査読論文

(Anti-)Labeling and Extraction Domains

SATO Hideshi[1]

This paper explores an extension of Bošković's (2016) hypothesis on the deduction of Condition on Extraction Domain (CED). I argue that Bošković's proposal of Anti-locality, a labeling-based derivational constraint, and Saito's (2016) proposal of the opacity of suffixal Case in labeling, both built on the system of labeling advocated in Chomsky (2013, 2015), collaborate to deal with the absence of Subject Condition effects and the presence of Adjunct Condition effects observed in cleft constructions in Japanese. Specifically, timing difference in labeling, via Minimal Search or else, yields an asymmetry between English and Japanese with respect to subject-affiliated labeling, i.e., labeling of the constituent formed by the merging of the subject and a projection headed by T takes place either in the interfaces or in syntax. This analysis can account for full CED paradigms in English and Japanese in conformity with the argument posited, for example, by Kishimoto (2001) that subjects are overtly raised to [Spec, T] in Japanese. This analysis also explains some peculiar properties of scrambling; scrambled phrases are transparent for extraction and are immune from island constraints.

Key words:　　(Anti-)labeling, Anti-locality, Condition on Extraction Domain, Scrambling, Minimal Search

1．Introduction

Although *wh*-movement is unbound in nature, overt *wh*-movement out of subject and adjunct is seriously degraded (i.e., the Subject Condition and the Adjunct Condition,) unlike the *wh*-movement out of object, as exemplified in (1).

(1) a.　Who$_i$ did you see [$_{Object}$ a picture of t_i]?

b. *Who$_i$ does [$_{Subject}$ a picture of t_i] hang on the wall?

c. *Who$_i$ did Mary cry [$_{Adjunct}$ after Peter hit t_i]?

These facts are discussed in Huang (1982), who proposes that the ill-formedness in (1b, c) should be uniformly explained as violations of Condition on Extraction Domain (CED).[2]

Since CED was proposed, a considerable number of studies have explored a more principled and highly elaborated account of it, expecting that extraction is sensitive to the asymmetry between complements and non-complements.[3] However, it is well known that this expectation is not fulfilled in a number of languages (see Stepanov (2001, 2007)). For instance, it is observed that Japanese does not obey the Subject Condition but rigidly respects the Adjunct Condition (see Lasnik and Saito (1992) and Takahashi (1994) among others.)

(2) a. [Op$_i$ John-ga [$_{Object}$ Mary-ga t_i katta　　no]-o　　mondai-ni　　site-iru no]-wa sono hon$_i$-o　da.

　　　　　　　-Nom　　　　　-Nom　bought fact-Acc problem-Dat make Comp Top　　that book-Acc be

　　　'It is that book that John is calling the fact that Mary bought into question.'　　　(Ishii (1997: 144))

b. [Op$_i$ John-ga [$_{Subject}$ Mary-ga t_i katta   no]-ga mondai da to   omotte iru no]-wa sono hon$_i$-o   da.

      -Nom   -Nom   bought fact-Nom problem is Comp think   Comp Top   that book-Acc be

'It is that book that John thinks that the fact that Mary bought is a problem.'   (ibid.: 143)

c. *[Op$_i$ dareka$_j$-ga [$_{Adjunct}$ e_j t_i suwari nagara] hon-o   yondeita   no]-wa   sono isu$_i$-ni da.

      someone-Nom   sit   while book-Acc was reading   Comp-Top   that chair-Dat be

'It is on that chair that someone was reading the book while sitting.'   (ibid.: 185)

Hoji (1990) and Ishii (1997) argue that the cleft construction in Japanese involves a movement of the empty operator (Op), associated with the focus phrase.[4] In (2b), although Op is extracted out of the subject, the result is satisfactory. Contrastively, in (2c), Op is extracted out of the adjunct phrase, and the result is severely degraded. These facts suggest that the CED expectation of the asymmetry between complements and non-complements should be discarded. Any approach to CED must overcome this empirical challenge.

This paper mainly aims to pursue Bošković's (2016) deduction of CED effects. I will argue that a collaboration of Bošković's (2016) hypothesis on the locality of movement and Saito's (2016) hypothesis on opaqueness of Case, both built on the system of labeling advocated in Chomsky (2013, 2015), successfully explains the troublesome cases in (2). This will result in emphasizing that the system of labeling has powerful syntactic implications in the theory of grammar.

This article is organized as follows. Section 2 reviews Bošković's (2016) hypothesis on labeling-based CED. It is shown that Anti-locality, a labeling-based derivational constraint on movement, with an assumption of a timing difference between the sub-algorithms of labeling, accounts for the ordinary CED effects in (1). Furthermore, it is pointed out that Anti-locality conflicts with observations that subjects in Japanese are placed in [Spec, T], and that it cannot accommodate the unordinary CED effects in (2). Section 3 serves to solve the puzzle. Next, it is shown that Saito's (2016) hypothesis on Case and labeling, proposing that Case should make a phrase opaque for Minimal Search, yields a timing difference in labeling between English and Japanese. This difference operates on Anti-locality and results in explaining troublesome cases in (2), even if we assume that subjects in Japanese are located in [Spec, T]. Section 4 investigates further consequences of this approach. I argue that some peculiar properties of scrambling are explained by the proposed analysis; scrambled phrases constitute transparent domains for extraction and scrambling exhibits island-insensitivity. Section 5 concludes this paper.

2. Deducing CED from Labeling

2.1 Bošković's (2016) hypothesis

Bošković (2016) proposes that collaboration of the labeling system proposed by Chomsky (2013, 2015) and Anti-locality, a derivational constraint on movement, deduces CED effects. The basic labeling algorithm he assumes is schematically summarized in (3).

(3) a.   γ→X   b.   γ→F   c.

                                         XP   γ→Y

        X   YP   XP$_{[F]}$ YP$_{[F]}$ t_{XP} YP
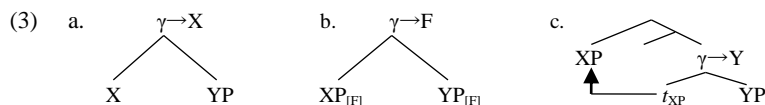
In the case where a head X and a phrase YP merge, as in (3a), X provides the label for the resulting syntactic object (SO) γ = {X, YP}.[5] In the case where two phrases, XP and YP, are merged, labeling for the SO γ = {XP, YP} has the following two options: prominent feature sharing as in (3b) or trace ignorance as in (3c). In (3b),

where XP and YP share a prominent feature F, F provides the label for γ. In (3c), where XP is moved out of γ, YP (or its head Y) provides the label for γ as the trace/copy of XP is ignored for labeling.

Bošković proposes a modification to this labeling system by establishing a timing difference in labeling. In particular, the labeling via (3a) should be done immediately by Minimal Search in syntax and the labeling via (3b, c) should take place when the structure is sent to the interfaces for interpretation. Example (4) illustrates the labeling via (3b).

(4) a. [$_\gamma$what$_{i <Q>}$ [$_{CP}$ C$_{<Q>}$ [$_{TP}$ John bought t_i]]]

　　b. I [$_{VP}$ wonder [$_{\gamma \to Q}$ what$_{i <Q>}$ [$_{CP}$ C$_{<Q>}$ [$_{TP}$ John bought t_i]]]]

In (4a), *what$_i$* is merged with the interrogative CP, sharing the Q-feature. Then, Q provides the label for γ = {*what$_i$*, CP} when γ is sent to the interfaces as in (4b).[6] The labeling via (3c) is exemplified in (5), whose derivation is illustrated in (6).

(5)　What$_i$ do you think t'_i that John bought t_i?

(6) a. [$_\gamma$ what$_i$ [$_{CP}$ that [John bought t_i]]]

　　b. ... [what$_i$ [$_{vP}$ v [$_{VP}$ think [$_\gamma$ t'_i [$_{CP}$ that [$_{TP}$ John bought t_i]]]]]]

　　c. ... [what$_i$ [$_{vP}$ v [$_{VP}$ think [$_{\gamma \to CP}$ t'_i [$_{C'}$ that [$_{TP}$ John bought t_i]]]]]]

In (6a), *what$_i$* is merged with the non-interrogative CP, forming γ = {*what$_i$*, CP}. Labeling of γ does not take place at this point of derivation. In (6b), *what$_i$* moves to the edge of v, its trace/copy remaining behind, being ignored for labeling. Finally, γ is sent to the interfaces, as in (6c), and γ is labeled as CP.

Bošković proposes that the timing-difference in labeling cooperates with a derivational constraint called Anti-locality (see Grohmann (2003), Abels (2003)), defined as follows:

(7) Movement of A targeting B must cross a projection distinct from B (where unlabeled projections are not distinct from labeled projections).　　　　　　　　　　　　　　(Bošković (2016: 20))

This constraint formalizes that movement must cross at least one labeled projection. This rules out the configuration in (8) as a violation of Anti-locality.[7]

(8) *[YP$_i$ [$_{XP}$ X [$_\gamma$ ...[$_\gamma$ ...[$_\gamma$ ... t_i]]]]]

Suppose that γ indicates an unlabeled projection. In (8), no labeled projection is crossed by the movement of YP[8].

2.2　An Anti-Locality Account of CED

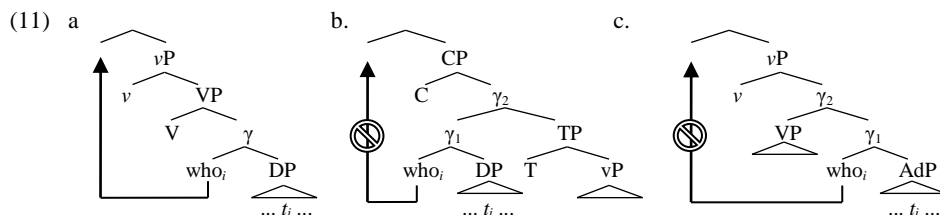Anti-locality explains CED effects as follows. The examples in (1) are repeated in (9).

(9) a. Who$_i$ did you see [$_{DP}$ a picture of t_i]?

　　b. *Who$_i$ does [$_{DP}$ a picture of t_i] hang on the wall?

　　c. *Who$_i$ did Mary cry [$_{AdP}$ after Peter hit t_i]?

Bošković (2016) assumes that DP and an adverbial phrase (AdP) are additional phases.[9] He also assumes that the Phase-Impenetrability Condition (PIC) holds and that movement must proceed through phase-edges for PIC-reasons.[10] These assumptions imply that any *wh*-movement out of DP/AdP yields the structure in (10), where the moved *wh*-phrase is internally merged with and is in the edge of DP/AdP.

(10)　[$_\gamma$ who$_i$ [$_{DP/AdP}$ ... t_i ...]]

In (10), the resulting SO γ remains unlabeled at this point. In the next step of derivation, the *wh*-phrase further moves to the edge of the next higher phase.

This procedure is common to (9a-c), whose derivations are demonstrated in (11a-c), respectively.

(11) a.   b.   c.

```
        vP                           CP                                vP
      /    \                       /    \                            /    \
    v      VP                    C       γ₂                        v       γ₂
         /    \                        /    \                            /    \
       V       γ              ⊘      γ₁      TP               ⊘        VP      γ₁
            /    \                  /    \    /  \                          /    \
         whoᵢ    DP             whoᵢ    DP  T    vP                     whoᵢ    AdP
              ... tᵢ ...              ... tᵢ ...                             ... tᵢ ...
```

In (11a), who_i moves to the edge of vP, the next higher phase. This movement crosses at least VP, a labeled projection.[11] Therefore, as expected, (11a) satisfies Anti-locality, and hence the well-formedness of (9a).[12] In contrast, in (11b), who_i moves to the edge of CP, the next higher phase. This movement crosses no labeled projection. Notice that the subject, γ_1, is still unlabeled before the movement takes place. As a result, γ_2 is also unlabeled. Consequently, the movement of who_i violates Anti-locality, and hence the ill-formedness of (9b), as expected. In (11c), who_i moves to the edge of vP, the higher phase. This movement crosses no labeled projection. Specifically, γ_1 is still unlabeled before the movement takes place. This leads to the unlabeled status of $\gamma_2 = \{VP, \gamma_1\}$. Therefore, (11c) violates Anti-locality; hence the ill-formedness of (9c), as expected.

2.3 A Parametric Puzzle

The Anti-locality approach, however, encounters problematic cases in Japanese. The examples in (2) are repeated in (12).

(12) a. [Opᵢ John-ga [Object Mary-ga t_i katta   no]-o mondai-ni   site-iru no]-wa   sono honᵢ-o da.
              -Nom   -Nom   bought fact-Acc problem-Dat make Comp Top that book-Acc be
        'It is that book that John is calling the fact that Mary bought into question.'   (Ishii 1997: 144)

      b. [Opᵢ John-ga [Subject Mary-ga t_i katta   no]-ga mondai da to   omotte iru no]-wa sono honᵢ-o da.
              -Nom   -Nom   bought fact-Nom problem is Comp think   Comp Top that book-Acc be
        'It is that book that John thinks that the fact that Mary bought is a problem.'   (ibid.: 143)

      c. *[Opᵢ darekaⱼ-ga [Adjunct e_j t_i suwari nagara] hon-o   yondeita   no]-wa   sono isuᵢ-ni da.
              someone-Nom   sit   while book-Acc was reading Comp-Top that chair-Dat be
        'It is on that chair that someone was reading the book while sitting.'   (ibid.: 185)

Following Hoji (1990) and Ishii (1997), I will assume that the cleft construction in Japanese involves overt A'-movement of Op, which is associated with the focus phrase. This assumption is confirmed by the fact that the cleft construction in Japanese is subject to the Complex NP Constraint as illustrated in (13).

(13) *?[CP Opᵢ [TP John-ga [DP [TP e_j t_i atta-koto-ga aru] nihonzinⱼ]-o oozei sitte iru] no]-wa Russellᵢ-ni da.
                 -Nom   have met   Japanese-Acc many know Comp-Top Russell-Dat be
        'It is with Russell that John knows many Japanese that have met e.'   (Ishii 1997: 184)

The deviance in (13) implies that the cleft construction in Japanese involves overt A'-movement similar to the overt wh-movement in English.

Turning to the facts to be explained, as shown in (12), the Op-movement out of the subject is perfect in parallel with the Op-movement out of the object, while the Op-movement out of the adjunct is rigidly excluded. Problematically, the absence of the Subject Condition effect in (12b) is unexpected under the Anti-locality approach. Suppose that the subjects in Japanese are placed in [Spec, T]. The examples in (12a-c) will be derived as in (14a-c), respectively.

(14) a.
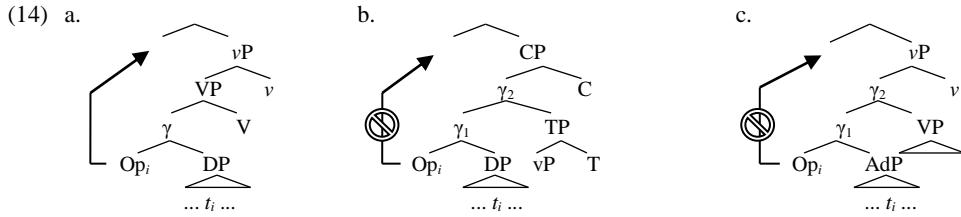
The movement of Op must proceed through phase-edges for PIC reasons. In this sense, derivations in (14) are completely parallel with those in (11). Anti-locality predicts that the movement of Op in (14b) should be ruled out, contrary to the fact in (12b).

2.4 The Subject Position in Japanese

One might argue that the well-formedness of (12b) can be accommodated if we assume that the subject in Japanese never undergoes movement and stays in-situ in [Spec, v].[13] This is certainly a strategy adopted by many researchers in order to account for CED effects in Japanese, motivated by the observation that Japanese lacks the φ-agreement necessary to induce movement to [Spec, T] (see Fukui (1986) and Kuroda (1988)).[14] If we assume that subjects are not raised to [Spec, T] but instead remain in [Spec, v], (12b) will be derived as in (15).

(15)
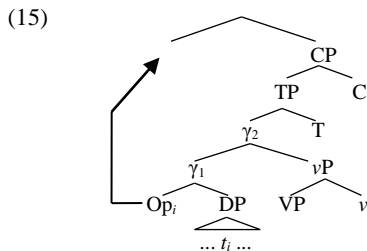
In (15), γ_1 is the subject and merges with vP, forming $\gamma_2 = \{\gamma_1, vP\}$. Here, the raising of Op to the next phase-edge at least crosses TP, a labeled projection. This could satisfy Anti-locality; hence the well-formedness of (12b) might follow.

However, I will not assume this strategy for empirical reasons. Following the observations of Miyagawa (2001) and Kishimoto (2001), I will assume that subjects are actually overtly raised to [Spec, T] in Japanese. Miyagawa (2001), for instance, observes that subjects in Japanese are overtly raised to [Spec, T] in order to satisfy an EPP requirement on T.[15] Kishimoto (2001) also observes subject/object asymmetries in some scope interpretations in Japanese. I will briefly summarize Kishimoto's argument below.

Indeterminate pronouns such as *dare* 'anyone' and *nani* 'anything' are used as negative polarity items when they are bound by *mo*. This is illustrated in (16).

(16) a. Taroo-wa *nani-mo*　kawa-nakat-ta.

　　　　Taroo-Top anything-Q　buy-Neg-Past

　　　　'Taroo did not buy anything.'

　　b. *Dare-mo* sono-hon-o kawa-nakat-ta.

　　　　anyone-Q that-book-Acc buy-Neg-Past

　　　　'No one bought that book.'　　　　　　　　　　　　　　　　　　　(Kishimoto (2001: 598))

In (16), the subject and the object are both bound by *mo*. When the Q particle *mo* is attached to V, however, a different picture is obtained.

(17) a. Taroo-wa *nani*-o   kai-*mo* si-nakat-ta.

Taroo-Top anything-Acc buy-Q do-Neg-Past

'Taroo did not buy anything.'

b. **Dare*-ga   Hanako-o   home-*mo* si-nakat-ta.

anyone-Nom Hanako-Acc admire-Q do-Neg-Past

'Anyone did not admire Hanako.'   (Kishimoto (2001: 600))

In (17a), *mo* is attached to V, separated from the object *nani* 'anything', but can still bind *nani*. Conversely, in (17b), *mo* is attached to V and cannot bind the subject *dare* 'anyone'. The asymmetry in (17) illustrates that the Q-particle *mo*, when attached to V, contains the object in its scope but excludes the subject from its scope. According to Kishimoto (2001), the scope of *mo* is defined as follows:

(18) Y is in the domain of a head X if it is contained in Max(X), where Max(X) is the least full-category maximal projection dominating X.   (Kishimoto (2001: 601))

If we assume that V and *mo* constitute a complex head and are overtly raised to *v*, and that subjects are located in [Spec, T], the asymmetry in (17) is easily accounted for. As illustrated in (19), *v*P, the scope-domain of *mo*, includes the object but not the subject.[16]

(19) [TP DP-ga$_i$ [T' [*v*P t_i [*v*' [VP DP-o t_j] V-mo$_j$-*v*]] do-NEG-T]]

Hereafter, I will assume that subjects are overtly raised to [Spec, T] in Japanese. This assumption will take us back to the question of how we can legitimate the derivation in (14b), where extraction takes place out of the subject in [Spec, T]. The next section deals with this puzzle.

3.   Anti-Labeling and Anti-Locality

3.1 Saito's (2016) hypothesis

Saito (2016) argues that Case is an anti-labeling device in Japanese. In particular, he proposes that suffixal Case in Japanese should make a phrase invisible for labeling. This is hypothesized as in (20).

(20) Case makes a phrase opaque for Minimal Search.   (Saito (2016: 139))

For instance, in (21), the Case suffix makes the DP opaque for Minimal Search.

(21) γ = {DP[Case], TP}

Therefore, in (21), TP (or its head) is searched as the uniquely visible label provider for γ. As a result, γ is labeled as TP.

He also argues, following Bošković (2007), contra Chomsky (2008), that feature valuation always occurs in the probe and that Case valuation takes place independently of φ-feature agreement.[17] The overall system is illustrated below. The derivation in (22) illustrates relevant portions of valuation and labeling in English.

(22) a. [TP T[φ:_] [*v*P DP{[φ: α], [Case: _]} [*v*' ...]]]

b. [TP T[φ: α] [*v*P DP{[φ: α], [Case: _]} [*v*' ...]]]

c. [γ DP$_i${[φ: α], [Case: _]} [T' T[φ: α] [*v*P t_i [*v*' ...]]]]

d. [γ→φ DP$_i${[φ: α], [Case: Nom]} [T' T[φ: α] [*v*P t_i [*v*' ...]]]]

In (22a), T probes for the subject DP, and in (22b), it has its unvalued φ-features valued as α. However, the valuation of Case feature of the DP is postponed until it moves to [Spec, T]. In (22c), the DP moves to [Spec, T]

and probes for T, and in (22d) it has its unvalued Case feature valued as Nominative. In (22d), φ provides the label for γ.

The derivation in (23) illustrates relevant portions of valuation and labeling in Japanese.

(23) a. [TP [vP DP[Case: __] [v'...]] T]

b. [γ DP$_i$ [Case: Nom] [TP [vP t$_i$ [v'...]] T]]

c. [γ→TP DP$_i$ [Case: Nom] [T' [vP t$_i$ [v'...]] T]]

Since T lacks φ-features, φ-valuation does not involve here. In (23b), the subject DP moves to [Spec, T] in order to probe for T as a Case provider, and it has its unvalued Case feature valued as Nominative. In (23c), TP (or its head T) provides the label for γ since the DP, suffixed with Nominative Case, is invisible for labeling via (20).[18]

3.2 Explaining the puzzle

Saito's hypothesis leads to an interesting speculation. Under Bošković's (2016) hypothesis on the timing of labeling, we predict that there exists a timing difference between the labeling in (22d) and the labeling in (23c). The relevant contrast is illustrated in (24).

(24) a. English   [γ DP$_{i[φ]}$ [T' T$_{[φ]}$ [vP t$_i$ ...]]]   (γ→φ in the interfaces)

b. Japanese   [γ DP$_i$ [Nom] [TP [vP t$_i$ ...] T]]   (γ→TP in syntax)

In English, as in (24a), the labeling of γ takes place in the interfaces (after Spell-Out for interpretation). In Japanese, as in (24b), the labeling of γ takes place immediately when γ = {DP, TP} is formed in syntax. This is because Minimal Search is responsible for the labeling of γ in (24b) and can easily detect TP (or the head T) as the unique label provider of γ under the assumption in (20).

I propose that this asymmetry provides a solution to the puzzle. The structures of (12a-c) are reformulated in (25a-c), respectively.

(25) a.   b.   c.
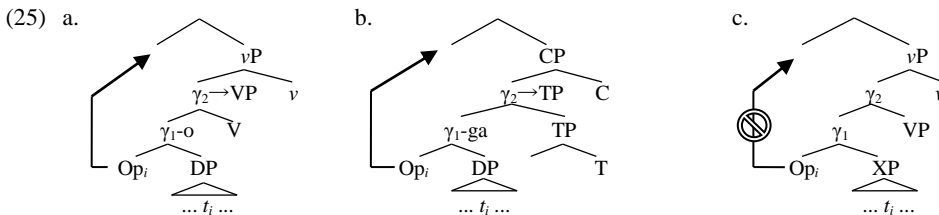
In (25a), γ$_1$-*o* is suffixed with Accusative Case and merges with V, forming γ$_2$ = {γ$_1$-*o*, V}. The label of γ$_2$ is straightforwardly determined as VP via (3a) in syntax.[19] As shown in (25a), further Op-movement crosses at least VP, a labeled projection. Therefore, this movement satisfies Anti-locality, as expected. In (25b), γ$_1$-*ga* is suffixed with Nominative Case and merges with TP, forming γ$_2$ = {γ$_1$-*ga*, TP}. Importantly, the label of γ$_2$ is straightforwardly determined as TP in syntax, as γ$_1$-*ga* is invisible for labeling under the assumption in (20). The movement of OP thus crosses at least TP, a labeled projection. Consequently, this movement satisfies Anti-locality, as expected.[20] This explains the fact that overt A'-movement out of subject is permissible in Japanese. In (25c), γ$_1$, without a suffixal Case, merges with VP, forming γ$_2$ = {γ$_1$, VP}. In contrast to (25b), γ$_1$ in (25c) is not suffixed with Case, and is hence visible for labeling. Consequently, γ$_2$ remains unlabeled when the movement of Op takes place. As a result, the movement of Op violates Anti-locality, as expected. This explains the fact that overt A'-movement out of adjunct is prohibited in Japanese. The asymmetry of CED effects between English (1) and Japanese (2) therefore results from the timing difference in labeling between the two languages, as represented in (24).

One might ask why an unlabeled SO can have its Case feature valued. I simply assume that suffixation of Case in Japanese is label-free and blind to the label of a constituent it attaches. In other words, any phrasal constituent probing for a Case-provider has a capacity to be suffixed with Case whether or not it is labeled. This assumption is supported by the examples in (26).[21]

(26) a. [PP Koko-kara]-ga huzi-san-ni   nobori-yasu-i.
           here-from-Nom Mt. Fuji-Dat   climb-easy-Pres.
        'It is from here that one can easily climb Mt. Fuji.'

    b. [VP Nigeru]-ga   haji da.
           escape-Nom shame be
        'It is a shame to run away.'

    c. [AP Mainichi utsukusiku]-o shuukan-ni site-iru.
           everyday beautiful-Acc   rule-Dat make-Pres.
        'I make it a rule to be beautiful everyday.'

    d. [CP Taro-ga   sokoe iku kadooka]-ga mondai da.
           Taro-Nom   there go whether-Nom problem be
        'It is the problem whether Taro will go there.'

As exhibited here, major constituents such as PP, VP, AP, and CP can be suffixed with Nominative/Accusative Case.[22] The assignment of structural Case is, thus, not restricted to nominal expressions in Japanese. This analysis might imply that the Case-system varies among languages. To say more about the Case-system is, however, beyond the scope of this paper.

4. Further Consequences

I have argued that the full paradigm of CED effects can be accounted for under Anti-locality by Bošković (2016) and Anti-labeling by Saito (2016). This section shows that the present approach has further consequences in accounting for peculiar properties of scrambling in Japanese.

4.1 Transparency of Scrambled Phrases

It is well known that scrambling in Japanese exhibits peculiar properties on extraction.[23] As illustrated in (27), a scrambled phrase allows Op-movement to take place out of it.

(27) [CP Op$_i$ [TP [DP Mary-ga t_i katta koto]-o$_j$ [TP John-ga t_j mondai-ni   site iru]] no]-wa   sono hon$_i$-o   da.
              Mary-Nom bought fact-Acc   John-Nom   problem-Dat make   Comp Top   that book-Acc be
        'It is that book that John is calling the fact that Mary bought into question.'

Furthermore, as illustrated in (28), scrambling out of a scrambled phrase is possible.

(28) [TP Sono hon-o$_i$ [TP John-ga [CP [TP [DP Mary-ga t_i katta   koto]-o$_j$ [TP Bill-ga t_j mondai-ni site iru] to] omotte iru].
        that book-Acc   John-Nom   Mary-Nom bought fact-Acc   Bill-Nom problem-Dat make Comp think Pres
        'It is that book that the fact that Mary bought, John thinks that Bill is calling into question.'

(adapted from Lasnik and Saito (1992: 42))

These facts raise empirical challenge against the Freezing Principle (see Wexler and Culicover 1981), as simply illustrated in (29).

(29)　*α_i ... [$_\beta$... t_i ...]$_j$ ... t_j ...

This formalizes a generalization that the moved phrase β becomes opaque for the extraction of α. This accounts for the fact that a topicalized phrase is opaque for Topicalization, as in (30a), and for *wh*-movement, as in (30b).[24]

(30)　a. *$^?$Vowel harmony$_j$, I think that [articles about t_j]$_i$ you should read t_i carefully.

　　　b. *$^?$Who$_j$ do you think that [pictures of t_j]$_i$ John wanted t_i.　　　　　　(Lasnik and Saito (1992: 101))
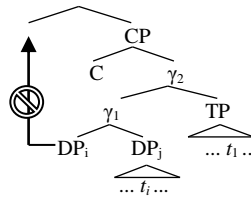
In contrast, even if a scrambled phrase is moved, it is transparent for Op-movement in (27) and for scrambling in (28), contrary to the predictions under the Freezing Principle in (29).

　The present approach successfully accommodates these facts. The derivations of (27)-(28) are represented in (31a) and the derivations of (30a, b) are represented in (31b).
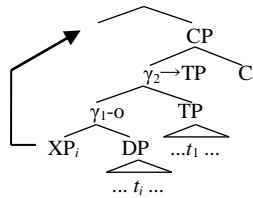
(31)　a.　　　　　　　　　　　　　　　b.

Suppose that in (31a), XP stands for Op or a scrambling phrase, and that γ_1-o is a scrambled phrase adjoining TP. The present analysis implies that γ_1-o is invisible for labeling as it is suffixed with Accusative Case. This also implies that Minimal Search straightforwardly labels γ_2 as TP in syntax. Consequently, the movement of XP crosses at least TP, a labeled projection. Anti-locality is satisfied; hence, the well-formedness of (27)-(28). Op-movement and scrambling out of a scrambled phrase are therefore allowed. Suppose that in (31b), DP$_i$ is the offensive moving element (namely a *wh*-phrase or a topicalized phrase) in the edge of DP$_j$. The SO γ_1 = {DP$_i$, DP$_j$}, which is unlabeled, is topicalized and merged with TP (or a functional projection such as TopP). The resulting SO γ_2 = {γ_1, TP} is also unlabeled. The further movement of DP$_i$ out of γ_1 crosses no labeled projection. This violates Anti-locality, and hence the ill-formedness of (30a, b), as expected. Topicalization and *wh*-movement out of a topicalized phrase are thus disallowed.

4.2　Island-Insensitivity of Scrambling

　It is also well known that scrambling in Japanese avoids certain island violations.[25] As in (32), scrambling does not obey the Adjunct Condition.

(32)　$^?$[$_{TP}$ sono hon-o$_i$ [$_{TP}$ John-ga [$_{Adjunct}$ Mary-ga t_i yomi-oete　　kara]　dekaketa]] (koto).

　　　　　that book-Acc　John-Nom　　Mary-Nom finish-reading after　went-out　(fact)

　　　'John went out after Mary finished reading that book.'　　　　　　　　(Saito (1985: 247))

Moreover, as in (33), scrambling does not obey the Complex NP Constraint.

(33)　$^?$[$_{TP}$ Bill$_i$-o [$_{TP}$ John-ga [$_{NP}$ [$_{CP}$ Mary-ga t_i sakete iru　to　yuu] uwasa]-o　kiita] (koto)

　　　　　Bill-Acc　John-Nom　　Mary-Nom　avoiding　Comp say　rumor-Acc heard　(fact)

　　　'John heard a rumor (which says) that Mary is avoiding Bill.'　　　　　(ibid.: 246)

　The absence of island effects in scrambling is also accounted for by the present approach. The derivation of (32) is illustrated in (34).

(34)
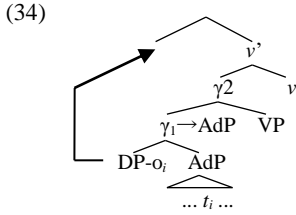
In (34), DP-*o* is a scrambled phrase launched from the adjunct AdP. Assuming that the AdP is a phase, DP-*o* merges with AdP and forms γ_1 = {DP-*o*, AdP}. The resulting SO γ_1 can be immediately labeled as AdP by Minimal Search as DP-*o* is suffixed with Accusative Case and therefore invisible for labeling. Consequently, scrambling of the DP-*o* to the next phase-edge crosses at least AdP, a labeled projection. This satisfies Anti-locality, and hence the well-formedness of (32), as expected. The acceptability of scrambling out of adjunct thus follows[26].

Bošković (2016) shows that Anti-locality deduces the Complex NP Constraint. He proposes that the highest projection in a thematic domain functions as a phase. Thus, NP is a phase as it is the highest thematic projection in the same way as *v*P is. As a result, *wh*-movement steps from the edge of CP to the edge of NP for PIC-considerations, as illustrated in (35).

(35)   *What$_i$ did you hear [t_i [NP rumors [$_\gamma$ t_i [CP that [TP John bought t_i]]]]]

The movement of *what$_i$* targets the intermediate CP and forms γ = {*what*, CP}. The resulting SO γ is unlabeled at this point, as the members of γ do not share any feature at all. Subsequently, *rumors* merges with γ, forming the labeled projection NP via (3a). The next movement of *what$_i$* targets the newly created NP, a phase. This movement violates Anti-locality, as illustrated in (36a).

(36) a.   b.
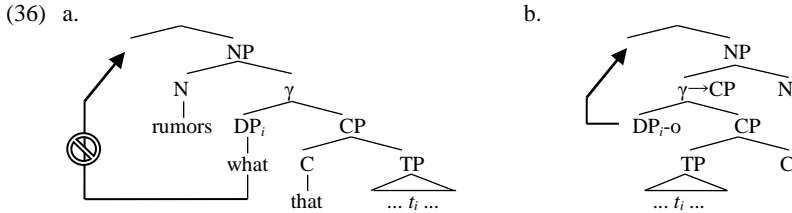
Assuming that this deduction of the Complex NP Constraint is correct, the well-formedness of (33) will be accounted for, as illustrated in (36b). What differs (36b) from (36a) is the timing of the labeling of γ. In (36a), the labeling of γ does not take place before the *wh*-movement. In contrast, in (36b), the labeling of γ *does* take place before the movement of DP-*o*. This is because the scrambled phrase DP-*o* is suffixed with Accusative Case and is invisible for labeling. The resulting SO γ = {DP-*o*, CP}, formed by the merging of DP-*o* and CP, is labeled as CP by Minimal Search immediately when the merger takes place. As a result, the further movement of DP-*o* crosses at least CP. This satisfies Anti-locality, and hence the well-formedness of (33), as expected. Scrambling out of a complex NP is thus allowed.

5. Conclusion

This paper pursued a unified account of CED effects in English and Japanese. The account proposed here was based on the hypotheses by Bošković (2016) and Saito (2016). First, I reviewed Bošković's hypothesis on labeling-based Anti-locality. It was shown that the movement of Op in cleft constructions in Japanese, evading the Subject Condition, was a troublemaker for the Anti-locality hypothesis. Then, I reviewed Saito's hypothesis

on Case as an anti-labeling device. It was discussed that Saito's hypothesis correlated with Bošković's hypothesis in yielding a timing difference of labeling between English and Japanese, which led to the correct account of CED effects in Japanese, i.e., the absence of Subject Condition effects and the presence of Adjunct Condition effects. Moreover, it was discussed that the proposed account had desirable results revealing that it captures peculiar properties of scrambling in Japanese, transparent for extraction and immune from island constraints.

Acknowledgements

References

Abels, Klaus (2003) *Successive Cyclicity, Antilocality, and Adposition Stranding*, Doctoral dissertation, University of Connecticut, Storrs.

Boeckx, Cedric (2003) *Islands and Chains*, John Benjamins Publishing Company, Amsterdam / Philadelphia.

Boeckx, Cedric (2008) *Understanding Minimalist Syntax: Lessons from Locality in Long-Distance Dependencies*, Blackwell Publishing, Oxford.

Bošković, Željko (2007) "On the Locality and Motivation of Move and Agree: An Even More Minimal Theory." *Linguistic Inquiry* 38, 589-644.

Bošković, Željko (2014) "Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis," *Linguistic Inquiry* 45, 27-89.

Bošković, Željko (2015) "From the Complex NP Constraint to Everything: On Deep Extractions across Categories, *The Linguistic Review* 32, 603-669.

Bošković, Željko (2016) "On the Timing of Labeling: Deducing Comp-Trace Effects, the Subject Condition, the Adjunct Condition, and Tucking in from Labeling," *The Linguistic Review* 33, 17-66.

Chomsky, Noam (2000) "Minimalist Inquiries: The Framework," *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89–155, MIT Press, Cambridge, Massachusetts.

Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory: Essay in honor of Jean-Roger Vergnaud*, ed. by Carlos P. Oteo and Maria Luisa Zubizarreta, 133-166, MIT Press, Cambridge, Massachusetts.

Chomsky, Noam (2013) "Problems of Projection," *Lingua* 130, 33-49.

Chomsky, Noam (2015) "Problems of Projection: Extensions," *Structures, Strategies and Beyond: Studies in Honour of Adriana Belletti*, ed. by Elisa Di Domenico, Cornelia Hamann and Simona Matteini , 3-16, John Benjamins Publishing Company, Amsterdam/ Philadelphia.

Fukui, Naoki (1986) *A Theory of Category Projection and its Applications*, Doctoral dissertation, MIT, Cambridge, Massachusetts.

Gallego Ángel J. (2011) "Successive Cyclicity, Phases, and CED Effects," *Studia Linguistica* 65, 32-69.

Grohmann, Kleanthes (2003) *Prolific Domains: On the Antilocality of Movement Dependencies*, John Benjamins Publishing Company, Amsterdam / Philadelphia.

Hiraiwa, Ken and Shinichiro Ishihara (2001) "Missing Links: Cleft, Sluicing, and "*No da*" Construction in Japanese," *MIT Working Papers in Linguistics* 43, 35-54.

Hoji, Hajime (1990) "Theories of Anaphora and Aspects of Japanese Syntax," ms., University of Southern California.

Hornstein, Norbert (2009) *A Theory of Syntax: Minimal Operations and Universal Grammar*, Cambridge University Press, Cambridge, UK.

Hornstein, Norbert and Jairo Nunes (2008) "Adjunction, Labeling, and Bare Phrase Structure," *Biolinguistics* 2, 57-86.

Huang, C. T. James (1982) *Logical Relations in Chinese and the Theory of Grammar*, Doctoral dissertation, MIT, Cambridge, Massachusetts.

Ishii, Toru (1997) *An Asymmetry in the Composition of Phrase Structure and its Consequences*, Doctoral dissertation, University of California, Irvine.

Kishimoto, Hideki (2001) "Binding of Indeterminate Pronouns and Clause Structure in Japanese," *Linguistic Inquiry* 32, 597-633.

Kishimoto, Hideki (2013) "Case, Tense, and Subject Raising in Japanese," *Nanzan Linguistics* 9, 21-50.

Koizumi Masatoshi and Katsuo Tamaoka (2010) "Psycholinguistic Evidence for the VP-Internal Subject Position in Japanese," *Linguistic Inquiry* 41, 663-680.

Kuroda, S.-Y. (1988) "Whether We Agree or Not: A Comparative Syntax of English and Japanese," *Papers from the Second International Workshop on Japanese Syntax*, ed. by William J. Poser, 103-143, CSLI Publications, Stanford, California.

Lasnik, Howard and Mamoru Saito (1992) *Move α: Conditions on its Application and Output*, MIT Press, Cambridge, Massachusetts.

Miyagawa, Shigeru (2001) "The EPP, Scrambling, and Wh-in-situ," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 293-338, MIT Press, Cambridge, Massachusetts.

Miyagawa, Shigeru and Koji Arikawa (2007) "Locality in Syntax and Floating Numeral Quantifiers," *Linguistic Inquiry* 38, 645-670.

Müller, Gereon (2010) "On Deriving CED Effects from the PIC," *Linguistic Inquiry* 41, 35-82.

Narita, Hiroki (2011) *Phasing in Full Interpretation,* Doctoral dissertation, Harvard University, Cambridge, Massachusetts.

Narita, Hiroki (2014) *Endocentric Structuring of Projection-free Syntax,* John Benjamins Publishing Company, Amsterdam / Philadelphia.

Nunes, Jairo and Juan Uriagereka (2000) "Cyclicity and Extraction Domains," *Syntax* 3, 20-43.

Saito, Mamoru (1985) *Some Asymmetries in Japanese and their Theoretical Implications*, Doctoral dissertation, MIT, Cambridge, Massachusetts.

Saito, Mamoru (2016) "(A) Case for Labeling: Labeling in Languages without Φ-feature Agreement," *The Linguistic Review* 33, 129-175.

Saito, Mamoru and Naoki Fukui (1998) "Order in Phrase Structure and Movement," *Linguistic Inquiry* 29, 439-474.

Stepanov, Arthur (2001) *Cyclic Domains in Syntactic Theory*, Doctoral dissertation, University of Connecticut, Storrs.

Stepanov, Arthur (2007) "The End of CED? Minimalism and Extraction Domains," *Syntax* 10, 80-126.

Takahashi, Daiko (1994) *Minimality of Movement*, Doctoral dissertation, University of Connecticut, Storrs.

Toyoshima, Takashi (1997) "Derivational CED: A Consequence of the Bottom-up Parallel-Process of Merge and Attract," *Proceedings of the West Coast Conference on Formal Linguistics* 15, 505-519.

Uriagereka, Juan (1999) "Multiple Spell-Out," *Working Minimalism*, ed. by Samuel D. Epstein and Norbert Hornstein, 251-282, MIT Press, Cambridge, Massachusetts.

Uriagereka, Juan (2012) *Spell-Out and the Minimalist Program*, Oxford University Press, Oxford.

Wexler, Kenneth and Peter W. Culicover (1981) *Formal Principles of Language Acquisition*, MIT Press, Cambridge, Massachusetts.

Notes

[1] Faculty of International Studies and Regional Development, University of Niigata Prefecture (hidesato@unii.ac.jp)

[2] Huang (1982: 505) defines CED as follows:

   (i) A phrase A may be extracted out of a domain B only if B is properly governed.

[3] For details in the minimalist literature, see Takahashi (1994), Ishii (1997), Uriagereka (1999, 2012), Boeckx (2003, 2008), Nunes and Uriagereka (2000), Stepanov (2001, 2007), Müller (2010), Gallego (2011), and Narita (2011, 2014), among others.

[4] It is argued, in Takahashi (1994), Stepanov (2001, 2007), Ishii (1997), and Narita (2011, 2014) among others, that the comparative construction and the tough construction in Japanese also involve A'-movement of Op, and that these

constructions exhibit the contrast similar to (2). See also Hiraiwa and Ishihara (2001) for another view that overt A'-movement is concerned with the cleft construction in Japanese.

5   I will use the following notations throughout the paper; (i) γ stands for an unlabeled SO, (ii) "→" stands for an application of labeling algorithm (for instance, "A→B" means that the label of A is determined as B.)

6   In (4) and (6), Spell-Out domains, sent to the interfaces, are boxed.

7   In (6b), the *wh*-movement from [Spec, C] to [Spec, *v*] crosses at least VP, thereby satisfying Anti-locality. Bošković assumes that the movement of subject from [Spec, *v*] to [Spec, T] under the *v*P-internal subject hypothesis also satisfies Anti-locality as it crosses some phrasal layers between *v*P and TP. I will assume, following Bošković, throughout the paper, that the *v*P-internal subject hypothesis is compatible with Anti-locality.

8   Notice that, as defined in (7), YP does not move across XP as XP is merely the target of YP-movement.

9   Details of an adverbial clause are still controversial. I will simply assume, for concreteness, that it is a projection headed by a phase head Adv. See Hornstein and Nunes (2008), Hornstein (2009), and Bošković (2014, 2015, 2016) for details.

10 Chomsky (2000: 108) defines PIC as follows:
    (i) In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

11 Further *wh*-movement in (11a), of course, meets Anti-locality, which is irrelevant for the discussion here.

12 Under the assumption here, the SO γ is labeled in the interfaces.

13 This strategy is suggested in Bošković (2016: 23).

14 For details, see Lasnik and Saito (1992), Takahashi (1994), Toyoshima (1997), Ishii (1997), Saito and Fukui (1998), Stepanov (2007), and Narita (2011, 2014), among others.

15 See also Miyagawa (2001), Miyagawa and Arikawa (2007), Koizumi and Tamaoka (2010), and Kishimoto (2013), among others.

16 Kishimoto (2001) assumes that the lower copy of the subject is not involved with scope interpretations. I will also assume it to be so.

17 Chomsky (2008) suggests that Case is valued as a reflex of φ-feature agreement.

18 Saito (2016) also argues that the proposed Case-system of valuation/labeling accounts for phenomena such as multiple nominative subjects and scrambling, characteristic of Japanese. For instance, the anti-labeling character of Case enables scrambling to take place as in (i), in which DP stands for a scrambled phrase with Case suffix.
    (i) $[_{γ→TP} DP_{i\,[Case]} [_{TP} ... t_i...]]$
    Assume that the scrambled DP merges with TP and forms γ = {DP, TP}. It follows that the label of γ will be immediately determined as TP by Minimal Search in syntax. This matter will be crucial for the discussion in the next section.

19 Whether $γ_1$ is suffixed by Case or not is irrelevant for the labeling of $γ_2$ here.

20 Additionally, the label of $γ_1$ is determined as DP in the interfaces.

21 The example in (26a) is cited from Saito (2016: 133), and the examples in (26b-c) are mine.

22 In Japanese, when suffixation of Case takes place, Minimal Search cannot find a head to be valued. In other words, something other than feature valuation might be involved with the system of Case in Japanese. This is quite different from the Case-system in English, where structural Case must be basically restricted to nominal expressions, probably associated with valuation of Case features. I leave this issue open for future research.

23 Similar examples are discussed in Saito (1985) and Ishii (1997).
    (i) $[_{CP} Op_i [_{TP} [_{CP} Mary\text{-}ga\ t_i\ itta\quad to]_j [_{TP} John\text{-}ga\ t_j\ omotteiru]]$ no]-wa Tookyoo$_i$-ni da.
    　　　　　　　　-Nom　went Comp　　　-Nom　think　Comp-Top　Tokyo-Dat be
    　'It is to Tokyo that John thinks that Mary went.'　　　　　　　　　　　　　　　　　　　(Ishii 1997: 218)
    (ii) $[_{TP} Sono\ mura_i\text{-}ni\ [_{TP} John\text{-}ga\ [_{CP} [_{TP} [_{CP} Mary\text{-}ga\ t_i\ sunde\ iru\ to]_j [_{TP} Bill\text{-}ga\ t_j\ itta]]\quad to]\quad omotte\ iru]]$ (koto)
    　　　that village-Dat　-Nom　　　　-Nom　live　Comp　-Nom　said Comp　think　　(fact)
    　'John thinks that Bill said that Mary lives in that village.'　　　　　　　　　　　　　　(ibid.: 217)
    Some remarks are in order about these examples. The examples in (i)-(ii) suggest that scrambled CPs behave as transparent domains for extraction in the same way as scrambled DPs. In my analysis, as mentioned in this section, it is

suffixal Case that allow a scrambled phrase to be transparent for extraction out of it. This implies that CP has some anti-labeling device similar to suffixal Case. Why can CPs undergo scrambling? Why are scrambled CPs transparent for extraction? I leave these issues for future research.

[24] In fact, several authors attempt to account for CED effects by means of minimalist versions of the Freezing Principle. For details, see Takahashi (1994), Ishii (1997), Toyoshima (1997), Nunes and Uriagereka (2000), Stepanov (2001, 2007), and Narita (2011, 2014), among others.

[25] Saito (1985) judges the examples in (32)-(33) mildly degraded. Ishii (1997) judges them fairly good. I agree with Ishii's judgment and regard these examples as acceptable.

[26] An anonymous reviewer suggests that the readers might wonder why null operators in (2c) and (13) do not exhibit island-insensitivity on a par with scrambled phrases in (32)-(33). In particular, null operators are generally assumed to be Case-marked/valued in their original positions, which might mean that they are invisible for labeling according to (20). If this reasoning is correct, the explanation of the ungrammatical cases in (2c) and (13) would be totally lost, given the structures in (34) and (36) respectively, on a par with the permissible cases in (32)-(33). Notice that, as discussed in 3.1, the crucial notion here is not Case-making/valuation itself but rather morphological Case suffix. Since null operators are Case-marked but are phonologically empty, they are indeed visible for Minimal Search and the labeling algorithm. This accounts for the contrast between scrambled phrases in (32)-(33), on the one hand, and null operators in (2c) and (13), on the other hand, with respect to island-(in)sensitivity.