

# The Relation between Late Merge and Phases\*

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## Abstract

In this paper, I propose a new condition on applications of Late Merge under the Phase Theory, and try to solve a problem about the “cyclicity” of the counter-cyclic operation. Adopting a modified version of *Phase Impenetrability Condition*, I claim that Late Merge is only applied to the syntactically available position. The proposed analysis allows an adjunct to be merged with the whole spelled-out expression. I support the analysis by considering a derivation of a complex DP.

**Keywords:** Late Merge, counter-cyclicity, Phase Theory, Phase Impenetrability Condition

## 1. Introduction

This paper attempts to propose a new condition on applications of Late Merge under the Phase Theory. Late Merge is the operation by which certain constituents can be inserted counter-cyclically (Lebeaux (1988), Takahashi (2006), and Takahashi and Hulsey (2009)). This operation is assumed to be necessary for bleeding Condition C effects, as illustrated in (1).

- (1) Which argument that John<sub>i</sub> made did he<sub>i</sub> believe? (Fox (1999: 164))

Given the copy theory of movement, sentence (1) has the LF representation in (2).

- (2) [which argument that John<sub>i</sub> made] did he<sub>i</sub> believe [which argument that John<sub>i</sub> made]?

In this representation, there is a full copy of the moved *wh*-phrase in the base-generated position. However, (2) violates Condition C of the Binding Theory because the R-expression *John* within the lower copy of the *wh*-phrase is bound by the co-referential pronoun *he*. We need to derive a different representation.

To account for the absence of the Condition C violation, Lebeaux (1988) proposes Late Merge, by which adjuncts can be introduced into a structure after movement.<sup>1</sup> As a result of Late Merge, the sentence in (1) has the representation in (3).

- (3) [which argument [that John<sub>i</sub> made]] did he<sub>i</sub> believe [which argument]?

Here, there is no copy of the relative clause containing the relevant R-expression in the base position, and the relative clause is counter-cyclically merged with the *wh*-phrase after *wh*-movement. Because there is no copy of the R-expression in the c-command domain of the co-referential pronoun, the Condition C violation is circumvented. The representation correctly predicts that the sentence in (1) is grammatical.

Thus, Late Merge need not obey the syntactic cycle. However, Sauerland (1998) argues that the counter-cyclic merger must be regulated by a kind of cyclicity. Consider the contrast in (4).

- (4) a. Which computer compatible with his<sub>j</sub> that Mary<sub>i</sub> knew how to use did she<sub>i</sub> tell every boy<sub>j</sub> to buy?

- b. \*Which computer compatible with Mary<sub>i</sub>'s that he<sub>j</sub> knew how to use did she<sub>i</sub> tell every boy<sub>j</sub> to buy? (Sauerland (1998: 52))

Sentence (4a) is acceptable but (4b) is not. In these sentences, there is a co-referential relation between the R-expression *Mary* and the pronoun *she*, and the variable binding relation between the quantifier phrase *every boy* and the pronoun *he*. In (4a), the variable pronoun is contained within the inner modifier of the *wh*-phrase and the relevant R-expression is contained within the outer modifier. In contrast, in (4b), the variable pronoun is within the outer modifier, and the R-expression is within the inner modifier.

Sauerland attributes the difference between (4a) and (4b) to the order of adjunction of the relative clauses during the derivations. Let me first consider the derivation of (4a), which is shown in (5).

- (5) a. [which computer [compatible with his<sub>j</sub>]]  
→ *Wh*-Movement  
b. [which computer [compatible with his<sub>j</sub>]] did she<sub>i</sub> tell every boy<sub>j</sub> to buy  
[which computer [compatible with his<sub>j</sub>]]  
→ Late Merge of the Outer Modifier  
c. [which computer [compatible with his<sub>j</sub>] [that Mary<sub>i</sub> knew how to use]]  
did she<sub>i</sub> tell every boy<sub>j</sub> to buy [which computer [compatible with his<sub>j</sub>]]

First, the inner modifier must be adjoined to the *wh*-phrase in the base position, as shown in (5a), to achieve variable binding. From (5b) to (5c), the outer modifier must be introduced in the derived position, so that the Condition C violation is circumvented. The application of adjunction is applied cyclically in that the inner modifier is introduced before the outer one. This kind of cyclic application of adjunction yields the grammatical sentence in (4a).

Next, consider the derivation of (4b), which is given below:

- (6) a. [which computer [that he<sub>j</sub> knew how to use]]  
→ *Wh*-Movement
- b. [which computer [that he<sub>j</sub> knew how to use]] did she<sub>i</sub> tell every boy<sub>j</sub> to  
buy [which computer [that he<sub>j</sub> knew how to use]]  
→ Late Merge of the Inner Modifier
- c. [which computer [compatible with Mary<sub>i</sub>'s] [that he<sub>j</sub> knew how to use]]  
did she<sub>i</sub> tell every boy<sub>j</sub> to buy [which computer [that he<sub>j</sub> knew how to  
use]].

In (4b), the outer modifier must be introduced in the base position (6a) for establishing the variable binding relation. Then, from (6b) to (6c), the inner modifier must be inserted after *wh*-movement for circumventing the Condition C violation. The application of adjunction does not observe the cyclicity in that the outer modifier is introduced before the inner one. This kind of counter-cyclic application of adjunction leads to ungrammatical sentence in (4b).

Thus, Sauerland accounts for the contrast in (4) in terms of “cyclicity” of the counter-cyclic operation. However, the cyclicity of late mergers poses a puzzling problem; how does Late Merge, a counter-cyclic operation, obey the cyclicity? Sauerland does not provide a principle-based answer to this problem. In this paper, I attempt to solve this problem, by proposing that applications of Late Merge are regulated by the Phase Theory. I will claim that a modified Spell-Out system restricts the application of the counter-cyclic mergers.

This paper is organized as follows. In section 2, I make a new condition on applications of Late Merge. In section 3, I show how the proposed condition accounts for “cyclic” applications of Late Merge which is illustrated in the contrast in (4). In section 4, I provide further supports for my proposal. Section 5 is a conclusion.

## 2. Proposal

In this section, I make a new proposal for a condition on applications of Late Merge. I propose that Late Merge is applied as long as the counter-cyclic operation obeys a structure building rule under the Phase Theory. The rule is derived from the combination of the basic principles of the Phase Theory and several assumptions. First, I briefly review the basic concepts of *phase*, and then I present the condition on applications of Late Merge.

The concept of *phase* is introduced by Chomsky (2000) for the purpose of the reduction of computational burden. The term *phase* refers to a subsection of the derivation. Derivations proceed phase by phase. At each phase-level, the computational system takes lexical items from lexicon, and forms a syntactic object. At the final stage of the derivation at a phase-level, a certain constructed constituent is sent to each of the PF and LF interfaces. The operation transferring a structure to PF interface is called Spell-Out. Following Chomsky (2000), I assume the timing of Spell-Out as follows:

(7) The Timing of Spell-Out

As soon as HP (phase) is completed, the complement of H is spelled-out.

As soon as the information is sent to the interface, it will be forgotten, and not accessed in the following derivation. This is ensured by the Phase Impenetrability Condition (PIC). The PIC prevents a certain spelled-out expression from being accessed outside of a phase. For example, under the well-known version of PIC, which Chomsky (2000) proposes, only the edge of a phase and its head are accessible for operations outside of the phase. However, I will adopt the following modified version of PIC to capture the restriction on applications of Late Merge (cf. Uriagereka (1999), Nunes and Uriagereka (2000), Obata (2010), and Bošković (2015)).

(8) The Modified Phase Impenetrability Condition (MPIC)

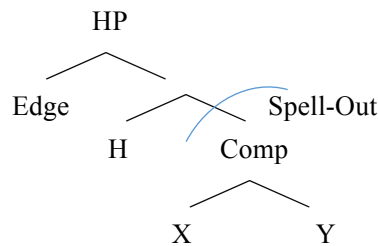
In phase  $\alpha$  with head H, only the immediate domain of H is accessible to operations outside  $\alpha$ , where K is in the immediate domain of H if the first node that dominates K is a projection/segment of H.

The MPIC dictates that, after Spell-Out, the phase edge, the phase head, and the phase head complement is accessible to syntax, but the internal structure of the complement is not.<sup>2</sup> The modified PIC is different from the PIC in that the former allows the phase head complement to be accessed outside of a phase after Spell-Out.

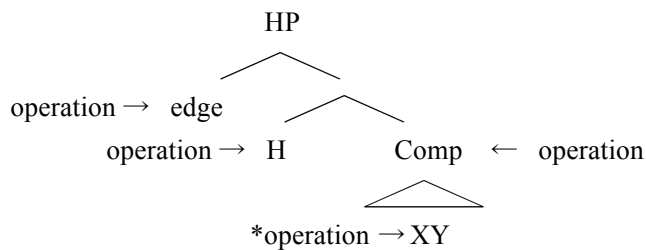
Given these assumptions under the Phase Theory, I will illustrate a restriction on syntactic operations at a phase level in (9):

(9) The Relationship between Spell-Out and Syntactic Operations

a. A phase is completed.  $\rightarrow$  Spell-Out



b. Edge, H, Comp is accessible.



Given (7), as soon as a phase is completed, the phase head complement is spelled-

out, as in (9a). At this stage, according to the modified PIC in (8), the phase edge, the phase head, and the whole phase head complement are accessible to syntactic operations but the internal structure of the spelled-out phase head complement is not, as illustrated in (9b).

Since Late Merge is one of syntactic operations, it must be subject to (8) so that it targets the phase edge, the phase head, and the whole phase head complement, but not the internal structure of the phase head complement, at each stage of phases. In this paper, following Chomsky (2001, 2004, 2008) and Citko (2014), I assume that CP, v\*P, and DP function as a phase.

In the remainder of this paper, I will present the solution to the puzzle about the cyclicity of the counter-cyclic operations, and provide some arguments for the proposed system.

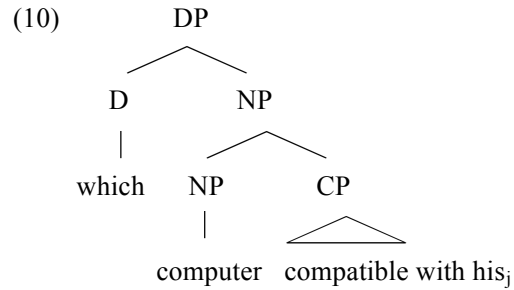
### 3. Cyclicity of the Counter-Cyclic Merger

In this section, I will argue that the proposed condition on applications of Late Merge provides the straightforward explanation for the puzzle about “cyclicity” of the counter-cyclic operation as shown in (4).

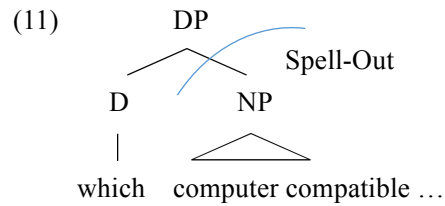
First, consider (4a), repeated below. In this sentence, the inner modifier of the *wh*-phrase contains the pronoun *his*, which is bound by the quantifier phrase *every boy*, and the outer modifier of that has the R-expression *Mary*, which co-refers with the pronoun in the matrix clause *she*.

- (4) a. Which computer compatible with his<sub>j</sub> that Mary<sub>i</sub> knew how to use did she<sub>i</sub> tell every boy<sub>j</sub> to buy?

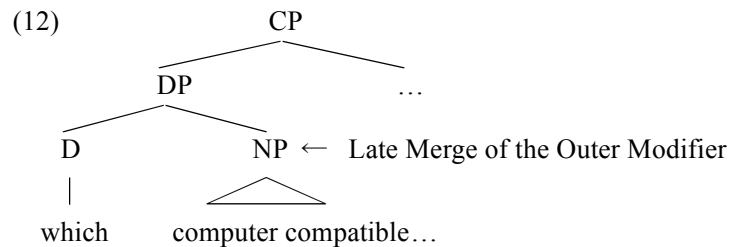
At the start of the derivation, the *wh*-phrase is constructed with the inner modifier, as in (10).



During the construction, the inner modifier is cyclically adjoined to the NP. Notice that I assume that a DP is a phase. Therefore, as soon as the DP, the *wh*-phrase, is completed, the phase head complement with the already inserted adjunct, *computer compatible with his*, is spelled-out, as shown in (11).



Then, the derivation proceeds, and the *wh*-phrase moves into Spec, CP in the matrix clause. At this stage, Late Merge of the outer modifies targets the NP of the moved *wh*-phrase, as shown in (12).



Notice that my proposal allows adjunction to the whole spelled-out expression. Since

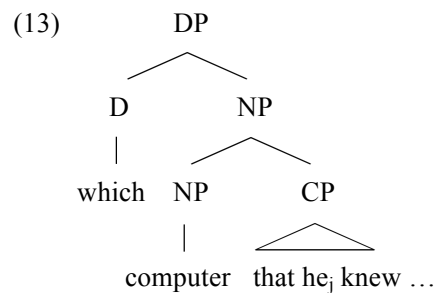


adjunction of the outer modifier targets the whole spelled-out NP, not the internal structure of the NP, the counter-cyclic merger is possible.

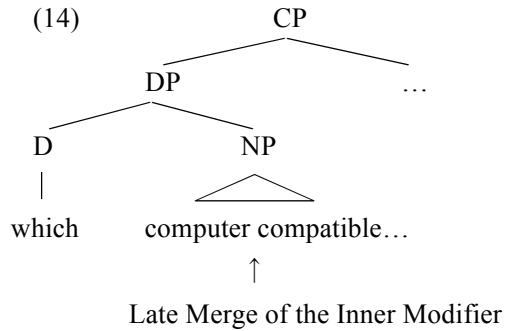
Next, consider the derivation of the sentence in (4b), repeated below. This sentence differs from that of (4a) in the positions of the bound variable pronoun and the R-expression. The former is contained within the outer modifier of the *wh*-phrase, and the latter is within the inner modifier.

- (4) b. \*Which computer compatible with Mary<sub>i</sub>'s that he<sub>j</sub> knew how to use did she<sub>i</sub> tell every boy<sub>j</sub> to buy?

In contrast to (4a), at the beginning of the derivation, the outer modifier containing the bound variable pronoun is introduced into the structure, as in (13).



After the *wh*-phrase is completed, the derivation proceeds in the same way as that of (4a). The NP with the already inserted modifier, *computer that he knew how to use*, is spelled-out, and the constructed *wh*-phrase moves into Spec, CP of the matrix clause. Then, Late Merge of the inner modifier is applied between the NP *computer* and the first adjoined adjunct *that he knew how to use*. The insertion targets the internal structure of the spelled-out NP, as shown in (14).



The present system does not allow such application of Late Merge because the position Late Merge targets is inaccessible to syntax. My proposal correctly accounts for (4b).

Thus, the proposed analysis provides a straightforward account of the cyclicity of Late Merge. In the following section, I will provide additional data in support of the present proposal.

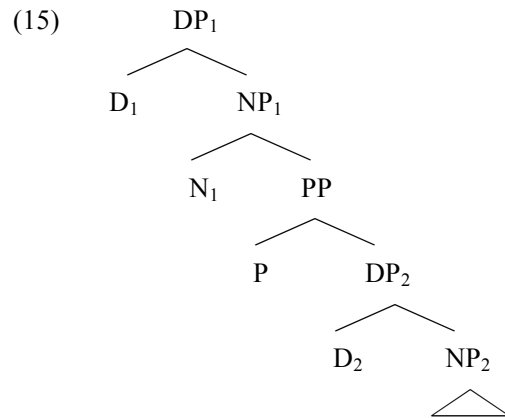
#### 4. Embedded Late Merge

In this section, first, I will illustrate how the derivation of a complex DP proceeds, and then, I will present the data supporting my proposal. The data includes the cases of A'-movement and A-movement. The former is straightforwardly analyzed whereas the latter case appears to be an apparent counterexample. I will agree that the apparent counterexample also supports the proposed analysis by adopting Late Merge assumed in Takahashi (2006), and Takahashi and Hulsey (2009).

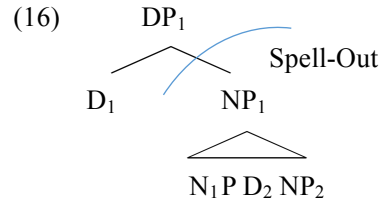
##### 4.1. The Prediction of the Applicability of Embedded Late Merge

The present proposal makes a prediction with a complex DP like (15), which embeds another DP.

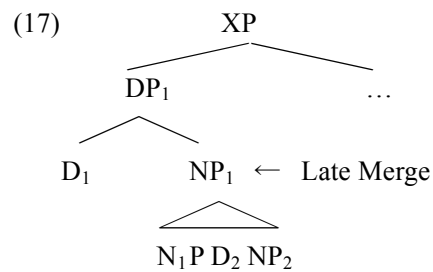
The Relation between Late Merge and Phases



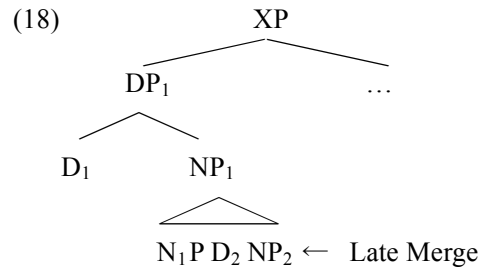
The derivation of this kind of DP involves Spell-Out at each DP phase. When the higher DP ( $DP_1$ ) is completed, the phase head complement  $NP_1$ , which includes the lower DP ( $DP_2$ ), is spelled-out, as represented in (16).



At this stage, the proposed system permits the application of Late Merge to  $NP_1$  to yield (17).



On the other hand, the system prevents Late Merge from applying to NP<sub>2</sub> to yield (18). This is because the position Late Merge targets is within the Spell-Out domain.



Thus, my proposal predicts that the application of Late Merge of adjuncts is possible when it is applied to the highest NP of a complex DP, but it is disallowed when it is applied in the deeply embedded position of a complex DP. In the following, I will show that this prediction holds for A'-movement and A-movement.

#### 4.2. The Case of A'-movement

Sauerland (1998) observes that the obviation of the Condition C violation depends on the position of the application of Late Merge. The sentences in (19) differ in the position of adjunction.

- (19) a. Which book of the woman Bill<sub>i</sub> admires did he<sub>i</sub> give to his parents?  
 (*Bill admires* modifies *book of the woman*)
- b. \*Which book of the woman Bill<sub>i</sub> admires did he<sub>i</sub> give to his parents?  
 (*Bill admires* modifies *woman*) (Sauerland (1998: 47))

The relative clause in (19a) *Bill admires* is merged with the whole restrictor NP *book of the woman*, whereas that in (19b) is adjoined to the lower NP *woman*. Sauerland argues that the former circumvents the Condition C violation as a result of Late

Merge of the adjunct, but the latter does not.

My proposal correctly predicts the contrast. In the following, I will demonstrate how the proposed Spell-Out system works in the derivations of the sentences in (19). (19a) has the derivation in (20).

- (20) a. [DP which [NP book of [DP the [NP woman]]]]  
 →Spell-Out  
 b. [DP which [NP book of [DP the [NP woman]]]]  
 →Wh-movement  
 c. [DP which [NP book of [DP the [NP woman]]]] did he<sub>i</sub> give ...  
 →Late Merge  
 d. [DP which [NP book of [DP the [NP woman]]]] did he<sub>i</sub> give ...  
     ↑  
     Late Merge  
     [Bill<sub>i</sub> admires]

When the complex *wh*-phrase is completed, the phase head complement NP *book of the woman* is spelled-out in the derivation from (20a) to (20b). The construction proceeds, and the *wh*-phrase moves to Spec, CP in the matrix clause, as in (20c). Since the whole phase head complement is still visible for syntactic operations, Late Merge can be applied to the higher NP, as shown in (20d).

On the other hand, (19b) has the derivation of (21).

- (21) a. [DP which [NP book of [DP the [NP woman]]]]  
 →Spell-Out  
 b. [DP which [NP book of [DP the [NP woman]]]]  
 →Wh-movement  
 c. [DP which [NP book of [DP the [NP woman]]]] did he<sub>i</sub> give ...  
 →Ban of Late Merge inside of Spell-Out Domain

- d. [DP which [NP book of [DP the [NP woman]]]] did he<sub>i</sub> give ...  
↑ \*Late Merge  
[Bill<sub>i</sub> admires]

The derivation proceeds in the same way up to *wh*-movement into the Spec, CP of the matrix clause (from (21a) to (21c)). At the stage of (21c), the application of Late Merge to the embedded NP is not available as indicated in (21d) because the position is within the domain inaccessible to syntactic operations. Thus, the proposed analysis accounts for the contrast in (19).

### 4.3. The Case of A-movement

Next, let us turn to A-movement. My proposal predicts that Late Merge in a deeply embedded position within a spelled-out domain is impossible in A-movement, too. However, sentence (22) indicates that the prediction does not hold in this case.

- (22) A picture of the team that John<sub>i</sub> coached seems to him<sub>i</sub> to be expected by each girl to be good.

In this sentence, the relative clause *that John coached* is adjoined to the NP *team*, which is embedded within the moved complex DP *a picture of the team*. The relative clause must be inserted after A-movement, otherwise the R-expression *John* in the relative clause is bound by the co-referential pronoun *him*. However, my proposal blocks such counter-cyclic merger because the operation targets the internal structure of the spelled-out expression, and therefore incorrectly predicts that the sentence is ungrammatical. Thus, the case of A-movement appears to pose a problem with my proposal.

I argue that the problem is solved by adopting another application of Late Merge, Late Merge of a restrictor NP, which is proposed in Takahashi (2006), and

Takahashi and Hulsey (2009). I will make a brief review of their analysis of the Condition C bleeding effects in A-movement, and try to show that their approach solves the problem with embedded Late Merge in A-movement.

Takahashi (2006) and Takahashi and Hulsey (2009) focus on a problem with the Condition C bleeding effects in A-movement. This is illustrated in (23).

(23) Every argument that John<sub>i</sub> is a genius seems to him<sub>i</sub> to be flawless.

(Fox (1999: 192))

The copy theory of movement requires that the moved DP leaves a copy behind. However, it is clear that A-movement in the derivation of the sentence does not leave the full copy of the moved phrase. If the full copy of the moved phrase occupied its original position, Condition C would be violated, contrary to fact, because the R-expression *John* within the lowest copy of the moved DP is bound by the co-referential pronoun *him*, as in (24).

(24) \*[[every claim that John<sub>i</sub> is a genius] seems to him<sub>i</sub> to be [[every claim that John<sub>i</sub> is a genius] flawless]]

Notice that Lebeaux's proposal allows only adjuncts to be inserted counter-cyclically. However, the Condition C violation cannot be obviated by such a late merger because the relevant R-expression is contained in the complement, not in an adjunct.

In order to solve this problem, Takahashi (2006), and Takahashi and Hulsey (2009) propose that Late Merge of a restrictor NP is possible in A-movement.<sup>3</sup> Their proposal builds on work by Fox (2002), who proposes that late merger is possible whenever the output LF representation is interpretable. Takahashi and Hulsey argue that the late merger of a restrictor NP is possible because its result can be semantically interpretable by adopting a procedure proposed in Fox (1999, 2002)

(for the detail discussion, see Chapter 3. in Takahashi (2006), and Takahashi and Hulse (2009)).

According to their analysis, the derivation of A-movement can proceed, as illustrated in (25).

- (25) [[every claim that John<sub>i</sub> is a genius] seems to him<sub>i</sub> to be [[every] flawless]]

First, only the determiner, *every*, is introduced in the base position, and then moves out of the c-command domain of the relevant pronoun, *him*. Then, the restrictor NP, *claim that John is a genius*, is introduced counter-cyclically. As a result of the late merger, no Condition C violation is induced.

I now turn to the analysis of the problem with my proposal, Late Merge applied in a deeply embedded position within a complex DP in A-movement. The problem can be solved by adopting the late merger of a restrictor NP in A-movement. Given this late merger, the sentence (23), repeated below, has the LF representation in (26).

- (23) A picture of the team that John<sub>i</sub> coached seems to him<sub>i</sub> to be expected by each girl to be good.
- (26) [[A picture of the team that John<sub>i</sub> coached] seems to him<sub>i</sub> to be expected by each girl to be [[a] good]].

First, only the determiner, *a*, is introduced in the base position, and then moves out of the c-command domain of the relevant pronoun, *him*. Then, the restrictor NP with the relative clause, *picture of the team that John coached*, is introduced counter-cyclically. That is, what is inserted late is not the relative clause, but the restrictor NP of the moved DP containing the relative clause. Note that the counter-cyclic merger applies to the D-head, the head of a DP phase. My proposal allows this kind of late merger because it is not applied to the internal structure of a Spell-Out domain.



Adopting the late merger of a restrictor NP, the proposed analysis will make a new prediction. If the late merger of a restrictor NP is blocked, Late Merge of relative clauses into the internal structure of a spelled-out domain will be banned in A-movement. This prediction is borne out by the contrast in (27).

- (27) a. A picture of her<sub>i</sub> team that John<sub>j</sub> took seems to him<sub>j</sub> to be expected by each girl<sub>i</sub> to be good.  
 b. \*A picture of her<sub>i</sub> team that John<sub>j</sub> coached seems to him<sub>j</sub> to be expected by each girl<sub>i</sub> to be good.

In the sentences, the moved DP contains a pronoun *her*, which is bound by the quantifier phrase *each girl*, in order to eliminate the possibility of the late merger of the restrictor NP. The NP must be introduced in the base position to establish the variable binding relation. The each relative clause is adjoined to the different positions. The relative clause *that John took* is merged with the whole restrictor NP *picture of her team*, whereas the relative clause *that John coached* is merged into the embedded NP within the complex DP *team*. The contrast in (27) suggests that (27a) obviates a Condition C violation, but (27b) does not.

This contrast follows from the proposed analysis. (27a) has the derivation in (28).

- (28) a. [DP a [NP picture of [DP her [NP team]]]]  
 →Spell-Out  
 b. [DP a [NP picture of [DP her [NP team]]]]  
 →A-movement  
 c. [DP a [NP picture of [DP her [NP team]]]] seems to him<sub>j</sub> ...  
 →Late Merge

- d.  $[_{DP} a \boxed{[_{NP} picture\ of\ [_{DP} her\ [_{NP} team]]}]]$  seems to him<sub>j</sub> ...  
↑ Late Merge  
[that John<sub>j</sub> took]

When the complex DP is completed, the phase head complement NP *picture of her team* is spelled-out in the derivation from (28a) to (28b). The derivation proceeds, and the DP moves to Spec, TP in the matrix clause, as in (28c). Since the whole phase head complement is still visible for syntactic operations, Late Merge can be applied to the higher NP, as shown in (28d).

On the other hand, (27b) has the derivation of (29).

- (29) a.  $[_{DP} a \boxed{[_{NP} picture\ of\ [_{DP} her\ [_{NP} team]]}]]$   
→ Spell-Out  
 b.  $[_{DP} a \boxed{[_{NP} picture\ of\ [_{DP} her\ [_{NP} team]]}]]$   
→ A-movement  
 c.  $[_{DP} a \boxed{[_{NP} picture\ of\ [_{DP} her\ [_{NP} team]]}]]$  seems to him<sub>j</sub> ...  
→ Late Merge  
 d.  $[_{DP} a \boxed{[_{NP} picture\ of\ [_{DP} her\ [_{NP} team]]}]]$  seems to him<sub>j</sub> ...  
↑ \*Late Merge  
[that John<sub>i</sub> coached]

The derivation proceeds in the same way up to A-movement into the Spec, TP in the matrix clause (from (29a) to (29c)). (29d) indicates that the application of Late Merge to the embedded NP is impossible because the position is within the domain inaccessible to syntactic operations. Thus, the proposed analysis accounts for the contrast in (27).

Summarizing this section, I have shown that Late Merge applied to the internal structure of an already spelled-out domain is banned in A'-movement and A-

movement by adopting the late merger of a restrictor NP.

## 5. Conclusion

In this paper, I have proposed a new condition on applications of Late Merge under the Phase Theory, and solved the puzzle about the cyclicity of the counter-cyclic merger. I have argued that Late Merge is only applied to the position which is available after Spell-Out. Late Merge of adjuncts is applied to the whole phase head complement, which is an accessible position to syntactic operations under the modified PIC. On the other hand, adjuncts cannot be inserted into the internal structure of a spelled-out domain. As a result of the modified PIC, adjuncts must be cyclically merged with the phrase that they are adjoined to. Supporting evidence comes from Late Merge applied to a deeply embedded position within a complex DP. When it is applied to an embedded position, which is already spelled-out, the application of Late Merger is blocked.

\*This paper is a revised version of my master thesis. I would like to express my deepest appreciation to Professor Etsuro Shima and Professor Yoshiaki Kaneko for their insightful comments. I would like to thank Takanori Nakashima, Ryosuke Sato, Atsushi Otomo, Takashi Yamazaki for their helpful comments. I would also like to thank my informants, Max Phillips Jr. and James Tink. All remaining errors are, of course, mine.

## Notes

- 1) Lebeaux (1988) proposes that adjuncts can be introduced into a structure counter-cyclically, but complements cannot. If the R-expression is contained in a complement of the moved phrase, Condition C is violated, as shown in (i).

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- (i) ??/\*Which argument that John<sub>i</sub> is a genius did he<sub>i</sub> believe?

(Fox (1999: 164))

Lebeaux rules out this possibility by invoking the Projection Principle (Chomsky (1981)).

- (ii) The Projection Principle

The subcategorization property of lexical items must be satisfied throughout the derivation.

Given the Projection Principle, the sentential complement in (i) must be merged with the lexical item that selects it prior to an application of movement. On the other hand, adjuncts are not constituents that are required by the selectional properties of a lexical item and, hence, they need not be introduced in the base position.

2) Uriagereka (1999) and Nunes and Uriagereka (2000) raise the possibility that the whole spelled-out expression is treated like a single lexical item in syntax. They suggest that syntactic operations can target the unit itself but cannot target the inside of the unit.

3) Takahashi (2006), and Takahashi and Hulsey (2009) propose that the late merger of an NP is blocked in A'-movement by the NP Case Filter. They argue that an NP needs Case, so that NP must merge in the base position to get Case in A'-movement.

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