot intervene between the *wh*-phrase and the auxiliary verb, but the LPPPA in (5c) can.

The analyses of Kayne and Rizzi cannot account for why only (5d) is acceptable. Following Rizzi's Split-CP structure, the structure represented in (6) should be given to all the examples in (5).

(6) $[_{\text{FocP}}$ *Wh & Negative* Foc^0 $[_{\text{TopP}}$ *Topic* Top^0 $[_{\text{IP}} \ldots]]]$

In (6), the *wh*-phrase and the negative adjunct are located in Spec-FocP, whereas the topicalized element is located in Spec-TopP.[2] If LPAs were located in Spec-FocP, (5c) as well as (5a) could be ruled out successfully for the incompatibility with the *wh*-phrase in Spec-FocP. However, also (5d) should be ruled out for the same reason, contrary to the fact.

Yet (5d) would wrongly be ruled out even if LPAs were located in Spec-TopP. In order to capture the presence of SAI in the matrix *Wh*-question, the head movement from I to Foc is required. This head movement is motivated by the *Wh*-criterion in Rizzi's analysis. However, the auxiliary verbs in (5b–d) are not considered to be in the Foc head, as they follow the topicalized element and the LPPPAs. If the head movement is obligatory, their analyses should exclude not only (5b, c) but also (5d), contrary to the fact. In fact, Rizzi (1997: 299) rules out an Italian example like (5b) because of the lack of the head movement to Foc.[3]

Even if it were stipulated that the head movement to Foc can be suspended exceptionally, another problem would arise. The word order in (5) indicates that the auxiliary verbs are in the Top head. However, the Top head should not trigger the head movement of I, since English Topicalization and sentences with LPAs lack SAI. This is exactly what Kayne (1994: 28) and Rizzi (1997: 303) assume for English. If all LPPPAs were hosted in TopP, it would not be clear why the head movement to Top is exceptionally allowed only in (5d). Therefore, the analyses providing a specific functional projection for all LPAs are dubious. Rather the contrast between (5a–c) and (5d) seems to imply that some LPPPAs are treated on a par with negative adjuncts and topicalized elements do, but others are not. Therefore it is necessary to consider subtypes of LPPPAs in order to deal with LPPPAs closely.

In section 3.2, I will show some more circumstances like (5) in which only a certain type of LPPPAs shares the same properties and distributions as topicalized elements. Section 3 will introduce a classification in which PP adjuncts are broken into VPPPAs and SPPAs. Section 4 will provide an alternative analysis which accounts for syntactic properties of the two types of LPPPAs more properly and less redundantly than Kayne and Rizzi.

3. Syntactic Differences between VPPPAs and SPPAs

At the end of the previous section, I noted the necessity of discussing subtypes of LPPPAs, taking as an example the contrast in (5). Reinhart (1983) proposes an analysis which sheds light on a classification between verb phrasal and sentential PPs, and on their syntactic differences. Although section 4 will propose a different analysis especially for left-peripheral SPPAs, this paper attempts to resurrect her dichotomy of PPs for the purpose of a close discussion of LPPPAs. In section 3, I classify PP adjuncts into VPPPAs and SPPAs, and show that their syntactic differences become more explicit in the left periphery.

3.1. The Distinction between VPPPAs and SPPAs

Section 3.1 introduces a classification of PP adjuncts. It is demonstrated that VPPPAs and SPPAs have different base-generation sites for adverbial licensing and that the distinction is supported with respect to two syntactic diagnostics.

This paper makes use of a dichotomy between verb phrasal and sentential PP adjuncts (VPPPAs and SPPAs) in the same spirit that Reinhart (1983) does. Included in VPPPAs are such adjuncts as means, instrument, accompaniment, location, benefactive, purpose and opponent, e.g. *with the car, with the knife, in front of the desk* and *for the big prize*. These PP adjuncts are VP-oriented in the sense that they readily modify verbs and verbal elements. On the other hand, listed in SPPAs are adjuncts such as *as a result of, in spite of, in general* and so on, most of which correspond to disjuncts or conjuncts in Quirk et al. (1985). According to the authors, disjuncts are syntactically more detached than other sentence elements. They are also superordinate in that they seem to have a scope that extends over the sentence as a whole and conjuncts have the similar role (see Quirk et al. (1985: 613, 631)). In this respect, SPPAs are sentence-oriented rather than VP-oriented.

The two types of PP adjuncts are clearly distinguished in terms of two syntactic diagnostics which strengthen the view that VPPPAs are VP-oriented and SPPAs are sentence-oriented. The first diagnostic is *though*-movement, in which VP can occur in front of *though*. As is evident from (7) and (8), VPPPAs can occur in this position with VP but SPPAs cannot (adjuncts at issue are italicized for clarity).

(7) a. Cut an apple *with the knife* though John did, he dropped all the pieces on the ground.
b. Go to the party *with his girlfriend* though John did, he lost sight of her in the crowd.
c. Carve a figure *out of the wood* though John did, the figure collapsed soon.
d. Compete *for the first prize* though John did, he finished in last place.

(8) a. * Come here by 9 *in general* though John does, he didn't come until the noon today.
b. * Keep running *in spite of the heavy rain* though John did, he fortunately didn't catch a cold.
c. * Develop a new vaccine *as a result of their research* though they did, the vaccine turned out to have serious side-effects.
d. * Succeed in the exam *in my opinion* though John will, he might repeat a year anyway.

Given that what occurs in front of *though* is limited to VP in this case, the contrast between (7) and (8) suggests that VPPPAs are VP constituents but SPPAs are not.

The second diagnostic concerns whether PP adjuncts can occur in the pre-auxiliary position. As argued by Jackendoff (1972), there are some positions in which PPs functioning as sentence adverbs can occur but some other PPs cannot. One of these positions is the one between the subject and the auxiliary verb, i.e. the pre-auxiliary position. As shown in (9) and (10), VPPPAs cannot occur in this position but SPPAs can.

(9) a. ?* John, with his car, will travel all over the continent.
b. ?* John, for the kids, will fix dinner.
c. ?* We, in front of the table, will seat ourselves.
d. ?* We, with the professor, will argue a lot.

(10) a. John, according to Mary, could win the race.
b. John, for all intents and purposes, has gained a great success.
c. We, in addition to turkeys, will buy chickens.
d. We, under normal circumstances, would start our meeting at 5.

Given that the pre-auxiliary position is T', the above contrast confirms the view that VPPPAs are VP constituents but SPPAs are not. SPPAs can occur in the pre-auxiliary position, because they are elements outside of VP and can be base-adjoined to T'. On the other hand, VPPPAs cannot occur in the position at issue, because they are elements inside VP and cannot be base-adjoined to T'. Nor can they move to T' from their base-generated position within VP, as there would be no motivation for such a movement.

From the two diagnostics, it is evident that VPPPAs are elements inside VP and that SPPAs are elements outside of VP. Put it theoretically, this difference between VPPPAs and SPPAs should be ascribed to their having a difference in adverbial licensing. Adopting Travis's (1988) claim that the adverbial is licensed by being adjoined to projections of its specific licensing head(s), this paper assumes that the licensing head of VPPPAs is V and that that of SPPAs is T and C.[4] This ensures that

VPPPAs must be base-generated within verbal projections and that SPPAs must be base-generated within higher projections such as those of T and C. This paper does not assume unlike Cinque (1999) that adverbial licensing must need feature checking under a Spec-head relation but assumes that the adverbial can be adjoined to projections whose specifier is already occupied.

In section 4, the difference in adverbial licensing will play a significant role in accounting for syntactic differences between left-peripheral VPPPAs and SPPAs. Based on the distinction, section 3.2 shows that VPPPAs and SPPAs give rise to sharp differences in the left-peripheral positions.

3.2. Syntactic Differences between Left-Peripheral VPPPAs and SPPAs

Although section 3.1 posited different licensing positions for VPPPAs and SPPAs, both of these can occur in the left-periphery, as exemplified in (1). One might say that the assumption regarding adverbial licensing is not on the right track and that PP adjuncts should not be differentiated in the left-periphery. However, as we will see in this section, VPPPAs and SPPAs do show sharp differences in the left-peripheral positions. Section 3.2 argues that such differences become explicit with respect to five syntactic properties: reconstruction effects, the iterability of left-peripheral elements, occurrences in Topicalization, occurrences in the matrix *Wh*-question and island effects. Specifically, I argue that left-peripheral VPPPAs show the same behavior as topicalized elements, whereas left-peripheral SPPAs do not.

The first syntactic difference concerns reconstruction effects. As is well-known, topicalized elements obtain reconstruction effects. Consider (11) and (12):

(11) a. The picture of himself$_i$, John$_i$ admired.
b. His$_i$ pictures, every student$_i$ left on the table.
(12) a. John$_i$ admired the picture of himself$_i$.
b. Every student$_i$ left his$_i$ pictures on the table.

The coreference between the subject and the anaphor in (11a) and the availability of the bound pronoun reading in (11b) are attributed to a reconstruction of the topicalized elements. The topicalized elements in (11a, b) are considered to have A'-moved upward from the object position in (12a, b), which is a position c-commanded by the subject. If they reconstruct to the object position, the subject can bind the anaphor or the pronoun, as in the case of (12a, b), and the grammaticality of (11a, b) follows. Similarly, left-peripheral VPPPAs obtain reconstruction effects, as shown by the parallelism between (13a, b) and (14a, b).

(13) a. For himself$_i$, John$_i$ always fixes dinner.
b. With his$_i$ knife, everyone$_i$ cut an apple.
(14) a. John$_i$ always fixes dinner for himself$_i$.
b. Everyone$_i$ cut an apple with his$_i$ knife.

This parallelism implies that the left-peripheral VPPPAs in (13a, b) have undergone A'-movement from the clause-final position in (14a, b), in which the VPPPAs are bound by the subject.

On the other hand, left-peripheral SPPAs lack reconstruction effects. Notice the contrast between (15a, b) and (16a, b):

(15) a. * According to himself$_i$, John$_i$ won the race.
b. * In his$_i$ opinion, every student$_i$ will succeed in the exam.
(16) a. John$_i$ won the race according to himself$_i$.
b. Every student$_i$ will succeed in the exam in his$_i$ opinion.

When the SPPAs *according to himself* and *in his opinion* occur in the left-periphery, as in (15a, b), the anaphor cannot be coreferential with the subject and the bound pronoun reading is not available. The examples in (15a, b) are contrastive with those in (16a, b), which show that the coreference between the subject and the anaphor, and the bound pronoun reading are possible when the SPPAs occur in the clause-final position. This suggests that the left-peripheral SPPAs in (15a, b) are not dislocated from the clause-final position in (16a, b), unlike the topicalized elements and the left-peripheral VPPPAs above.

The second syntactic difference is observed in the iterability of left-peripheral elements. As shown in (17)–(19), topicalized elements and left-peripheral VPPPAs cannot be iterable but left-peripheral SPPAs can.

(17) a. * This book, to Robin, I gave. (Culicover (1991: 61))
b. * On the table, this book, John put.
(18) a. * For the big prize, with the tall man, John competed.
b. * With the knife, out of the wood, John carved a figure.
(19) a. In my opinion, for all intents and purposes, John has gained a great success.
b. In addition, as a result of the research, John developed the new vaccine.

Thirdly, left-peripheral VPPPAs and SPPAs are also distinguished in co-occurrences with topicalized elements. As shown in (20) and (21), VPPPAs cannot but SPPAs can co-occur with

topicalized elements in the left periphery regardless of the orderings.

(20) a. * This figure, out of the wood, John carved.
b. * With the knife, the apple, John cut.
(21) a. The new vaccine, as a result of the research, John developed.
b. In my opinion, the first prize, John will win.

The fourth syntactic difference lies in occurrences in the matrix *Wh*-question, which were partly discussed in section 2. Topicalization is incompatible with the matrix *Wh*-question. Neither the sequence of *Wh-Topic* nor that of *Topic-Wh* is permissible. See (22) and (23):[5]

(22) a. * To whom, a book like this, would you give? (=(5a))
b. * Where, that book, did John put?
(23) a. * This book, to whom should I give? (Chomsky (1977: 94))
b. * Rosa, when did you last see? (Reinhart (1983: 85))

The same is true of left-peripheral VPPPAs. As given in (24) and (25), VPPPAs cannot occur in the left periphery of the matrix *Wh*-question regardless of the orderings.

(24) a. * What, with the professor, did John argue? (=(5b))
b. ?* Where, with his parents, did John go?
(25) a. * With the professor, what did John argue?
b. ?* With his parents, where did John go?

On the other hand, left-peripheral SPPAs are compatible with the matrix *Wh*-question both in the sequence of *Wh-PP* and that of *PP-Wh*. See (26) and (27):

(26) a. What in spite of the heavy rain did John do? (=(5c))
b. What in addition to turkeys did you buy?
(27) a. In spite of the heavy rain, what did John do?
b. In addition to turkeys, what did you buy?

Finally, left-peripheral SPPAs are distinguished from topicalized elements and left-peripheral VPPPAs with respect to island effects.

(28) a. * Which book did Lee say that, on the table, Lee had put? (Culicover (1991: 5))
b. * Where do think that those books, they put?

(29) a. * On which table did Lee say that for Robin, she can put the books?
(Culicover (1991: 5))
b. * What did John say that in front of the desk, he found?

(30) a. What did Lee insist that, under normal circumstances, Robin would give us?
(Browning (1996: 250))
b. What did John say that in general, he brought to the game?

Topicalized elements and left-peripheral VPPPAs constitute an island for *wh*-movement, as in (28) and (29), but left-peripheral SPPAs do not, as in (30).

In sum, the discussion above has shown five syntactic differences between left-peripheral VPPPAs and SPPAs. We have observed that left-peripheral VPPPAs show the same behavior as topicalized elements, but left-peripheral SPPAs do not. These facts suggest that left-peripheral VPPPAs should be close to topicalized elements in syntactic derivation but left-peripheral SPPAs should not. Section 4 will propose an analysis which distinguishes the two types of LPPPAs with respect to syntactic derivation.

4. A Minimalist Analysis of LPPPAs

This section provides a syntactic analysis in which left-peripheral VPPPAs are necessarily located in Spec-CP, while left-peripheral SPPAs are base-adjoined to projections of C or T. I claim that this derivational difference stems from the fact that only left-peripheral VPPPAs undergo A'-movement to Spec-CP by virtue of topic feature matching. I also claim that the presence of a pair of topic features and the concomitant A'-movement is responsible for yielding the different syntactic properties between left-peripheral VPPPAs and SPPAs.

4.1. Derivations of Sentences with LPPPAs

Section 4.1 demonstrates how the present paper derives basic sentences with LPPPAs. As preliminaries, let us begin by describing the framework and assumptions that are of importance in the discussion below.

This paper adopts Chomsky's (2000, 2001) framework, in which uninterpretable features are deleted by *Agree* and movements are driven by the EPP feature [EPP], although the phase-by-phase derivation is ignored for simplicity. Chomsky (2000) derives *Wh*-question (31a) as in (31b, c).

(31) a. What did Mary buy?

b. [$_{CP}$ C_{AUX} [$_{TP}$ Mary buy what]]

~~[*u*Q]~~ [Q]

[EPP] ~~[*u*Wh]~~

c. [$_{CP}$ what C_{AUX} [$_{TP}$ Mary buy t_{Wh}]]

[Q] ~~[*u*Q]~~

~~[*u*Wh]~~ ~~[EPP]~~

In (31b, c), an interrogative C is projected with an uninterpretable Q-feature [*u*Q] and [EPP], while the *wh*-phrase carries an interpretable Q-feature [Q] and an uninterpretable *wh*-feature [*u*Wh]. [*u*Q] of C enters into a matching relation with the goal [Q] of the *wh*-phrase. Under this relation, [*u*Q] of C undergoes deletion by *Agree* and concomitantly, [*u*Wh] of the *wh*-phrase gets deleted, as shown in (31b). Finally, as shown in (31c), [EPP] of C gets eliminated by moving the *wh*-phrase to Spec-CP, based on the matching relation between [Q] and [*u*Q].

Adopting the single CP structure, this paper extends Chomsky's essential mechanism of *Wh*-question to Topicalization. Consider (32):

(32) a. This book, Mary gave to John.

b. [$_{CP}$ C [$_{TP}$ Mary [$_{VP}$ gave this book to John]]]

~~[*u*Top]~~ [Top]

[EPP] ~~[*u*Op]~~

c. [$_{CP}$ this book C [$_{TP}$ Mary [$_{VP}$ gave t_{Topic} to John]]]

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

In the present analysis, Topicalization projects a non-interrogative C endowed with an uninterpretable topic feature [*u*Top] and [EPP]. The topicalized object is base-generated within VP for θ-theoretical reason and carries an interpretable topic feature [Top] and an uninterpretable feature which corresponds to [*u*Wh] of *wh*-phrases (see Radford (2004) for comparison). This paper tentatively calls this uninterpretable feature an uninterpretable operator feature [*u*Op] (see Shima (1999) for comparison). [*u*Top] of C enters into a matching relation with the goal [Top] of the topicalized element. Under this relation, [*u*Top] gets deleted by *Agree*, and on top of that, [*u*Op] of the topicalized element must undergo deletion, as shown in (32b). [EPP] of C gets eliminated by moving the topicalized element to Spec-CP via the matching relation between [Top] and [*u*Top], as shown in (32c).

The present analysis for Topicalization is in line with Chomsky's (2000, 2001) framework, in which three kinds of uninterpretable formal features are involved in overt movement and uninterpretable features render the goal active. In the present analysis, three uninterpretable features consist of [*u*Op], [*u*Top] and [EPP], and [*u*Op] renders topicalized elements active so that they can enter into a matching relation with the non-interrogative C. [Top] and [*u*Op] of topicalized elements are analogous to [Q] and [*u*Wh] of *wh*-phrases. [Top] contributes to semantic interpretation at LF in the same way that [Q] does. On the other hand, [*u*Op] as well as [*u*Wh] contributes to the obligatory movement of its carrier to Spec-CP. This is because [*u*Op] does not get eliminated until [Top] matches [*u*Top] of C, a feature paired with [EPP].

In addition, I assume the following for the matrix *Wh*-question and Topicalization in English. Firstly, I assume that the matrix C is unique in English. To be more specific, C is uniquely projected in the matrix clause either with [*u*Q] or with [*u*Top]. Secondly, I assume that [EPP] of C is also unique so that only one element can occupy Spec-CP as a result of relevant feature matching. This precludes multiple specifiers regarding CP. Finally, the interrogative C is sufficiently affixal to trigger the head movement from T to C, while the non-interrogative C is not.

With these preliminaries in mind, let us show how to derive sentences with left-peripheral VPPPAs first. This paper claims with Reinhart (1983) that left-peripheral VPPPAs A'-move to Spec-CP, and further claims that this A'-movement is triggered by topic feature matching.[6]

(33) a. With the knife, John cut an apple.

b. $[_{CP}$ C $[_{TP}$ John $[_{VP}$ cut an apple with the knife]]]

~~[*u*Top]~~ [Top]

[EPP] ~~[*u*Op]~~

c. $[_{CP}$ with the knife C $[_{TP}$ John $[_{VP}$ cut an apple t_{PP}]]]

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

The VPPPA in (33a) is base-generated within VP for adverbial licensing to the effect that VPPPAs must be licensed within verbal projections. As illustrated in (33b), [*u*Top] of the non-interrogative C probes [Top] of the VPPPA, and both [*u*Top] and [*u*Op] undergo deletion by *Agree*. The VPPPA A'-moves to Spec-CP to delete [EPP] of C based on the matching between [Top] and [*u*Top], as in (33c).[7]

When VPPPAs occur in the left periphery, they must be placed there via movement after satisfying adverbial licensing. At the same time, the application of A'-movement to left-

peripheral VPPPAs ensures that they need Spec-CP as their specific position. The presence of A' -movement is confirmed by the presence of reconstruction effects.

(34) a. His_i pictures, every $student_i$ left on the table. (=(11b))
b. [$_{CP}$ his pictures [$_{TP}$ every student left his pictures on the table]]
(35) a. With his_i knife, $everyone_i$ cut an apple. (=(12b))
b. [$_{CP}$ with his knife [$_{TP}$ everyone cut an apple with his knife]]

Based on Chomsky's (1995) Copy Theory, the Topicalization example of (34a) has two copies of the topicalized element, one in Spec-CP and the other in the original position, as illustrated in (34b). If the lower copy remains undeleted at LF, then the quantized subject binds the pronoun in the lower copy. As a result, the bound pronoun reading is obtained successfully. The fact that the bound pronoun reading is available in (35a) supports the claim that left-peripheral VPPPAs also undergo A'-movement. The VPPPA in (34a) has A'-moved leaving behind its copy in VP, as illustrated in (35b). The bound pronoun reading is available because the lower copy is bound by the quantized subject at LF.

Now let us show how to derive sentences with left-peripheral SPPAs. This paper claims that left-peripheral SPPAs are base-adjoined to projections of T or C without topic feature matching.[8] The structure in (36b) represents the derivation of (36a).

(36) a. Under normal circumstances, we would start our meeting at 5.
b. [$_{TP}$ under normal circumstances [$_{TP}$ we would start our meeting at 5]]

In (36a), the SPPA is base-adjoined to TP. This base-adjunction is tenable for SPPAs, because SPPAs are licensed within projections of T or C. The base-adjunction to TP is irrelevant to feature matching with T and thereby does not give rise to the deletion of [EPP] of T.[9] Crucially, left-peripheral SPPAs do not require Spec-CP as their specific position because they lack topic feature matching with C and the concomitant A'-movement. Consequently, even though they are base-adjoined to projections of C, this adjunction does not lead to the deletion of [EPP] of C, as will be discussed later.

The claim that SPPAs lack A'-movement is supported by the fact that they do not obtain reconstruction effects.

(37) a. * In his$_i$ opinion, every student$_i$ will succeed in the exam. (=(15b))
b. [$_{TP}$ in his opinion [$_{TP}$ every student will succeed in the exam]]
(38) a. Every student$_i$ will succeed in the exam in his$_i$ opinion. (=(16b))
b. [$_{TP}$ every student [$_{T'}$ will succeed in the exam in his opinion]]

The contrast above shows that the SPPA in (37a) is not A'-moved from the clause-final position in (38a), which is a position c-commanded by the subject, given it is right-adjoined to T' as in (38b). Rather the lack of the bound pronoun reading in (37a) follows from the fact that the SPPA is base-adjoined to TP, as illustrated in (37b). In (37b), the quantized subject does not c-command the pronoun in the SPPA, given the following definition of c-command.

(39) X c-commands Y iff X and Y are categories and X excludes Y and every category that dominates X dominates Y. (Kayne (1994: 16))

Both of the TP segments in (37b) dominate the subject, while only the higher one dominates the SPPA. Hence, the category of TP dominates the subject, but not the SPPA. Since not every category that dominates the subject dominates the SPPA, the subject does not c-command the SPPA (cf. Reinhart's (1983) definition of c-command and analysis of the binding properties regarding LPPPAs).[10]

In section 4.2, I will show that this analysis successfully accounts for the syntactic differences between left-peripheral VPPPAs and SPPAs.

4.2. A Minimalist Account for LPPPAs' Syntactic Properties

Section 4.2 is devoted to accounting for the four syntactic differences between topicalized elements and left-peripheral VPPPAs on the one hand, and left-peripheral SPPAs on the other. I argue that these differences also originate from whether left-peripheral elements undergo A'-movement to Spec-CP as a result of topic feature matching.

4.2.1. Iterability and Co-occurrences

Section 4.2.1 provides a Minimalist account for the syntactic properties regarding the iterability and occurrences in Topicalization and the matrix *Wh*-question.

First, let us explain the non-iterability of topicalized elements and left-peripheral VPPPAs, repeated here in (40).

(40) a. * This book, to Robin, I gave. (=(17a))

b. * For the big prize, with the tall man, John competed. (=(18a))

(41) a. [$_{CP}$ to Robin C [$_{TP}$ I gave this book t_{PP}]]

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

b. [$_{CP}$ with the tall man C [$_{TP}$ John competed t_{PP} for the big prize]]]

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

As sketched in (41a, b), the two topicalized elements and the two VPPPAs are base-generated within VP. In (41a), [*u*Op] of *to Robin* and [*u*Top] of the non-interrogative C are deleted by virtue of topic feature matching, while [EPP] is deleted by moving the PP to Spec-CP. The same feature deletions take place in (41b), in which the goal is the VPPPA *with the tall man*. The ungrammaticality of (40a, b) follows from the lack of motivation for applying A'-movement to the object *this book* and the VPPPA *for the big prize*. As this paper assumes that C and its [EPP] are unique, no more element can move up to CP in (41a, b).

The same explanation can be given for the fact that left-peripheral VPPPAs are incompatible with Topicalization.

(42) a. * This figure, out of the wood, John carved. (=(20a))

b. * With the knife, the apple, John cut. (=(20b))

In (42b), for example, [EPP] of C is deleted by the movement of the object *the apple*. Moving the VPPPA to CP is impossible, since CP is already closed.

The incompatibility with the matrix *Wh*-question is explained in the following way.

(43) a. * To whom, a book like this, would you give? (=(22a))

b. * What, with the professor, did John argue? (=(24a))

(44) a. * This book, to whom should I give? (=(23a))

b. * With the professor, what did John argue? (=(25a))

The examples in (43) and (44) are excluded, because nothing motivates the direct objects and the VPPPAs to undergo A'-movement. Consider (45) and (46):

(45) a. [$_{CP}$ C_{AUX} [$_{TP}$ you give a book like this to whom]]
[*u*Q] [Q]
[EPP] [*u*Wh]

b. [$_{CP}$ C_{AUX} [$_{TP}$ John argue what with the professor]]
[*u*Q] [Q]
[EPP] [*u*Wh]

(46) a. [$_{CP}$ to whom C_{AUX} [$_{TP}$ I give this book t_{Wh}]]
[Q] ~~[*u*Q]~~
~~[*u*Wh]~~ ~~[EPP]~~

b. [$_{CP}$ what C_{AUX} [$_{TP}$ John argue t_{Wh} with the professor]]
[Q] ~~[*u*Q]~~
~~[*u*Wh]~~ ~~[EPP]~~

In (43a, b), an interrogative C with [*u*Q] and [EPP] is projected, while the affixal nature of the interrogative C has triggered SAI, as illustrated in (45a, b). According to the assumption that C is uniquely projected either with [*u*Q] or with [*u*Top], it is impossible to project a non-interrogative C with [*u*Top] in these cases. In (45a, b), C can probe the *wh*-phrases. However, it cannot probe the direct object and the VPPPA, because they do not carry [Q]. Therefore, the direct object and the VPPPA are not motivated to undergo A'-movement to Spec-CP. Similarly, the direct object in (44a) and the VPPPA in (44b) have no motivation for A'-movement, since all the features of C are relevant only to *wh*-movement (see (46)).[11]

So far this section has provided an explanation for the syntactic properties of topicalized elements and left-peripheral VPPPAs. The remainder of this section is dedicated to accounting for the properties of left-peripheral SPPAs. The fact that left-peripheral SPPAs are iterable is explained as follows.

(47) a. In my opinion, for all intents and purposes, John has gained a great success.
(=(19a))

b. [$_{TP}$ in my opinion [$_{TP}$ for all intents and purposes [$_{TP}$ John ...]]]

Topic feature matching does not take place in the case of left-peripheral SPPAs, and thus they do not need Spec-CP as their specific position. In (47b), the SPPAs are multiply base-adjoined to TP. This adjunction involves no feature matching either with T or C, thereby dispensing with the elimination of [EPP].

Left-peripheral SPPAs can be compatible with topicalized elements for the same reasons.

(48) a. The new vaccine, as a result of the research, John developed. (=(21a))

b. In my opinion, the first prize, John will win. (=(21b))

(49) a. $[_{CP}$ the new vaccine $[_{C'}$ as a result of the research C $[_{TP}$ John developed $t_{Topic}]]]$

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

b. $[_{CP}$ in my opinion $[_{CP}$ the first prize C $[_{TP}$ John will win $t_{Topic}]]]$

[Top] ~~[*u*Top]~~

~~[*u*Op]~~ ~~[EPP]~~

In the present approach, the SPPA in (48a) is base-adjoined to C' and that in (48b) is base-adjoined to CP.[12] These adjunctions do not delete [EPP] of C because they are irrelevant to topic feature matching with C. Thus the topicalized movement to Spec-CP is successfully triggered by [EPP] of C, as sketched in (49a, b).

Finally, let us explain the fact that left-peripheral SPPAs are compatible with the matrix *Wh*-question. This paper proposes that the SPPA in (50a) is base-adjoined to C', while that in (50b) is base-adjoined to CP, as represented in (51a, b).[13]

(50) a. What in spite of the heavy rain did John do? (=(26a))

b. In spite of the heavy rain, what did John do? (=(27a))

(51) a. $[_{CP}$ what $[_{C'}$ in spite of the heavy rain $[_{C'}$ C_{Aux} $[_{TP}$ John do $t_{Wh}]]]]$

[Q] ~~[*u*Q]~~

~~[*u*Wh]~~ ~~[EPP]~~

b. $[_{CP}$ in spite of the heavy rain $[_{CP}$ what C_{Aux} $[_{TP}$ John do $t_{Wh}]]]$

[Q] ~~[*u*Q]~~

~~[*u*Wh]~~~~[EPP]~~

These base-adjunctions are tenable under adverbial licensing of SPPAs. In addition, the head-movement from T to C can take place successfully in (50a), although providing a projection for the SPPA is problematic for the head-movement, as discussed in section 2. The SPPA of (50a) is adjoined to C' without leading [EPP] of C to elimination. For the lack of [Q], the SPPA does not block the matching between [*u*Q] of C and [Q] of the *wh*-phrase. The head-movement from T to C is triggered by the affixal nature of the interrogative C without any problems.

4.2.2. Island Effects

The final part of section 4.2 is devoted to accounting for the remaining syntactic property,

i.e. island effects. I argue that island effects of left-peripheral VPPPAs and topicalized elements are explained in terms of Defective Intervention Constraints of Chomsky (2000).

For the discussion of island effects, it is necessary to pay attention to the structure of the left-periphery in the embedded clause and the way in which successive-cyclic A'-movement proceeds. As for the structure, the examples in (52) suggest that the structure of the left-periphery should be richer in the embedded clause, although the discussion so far adopted the single CP structure to the matrix clause.

(52) a. I think that this book, John gave to Mary.
b. I think that with the knife, John cut an apple.

As illustrated in (52), Topicalization and sentences with left-peripheral VPPPAs can occur in the *that*-clause selected by the non-factive predicate. To such an embedded clause, I adopt the CP-recursion structure in (53) that basically follows Authier (1992) and Iatridou and Kroch (1992).

(53) $[_{CP1}\ C1_{that}\ [_{CP2}$ Topic & VPPPA C2 $[_{TP}$ ...]]]

In (53), two types of C are projected. The higher C labeled as C1 is occupied by the complementizer *that*. Projected below is C2 that hosts topicalized elements and left-peripheral VPPPAs in its specifier.

For successive-cyclic A'-movement, I adopt the mechanism of Chomsky (2000), which is shown in (54).

(54) a. What does John think that Mary bought?
b. $[_{CP1}\ C1_{that}\ [_{TP}$ Mary bought what]]
~~[*u*P]~~ [Q]
[EPP] [*u*Wh]
c. $[_{CP}\ C\ [_{TP}$ John think $[_{CP1}$ what $C1_{that}\ [_{TP}$ Mary bought $t_{Wh}]]]]$
[*u*Q] [Q] ~~[*u*P]~~
[EPP] [*u*Wh] ~~[EPP]~~

Chomsky (2000: 149, note. 91) hypothesizes that C may have a nonspecific periphery feature [*u*P], which is contingent on assignment of [EPP]. This feature is considered as a minimal complement of periphery features, while [*u*Q] and [Q] are considered as full complements of

periphery features. According to this hypothesis, the embedded C, i.e. C1 in the present analysis is assigned [*u*P] as well as [EPP], as sketched in (54b). [*u*P] enters into a matching relation with [Q] of the *wh*-phrase, and this matching relation leads [*u*P] to deletion. In spite of the matching relation between [*u*P] and [Q], [*u*Wh] does not undergo deletion at this stage, based on an assumption that only a probe with a full complement of periphery features such as [*u*Q] is capable of deleting [*u*Wh]. In (54a), [*u*Wh] of the *wh*-phrase gets deleted when it enters into a matching relation with [*u*Q] of the matrix C, as in (54c).

With a minor modification, this paper extends the mechanism above to successive-cyclic A' -movement of topicalized elements, as in (55).

(55) a. This book, I think that John gave to Mary.

b. $[_{CP1}$ C1$_{that}$ $[_{TP}$ John gave this book to Mary]]

~~[*u*P]~~ [Top]

[EPP] [*u*Op]

c. $[_{CP}$ C $[_{TP}$ I think $[_{CP1}$ this book C1$_{that}$ $[_{TP}$ John gave t_{Topic} to Mary]]]]

[*u*Top] [Top] ~~[*u*P]~~

[EPP] [*u*Op] ~~[EPP]~~

Given that [Q] and [*u*Q] belong to periphery features, which are responsible for triggering A' -movement, it is natural to take also [Top] and [*u*Top] as types of periphery features.[14] Then [*u*P] of C1 can potentially match [Top] as well as [Q]. If this matching relation holds, as in (55b), the topicalized object of (55a) can move up to Spec-CP1 to eliminate [EPP]. [*u*Op] does not undergo deletion at this stage, since [*u*P] is not a full complement of periphery features. It gets eliminated when entering into a matching relation with [*u*Top] of the matrix C, as in (55c).

Now we are in a position to explain the presence versus absence of island effects. This paper claims that the examples in (56) are excluded in terms of Chomsky's (2000: 123) Defective Intervention Constraints (57).

(56) a. * Where do you think that those books, they put? (=(28b))

b. * What did John say that in front of the desk, he found? (=(29b))

(57) * $\alpha > \beta > \gamma$, where $>$ is c-command, β and γ match the probe α, but β is inactive so that the effects of matching are blocked.

(58) a. $[_{CP1}\ C1_{that}\ [_{CP2}$ those books C2 $[_{TP}$ they put t_{Topic} where]]]

[*u*P]	[Top]	~~[*u*Top]~~	[Q]
[EPP]	~~[*u*Op]~~	~~[EPP]~~	[*u*Wh]

b. $[_{CP1}\ C1_{that}\ [_{CP2}$ in front of the desk C2 $[_{TP}$ he found what t_{PP}]]]

[*u*P]	[Top]	~~[*u*Top]~~	[Q]
[EPP]	~~[*u*Op]~~	~~[EPP]~~	[*u*Wh]

In (58a, b), the topicalized element and the VPPPA occupy Spec-CP2 with their [*u*Op] deleted and C1 realized as *that* is merged to CP2. Although [*u*P] of C1 seeks a matching goal in its c-commanding domain, it cannot enter into a matching relation with [Q] of the *wh*-phrases, according to Defective Intervention Constraints. Since [Top] as well as [Q] can match [*u*P], the deleted [*u*Op] of the topicalized element and the VPPPA count as inactive elements. Thereby, the topicalized element and the VPPPA block the matching between C1 and the *wh*-phrases, and *wh*-movement to Spec-CP1. Notice also that the topicalized element and the VPPPA cannot move up to Spec-CP1 either. Because they have turned into inactive elements due to the deletion of [*u*Op], they are not capable of participating in any more movements or feature matching operations.[15]

On the other hand, the fact that left-peripheral SPPAs do not constitute an island follows from the absence of [Top] and [*u*Op]. Consider (59):

(59) a. What did John say that in general, he brought to the game? (=(30b))

b. $[_{CP1}\ C1_{that}\ [_{TP}$ in general $[_{TP}$ he brought what to the game]]]

~~[*u*P]~~	[Q]
[EPP]	[*u*Wh]

c. $[_{CP1}$ what $C1_{that}\ [_{TP}$ in general $[_{TP}$ he brought t_{Wh} to the game]]]

[Q]	~~[*u*P]~~
[*u*Wh]	~~[EPP]~~

Although the SPPA of (59a) is located between C and the *wh*-phrase, as shown in (59b), it does not have [Top] and [*u*Op], and thereby Defective Intervention Constraints do not work for (59a). [*u*P] probes [Q] of the *wh*-phrase successfully and the *wh*-phrase moves up to CP, as in (59c). The derivation proceeds to the matrix clause, in which the *wh*-phrase moves up to the matrix C, as a result of the matching between [*u*Q] of the matrix C and [Q] of the *wh*-phrase in CP.

To sum up, section 4.2 has proposed a syntactic account that ascribes the different syntactic properties of LPPPAs to the presence of topic feature matching and A'-movement to Spec-CP

concomitant to the feature matching. The present analysis is preferred to the analyses of Kayne and Rizzi in that it can capture the syntactic properties and the distribution patterns of LPPPAs more properly and less redundantly by virtue of projecting CP only for left-peripheral VPPPAs.

5. Concluding Remarks

This paper has clarified syntactic differences between left-peripheral VPPPAs and SPPAs and proposed a Minimalist analysis for the two types of LPPPAs. In the present analysis, a specific functional projection, i.e. CP is necessary only for left-peripheral VPPPAs. This is because VPPPAs must be base-generated within verbal projections for adverbial licensing and involve A'-movement to CP in order to occur in the left-periphery. This A'-movement is triggered by topic feature matching between C and VPPPAs. The presence of the pair of topic features and the concomitant A'-movement to Spec-CP induces the same properties between topicalized elements and left-peripheral VPPPAs. On the other hand, left-peripheral SPPAs do not need a specific functional projection, because they are base-generated to projections of T or C for adverbial licensing. Theoretically, they lack the pair of topic features and A'-movement concomitant to topic feature matching. The absence of these distinguishes left-peripheral SPPAs from topicalized elements and left-peripheral VPPPAs.

Notes

[*] An earlier version of this paper was presented at the 78th General Meeting of the English Literary Society of Japan held at Chukyo University on May 21, 2006 and published in its Proceedings, pp. 107–109. I would like to express my deep gratitude to Hiromi Onozuka, Masaharu Shimada, Howard Lasnik, Alexandar Williams and two reviewers for their helpful comments and suggestions on the earlier version of this paper. I also thank Annie Gagliardi, Rebecca McKeown and Tim Hunter for their help to make English examples. My thanks also go to Edgar Acuria for stylistic help. Needless to say, all remaining inadequacies are my own.

[1] The asterisk indicates that TopP is iterative.

[2] In Rizzi's Split-CP analysis, the *wh*-phrase of the matrix *Wh*-question is located in Spec-FocP, while that of the embedded *Wh*-question is hosted in Spec-ForceP.

[3] The following Italian example corresponds to (5b).

(i) * Che cosa, a Gianni, gli hai detto?
what to Gianni to-him have-2SG told
'What, to Gianni, did you tell him?'

[4] Another possible candidate for the licensing head of VPPPAs is *v*. This paper leaves *v* aside from the discussion.

[5] Although sentences like (23a, b) are considered to be grammatical in Koizumi (1995) and Haegeman (2000), among others, my informants disagreed with their judgment. Instead they agreed with the judgment of Chomsky (1977) and Reinhart (1983). It should be noted that Left Dislocation is fairly possible in this circumstance, though Topicalization is not.

(i) a. This book, to whom should I give it? (Chomsky (1977: 94))
b. (As for) Rosa, when did you last see her? (Reinhart (1983: 85))

My informants found a significant difference of acceptability between (23a, b) and (ia, b).

[6] In Reinhart (1983: 68–70), verb-phrasal PPs as well as topicalized elements move up to COMP.

[7] A reviewer raises a question as to how the present analysis deals with sentences such as in (i), where topic elements stay in situ.

(i) a. Mary gave *this book* to John.
b. John cut an apple *with the knife*.

Under the present analysis, it is possible to assume that topic elements in situ carry only [Top] but not [*u*Op] and that the whole sentences do not project C with [*u*Top]. In other words, C or its [*u*Top] is only responsible for triggering syntactic aspects of topic sentences, while topic interpretation is obtained by virtue of [Top], which topic elements carry. This assumption could apply to sentences with left-peripheral SPPAs and the unmarked sentence where the subject carries old information and functions as a topic-like element. I am grateful to the reviewer for bringing my attention to this issue and leave a detailed analysis for future research.

[8] Reinhart (1983: 69–70) claims that above COMP, there is a higher category called *Expression*, which could be a functional projection in the current term, and that sentential PPs are located there. Although her analysis can capture the distribution of clause-initial sentential PPs, it cannot explain why sentential PPs can occur between the *wh*-phrase and the auxiliary verb or why they can be iterable in the left-periphery.

[9] As far as I have investigated, left-peripheral SPPAs have a different intonational property. This could be attributed to the absence of [Top] and/or [*u*OP].

[10] As far as I have checked, some SPPAs such as *in his home town* and *on his 21st birthday* can give rise to reconstruction effects. These PP adjuncts are classified as SPPAs based on their occurrence in the auxiliary position, as in (i). In addition, they are compatible with the matrix *Wh*-question (see (iii) below). However, bound pronoun reading is possible not only in (i) but also in (ii).

(i) a. Everyone$_i$, in his$_i$ hometown, has a special memory.
b. Everyone$_i$, on his$_i$ 21st birthday, has a special party.
(ii) a. In his$_i$ hometown, everyone$_i$ has a special memory.
b. On his$_i$ 21st birthday, everyone$_i$ has a special party.

The availability of bound pronoun reading in (ii) suggests that these SPPAs involve movement to the left-periphery to show reconstruction effects, as opposed to *according to* and *in one's opinion*.

Unfortunately, this paper cannot provide an account for why these PP adjuncts can undergo movement to the left-periphery and why those such as *according to* and *in one's opinion* cannot. I leave this problem for future research and end the discussion here by pointing out the following data.

(iii) a. In his hometown, what will he do?
b. On his 21st birthday, what will he do?
(iv) a. ?* In his$_i$ hometown, what will everyone$_i$ do?
b. ?* On his$_i$ 21st birthday, what will everyone$_i$ do?

Notice that bound pronoun reading is hard to get in (iv), while the PP adjuncts at issue can occur in front of the *wh*-phrase, as in (iii). Therefore, in the matrix *Wh*-question, these PP adjuncts should not be placed in the left-periphery via movement but should be base-generated there. Undeniably, they have an option to occur in the left-periphery without movement.

[11] Rizzi (1997: 290–291) presents Italian examples in which multiple Topicalization is possible and a topicalized element can precede a *wh*-phrase in the matrix *Wh*-question but not vice versa. See (i) and (ii):

(i) Il libro, a Gianni, domain, glielo darò senz'altro.
the book-Acc to Gianni tomorrow to-him-it give-1SG for sure
'The book, to Gianni, tomorrow, I'll give it to him for sure.'
(ii) a. A Gianni, che cosa gli hai detto?
to Gianni what to-him have-2SG told
'To Gianni, what did you tell him?'
b. * Che cosa, a Gianni, gli hai detto? (=(i) in note. 3)
'What, to Gianni, did you tell him?'

This paper does not go into Italian or account for differences between Italian and English, because it is beyond the scope of this paper. For the present purpose, it suffices to say that the two languages exploit different structures for the left-periphery due to the language variation. For example, as for (iia), the Italian matrix clause could project both an interrogative projection and a non-interrogative projection at the same time with an ordering restriction, while the English matrix clause does not have this option.

[12] See note. 13 below.

[13] It seems that SPPAs cannot be adjoined to TP in the matrix *Wh*-question. As shown in (ia, b), SPPAs cannot intervene between the auxiliary verb and the subject.

(i) a. * What did in spite of the heavy rain John did?
b. * What did in addition to turkeys you buy?

The ungrammaticality of (ia, b) poses a problem to the present assumption that left-peripheral SPPAs can be base-generated to TP. Unfortunately, I cannot give a solution to why the adjunction to CP and C' is possible but the adjunction to TP is prohibited in the matrix *Wh*-question. I leave for future research a further refinement of adverbial licensing for left-peripheral SPPAs.

In addition, the contrast between (50a) and (ia) urges me to say that the SPPA in (48a) should be adjoined to C' rather than to TP, although there would be no clear evidence against TP adjunction in Topicalization.

[14] Chomsky (2000: 108) implies that periphery features consist of force, topic, focus, etc.

[15] The present analysis for the so-called topic island is an extension from Chomsky's analysis for *wh*-island such as (ia).

(i) a. * What do you wonder who bought?
b. $[_{CP}\ C_{AUX}\ [_{TP}$ you wonder $[_{CP}$ who C $[_{TP}\ t_{Wh}$ bought what]]]]

[*u*Q]	[Q]	~~[*u*Q]~~	[Q]
[EPP]	~~[*u*Wh]~~[EPP]		[*u*Wh]

In (ib), the deleted [*u*Wh] of *who* blocks the matching between [*u*Q] of the matrix C and [Q] of *what*, according to Defective Intervention Constraints. Thereby, *what* cannot move up to the matrix C and [*u*Q] of the matrix C remains undeleted. [*u*Q] is not deleted by probing *who* either, since *who* has turned into a defective element for its deleted [*u*Wh] and cannot participate in any more feature matching operations.

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