

Derivational Analysis on Anaphors in DP Phase*

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Kim, Ji-Sook. 2003. **Derivational Analysis on Anaphors in DP Phase**. *The Linguistic Association of Korea Journal*, 11(1), 51-68. The purpose of this paper is to provide the derivational analysis on the locality in applying English anaphor binding with some assumptions within the Minimalist Framework (Chomsky 1999, 2000, 2001). This paper also suggests that a local anaphor binding phenomenon results from matching/ agreement between the reference features of an anaphor and a nominal expression. It extends the notion of phase introduced in Chomsky (1999, 2000) to DP and resolves the Reconstruction effects of anaphors under the Phase Impenetrability Condition and Match. Therefore, it accounts for the binding properties of anaphors in DP phase.

key words: anaphor, Match, reference feature, DP phase, PIC, RACA

1. Introduction

I will present a derivational analysis on the anaphor constructions including Reconstruction effects under Match, within the Minimalist Framework (Chomsky 1999, 2000, 2001). Following Chomsky's matching condition (Chomsky 1999: 4), I will argue that the operation Match plays a crucial role in accounting for the binding phenomena of anaphors related to reference features.

As for a notion of the local domain for the application of anaphor binding, the domain where I can check under Match, is restricted to a basic derivation unit, phase of Chomsky (1999, 2000). Chomsky (1999, 2000) assumes that the derivation of EXP

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proceeds by phase. Strong phases differ from weak phases; the head of a strong phase, C and ν may have an EPP-feature, which provides a position for XP-movement (Chomsky 1999: 9). Based on these properties of phase, I will extend the notion "phase" introduced in Chomsky (1999, 2000) to DP, and suggest how Phase Impenetrability Condition in Chomsky (1999, 2000) works for my proposal.

2. Basic Assumptions on Reference Assignment via Match

2.1 DP Phase

As far as the locality restriction in matching of a PROBE and a GOAL is concerned, I propose that a basic derivation unit, phase, which is introduced in Chomsky (1999, 2000), determines the domain of the application for the Condition A.

Chomsky (1999: 9) takes CP and ν P to be strong phases. The phases are "propositional"; ν P with full argument structure and CP with force indicators, but not TP alone or "weak" verbal configuration.¹⁾ Following his idea, I suggest that the notion of the head of a strong phase can be extended to D.²⁾ Given the

1) In Chomsky (1999), the strong/weak phases are divided by ν^* and ν . According to Chomsky (1999), there is a distinction between complete functional head ν (represented as ν^*) and incomplete functional head ν . For convenience' sake, I indicated complete functional head ν as ν without any subscripts, not ν^* , in my analysis.

Complete functional head ν has complete \emptyset -features and an EPP-feature, whereas incomplete functional head ν does not have complete \emptyset -features and the EPP-feature. For instance, it is assumed that incomplete functional head ν selects VP of passive constructions or unaccusative constructions (Chomsky 1999: 6).

2) Chomsky (1999, 2000) does not suggest that D is a head of a strong phase. Chomsky (1999: fn28, 2001: fn16), however, mentions the possibility that if phases include DPs, they extend partially to Huang's CED. See Chomsky (1999, 2000, 2001) and Kim (2001) for this detailed information.

properties of strong phases, DP also has a full argument structure with external arguments and an EPP-feature.

As an illustration, let us look at the following:

- (1) [DP Bill [D' 's [NP t_{Bill} [N' destruction [PP of the city]]]]]³⁾
 [∅-set]⁺ [∅-set]⁻
 [Case]⁻ [EPP]⁻

In (1), I assume that *Bill* is generated not by merge in the Spec of DP but by merge in the Spec of NP to delete the EPP-feature of D. Then, Agree deletes the uninterpretable [∅-set] of D and the uninterpretable Case feature of *Bill*.⁴⁾ As a

3) According to Fukui and Speas (1986), the possessive morpheme 's (e.g., *Bill's*) is in a head D which assigns genitive Case.

4) Agree is defined as in the following:

(i) *Agree*

Agree establishes a relation (agreement, Case-checking) between a lexical item (LI) *a* and a feature *F* in some restricted search space (Chomsky 2000: 101).

The Genitive Case is generally considered as the nonstructural Case (i.e., inherent Case) (See Chomsky 1986). Namely, the inherent Case cannot be checked in the way the structural Case is, since the former is related to θ-marking. Unfortunately, the inherent Case is largely ignored in Chomsky (1993, 1995, 1999, 2000, 2001).

On the other hand, Uchibori (1996: 111) assumes that the genitive Case is an instance of the structural Case which needs to be checked off through Spec-head relation with a functional category (i.e., D). Considering this point, I assume that as far as the subject of Picture-DP constructions is concerned, the genitive Case should be regarded as an instance of the structural Case which is deleted within the DP phase.

Let us examine the following examples:

(ii) a. [dP a [NP picture [PP of himself]]]
 b. [dP which [NP picture [PP of himself]]]
 c. [dP whose D [NP t_{whose} picture [PP of himself]]]

The head D of DP in (iic) has an EPP-feature, while if head D does not have an EPP-feature as in (iia, iib), it is considered a weak phase, which we indicate dP.

Compared with the example of (1), let us see another example:

result, DP is a strong phase with a full external argument structure and an EPP-feature as if CP and ν P are. This proposal can resolve the anaphoric relation in the Reconstruction Effects of Picture-DP constructions.⁵⁾

Phases should satisfy all selectional requirements, otherwise the derivation crashes at the phase level. For instance, for A-movement, it should follow from the theories of Case-agreement/locality. In case of A'-movement, it should target the edge of strong phases CP and ν P. According to Chomsky (1999, 2000), locality conditions require "short movement" in successive stages, leading to convergence in the final stage. He expresses a version of this idea as a *Phase Impenetrability Condition* (hereafter *PIC*), strengthening further the notion of cyclic derivation:

- (2) Given [Z_P Z...[H_P α [H YP]]] where HP and ZP are strong phases, the domain of H is not accessible to operations at ZP, but only H and its edge are accessible to the operations.

(where, YP=the domain of H, α =the edge of H)

(Chomsky 1999: 10)

Let us examine the following structures:

- (3) a. Mary thinks that [ν_P Bill_i likes himself_i]
 b.*[Bill_i thinks [C_P that [ν_P Mary_j likes himself_i]]]

(iii) Bill believes [T_P himself to be smart]

According to a version of Chomsky (1999: alternative (I), 2000) with respect to the EPP-feature of defective T (i.e., T_{def}) in raising and ECM constructions, T_{def} in the embedded clause in (iii) is unable to determine Case-agreement but has an EPP-feature (Chomsky 1999:5). Although I adopt a version of Chomsky (2000) that T has an EPP-feature, it cannot be applied to Agree since it does not have complete \emptyset -features and does not determine Case-agreement. As a result, we should not interpret TP with defective head T_{def} in the same point as DP phase via Agree. I am indebted to a reviewer of this journal for discussion of this issue.

5) We will deal with the Reconstruction Effects of anaphors in chapter 3.

When *Bill* is introduced to the derivation as in (3a), *Bill* can see *himself* since they are in the same phase, vP . However, when *Mary* is introduced to the derivation as in (3b), *Mary* and *himself* are in the same phase, but their [\emptyset -set] does not match. Next, when *Bill* is introduced to the derivation, *Bill* cannot see *himself* by the violation of PIC in (2).

Based on this proposal, I will show in the next chapter that if the extension of a strong phase to DP with an external argument is on the right track, the binding properties including the Reconstruction Effects of anaphors in DP phase can be accounted for.

2.2 Reference Assignment Condition on Anaphors

The reference of anaphors is affected by the presence of the other nominal expressions, which is a part of C_{HL} . Following Chomsky's (1999, 2000) matching condition, I assume that there is a reference feature in nominal expressions that is required to satisfy Full Interpretation of anaphoric expressions at LF. Therefore, I propose the following matching condition to be satisfied between a probe and a goal for the binding relation of anaphors, indicating them into capital letters:

- (4) a. **PROBE** (i.e., target feature): uninterpretable reference feature (i.e., [UR]) of an anaphor
 b. **GOAL** (i.e., matching feature): interpretable reference feature (i.e., [IR]) of a nominal expression DP

Under the matching condition of the PROBE and the GOAL in (4), and PIC in (2), how does the [UR] of the PROBE recover the reference? I suggest that the unvalued [UR] is assigned its value by the [IR] to establish a reference recovery in the same

phase to which both [UR] and [IR] belong, satisfying PIC. My proposal is formulated as in the following:

(5) ***Reference Assignment Condition on Anaphors*** (hereafter ***RACA***)

Assign the [IR] of a GOAL, G, matching feature of a PROBE, to the [UR] of a PROBE, P, satisfying PIC.

According to (5), the [UR] of P mentioned in (3a) of section 2.1 locates its matching feature, the [IR] in (3a) mentioned in 2.1 since both P and G belong to the same phase.⁶⁾ Hence, the [UR] gets the reference from the [IR] under Match. On the other hand, the [UR] of *himself* (i.e., P) in (3b) is not in the same phase as the [IR] of *Bill* (i.e., G), violating PIC. Therefore, the [UR] does not get the reference from the [IR] under Match.

3. Derivations

3.1 Picture-DP Constructions

Consider the following Picture-DP examples:

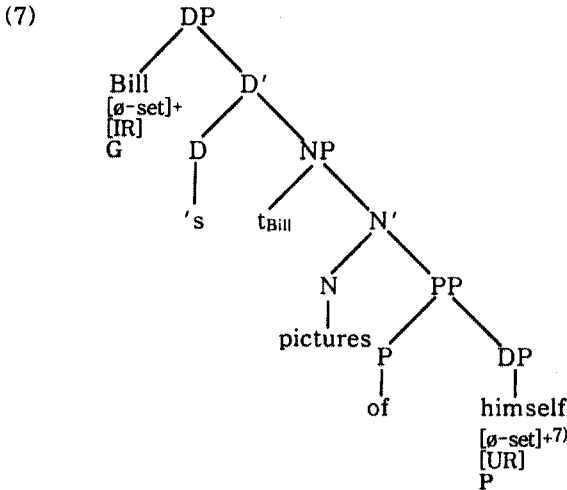
- (6) a. Mary_j liked [Bill_i's picture of himself_{i/*j}].
 b. *Mary_j liked [Bill_i's picture of herself_j].
 c. Bill_i liked a picture of himself_i.

Suppose that we have the following syntactic object at some point of the derivation of (6a):

6) In this point, as far as anaphor binding phenomenon is concerned, I suggest that the following domain of a PROBE under the matching of a PROBE and a GOAL:

(i) *The Domain of a PROBE, P*

In the structure [_{HP} β H ... α v] where β c-commands α, the domain of α (i.e., PROBE, P) is HP minus α and v. (where, HP = strong phase, β = GOAL)



7) Recently Chomsky (1999, 2000) has eliminated the notion of trace. He proposes that the notion of trace is not tenable since trace can not enter into computation. However, in this paper, *t* is marked to show that NP movement and VP movement occur from this *t* position.

For expository purpose, the following notations are used:

- a. + : interpretable
- b. - : uninterpretable
- c. [ø-set]: the set of ø-features (e.g., person, number, gender)
- d. [IR]: interpretable reference feature
- e. [UR]: uninterpretable reference feature

For convenience, I do not indicate the feature notation except when needed.

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When *Bill* is introduced to DP phase in the course of the derivation as in (7), the [IR] of *Bill* (i.e., GOAL) matched with \emptyset -features of the anaphor *himself* assigns the reference to the [UR] of *himself* (i.e., PROBE) in the same phase under Match. Hence, the [UR] is valued and *himself* is interpreted as coreferential with *Bill*, satisfying RACA in (5).

On the other hand, let us consider the derivation of (6b).

- (8) a. [NP picture [PP of herself]]
 b. [NP Bill [N' picture [PP of herself]]]
 c. [DP D('s) [NP Bill picture [PP of herself]]]
 d. [DP Bill_i's [NP t_i picture [PP of herself]]]
 e. [VP liked [DP Bill_i's [NP t_i picture [PP of herself]]]]
 f. [_{VP} v [_{VP} liked [DP Bill_i's [NP t_i picture [PP of herself]]]]]
 g. [_{VP} liked_{j-v} [_{VP} t_j [DP Bill_i's [NP t_i picture [PP of herself]]]]]
 h. [_{VP} Mary [_{v'} liked_{j-v} [_{VP} t_j [DP Bill_i's [NP t_i picture [PP of herself]]]]]]
 i. [TP T [_{VP} Mary [_{v'} liked_{j-v} [_{VP} t_j [DP Bill_i's [NP t_i picture [PP of herself]]]]]]]
 j. [TP Mary_k T [_{VP} t_k [_{v'} liked_{j-v} [_{VP} t_j [DP Bill_i's [NP t_i picture [PP of herself]]]]]]]⁹⁾

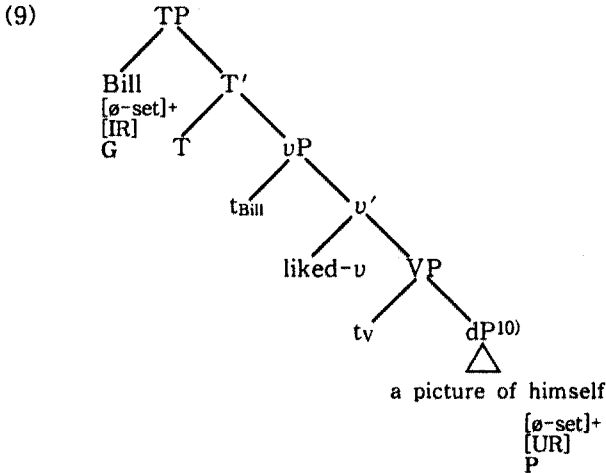
As shown in (8d), when *Bill* is introduced to the derivation, the \emptyset -features of *herself* and those of *Bill* are not matched in DP phase. Thus, the [IR] of *Bill* cannot be a GOAL for the [UR] of *herself*. Consequently, the [UR] cannot be assigned the reference from the [IR] of *Bill* in DP phase under Match.

Furthermore, as shown in (8j), the [UR] of *herself* cannot access the [IR] of *Mary* matched with \emptyset -features of *herself*, since it is neither on the edge and head D of DP phase, violating PIC in (2). Thus, the [IR] of *Mary* cannot assign its reference to the [UR] of *herself*, violating RACA in (5). Hence, *herself* is not

9) Only in case a sentence is the simple predicate of that as in (8j), I suggest the strong phase, vP, can be extended to TP.

licensed by its antecedent.

Next, suppose that the derivation leading to (6c) has constructed the following syntactic object:



When *Bill* is introduced to the derivation, the [UR] of *himself* acting as a PROBE, P, looks for a matching feature, the [IR] of *Bill* (i.e., GOAL, G), in the same phase to which both P and G belong, in order to establish a reference recovery. Thus, the [UR] is assigned the reference from the [IR] since P can access G by PIC.

3. 2 Reconstruction Effects

3. 2. 1 Anaphor Reconstruction

Let us consider how anaphors in reconstruction structures are

10) See note 4 in section 2.1 on the indicating of dP.

dealt with by the Match-based reference assignment approach.

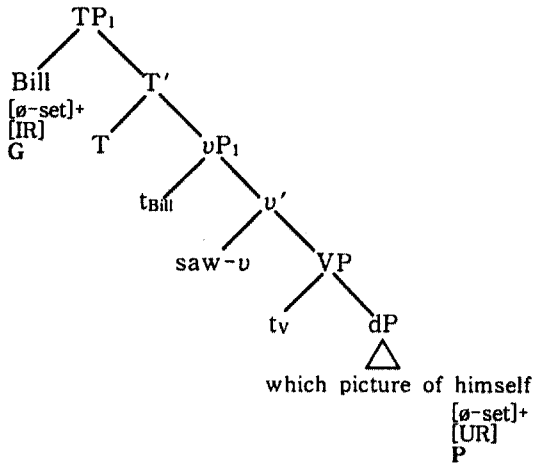
- (10) John wondered [which picture of himself] Bill saw t.

At the LF component, where copies are visible, let us examine how either matrix subject, *John*, or embedded subject, *Bill*, is interpreted as coreferential with the anaphor *himself* through the derivation:

- (11) a. [_{VP1} saw [_{dP} which picture of himself]_a]
 b. [_{VP1} v [_{VP} saw [_{dP} which picture of himself]_a]]
 c. [_{VP1} saw_{i-U} [_{VP} t_i [_{dP} which picture of himself]_a]]
 d. [_{VP1} Bill [_{v'} saw_{i-U} [_{VP} t_i [_{dP} which picture of himself]_a]]]
 e. [_{TP1} T [_{VP1} Bill [_{v'} saw_{i-U} [_{VP} t_i [_{dP} which picture of himself]_a]]]]]
 f. [_{TP1} Bill_j [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} which picture of himself]_a]]]]]
 g. [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]
 h. [_{VP2} wondered [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]]]
 i. [_{VP2} v [_{VP} wondered [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]]]]]
 j. [_{VP2} wondered_{k-U} [_{VP} t_k [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]]]]]
 k. [_{VP2} John [_{v'} wondered_{k-U} [_{VP} t_k [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]]]]]
 l. [_{TP2} John_i T [_{VP2} t_i [_{v'} wondered_{k-U} [_{VP} t_k [_{CP} [which picture of himself]_a [_{TP1} Bill_j T [_{VP1} t_j [_{v'} saw_{i-U} [_{VP} t_i [_{dP} t_a]]]]]]]]]]]]]

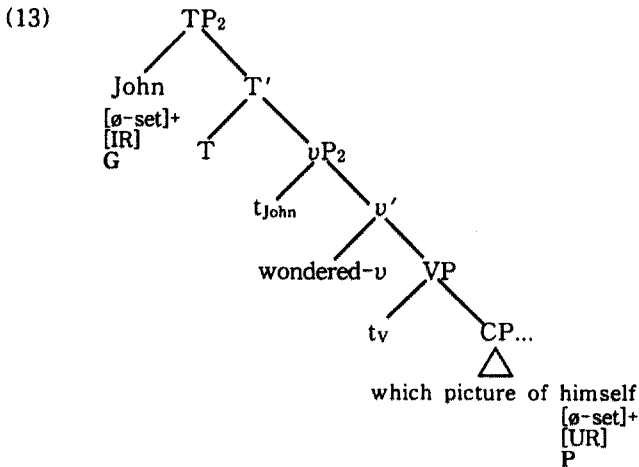
First of all, when *Bill* is introduced to the derivation, as in (11d), we have the following structure:

(12)



The [UR] of *himself* with interpretable \emptyset -features (i.e., PROBE) is assigned the reference from the [IR] of *Bill* with interpretable \emptyset -features (i.e., GOAL) in uP phase, for Match. Hence, the [UR] of P is valued, and *himself* is fully interpreted as *Bill* by RACA in (5).

Next, when *John* is introduced to the derivation, as in (11k), we have the following structure:



When *John* is introduced at the higher uP_2 phase level, *John* can see *himself* because the [UR] of P is on the edge of the embedded CP phase, Spec of CP, by PIC. Hence, the [UR] of P is assigned the reference from the [IR] of G, satisfying RACA. Consequently, *himself* is interpreted as coreferential with *John*.¹¹⁾

In this way, I showed that anaphor *himself* in the sentence such as (10), optionally, is interpreted as coreferential with either *John* or *Bill* by the Match-based reference assignment approach.

3. 2. 2 Multiple Antecedent Constructions

Next, let us see the following contrast:

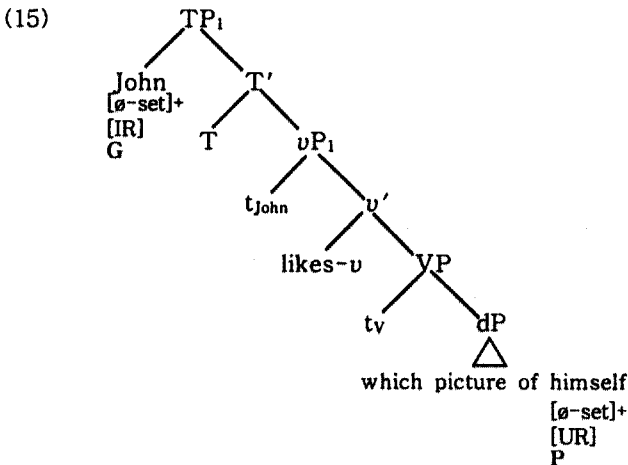
- (14) a. [which picture of himself_{*i*/_{*j*}]}
- does Bill_{*i*} think t' John_{*j*} likes t?

11) The configuration in (12) and (13) provides two possibilities of matching in the course of the derivation; the anaphor *himself* can be matched by either *Bill* or *John*, optionally. It does not mean that *himself* is matched by both *Bill* and *John* at the same time, which is impossible for interpretation.

- b. [whose picture of himself_{i/v,j}] does Bill_i think t' John_j likes t?

In (14a), the anaphor *himself* can take either *Bill* or *John* as its antecedent.¹²⁾ In (14b), *which* in (14a) is replaced by *whose*, in which neither *Bill* nor *John* may be available as the antecedent.

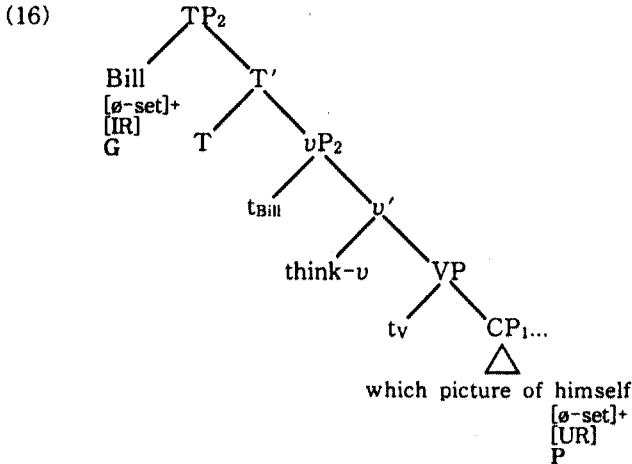
When the embedded subject *John* in (14a) is introduced to the derivation, suppose that the derivation has the following structure:



In (15), *John* can see *himself* by PIC because they are in the same phase. The [UR] of *himself* as a PROBE gets the reference from the [IR] of *John* as a GOAL, satisfying RACA. Hence, the [UR] is valued and *himself* gets a coreferential interpretation with *John*.

On the other hand, when *Bill* is introduced to the derivation, suppose that the derivation has the following structure:

12) For the so-called multiple binding effects and reconstruction effects, see Barss (1986), Huang (1993), Heycock (1995) and among others.



In (16), *himself* can access *Bill* since it is on the edge of the embedded CP₁ phase, Spec of CP₁, by PIC. In other words, if anaphors are on the edge position of a fronted strong CP, a nominal expression *Bill* can see *himself* since the edge position of CP is penetrable by PIC in (2). Hence, the [UR] of *himself* (i.e., PROBE) gets the reference from its matching feature, the [IR] of *Bill* (i.e., GOAL), satisfying RACA. Hence, anaphor *himself* is interpreted as coreferential with *Bill*. In this way, *himself* in (14a) gets coreferential interpretation with either *John* or *Bill* under Match.

Next, let us consider the derivation of (14b). At this point, recall that DP can be a target for movements as if CP and vP can, as we can see in *wh*-movement.¹³⁾

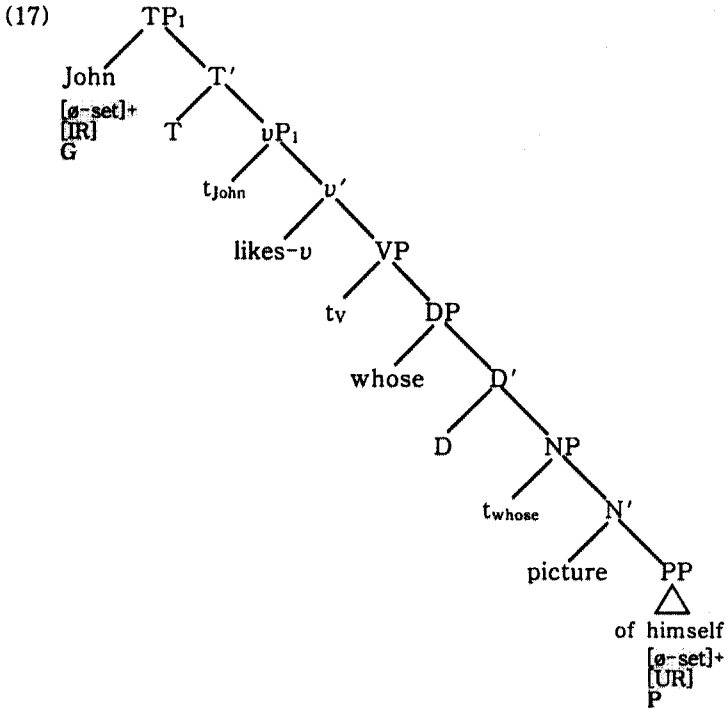
13) See section 2.1.

Uchibori (1996: 111) proposes that a crucial difference between (14a) and (14b) lies in the internal structure of a *wh*-phrase from which an anaphor is contained. Uchibori regards genitive Case as an instance of structural Case. It follows that wherever the genitive *wh*-phrase *whose* in (14b) is base-generated, *whose* should be in the Spec of DP at LF which results in the following structure:

(i) [DP *whose* [_D D [_{NP} t_{whose} picture [_{PP} of himself]]]]

On the other hand, the *wh*-phrase *which* in (14a) is assumed to have no such

First of all, when *John* is introduced to the derivation, suppose that the derivation has the following structure:



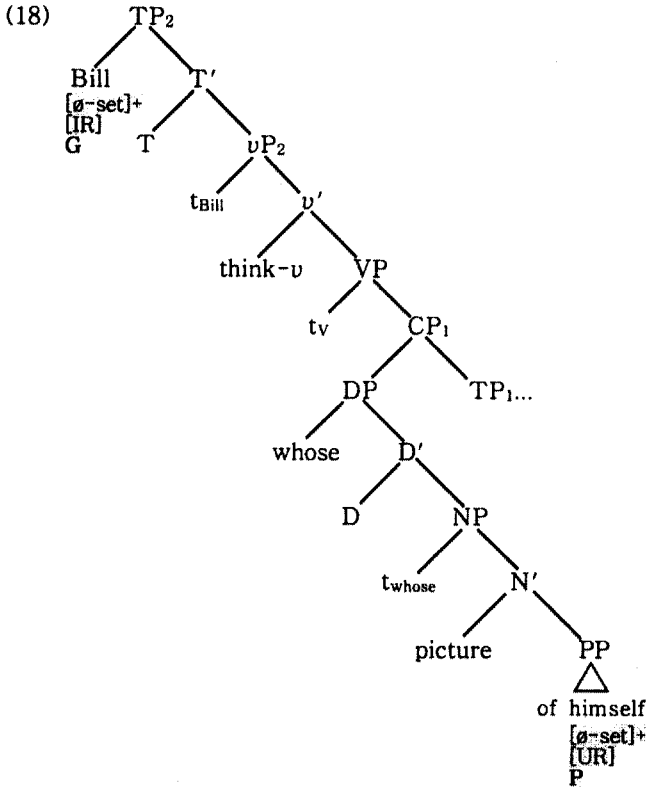
In (17), *himself* cannot access *John* since it is neither on the edge nor the head of the strong phase DP. In other words, if an anaphor is in the complement position of a fronted strong DP phase, a nominal expression in the main clause, *John*, cannot see *himself* since the complement position of DP is impenetrable by the PIC. Hence, the [UR] of *himself* cannot be assigned the

N-related feature (e.g., Case feature) so that it should not move to the Spec of DP:

- (ii) [DP D [NP which [N picture [PP of himself]]]]

reference from the [IR] of *John*, by the violation of RACA in (5).

Next, *Bill* is introduced to the derivation, suppose that the derivation has the following structure:



In (18), *himself* cannot access *Bill* since it is neither on the edge nor the head of the strong phase DP by PIC, like (17). Thus, the [UR] of *himself* cannot get the reference from the [IR] of *Bill*, and the anaphor *himself* cannot be interpreted as coreferential with *Bill*.

In this way, I showed the reconstruction effects on anaphors via the Match-based reference assignment approach.

4. Conclusion

As far as the local domain in matching of a PROBE and a GOAL is concerned, I proposed that a basic derivation unit, phase of Chomsky (1999, 2000) determine the domain of the application for the Condition A. On the basis of the properties of strong phases, I showed that the notion of phase should be extended to DP with a full argument structure and an EPP-feature.

Based on Chomsky's (1999, 2000) Match theory and Phase Impenetrability Condition, I showed that the reference of English anaphor in DP phase including Reconstruction effects can be licensed by its antecedent at some point of derivation. In other words, unlike previous condition on anaphors such as Condition A of the binding theory, Reference Assignment Condition on Anaphors (RACA) accomplishes the reference recovery via Match between the [UR] of the PROBE and [IR] of the GOAL.

As a result, this paper claimed that Reconstruction effects of anaphors can be accounted for by my proposal, Match-based reference assignment approach.

References

- Abney, S. (1987). *The English Noun Phrase in its Sentential Aspect*. Doctoral dissertation, MIT.
- Barss, A. (1986). *Chains and Anaphoric Dependence*. Doctoral Dissertation, MIT.
- Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origin, and Use*. New York: Praeger.
- Chomsky, N. (1993). A Minimalist Program for Linguistic Theory. In Kenneth Hale, and Samuel Jay Keyser (eds.) *The View from Building 20: Essays in Linguistics in Honor of Sylvain*

- Bromberger*, 1-52. Cambridge, Mass.: MIT Press.
- Chomsky, N. (1995). *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chomsky, N. (1999). Derivation by Phase. In *MIT Occasional Papers in Linguistics* 18. Department of Linguistics and Philosophy, MIT, Cambridge, Mass.
- Chomsky, N. (2000). Minimalist Inquiries: The Framework. In Roger Martin, David Michaels, and Juan Uriagereka (eds.) *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, 89-155, Cambridge, Mass.: MIT Press.
- Chomsky, N. (2001). Beyond Explanatory Adequacy, ms., MIT.
- Fukui, N. and M. Speas. (1986). Specifiers and projection. In *MIT Working Papers in Linguistics* 8: 128-72. Department of Linguistics and Philosophy, MIT, Cambridge, Mass.
- Heycock, C. (1995). Asymmetries in Reconstruction. *Linguistic Inquiry* 26.4: 547-70.
- Huang, C.-T. James. (1993). Reconstruction and the Structure of VP: Some Theoretical Consequences. *Linguistic Inquiry* 24: 103-40.
- Kim, S. Y. (2001). Phase Sensitivity and Binding Condition. *Korean Journal of Linguistics* 26: 39-58.
- Uchibori, A. (1996). Some asymmetries in the reconstruction effect on anaphora. In *University of Connecticut Working Papers in Linguistics 5: Minimal Working Papers*, 81-115. Department of Linguistics, University of Connecticut, Storrs, Connecticut.

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