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## ON THE CATEGORY AND INTERPRETATION OF PARTIAL CONTROL INFINITIVES\*

### 1 INTRODUCTION

Much attention has been paid to the control construction in the history of generative syntax. Recently, in particular, an argument for the possibility of reducing PRO to the copy of A-movement has flourished. One such argument dates back to Hornstein (1999) who proposes that the control construction can be treated the same as the raising construction if theta roles are strong features and an argument can check more than two theta roles, allowing movement to A-position (let us term this movement theory of control). In so doing, PRO can vanish from the grammar and Minimal Distance Principle of Rosenbaum (1967), which decides the controller of PRO, can be reduced to Minimal Link Condition, designating that the controller is automatically decided as a local argument since movement is usually a local operation.

Contrary to this current, there are also advocates for the existence of PRO. For those who are against the movement analysis of Hornstein, a phenomenon called Partial Control is a sanctuary to defend PRO's existence, and this phenomenon is the main issue of the present paper.

Partial Control (henceforth PC) is a construal phenomenon in which a controller is identical with a part of PRO's referent. This phenomenon rises to the surface only when a collective predicate requiring a semantically plural subject appears in infinitival complements as in (1a). Note that PC is a subclass of Obligatory Control and requires a controller. As (1b) shows, if the controller is omitted from the referent of PRO by *without himself*, the sentence becomes ungrammatical.

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- (1) a. The chair<sub>1</sub> preferred [PRO<sub>1+</sub> to gather at 6].<sup>1</sup>  
 b. \*The chair<sub>1</sub> preferred [PRO<sub>1+</sub> to gather without him<sub>1</sub>]. (Landau 2000: 5)

On the other hand, in Exhaustive Control (henceforth EC), a controller exhaustively controls the referent of PRO. Hence, a collective predicate such as intransitive *gather* cannot occur as the sentence in (2b) shows.

- (2) a. The chair<sub>1</sub> managed [PRO<sub>1</sub> to gather the committee at 6].  
 b. \*The chair<sub>1</sub> managed [PRO<sub>1+</sub> to gather at 6]. (ibid.)

Since, in PC, the controller and the referent of PRO are not exactly the same, the controller cannot be treated as a copy of the subject in infinitival complements like the movement theory of control does.

This paper argues for the presence of PRO and shows that PRO is a usual pronominal having a referent of its own, by arguing that the syntactic category of infinitival complements differs on whether PC is possible or not. I also propose the mechanism of PC.

This article is organized as follows: in the next section, I will introduce the previous analysis of Landau (2000) and show that his analysis has some conceptual problems. In section 3, I argue that the syntactic category of complements differs regarding whether PC is possible or not. Section 4 offers an analysis of EC. In section 5, I will propose a new analysis of PC. The final section, section 6, presents concluding remarks.

## 2 LANDAU (2000)'S ANALYSIS

PC was first recognized in Williams (1980) and received scrutiny in Landau (2000). In this section, we will overview the analysis of Landau (2000) and discuss some problems with it.

Let us first examine the environment in which PC occurs. As the sentences in (3) show, collective predicates such as *meet*, *gather* which require semantically plural subjects cannot cooccur with the singular subject.

- (3) a. \*John met at 6.  
 b. \*The chair gathered during the strike.  
 c. \*Mary applied together for the grant (Landau 2000: 27)

A difference emerges when a collective predicate is embedded in infinitival complements with the singular matrix subject. If the matrix predicate is verbs such as *manage*, *dare*, *forget* as in (4), the sentence becomes ungrammatical. On the other hand, when the matrix predicate is *want*, *be afraid*, *wonder* as in (5), the sentence becomes grammatical.

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<sup>1</sup> The symbol + stands for indefinite people who are not identical with the controller.

- (4) a. \*John managed [PRO to meet at 6].
- b. \*The chair dared [PRO to gather during the strike].
- c. \*Mary forgot [PRO to apply together for the grant]. (Landau 2000: 27)
- (5) a. John wanted [PRO to meet at 6].
- b. The chair was afraid [PRO to gather during the strike].
- c. Mary wondered whether [PRO to apply together for the grant]. (ibid.)

Given that the grammaticality differs depending on the matrix predicates, we know that whether PC is possible or not depends on the class of matrix predicates. Following Landau (2000), let us term the verbs which permit PC as PC verbs and the complements which PC verbs select as PC-complements. The verbs which do not allow PC are EC verbs and the complements which EC verbs take are EC-complements. According to Landau, PC verbs as represented in (5) are categorized as in (6b), and EC verbs such as the verbs in (4) are as in (6a).

- (6) a. EC verbs are *implicative, aspectual* and *modal*.
- b. PC verbs are *factive, propositional, desiderative* or *interrogative*.  
(ibid.: 37)

Therefore, PC occurs only when a collective predicate appears in PC-complements, and the matrix subject is singular. If a predicate requiring a singular subject appears in PC-complements, PC does not rise to the surface.

A big difference between PC-complements and EC-complements is that PC-complements are tensed, while EC-complements are not, following Landau (2000). When an adverb modifying the matrix clause and the one modifying an infinitival complement differ temporarily, EC-complements become ungrammatical while PC-complements are grammatical as in (7) and (8). This shows that only PC-complements have tense on its own independent of the matrix tense.

- (7) EC-complements
  - a. \*Today, John managed to have finished his duties yesterday. (ibid.: 59)
  - b. \*Yesterday, John began to solve the problem tomorrow.
  - c. \*Yesterday, John had to solve the problem tomorrow. (ibid.: 57)
- (8) PC-complements
  - a. Yesterday, John hoped to solve the problem tomorrow.
  - b. Yesterday, John wondered how to solve the problem tomorrow. (ibid.)
  - c. Today, John regretted having kissed his aunt last week.
  - d. Today, John claimed to have lost his car keys last week. (ibid.: 58)

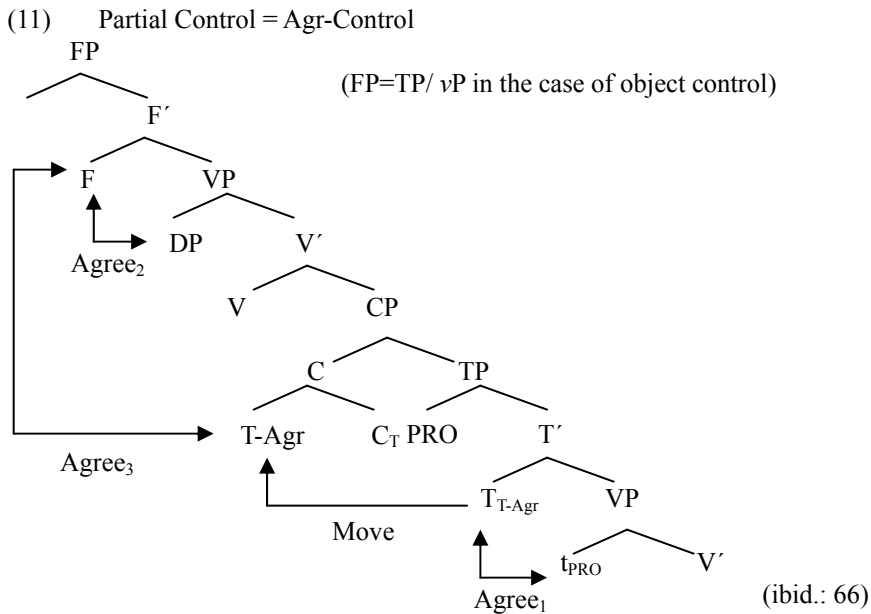
The analysis of Landau (2000) is based on this difference of tense. According to Pesetsky and Torrego (2001), when a sentence has tense, C has an uninterpretable T-feature and EPP, and therefore T moves to C. Landau applies this to infinitival complements. Since PC-complements have tense, C has an uninterpretable feature and EPP and hence T-to-C movement applies while it does not apply to untensed EC-complements.

- (9) T-to-C applies in PC-complements but not in EC-complements.  
(Landau 2000: 64)

We will now look more carefully into the specific analysis of Landau. His analysis utilizes Agree of semantic number called semantic plurality, a kind of phi-feature. Semantic plurality + on DP means that it is plural and semantic plurality – on DP means that it is singular. Detailed account of agreeing semantic plurality is summarized in (10).

- (10) a. DPs, including PRO, enter the derivation with valued phi-features.  
b. Functional heads enter the derivation with unvalued phi-features.  
c. Semantic Plurality (SP): +/– on DP, +/–/Ø on functional heads.  
d. Matching: Ø (i.e., no SP) and [–SP] are non-distinct on functional heads.  
e. PRO and infinitival Agr are anaphoric.  
f. PRO, being anaphoric, cannot value unvalued functional heads.  
(ibid.: 62)

Let us now discuss the derivation of PC. Since PC-complements have independent tense, T-Agr moves to C. This T-Agr interrupts the direct Agree of semantic plurality between the matrix DP and PRO, resulting in the gap of semantic number between the matrix DP and PRO. In (11), F stands for T in the case of subject control, *v* in the case of object control.

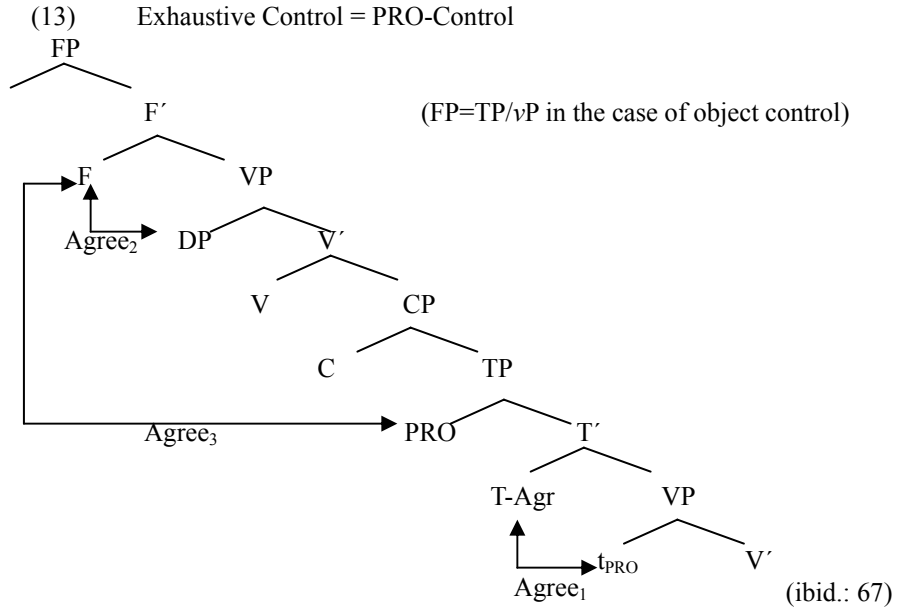


- (12) a.  $\underline{\text{Agree}}_2(F_-, DP_-)$  ;  $\underline{\text{Agree}}_3(F_-, Agr_0)$  ;  $\underline{\text{Agree}}_1(Agr_0, PRO_-)$   
b.  $\underline{\text{Agree}}_2(F_+, DP_+)$  ;  $\underline{\text{Agree}}_3(F_+, Agr_+)$  ;  $\underline{\text{Agree}}_1(Agr_+, PRO_+)$

- c.  $\text{Agree}_2(F_-, DP_-)$  ;  $\text{Agree}_3(F_-, Agr_0)$  ;  $\text{Agree}_1(Agr_0, PRO_+)$  PC effect  
 d.  $\text{Agree}_2(F_+, DP_+)$  ;  $\text{Agree}_3(F_+, Agr_+)$  ;  $*\text{Agree}_1(Agr_+, PRO_-)$  *Mismatch*  
 (Landau 2000: 66)

We must draw attention to (12c). In (12c), Agr enters the derivation with no semantic plurality  $\emptyset$  and PRO with semantic plurality + ( $\text{Agree}_1$ ). Here, by (10f), Agr remains to have no value since PRO cannot value unvalued functional heads. In  $\text{Agree}_2$ , then, DP with semantic plurality – values F as –. Finally in  $\text{Agree}_3$ , F with semantic plurality – and Agr with no semantic plurality agrees since  $\emptyset$  (no semantic plurality) and semantic plurality – are non-distinct on functional heads as (10d) shows. The result of Agree in (12c) is that the matrix DP with semantic plurality – is singular while PRO with semantic plurality + is plural. As we have already noticed, PC occurs since T-Agr moves to C and the semantic plurality of F agrees with this T-Agr and not with PRO itself.


On the other hand, EC-complements have no tense and T-to-C movement does not occur. Hence the matrix DP and PRO must agree with the same functional head F, resulting the constant matching of semantic number between the matrix DP and PRO.



- (14) a.  $\text{Agree}_2(F_-, DP_-)$  ;  $\text{Agree}_3(F_-, PRO_-)$  ;  $\text{Agree}_1(Agr_0, PRO_-)$   
 b.  $\text{Agree}_2(F_+, DP_+)$  ;  $\text{Agree}_3(F_+, PRO_+)$  ;  $\text{Agree}_1(Agr_0, PRO_+)$   
 c<sub>1</sub>.  $\text{Agree}_2(F_-, DP_-)$  ;  $*\text{Agree}_3(F_-, PRO_+)$  ;  $\text{Agree}_1(Agr_0, PRO_+)$  *Mismatch*  
 c<sub>2</sub>.  $\text{Agree}_2(F_-, DP_-)$  ;  $*\text{Agree}_3(F_-, Agr_0)$  ;  $\text{Agree}_1(Agr_0, PRO_+)$  *PIC*  
 d.  $\text{Agree}_2(F_+, DP_+)$  ;  $*\text{Agree}_3(F_+, PRO_-)$  ;  $\text{Agree}_1(Agr_0, PRO_-)$  *Mismatch*  
 (ibid.: 68)

The account of Landau (2000) based on Agree, however, displays some

conceptual problems. First, in the case of EC, Agree<sub>3</sub> (between F and PRO) violates Phase Impenetrability Condition<sup>2</sup> of Chomsky (2001).

- (15) a. John began to do his homework.  
 b. [<sub>TP</sub> John<sub>i</sub> T [<sub>VP</sub> began [<sub>CP</sub> [<sub>TP</sub> PRO<sub>i</sub> to [<sub>VP</sub> do [<sub>VP</sub> [<sub>DP</sub> his homework]]]]]]].
- 

A second problem is that though the analysis of Landau assures us that there is a difference of semantic number between DP and PRO in PC, it does not explain the PC fact that the referents of PRO includes the controller. As shown in (1a), PC is a phenomenon in which the controller and a part of the referent of PRO must corefer. Therefore, if a theory does not explain this obligatory partial coreference, it can be regarded as insufficient. Third, it would not make sense to assume that the controller is determined by Agree. Were it to be the case that the controller is decided by Agree, the controller in EC might be appropriately predicted because the matrix DP and PRO agree with the same functional head. However, in the case of PC in (11), the matrix DP and PRO agree with different functional heads. This leads to a difficulty that a controller is not properly determined by the mechanism Agree. The final problem is that auxiliary inversion does not take place in embedded complements as illustrated in (16).

- (16) a. Bill wonders whether we should take a later bus.  
 b. \*Bill wonders whether should we take a later bus.

If T-to-C movement such as auxiliary inversion does not generally take place in complement clauses, the account of Landau is not tenable.

The present paper, therefore, does not use the mechanism Agree. Instead of Agree, I will provide an alternative account in which PC and EC are treated as a completely different phenomenon. In the next section, we will first look at the categorical difference between PC-complements and EC-complements.

### 3 THE CATEGORY OF INFINITIVAL COMPLEMENTS

We noted a little earlier that the first problem of Landau (2000) is that Agree<sub>3</sub> (between F and PRO) in EC violates Phase Impenetrability Condition since PRO is in the complement of C. In this section, I suggest that the syntactic category of PC-complements is CP while that of EC-complements is not. The problem of Landau that Agree in EC operates over CP is, therefore, resolved. To do so, we utilize tests of pseudo-cleft sentences and passivization.

<sup>2</sup> Phase Impenetrability Condition (cf. Chomsky 2001: 13-14)

[<sub>ZP</sub> Z...[<sub>HP</sub> α [H YP]]]

The domain of H (YP) is not accessible to operations at ZP; only H and its edge are accessible to such operations, (where HP is the strong phase CP or vP).

First, we discuss the category which is situated at the focus position of pseudo-cleft sentences. Koster and Mary (1982) argue that CP with complementizers such as *that*, *for* can be in the focus position, but VP in (17c) cannot.

- (17) a. What he suspected was [<sub>CP</sub> that Bill saw Monument Valley].  
 b. What he wanted was [<sub>CP</sub> for Bill to see Monument Valley].  
 c. \*What he suspected that Bill was [<sub>VP</sub> saw Monument Valley].  
 (Koster and Mary 1982)

Furthermore, TP is also considered not to occupy the focus position of pseudo-cleft sentences. ECM verbs are thought to select TP complements. When its TP complements are in the focus position of pseudo-cleft sentences, the sentences become ungrammatical as in (18).

- (18) a. \*What they believe is [<sub>TP</sub> him to be innocent].  
 b. \*What we hadn't intended was [<sub>TP</sub> you to get hurt]. (Radford 2004: 132)

What (17) and (18) make clear at once is that the category which is in the focus position of pseudo-clefts is not TP nor VP, but CP. We are now ready to consider whether PC-complements and EC-complements are CP or not by placing them in the focus position of pseudo-cleft sentences. When EC-complements are placed in that position, the result is less grammatical or ungrammatical as the sentences in (19) show.

- (19) EC-complements<sup>3</sup>  
 a. ??What Ken dared was to debate with his opponent.  
 b. ??What Bill managed was to clear of his debt.  
 c. \*What Bill condescended was to reply to every letters.  
 d. \*What he continued was to drink until after midnight.

Then, when PC-complements are in the focus position of pseudo-cleft sentences, the sentences are grammatical as in (20).

- (20) PC-complements  
 a. What I've always liked was to explore and try completely different things.  
 b. What he hated was to practice for many hours only to present a three minute "musical number".  
 c. What Tom wanted was to come here.  
 d. What Augst prefers is to study these author's more obscure contemporaries.

These results lead us to the conclusion that the category of PC-complements is CP while that of EC-complements is not.

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<sup>3</sup> Since modal verbs such as *have to* change their original meaning when they are in pseudo-clefts and cannot be passivized, they are omitted from this paper.



The same observation applies to the passivization test. Let us first consider the verb *intend*. According to Radford (2004), the verb *intend* is an ECM verb when it selects bare *to*-infinitive. On the other hand, when it takes a complement which has a complementizer *for*, the complement is CP and *intend* is not an ECM verb. When the matrix predicate is passivised, then, ECM complements (TP complements) are grammatical while CP complements are not as in (21) and (22). This shows that if complements are CP, moving an argument from the complements to the matrix clause crosses CP boundary and violates Phase Impenetrability Condition.

- (21) a. Nobody intended [*you* to get hurt].
- b. *You* weren't intended [to get hurt].
- (22) a. Nobody intended [for *you* to get hurt].
- b. \**You* weren't intended [for to get hurt] (Radford 2004: 265)

Therefore, if a matrix predicate is passivized and an argument is moved from complements to the matrix clause, it will reveal whether the complement is CP or not.

When EC verbs are passivized and an argument in EC-complements is moved into the matrix clause, the sentences are grammatical as in (23). It is clear, therefore, that EC-complements are not CP.

- (23) EC-complements
  - a. The World Heritage area is managed to maintain these values.
  - b. The current study was begun to test whether cysteamine eye drops could prevent or reduce corneal cystine crystals in these patients.
  - c. The PLT also said that fuel was managed to arrive at destination on fullest tank.
  - d. It seems that today the message is begun to arrive
  - e. The tendency of masochism is remembered to occur.
  - f. If shipment is failed to arrive at the above-required seaport or airport by the deadline stated above, there would be extra cost occur

Meanwhile, when PC verbs are passivized, the sentences are grammatical as the sentences in (24) illustrate. Consequently, we can recognize that PC-complements are phases, CP.

- (24) PC-complements
  - a. \*The newspaper was wanted to give important information.
  - b. \*The cinema is preferred to show latest films.
  - c. \*Newspapers are liked to have a balance between news and leisure related items.
  - d. \*Some students are wanted to have arrived.
  - e. \*Some students are preferred to have arrived.
  - f. \*Some students are liked to have arrived.

We arrive at this conclusion from the tests of pseudo-clefts sentences and passivization that the syntactic category of PC-complements is CP while that of

EC-complements is not. This consequence leads us to further consideration of the structure of EC-complements in the next section.

#### 4 EXHAUSTIVE CONTROL

In the previous section, we have illustrated that the category of PC-complements is CP while that of EC-complements is not. This leaves us the next question as to the structure of EC-complements. In this paper, I propose that EC-complements have smaller clause structure than PC-complements do and PRO does not exist, and EC verbs function like adverbs. EC is, thus, not exactly the control construction.

In section 3, we observed that EC-complements are not CP. It is plausible to say, therefore, that EC-complements are smaller than CP. Furthermore, the sentences in (7) show that EC-complements are not tensed. Following Martin (1996), null Case of PRO is checked by tensed nonfinite T. Were it to be the case, PRO cannot exist if T is not tensed. Since T in EC-complements does not have tense, therefore, PRO is not present in EC-complements.

What does the structure of EC-complements look like then? Komoto (2002), following Wurmbrand (2001), suggests that the English implicative verbs such as *manage*, *dare*, a subclass of EC verbs, are restructuring verbs and select bare VP complements which do not have the subject as the structure in (25b) shows.

- (25) a. John managed to solve the problem.  
 b.
- (Komoto 2002: 49)

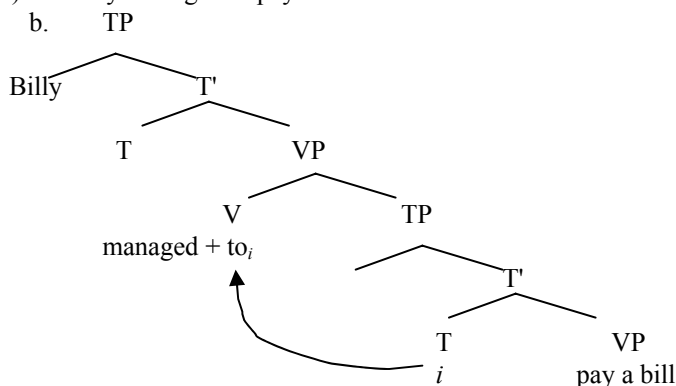
According to Komoto (2002), the structure in (25b) reflects that the event of implicative verbs and that of infinitival verbs are composed via event composition and implicative verbs *manage* work as a modifier rather than as a predicate. As Komoto (2002) discusses, the assumption that implicative verbs and infinitival verbs constitute a single sequence of event explicates various facts. First, time represented by an implicative verb and that of an infinitival verb are continuous. Therefore, as we have already seen, it is impossible to modify both events with adverbs of different time as in (26) while it is possible in the sentence with PC verbs as in (27).

- (26) \*Today, John managed to have finished his duties yesterday.  
 (Landau 2000: 59)



have the structure in (35).<sup>4</sup>

(35) a. Billy managed to pay a bill.



Since EC verbs do not select CP complements as we have discussed in section 3, EC verbs take TP complements. This T does not have tense, so PRO is not present because its null Case must be checked with tensed nonfinite T. Then, infinitival *to* incorporates into the matrix verb since this T (infinitival *to*) is defective in that it is not tensed and must support its tense by sticking together with a tensed predicate.

For the present paper, it is sufficient to say that EC verbs do not select CP and PRO is not present as nonfinite T of EC-complements is not tensed. Since there is the one and only subject in the sentence with EC verbs, it is natural that PC is impossible. Having got EC-complements out of the way, we may return to PC in the next section.

## 5 PARTIAL CONTROL

In this section, we will discuss the mechanism of PC. Since PC-complements are tensed, PRO exists if null Case of PRO is checked by tensed nonfinite T and the distribution of PRO is determined by null Case, following Martin (1996). As far as the interpretation of PRO is concerned, the binding theory is indispensable. Hence, before discussing the interpretation of PRO and PC mechanism in 5.2, it is desirable to describe the binding theory in the next subsection.

### 5.1 Binding in Minimalism

In Chomsky (1993), Condition A and B of the binding theory are as follows.

<sup>4</sup> When EC verbs are passivized as in (23a,b) in section 3, they take an accusative object, otherwise they select infinitival complements and the structure is like (35b).

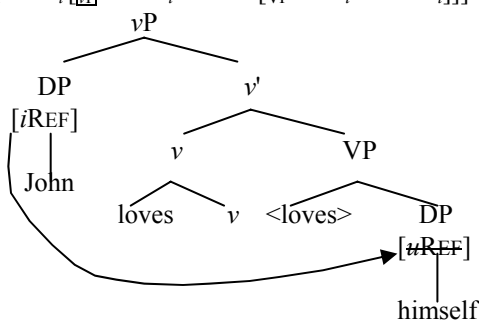
- (36) A. If  $\alpha$  is an anaphor, interpret it as coreferential with a c-commanding phrase in D.  
 B. If  $\alpha$  is a pronominal, interpret it as disjoint from every c-commanding phrase in D.  
 (Chomsky 1993: 43)

Here, D is the local binding domain which is the smallest complete functional complex in which grammatical functions ( $\theta$ -roles) are satisfied. The local binding domain is, therefore, considered as TP, DP and small clause.

Though this assumption achieved great deal of empirical success, it is representational conditions and not appropriate if derivation proceeds under constraints imposed by Minimalism. In this paper, alternatively, we take over the view of Hicks (2004, 2005) that the local binding domain reduces to the phase (CP, vP), an independently motivated stage of derivation in Chomsky (2001).

According to Hicks (2004, 2005), Condition A can be replaced by the operation Agree in the syntactic computation, and Condition B is an interface condition. In so doing, theoretically superfluous items, indices, are eliminated from the grammar. Let us suppose that anaphors have an uninterpretable feature [ $u$ REF] and it is checked off by Agree with DP in the same phase. For instance, in (37), *himself* and *John* are in the same phase vP if the subject is first situated inside vP (VP internal subject hypothesis), and [ $u$ REF] is deleted by Agree with *John*.

- (37) a. [<sub>TP</sub> John<sub>i</sub> [<sub>vP</sub> <John<sub>i</sub>> loves [<sub>VP</sub> him<sub>\*i</sub>/himself<sub>i</sub>]]].  
 b.



(Hicks 2004: 3)

As the sentence in (37) suggests, the binding theory proceeds derivationally. Let us next consider that the complementary distribution of anaphors and pronominals can be accounted for in terms of the phase. In (38), an anaphor *himself* cannot occur in the object position since its [ $u$ REF] cannot Agree with *Mary* in the same phase which has a different gender feature. Hence, the complementarity between anaphors and pronominals in the object position can be explained in that vP is the phase.

- (38) [<sub>TP</sub> John<sub>i</sub> [<sub>VP</sub> <John<sub>i</sub>> said [<sub>CP</sub> [<sub>TP</sub> Mary<sub>j</sub> [<sub>vP</sub> <Mary<sub>j</sub>> loved [<sub>VP</sub> him<sub>i</sub>/\*himself<sub>i</sub>]]]]]]].  
 (ibid.: 2)

Moreover, the complimentary distribution in the embedded subject position is also explicated in that CP is the phase. Since ECM verbs are considered to select TP complements as in (39), *himself* can corefer with the matrix subject *John*, but a

pronominal *him* cannot corefer with it. When the complement is CP, conversely, an anaphor *himself* cannot occur in the embedded subject position while a pronominal *he* can corefer with the matrix subject *John* as in (40).

- (39) John<sub>i</sub> [<sub>VP</sub> <John<sub>i</sub>> believes [<sub>TP</sub> him<sub>i</sub>/\*himself<sub>i</sub> to [<sub>VP</sub> <himself<sub>i</sub>> love Mary]]]  
(Hicks 2004: 3)
- (40) John<sub>i</sub> thinks [<sub>CP</sub> he<sub>i</sub>/\*himself<sub>i</sub> is honest].

The sentences (39) and (40) suggest that the complementary distribution between anaphors and pronominals is accounted for since CP is the phase. It seems reasonable to conclude from (38) to (40) that an antecedent (or its copy) must occur within the same phase as an anaphor, but may not occur within the same phase as a pronominal. In this subsection, we observed that the local binding domain can be reduced to the phase (CP, *v*P) and the complementary distribution of anaphors and pronominals can be accounted for in terms of the phase.

### 5.2 The Construal of PRO

Now that we have observed that the local binding domain is the phase, the next step is to explore the interpretation of PRO and the mechanism of PC. In the previous subsection, we noted that an anaphor cannot occur in the subject position of CP complements since [*u*REF] of an anaphor remains unchecked in the CP phase. Here the sentence is again echoed as (41).

- (41) John<sub>i</sub> thinks [<sub>CP</sub> he<sub>i</sub>/\*himself<sub>i</sub> is honest].

With the sentence in (41) in mind, let us consider specifically the control construction as in (42) with a PC verb and a collective predicate *gather*.

- (42) John likes [<sub>CP</sub> PRO to gather at 6].

As we have concluded that PC verbs select CP complements in section 3, the verb *like* takes a CP complement and PRO is situated as the subject of the CP complement. It is obvious from (41), consequently, that PRO is not an anaphor but a pronominal, since the subject of CP complements cannot be an anaphor but a pronominal. In this paper, hence, I propose that PRO is a usual referential pronominal which has a referent of its own.<sup>5</sup> That PRO is a pronominal is assured because PC verbs select CP complements

<sup>5</sup> PRO is not a pronominal anaphor like Chomsky (1981) assumes. PRO is subject to the binding theory in that it is generally a pronominal. And coreference of PRO and the controller in Obligatory Control is caused by a different mechanism than the binding theory. The binding theory is inappropriate to determine the distribution of PRO, now that government is eliminated and PRO is not an anaphor. If the distribution of PRO is decided by the Case theory according to Martin (1996), it is theoretically possible to consider that the interpretation (but not distribution) of PRO is subject to the binding theory.

and CP is the phase and the local binding domain. This fact, at the same time, can be a counterargument to the theory which deals with PRO as a left copy of A-movement. This is because PRO is not an anaphor which can be replaced with a copy but is a pronominal, as such, has a referent.

This will lead us further into a consideration of the mechanism of PC. To con the interpretation of PRO, we must build a theory which properly explains (a) how to construe the referent of PRO as PRO is a referential pronominal and (b) how to determine the controller of PRO. By considering the relation between the mechanisms of (a) and (b), the mystery of PC will be untangled.

Let us first consider (b) how to determine the controller of PRO. It has long been discussed that PRO in Obligatory Control must corefer with a controller. The controller is decided by Minimal Distance Principle of Rosenbaum (1967) which stipulates that PRO in Obligatory Control must be controlled by a nearest c-commanding phrase.

- (43) *Minimal Distance Principle* (cf. Rosenbaum 1967)  
PRO must be controlled by a nearest c-commanding DP.

Keeping Minimal Distance Principle, for example in (42), the controller is decided as the matrix subject *John* as in (44). In the case of transitive matrix verbs such as *persuade*, the controller is decided to be the object of the matrix verbs because it is the nearest c-commanding DP.

- (44) John<sub>i</sub> likes PRO<sub>i</sub> to gather at 6.

Note that Minimal Distance Principle is a principle at syntax which applies only to PRO in Obligatory Control and it is independent of the binding theory.

Next we will examine (a) how to construe the referent of PRO. Since PRO is a usual referential pronominal, I adopt here the way of interpreting usual referential pronominals following Heim and Kratzer (1998). In Heim and Kratzer, referential pronominals are construed via assignment function  $g_c$  with respect to context. Pronominals are generally considered to have a numerical index and  $g_c$  takes this index and returns it to DP in the context which matches the phi-feature of a pronominal (or the phi-feature of the numerical index which a pronominal has). The details of  $g_c$  are cited below.

- (45) *Appropriateness Condition*  
A context  $c$  is appropriate for an LF  $\Phi$  only if  $c$  determines a variable assignment  $g_c$ , whose domain includes every index which has a free occurrence in  $\Phi$ . (Heim and Kratzer 1998: 243)
- (46) *Truth and Falsity Conditions for Utterances*  
If  $\Phi$  is uttered in  $c$  and  $c$  is appropriate for  $\Phi$ , then the utterance of  $\Phi$  in  $c$  is true if  $\llbracket \Phi \rrbracket^{g_c} = 1$  and false if  $\llbracket \Phi \rrbracket^{g_c} = 0$ . (ibid.)

Let us look at a specific example. In (47), a pronominal *she* has an index 1 which has a singular, third person, feminine phi-feature. Then, a context  $c$  is appropriate for *she*

only if  $c$  determines a variable assignment  $g_c$ . Here the context includes *Susan* and is appropriate in that  $g_c$  can map 1 to *Susan*.

- (47) a. She<sub>1</sub> is taller than Kate.  
 b. She has an index 1 which has a singular, third-person, feminine phi feature.  
 c.  $g_c = [1 \quad Susan]$

The same can be said of PRO. Since PRO is a referential pronominal, PRO is generally subject to the assignment function  $g_c$  which is described in (48).

- (48) If  $\alpha_1$  is a PRO that has an index 1,  $g_c$  is an assignment function with respect to context, then  $\llbracket \alpha_1 \rrbracket^{g_c} = g_c(1)$ .

If PRO takes a collective predicate, PRO has an index 1 which has a plural phi-feature. Therefore, PRO refers to plural individuals in the context. If PRO takes a predicate which requires a singular subject, PRO's index has a singular phi-feature, and thus PRO refers to a singular individual in the context.

- (49) If PRO takes a collective predicate, PRO has an index 1 which has a plural phi feature.

What is important here now is the relationship between the controller of PRO and the referent of PRO. I assume in the present paper that if PRO has a controller, it is always a part of the referent of PRO. This relationship is formulated as in (50).

- (50) If PRO  $\alpha$  has a controller  $\beta$ , then  $\llbracket \alpha \rrbracket \geq \llbracket \beta \rrbracket$ .

Summarizing what I have argued so far, PRO is a referential pronominal and has a referent which is construed via assignment function  $g_c$  with regard to context. Different from  $g_c$  (the binding theory), PRO in Obligatory Control (hence when PRO is in the VP-internal position) is subject to the special mechanism Minimal Distance Principle for some reason. And as for the referent of PRO and the controller, the relationship of (50) always holds.

Let us calculate the sentence in (44). Here, a collective predicate *gather* appears, so PRO's index 1 has a plural phi-feature and PRO refers to plural individuals in the context.

- (51) a. [John likes [<sub>CP</sub> PRO<sub>1</sub> to gather at 6]].  
 b.  $\llbracket \text{PRO}_1 \text{ to gather at 6} \rrbracket^{g_c}$   
 $= [\lambda x \ D_c. x \text{ gather at 6}] (\llbracket \text{PRO}_1 \rrbracket^{g_c})$   
 $= [\lambda x \ D_c. x \text{ gather at 6}] (a \text{ and } b) \text{ (=by application of } g_c)$   
 $= 1 \text{ iff } \underline{a \text{ and } b} \text{ gather at 6}$

The third line of (51b) is achieved by (48), and here for simplicity's sake, PRO refers to plural individuals *a* and *b*. Since *John* is already decided as the controller of PRO at



syntax by Minimal Distance Principle, the relationship between *John* and *a* and *b* are obtained by (50) as in (52).

$$(52) \quad [a \text{ and } b] \geq \text{John}$$

I would like to emphasize  $[a \text{ and } b]$ . As a candidate for the individual who is identical to *John*,  $[a \text{ and } b]$ , *a*, *b* are considered. But since *John* is a singular individual, *a* or *b* is chosen as the individual who is the same as *John*. Other individual who is not identical with *John* is, of course, interpreted in the context by  $g_c$ . In the case in which PRO takes a predicate which requires a singular subject such as the sentence in (53), by calculation with the rule (48), and the relationship of (50), (54) is achieved.

(53) John likes  $[_{CP} \text{ PRO to go abroad}]$ .

(54)  $a \geq \text{John}$

As for the sentence in (53), PRO refers to a singular individual, here for simplicity, it is decided to be *a*. By (50), the relation that the controller *John* is a part of the referent of PRO *a* is obtained. In this case, a candidate for the individual identical to *John* is only *a*, and *John* is singular. Therefore, *a* is automatically chosen as identical to *John*. In sum, PC is achieved because PRO as a referential pronominal refers to plural individuals when a collective predicate appears in the infinitive, and a part of them is controlled by the controller. Since the controller is always a part of the referent of PRO as in (50), the controller and the referent of PRO must identify even when a predicate requiring a singular subject appears in an infinitival complement.

An advantage of this theory is that it decides the controller of PRO; and besides it can interpret a part of the referent of PRO which is not controlled by the controller. Otherwise a part of PRO which is not controlled is left unexplained and is not construed in any way. Landau (2000)'s analysis explains that there is a case in which the semantic number of the controller and that of PRO differs, but it does not account for how PRO, and what is more, a part of PRO which is not controlled, is interpreted. In addition to this, the movement theory of Hornstein (1999) does not explain how a part of PRO which is not controlled is construed. The movement theory cannot, anyhow, apply to PC since the controller and the referent of PRO (the subject of PC-complements) are not exactly identical and therefore cannot copy the subject of PC-complements. And since PRO is a pronominal as is the subject of CP complements, PRO is not an anaphor which can be explained by copying. Another benefit of my theory is that we can interpret PRO in general both in Obligatory Control and Non-Obligatory Control. PRO in Non-Obligatory Control is considered to be at the VP-external position such as the subject position and the adjunct position (cf. Manzini (1983), Landau (2000)). Therefore, in Non-Obligatory Control, there cannot be a controller because there is no phrase c-commanding PRO in that position. Since PRO in Non-Obligatory Control is not subject to Minimal Distance Principle, therefore, it is interpreted just by the assignment function  $g_c$  with respect to context.

## 6 CONCLUSION

In this paper, I have argued first that two types of infinitival complements, that is, EC-complements and PC-complements differ in their syntactic category. The category of PC-complements is CP while that of EC-complements is not. The categorical difference of complements reflects the difference of interpretation.

As for EC, it is not the control construction in that it does not contain PRO. What is important is that EC verbs select complements which have smaller clause structure than PC-complements do. Therefore it is smaller than CP as the result in section 3 assures. And PRO cannot exist, for null Case of PRO is checked only by tensed nonfinite T but EC-complements are not tensed. EC verbs function as an adverb and there is the one and only subject in the sentence with EC verbs. Therefore, it is natural that PC is impossible. We should notice that the first problem of Landau (2000) is resolved because PRO is not present in the first place and moreover EC-complements are not CP.

As far as PC-complements are concerned, they are CP and CP is the local binding domain because the local binding domain reduces to the phase. We may recall that the subject in CP complements is not an anaphor but a pronominal in that the complementary distribution of anaphors and pronominals can also be accounted for by the fact that the local binding domain is the phase. Since PRO is the subject of CP complements, it is not an anaphor but a referential pronominal.

PRO in Obligatory Control (hence PRO in PC-complements) must obey two different mechanisms. One is Minimal Distance Principle which decides the controller of PRO. The other is the assignment function  $g_c$  which determines the referent of PRO with regard to context. I would like to lay special emphasis on that the relationship that the controller is a part of the referent of PRO always holds. Therefore, when PRO takes a collective predicate, PRO refers to plural individuals and a part of them is identical to the controller.

My analysis properly explains how to determine the controller and the partial coreference between the controller and PRO without recourse to T-to-C movement that is not empirically corroborated. Therefore, the proposal of this paper is different either from Landau (2000) and the account of Hornstein (1999) which is based on the movement theory of control. It should be noted lastly, from what has been discussed so far, that PC is obtained because PRO is not a pure anaphor nor a copy but is generally a referential pronominal.

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