English Verbal Morphology under Feature Inheritance

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1. Introduction

This paper aims to investigate the mechanism of the English verbal morphology in terms of the current framework of generative syntax. Shown in (1) are basic data relevant to the present discussion.

(1) a. John watched movies.
b. John did not watch movies.
c. What did John watch?

As for the examples in (1), two questions are addressed in this paper: (i) how the inflected verbal form (e.g. *watched*) is built up in (1a) and (ii) why the dummy auxiliary verb *do* is obligatorily inserted in negation and the matrix question such as (1b) and (1c).

With respect to the questions, two major analyses have been proposed in the literature. The first approach is the affix hopping approach, in which verbs are stored in bare form in the lexicon and obtain an affix via the affix hopping operation in syntax (Chomsky (1957), Bobaljik (1994), Lasnik (1995) and Omaki (2009)). The second approach is the lexicalist approach, in which verbs in the lexicon are already stored in the inflected forms (Chomsky (1993)).

This paper presents an analysis of the English verbal morphology by revisiting the affix hopping approach in terms of the framework of Chomsky (2008). Specifically, this paper proposes that either affix hopping or *do*-insertion takes place complementally depending on whether Tense-feature and the main verb are adjacent at PF. It is argued that the present analysis accounts for not only the standard cases of the English verbal morphology but also special cases of *do*-insertion observed in the matrix question and Negative Inversion.

This paper is organized as follows. Section 2 overviews the mechanism of Chomsky's (2008) feature inheritance and proposes a system for the English verbal morphology which resorts to the PF adjacency between Tense-feature and the main verb. It is argued that the proposed system successfully accounts for the basic facts on the English verbal morphology. Section 3 extends the analysis to the matrix question and Negative Inversion, where *do*-insertion is required. It is argued that the present system provides a precise account for not only the standard cases but also special cases of *do*-insertion in these constructions. Section 4 makes concluding remarks and demonstrates a remaining problem for the present analysis.

2. Feature Inheritance and Verbal Morphology

Section 2 proposes a system for the English verbal morphology in terms of the framework of Chomsky (2008). Section 2.1 outlines the mechanism of Chomsky's (2008) feature inheritance. Section 2.2 presents a system for the English verbal morphology which resorts to the PF adjacency between Tense-feature and the main verb in conjunction with feature inheritance.

2.1. The Mechanism of Feature Inheritance

Chomsky (2008) makes a significant departure from syntactic theories up to Chomsky (2000, 2001), which have maintained that the original locus of ϕ-features is T. Specifically, Chomsky (2008) advocates the mechanism of feature inheritance, according to which uninterpretable ϕ-features [uϕ] originate in the phase head C, and they are inherited from C to the lower head T in overt syntax. According to this mechanism, the derivation of (2a) proceeds as shown in (2b, c).

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(2) a. We like movies.
b. [$_{CP}$ C$_{[u\phi]}$ [$_{TP}$ T$_{[u\phi]}$ [$_{vP}$ we$_{[\phi]}$ like movies]]][1]
c. [$_{CP}$ C$_{[u\phi]}$ [$_{TP}$ we$_{[\phi]}$ T$_{[u\phi]}$ [$_{vP}$ <we> like movies]]][2]

As shown in (2b), [uϕ] originates in C, and it is discharged to T soon after C is merged to TP. [uϕ], once inherited to T, plays an important role in Agree and Move. As uninterpretable features, [uϕ] probes DP with interpretable ϕ-features [ϕ] in its c-commanding domain, e.g. the subject DP *we*. As a result, the Goal DP *we* is attracted to Spec-T, as shown in (2c).

A question arising from this mechanism is why uninterpretable ϕ-features cannot keep staying in C and must be discharged to T. Richards (2007) offers convincing reasoning to why uninterpretable features including ϕ-features must be discharged. According to Richards (2007), a valued uninterpretable feature, if remaining on the edge of the lower phase, is no longer distinguishable from an interpretable feature in the next higher phasal computation. Consequently, Transfer to the higher phase fails to delete the valued uninterpretable feature on the lower phase edge, causing a derivational crash. Since ϕ-features originating in the phase head C are uninterpretable features, they must be discharged to the lower head T so that the derivation will result in convergence.

Chomsky (2008) assumes that C is originally endowed with not only ϕ-features but also what he calls Tense-feature, and that feature inheritance also applies to Tense-feature. Thus, in the derivation of (2a), both ϕ-features and Tense-feature are inherited to T, once C is merged to TP.[3]

(3) [$_{CP}$ C$_{[u\phi][Tense]}$ [$_{TP}$ T$_{[u\phi][Tense]}$ [$_{vP}$ we$_{[\phi]}$ like movies]]]

However, Chomsky (2008) and his subsequent works do not make clarification as to what Tense-feature is or what Tense-feature is responsible for. To my knowledge, few studies have been conducted as to how this Tense-feature contributes to syntax and other levels of language. One of the few studies which make an explicit reference to the role of Tense-feature is Kanno (2008), which assumes that Tense-feature is related to the realization of tense morphemes. This paper follows Kanno (2008) in assuming that Tense-feature is realized as one of the tense morphemes such as *-ed*. This paper also assumes that a tense morpheme realized from Tense-feature has to undergo affix hopping to a verbal element at PF. The following section proposes a system for the English verbal morphology which puts these assumptions into shape.

2.2. Affix Hopping and *Do*-insertion under Feature Inheritance

Based on the feature inheritance mechanism above, section 2.2 provides a system for the English verbal morphology. Specifically, this section proposes an analysis where either affix hopping or *do*-insertion takes place complementally depending on whether Tense-feature and the main verb are adjacent at PF. It is argued that the proposed system successfully captures the basic facts on the English verbal morphology.

This paper proposes the following system resorting to the PF adjacency between Tense-feature and the main verb.

(4) The main verb is inserted into overt syntax without inflection, i.e. in the bare from. It originates as V and moves up to v.
(5) Tense-feature has a specification, either [+past] or [-past]. At PF, it obtains one of the tense morphemes depending on which specification it has.
a. If the specification is [+past], Tense-feature is realized as *-ed*
b. If the specification is [-past], the form of the

[1] Throughout this paper, the strike-through representation such as ~~[uϕ]~~ is used for features that have already been inherited/discharged.
[2] The angle-bracket representation such as <we> stands for an unpronounced copy that a lexical item has left behind in movement.
[3] Chomsky (2012:29) makes an intriguing note on why Tense-feature is inherited to T in conjunction with ϕ-features. He notes that features of a lexical item cannot move independently of the feature bundle to which they belong. Following Chomsky (2012), this paper assumes that ϕ-features and Tense-feature belong to the same feature bundle and that they participate in feature inheritance in a bundle. This means that if ϕ-features are inherited to T, also Tense-feature is inherited concomitantly. Section 3 will show another possibility that the bundled features do not undergo inheritance and remain in C.

tense morpheme is determined in relation with the value of uninterpretable ϕ-features. If uninterpretable ϕ-features are valued as 3rd person-singular, Tense-feature is realized as *-s*; otherwise, the null form is realized.

(6) a. If the tense morpheme is adjacent to the main verb at PF, the tense morpheme undergoes PF-merger with the verb. As a result, the tense morpheme such as *-ed* is amalgamated with the verb.

b. If the tense morpheme is not adjacent to the main verb at PF, *do*-insertion takes place in the head where the tense morpheme is present, and the dummy verb *do* is amalgamated with the tense morpheme.

The proposed system works fine for capturing the basic facts on the English verbal morphology. Sentence (7a) is a simple case to which (5a) and (6a) apply. The derivation of (7a) is illustrated in (7b) and (7c), and the PF representation of (7a) is illustrated in (7d).

(7) a. John watched movies.
b. [$_{vP}$ John watch(=v) [$_{VP}$ <watch> movies]]
c. [$_{CP}$ C$_{\text{[u}\phi\text{][Tense]}}$ [$_{TP}$ John$_{[\phi]}$ T$_{[u\phi][Tense]}$ [$_{vP}$ <John> watch movies]]]
d. [John -ed$_{[Tense]}$ watch movies]
[Tense] = [+past]

As shown in (7b), the uninflected main verb *watch* originates as V and moves up to v (see (4)). Once C is merged to TP, C discharges [uϕ] and [Tense] to T. [uϕ] in T enters into an Agree relation with [ϕ] of the subject *John*, and *John* is attracted to Spec-T, as shown in (7c). On the other hand, [Tense] inherited to T obtains a tense morpheme at PF. Given that the tense specification is [+past], [Tense] obtains a tense morpheme *-ed* (see (5a)). At the PF representation in (7d), this tense morpheme is adjacent to the main verb *watch*. It undergoes PF-merger with the verb, which makes the inflected verbal form *watched* (see (6a)).

If the tense specification is [-past], the form of the tense morpheme is determined according to (5b). [Tense] obtains a tense morpheme, either *-s* or *-ø* depending on what value [uϕ] has been assigned. Sentence (8a) is a case where [uϕ] is valued as 3rd person-singular since [ϕ] of the subject *John* is 3rd person-singular.

(8) a. John watches movies.
b. [John -s$_{[u\phi][Tense]}$ watch movies]
[Tense] = [-past]
[uϕ] = 3rd person-singular

In this case, [Tense] is realized as *-s* in relation with the value of [uϕ]. At PF, this tense morpheme undergoes merger with the verb, which makes the inflected verbal form such as *watches*. On the other hand, [Tense] obtains the null form *-ø* if [uϕ] is assigned a value other than 3rd person-singular. Sentence (9a) is such a case.

(9) a. We watch movies.
b. [We -ø $_{[u\phi][Tense]}$ watch movies]
[Tense] = [-past]
[uϕ] = 1st person-plural

In (9a), [uϕ] is valued as 1st person-singular via its Agree relation with [ϕ] of the subject *we*, and [Tense] is realized as the null form *-ø*. By undergoing PF-merger with the verb, this tense morpheme ends up with making the verbal form such as *watch* in (9a), the same verbal form as the bare form.

The discussion so far has been confined to the circumstances where (6a) works. The remainder of this section turns attention to the circumstances where (6b) is the key. One of the typical circumstances where (6b) works is the negative sentence with *not* such as (10a).

(10) a. John did not watch movies.
b. [$_{CP}$ C$_{\text{[u}\phi\text{][Tense]}}$ [$_{TP}$ John T$_{[u\phi][Tense]}$ [$_{NegP}$ not [$_{vP}$ <John> watch movies]]]]
c. [John -ed$_{[Tense]}$ not watch movies]
[Tense] = [+past]

In the case of negation, NegP is assumed to be projected between TP and vP, as shown in (10b) (Pollock (1989)). When the negative element *not* is overtly present, it is realized as the head of NegP. Given that *not* is the head of NegP, as sketched in (10c), this negative element *not* intervenes between [Tense] inherited by T and the verb both in overt syntax and PF. Consequently, the tense morpheme is not adjacent to the verb at PF, and, according to (6b), the dummy verb *do* must be inserted to get amalgamated with the tense morpheme. Given that the tense specification is [+past], [Tense] obtains a tense morpheme *-ed*, and it

is amalgamated with the dummy verb and realized as *did*.[4]

The same account is true of VP fronting in (11a), whose derivation and PF representation are illustrated in (11b, c).

(11) a. Watch movies John did.
b. $[_{CP}\ [_{vP}$ watch movies $]\ C_{[u\phi][Tense]}\ [_{TP}$ John $T_{[u\phi][Tense]}\ ]]$
c. [watch movies John -ed$_{[Tense]}$]
[Tense] = [+past]

Given that VP fronting targets vP rather than VP, [Tense] inherited by T is not adjacent to the verb. Thus, *do*-insertion is required for VP-fronting, as in the case of negation.

In sum, section 2 has proposed a system for the English verbal morphology schematized in (4)–(6), arguing that this system straightforwardly accounts for the basic facts on the English verbal morphology. Section 3 extends the analysis to the matrix question and Negative Inversion, clarifying how *do*-insertion takes place in these constructions.

3. Residual Verb Second

Section 3 discusses the matrix question and Negative Inversion, another circumstance in which *do*-insertion is required. Section 3.1 claims that these constructions are cases where Tense-feature is stranded in C and that this stranding is the key to the application of *do*-insertion. Section 3.2 argues that the present analysis for the verbal morphology provides a precise account for special cases of these constructions in which *do*-insertion is exceptionally canceled.

3.1. Residual Verb Second as Tense-feature Stranding

The matrix question and Negative Inversion are what Rizzi (1991) calls constructions with the residual verb second in Modern English.

(12) a. What did John watch ?
b. Never did John watch such movies.

In these constructions, Subject Auxiliary Inversion (hereafter, SAI) is required to apply, except for some special cases, which will be demonstrated in section 3.2. When no auxiliary verb is present, as in (12a, b), the dummy verb *do* must participate in SAI. The application of SAI leads to the verb second word order, which is typically observed in Germanic languages.

This paper claims that the residual verb second phenomenon is also captured by the present system for the verbal morphology resorting to the PF adjacency between Tense-feature and the verb. Specifically, this paper claims that the residual verb second phenomenon is attributed to the stranding of Tense-feature in C, proposing the analysis in (13) for the matrix question and Negative Inversion.

(13) $[_{CP}\ C_{[u\phi][Tense]}\ [_{TP}\ T\ ]]$

In (13), Tense-feature is stranded in C without inherited by T. Notice also that this analysis allows C to retain not only Tense-feature but also ϕ-features.

One would say that [uϕ] causes a derivational crash by stranding in C, according to what section 2.1 discussed with reference to Richards (2007). Namely, a valued uninterpretable feature remaining on the edge of the lower phase causes a derivational crash because it is no longer distinguishable from an interpretable feature in the computation of the next higher phase level, and Transfer to the higher phase fails to delete the valued uninterpretable feature. However, notice that Richards's (2007) reasoning is not necessarily at issue at least in the matrix clause. In the matrix clause, CP is the final phase above which no higher phase is present. Given that the whole CP rather than TP is transferred in the matrix clause, a valued uninterpretable feature does not cause a derivational crash even if it remains in C. As for this point, this paper assumes with Goto (2010) and Obata (2010) that in the matrix clause, the whole CP is transferred and that uninterpretable features including [uϕ] can strand in C without inherited by T. This paper also assumes with Goto (2010) that T is inactive unless it inherits features from C. In other words, T does not give rise to Agree or attract any elements to its specifier without inheriting features.

With the above discussion in mind, let us see how the matrix question and Negative Inversion are derived under the present analysis.

[4] This paper assumes that there is an idiosyncratic rule by which the amalgamation of *do* and *-ed* makes *did* rather than *doed*.

(14) a. What did John watch?
b. [$_{CP}$ what $C_{[u\phi][Tense][EF]}$ [$_{TP}$ T [$_{vP}$ John$_{[\phi]}$ watch <what>]]]
c. [what -ed$_{[Tense]}$ John watch]
[Tense] = [+past]

(15) a. Never did John watch such movies.
b. [$_{CP}$ never $C_{[u\phi][Tense][EF]}$ [$_{TP}$ T [$_{vP}$ <never> John$_{[\phi]}$ watch such movies]]]
c. [never -ed$_{[Tense]}$ John watch such movies]
[Tense] = [+past]

In (14b) and (15b), the *wh*-phase *what* and the negative element *never* are attracted to Spec-C by Edge Feature [EF] in C. T is an empty projection without any features or lexical items, since it is assumed that T is inactive unless it inherits features from C. [uϕ] stranded in C is successfully deleted by entering into an Agree relation with [ϕ] of the subject DP within vP. The crucial point for the present analysis of the verbal morphology is that [Tense] in C is separated from the verb by the subject in Spec-v. Consequently, [Tense] cannot constitute an adjacent relation with the verb at PF, and *do*-insertion must take place in C. The inserted dummy verb is amalgamated with the past tense morpheme *-ed* and the inflected verb from *did* is generated.

The present analysis offers intriguing implications for the difference between the matrix question and the embedded question. As is well-known, the embedded question in the Standard English lacks SAI, unlike the matrix question. Compare (16a) and (16b) :

(16) a. *I wonder what did John watch.
b. I wonder what John watched.

Notice that in the embedded question, the embedded CP is not the final phase. The whole derivation of (16b) has vP phase and the matrix CP phase above the embedded CP phase. This means that in the embedded CP phase, Transfer targets not the whole CP but the complement of C, namely, TP. Thus, according to Richards's (2007) reasoning, the embedded C must not retain but must discharge its uninterpretable features to T for a convergent derivation. Accordingly, in the derivation of (16b), both ϕ-features and Tense-feature must be discharged from C to T. Once the feature inheritance at issue takes place, the subject *John* is attracted to Spec-T, while the *wh*-phrase *what* is attracted to Spec-C. This process is illustrated in (17a), and the PF representation of (17a) is illustrated in (17b).

(17) a. [$_{CP}$ what $C_{\sout{[u\phi][Tense]}[EF]}$ [$_{TP}$ John$_{[\phi]}$ T$_{[u\phi][Tense]}$ [$_{vP}$ <John> watch <what>]]]
b. [what John -ed$_{[Tense]}$ watch]
[Tense] = [+past]

As is clear from (17b), the derivation in (17a) leads to the PF representation in which the tense morpheme and the main verb are adjacent at PF. This adjacent relation allows the realization of the inflected verb form, which straightforwardly accounts for the fact that the embedded question lacks SAI.

The situation is quite different in the case of Negative Inversion. Negative Inversion requires the application of SAI event in the embedded clause. Compare (18a) and (18b):

(18) a. I think that never did John watch such movies.
b. *I think that never John watched such movies.

In the embedded Negative Inversion, the complementizer *that* must appear in front of the negative element, as shown in (18a). This implies that the embedded Negative Inversion differs from the embedded question also in the structure of the embedded left periphery. Taking this fact into consideration, previous studies such as Authier (1992) claim that the embedded Negative Inversion is a typical case where the CP-recursion structure is adopted. Namely, the complementizer *that* is located in the head of the higher CP (CP1) and the negative element is attracted to the specifier of the lower CP (CP2). According to the CP-recursion approach, sentence (18a) is structured as in (19).

(19) [$_{CP1}$ that(=C1) [$_{CP2}$ never C2 [$_{TP}$ John watch such movies]]]

The application of SAI in the embedded Negative Inversion is captured by the present system of the verbal morphology by assuming the CP-recursion structure and by following Radford's (2006) assumption that only the top most C counts as a phase head in the multiple CP structure. The derivation of (18a) is illustrated in (20a), and the PF representation of (18a) is illustrated in (20b).

⑳ a . [$_{CP1}$ that$_{[u\phi][Tense]}$ [$_{CP2}$ never C2$_{[u\phi][Tense][EF]}$ [$_{TP}$ T [$_{vP}$ <never> John$_{[\phi]}$ watch such movies]]]

b . [never -ed$_{[Tense]}$ John watch such movies] [Tense] = [+past]

In (20a), C1, i.e. the complementizer *that* is originally endowed with [uϕ] and [Tense]. This follows from the assumption that only the top most C counts as a phase head in the multiple CP structure. As in the case of the embedded question, the embedded CP in (20a) is not the final phase: the whole derivation has vP phase and the matrix CP phase above the embedded CP phase. Thus, in (20a), both [uϕ] and [Tense] must be discharged from C1. The most crucial point in this derivation is that only C1 but not C2 counts as a phase head according to the present assumption. Thus, in principle, [uϕ] and [Tense] discharged from C1 can stop at C2 without reaching at T. [uϕ] inherited by C2 is successfully deleted by entering into an Agree relation with [ϕ] of the subject DP within vP, while the negative phrase *never* is attracted to Spec-C2 by [EF] in C2. Then, the derivation in (20a) leads to the PF representation in (20b), which is the same representation as that of matrix Negative Inversion (see (15c)). As [Tense] in C2 is separated from the verb by the subject in Spec-v, [Tense] cannot constitute an adjacent relation with the verb at PF, and *do*-insertion must take place in C2.

In sum, section 3.1 argued that the present system provides a precise account for the application of *do*-insertion in the matrix question and Negative Inversion by assuming that these constructions allow stranding of Tense-feature. The following section claims that the present system for the verbal morphology can provide a successful account for special cases of the matrix question and Negative Inversion.

3.2. Exceptional Cases of Verb Second: Subject *Wh*-movement

As mentioned in section 3.1, the matrix question and Negative Inversion have certain special cases to which SAI is exceptionally suspended. Demonstrating such examples, section 3.2 argues that the present system for the verbal morphology can provide a successful account for why SAI does not apply to the special cases.

One of the special circumstances in which SAI is suspended is the so-called subject *Wh*-question. As is well-known and clear from the difference between (21a) and (21b), the dummy verb must not appear when the matrix subject is a *wh*-phrase.

㉑ a . *Who did watched movies ?
(unless *did* is stressed)

b . Who watched movies ?

The present system for the verbal morphology accounts for the absence of SAI in the subject *Wh*-question as follows:

㉒ a . Who watched movies?

b . [$_{CP}$ who$_{[\phi]}$ C$_{[u\phi][Tense][EF]}$ [$_{TP}$ T [$_{vP}$ <who> watch movies]]]

c . [who -ed$_{[Tense]}$ watch movies] [Tense] = [+past]

In this case, the subject *wh*-phrase *who* is attracted to Spec-C by [EF] in C, while its [ϕ] helps delete [uϕ] in C under Agree. This derivation produces two copies of the *wh*-phrase. The pronounced copy is the derived copy in Spec-C, while the original copy within vP is invisible at PF and unpronounced. Thus, sentence (22a) ends up with the PF representation in (22c), in which there is no intervening element between [Tense] and the verb. Hence, under this circumstance, the realized tense morpheme successfully undergoes PF-merger with the verb, and *do*-insertion is suspended.

Let us turn to the special case of Negative Inversion. As discussed in section 3.1, SAI is required to apply to Negative Inversion both in the matrix and the embedded clauses. However, it is reported that there is one circumstance in which SAI is canceled. It is when the inversion sentence is embedded and the subject of the inversion sentence is a *wh*-phrase extracted to the matrix clause. Compare the a-sentences and b-sentences below:

㉓ a . ??Leslie is the person who I said that only in that election did run for public office.

b . Leslie is the person who I said that only in that election ran for public office.
(Culicover (1993:101, fn.4))

㉔ a . *Who$_i$ did you say that never again t_i did want to eat anchovies?

b . Who$_i$ did you say that never again t_i wanted to eat anchovies? (Sobin (2003:199))

Notice that the a-sentences, to which SAI has applied, result in quite lower acceptability than the b-sentences, in which SAI is absent and the main verbs are inflected.

The significant question to answer is what suspends the application of SAI under this circumstance. This paper claims that this exceptional absence of SAI is successfully captured by the present analysis for the verbal morphology. Taking (24b) as an example, let us see how SAI is suspended under the present analysis.

(25) a. $[_{CP1}$ who$_{[\phi]}$ that$_{\text{~~[u}\phi\text{][Tense]~~ [EF]}}$ $[_{CP2}$ never again C2$_{[u\phi][Tense]\,[EF]}$ $[_{TP}$ T $[_{vP}$ <never again> <who> want to eat anchovies]]]]

b. [never again -ed$_{[Tense]}$ want to eat anchovies] [Tense] = [+past]

Since (24b) is a case of the embedded Negative Inversion, the structure of the embedded left periphery should be the CP-recursion structure, in which C1 but not C2 counts as a phase head. Accordingly, [uϕ] and [Tense] must be discharged from C1 but can stop at C2 without reaching at T. On the other hand, the negative phrase *never again* is attracted to Spec-C2 by [EF] in C2, while the extracted *wh*-phrase *who*, which is attracted by [EF] in C1, drops by the edge of CP1 on its way to the matrix left periphery. As a result of these movements, this derivation makes two copies of the negative phrase and the *wh*-phrase: the derived copies in the embedded left periphery and the original copies within vP. The important point to note here is that the original copies within vP are invisible at PF and unpronounced: only the derived copies are pronounced. Therefore, the derivation ends up with the PF representation in (25b), in which nothing intervenes between [Tense] and the main verb. The realized tense morpheme successfully undergoes PF-merger with the verb, and this is why *do*-insertion is suspended in (24b).

In sum, section 3.2 argued that the present system for the verbal morphology can successfully account for why SAI is suspended in special cases of the matrix question and Negative Inversion.

4. Concluding Remarks

This paper presented an analysis of the English verbal morphology by revisiting the affix hopping approach in terms of Chomsky's (2008) mechanism. Specifically, this paper proposed that either affix hopping or *do*-insertion takes place complementally based on the PF adjacency between Tense-feature and the main verb. It was argued that the proposed analysis accounts for not only the standard cases of the English verbal morphology but also special cases of *do*-insertion observed in the residual verb second constructions.

This paper is ended by demonstrating a remaining problem for the present analysis. Sentence (26a) is a case in which *do*-insertion is predicted to apply under the present analysis, but in fact *do*-insertion must not apply, as indicated by the ungrammaticality of (26b).

(26) a. John often watched movies.

b. *John did often watch movies.
(unless *did* is stressed)

c. [John -ed$_{[Tense]}$ often watch movies] [Tense] = [+past]

In (26a), the adjunct *often* is placed between the subject and the main verb. As this kind of adjunct is assumed to be adjoined to vP or some functional projection between TP and vP, sentence (26a) ends up with the PF representation in (26c), in which the adjunct interferes with the PF adjacency between Tense-feature and the main verb. The present analysis would wrongly predict that the dummy verb *did* appears, and sentence (26b) would be generated.

The treatment of adjuncts has been a problematic issue for the affix hopping approach. Meanwhile, peculiar behaviors of adjuncts have been studies by a number of researchers such as Lebeaux (1988), Ishii (1997), Ochi (1999) and Stepanov (2001). Among others, Ochi (1999) approaches to the transparency of adjuncts in the PF adjacency such as in (26). He proposes that adjuncts are merged into the structure postcyclically and that the postcyclic merger of adjuncts results in a PF representation where the inflection and the main verb are adjacent. Although his analysis is quite successful to derive (26a) rather than (26b) under the old framework of generative syntax, it is unfortunate that his analysis is no longer compatible with the recent framework since Chomsky (2000). For now, this paper leaves this problem for a future research, trying to find out ways to incorporate the postcyclic merger approach into the current framework of generative syntax.

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