

The Symmetry Condition on Labeling

Takanori Nakashima (Tohoku University)

Abstract. Chomsky’s labeling theory holds that a label of a syntactic object is provided by a fixed algorithm, Labeling Algorithm (LA). Although LA is claimed to be an instantiation of Minimal Search (MS), MS remains an unexplained notion, and it is unclear what is the search domain within which MS locates the head that provides a label. To address this issue, this article proposes that MS is constrained by a condition to minimize the search space of MS, the Symmetry Condition on Labeling (SCL). The SCL allows LA to provide a label to an XP-YP structure via feature sharing only when XP and YP are mirror-symmetric (i.e., the heads X and Y have the same embedding depth). The SCL provides a unified account of freezing effects, *wh*-island effects, and Proper Binding Condition effects, because they involve symmetry-breaking extractions that result in labeling failure. The SCL also predicts that there are no multiple-Specs created by feature sharing, and hence this article re-examines constructions that have been analyzed in terms of multiple-Specs.

Keywords: Labeling Algorithm, freezing effects, *wh*-island effects, Proper Binding Condition effects, multiple-Specifiers

1. Introduction

Chomsky 2013, 2015 proposes labeling as a process of providing information on the interpretation of a syntactic object (SO) at the interfaces. An SO is labeled by a fixed algorithm, Labeling Algorithm (LA), which “licenses SOs so that they can be interpreted at the interfaces, operating at the phase level.” (Chomsky 2013: 43)¹ LA is an instantiation of

¹ This article assumes with Chomsky 2013, 2015 that labeling takes place at a phase-level.

Minimal Search (MS) to detect a lexical item (LI) that provides the label of an SO. Given $SO = \{H, XP\}$, where H is an LI and XP a phrase, LA selects H as the label of the SO since H is the most prominent LI. If we have $SO = \{XP, YP\}$, where both XP and YP are phrases, MS does not uniquely identify the head of the SO, locating two LIs X, Y of XP, YP, respectively. Chomsky 2013 argues that there are two cases to provide a label to the $\{XP, YP\}$ structure. One case is when SO is modified “so that there is only one visible head.” (p. 43) Specifically, the movement of XP out of $\{XP, YP\}$ makes the lower copy of XP “invisible” to LA, since not every occurrence of XP is in the domain of $\{XP, YP\}$. Then, the $\{XP, YP\}$ structure is labeled YP. Another case is when “X and Y are identical in a relevant respect, providing the same label.” (p. 43) Suppose that X and Y, respective heads of XP and YP, involve agreement features F. Then, LA simultaneously finds heads X and Y, providing the label $\langle F, F \rangle$, the pair of features shared between X and Y. Since LA “licenses SOs so that they can be interpreted at the interfaces,” an SO that remains unlabeled crashes at the conceptual-intentional (CI) interface and externalization.

As noted above, LA is an instantiation of MS. However, the notions of MS and LA are not formally defined by Chomsky 2013, 2015; in particular, there remains the question of how far they will locate relevant heads deeply embedded in the structure. Chomsky 2015 suggests that “LA seeks heads H within its search domain (observing the Phase Impenetrability Condition PIC),” (p. 6) but this has not been empirically examined. There also remains the question of whether the PIC is the only condition to narrow the domain of LA. Consider (1), where X and Y are LIs and α, β, γ are phrases.

That is, SOs undergo labeling after a phase head is introduced to the derivation, but before the phase head complement is transferred to the interfaces.

- (1) a. $\{\{X_{[F]}, \alpha\}, \{Y_{[F]}, \beta\}\}$
 b. $\{\{\gamma, \{X_{[F]}, \alpha\}\}, \{Y_{[F]}, \beta\}\}$

If MS is carried out in a “top-down” fashion, MS to seek relevant features in (1a) reaches $\{X_{[F]}, \alpha\}$ and $\{Y_{[F]}, \beta\}$, and then it finds out $X_{[F]}$ and $Y_{[F]}$ simultaneously. In (1b), on the other hand, the “top-down” search firstly reaches $\{\gamma, \{X_{[F]}, \alpha\}\}$ and $\{Y_{[F]}, \beta\}$, secondly $\{X_{[F]}, \alpha\}$ and $Y_{[F]}$, and finally $X_{[F]}$. Crucially, the “top-down” search in (1a) locates the relevant heads $X_{[F]}$ and $Y_{[F]}$ at the same step, whereas the one in (1b) requires an extra step to find out $X_{[F]}$ after locating $Y_{[F]}$. If a third factor principle that minimizes search space for computation is at work (see also Chomsky 2005), it would prefer the former to the latter, since the former narrowly restrict the search space for LA. On the basis of this idea, this article proposes the Symmetry Condition on Labeling (SCL) in (2).

(2) *The Symmetry Condition on Labeling*

An XP-YP structure provides a label via feature sharing between X and Y only if X and Y have the same embedding depth.

Suppose that the embedding depth is defined in terms of set membership. In (1a), both X and Y have the same embedding depth, since X as well as Y is a member of a member of the set. In (1b), X and Y differ in embedding depths: X is a member of a member of a member of the set (1b), whereas Y is a member of a member of the set. In (1a), LA provides a label $\langle F, F \rangle$ via feature sharing between X and Y, whereas the SCL bars labeling of the XP-YP structure in (1b). If this proposal is correct, it will be suggested that MS into an XP-YP structure is severely restricted by the principle to minimize the search steps, and labeling of an XP-YP

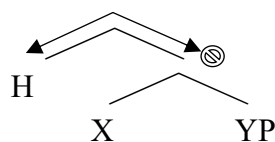
structure requires not only featural identity between X and Y but also structural symmetry between XP and YP.

This article is organized as follows. Section 2 attempts to clarify the conception of MS for labeling, proposing the SCL as a condition to minimize the search space of MS in XP-YP structures. Section 3 demonstrates that the SCL is empirically supported by a ban on extraction out of moved elements (aka. freezing effects). Section 4 accounts for *wh*-islands in terms of the SCL. Section 5 illustrates that the SCL also explains the Proper Binding Condition (PBC) effects. Section 6 examines *prima facie* counterexamples to the SCL: multiple-Spec constructions. Section 7 concludes the article.

2. Clarifying the Conception of MS

Section 2 attempts to clarify how LA works, demonstrating that the SCL serves as a condition to minimize the search space for MS. We first consider labeling of an H-XP structure such as (3).

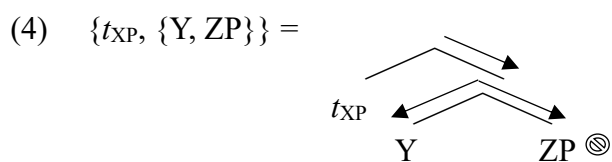
(3) $\{H, \{X, YP\}\} =$



MS carried out in a “top-down” fashion simultaneously finds out the members of the set in (3), H and $\{X, YP\}$. Suppose that LA halts at this stage, calling off traversal of the sister of H, the domain $\{X, YP\}$. Then, LA uniquely identifies the LI H, providing it as the label of (3). In this process, crucially, LA never selects any LIs c-commanded by H such as X, since MS visits no LIs within the domain $\{X, YP\}$. As Chomsky 2005 suggests, the language design is determined by the following three factors: (I) genetic endowment, (II) experience, and (III) general principles not specific to the language faculty. The factor (III) involves a principle of

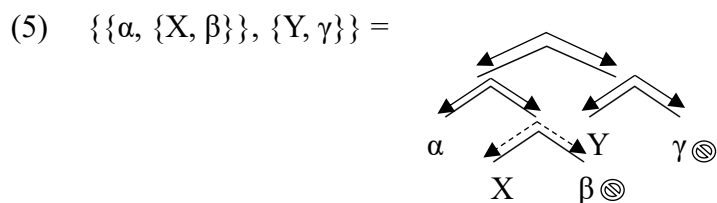
efficient computation that is significant for computational systems like languages. So, suppose that the factor (III) restricts the search space for MS so as not to traverse H's c-commanding domain once H is located (let us call this the Minimality Condition on MS). This serves as a condition to keep the search space of MS in an H-XP structure minimal.

We next consider a t_{XP} -YP structure like (4), where t_{XP} is a lower copy of XP.



Since the lower copy of XP is “invisible” to LA, it behaves as if it were outside the domain of MS (notice that, however, the lower copy never disappears from the structure, as the No-Tampering Condition (NTC, Chomsky 2004, 2007, 2008, 2013) dictates). Given this, the “top-down” MS visits only $\{Y, ZP\}$ at the first step. At the next step, MS locates Y and ZP simultaneously, halting at this stage to provide Y as the label. In this process, MS in (4) never visits any LIs c-commanded by Y. Thus, the Minimality Condition on MS also keeps the search space of MS minimal in t_{XP} -YP structures.

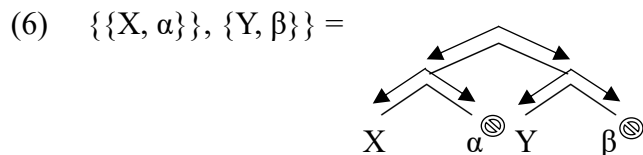
Now, consider the XP-YP structure such as (5), where X and Y share features F; α, β, γ are phrases.



The structure in (5) is asymmetric in that X and Y have the different embedding depth. Were it not for the SCL, the “top-down” MS would first reach $\{\alpha, \{X, \beta\}\}$ and $\{Y, \gamma\}$, second $\{X,$

$\beta\}$ and Y, and third X and β . Then, LA would provide the features shared between X and Y as the label of (5). Crucially, however, MS in (5) involves a superfluous step of MS to traverse the domain $\{X, \beta\}$ after Y is located (this is illustrated with the dotted arrows in (5)). In order to keep the domain of MS minimal, it is desirable that some condition bar the superfluous step to seek one head after another head is located. Notice that the Minimality Condition on MS does not eliminate the superfluous step to locate X because it is outside the c-command domain of Y. Recall that in (3) and (4), superfluous steps are eliminated by the Minimality Condition since it blocks MS to seek an LI within the c-command domain of another LI: In (3), MS does not visit X after H is located; In (4), MS visits no LIs after Y is located. By contrast, the Minimality Condition on MS does not serve as a condition to bar the superfluous step of MS in (5), since X is outside the c-command domain of Y.

An XP-YP structure may provide a label without no superfluous steps of MS only when it is mirror-symmetric as in (6), where LIs X and Y have the same embedding depth.

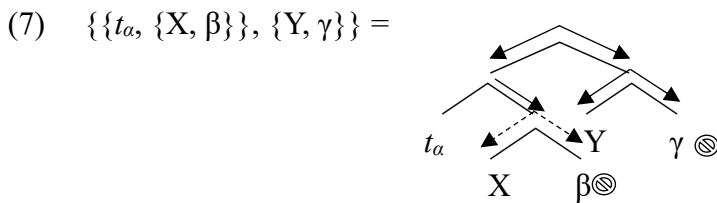


In this structure, the “top-down” MS visits $\{X, \alpha\}$ and $\{Y, \beta\}$, and then locates X and Y simultaneously. MS halts at this stage, providing the features shared between X and Y as the label. Crucially, MS does not visit any heads within α or β after X and Y are located, owing to the Minimality condition. Tree-traversal in (6) involves no superfluous steps of MS, since it halts when X and Y are simultaneously located. Thus, SCL in (2) serves as a principle to eliminate superfluous steps, minimizing the search space in XP-YP structures.² The SCL is

² Notice that MS does not have to keep track of how many levels of embedding are involved

categorized into the factor (III), since it constrains MS into XP-YP structures to restrict the computational recourses in labeling by minimizing the domain accessed by MS.

The following sections will propose a unified account of freezing effects (Section 3), *wh*-islands (Section 4), and the PBC effects (Section 5) in terms of the SCL. It will be demonstrated that these constructions fall under cases such as (7), where t_α is a lower copy of a phrase α .



The SCL bars labeling of (7) via feature sharing between X and Y, since X and Y do not have the same embedding depth. Crucially, although t_α is “invisible” to LA (i.e., it is not visited by MS), it never disappears from the structure owing the copy theory of movement and the NTC. Thanks to the lower copy that breaks symmetry between XP and YP, X and Y have different embedding depth. Freezing effects, *wh*-islands, and Proper Binding Condition effects is reduced to the SCL, because they involve the symmetry-breaking extractions leaving t_α behind.

3. Freezing Effects

This section accounts for freezing effects like (8), where extraction out of an A- or A'-

in finding X and Y, and then compare the depth of embedding of X and Y. Consider the symmetric structure in (6). Given that MS is carried out in a “top-down” fashion, it finds out X and Y simultaneously (i.e., at the second step of LA). In this process, we need no mechanism to compare the depth of embedding: heads X and Y have the same depth of embedding since they are identified by the “top-down” MS at the same step.

moved category leads to degradation in acceptability.³

- (8) a. ?*Who_i do you think that [pictures of t_i]_j t_j are on sale?
b. ??Who_i do you wonder [which picture of t_i]_j Mary bought t_j ?

(Lasnik and Saito 1993: 101-102)

(8a) is derived in the following way (notice that *who* is a phrase, but its internal structure is abstracted away for simplicity of illustration).

- (9) a. {D, {pictures, {of, who}}}
b. {who, {D, {pictures, {of, t_{who} }}}}
c. {{who, {D, ...}}, vP}

³ Bošković (2018) tries deduce freezing effects from the phase theory (Chomsky 2000, 2001) and the labeling theory (Chomsky 2013), postulating that unlabeled SOs cannot undergo movement. According to him, extraction out of the bracketed phrases in (8) yields an unlabelable XP-YP structure owing to the PIC, and hence it cannot undergo further movement.

Although Bošković's 2018 deduction is tempting, one conceptual problem arises: his analysis bars IM of a non-phasal category, though it allows EM of a non-phasal one. Chomsky 2004, 2007, 2008, 2013, 2015 argues that IM and EM are two possible instances of a single rule, Merge (α, β) = { α, β }: Merge (α, β) is called IM when α is internal to β ; Merge (α, β) is called EM when α is external to β . Since IM and EM are two instances of the single rule, to bar either type requires stipulation. Unless his analysis provides a principled explanation of why one of the two types of the single rule is constrained without stipulation, it precludes unification of EM and IM into Merge.

- d. $\{T, \{\{who, \{D, \dots\}\}, vP\}\}$
- e. $\{\{who, \{D, \dots\}\}, \{T, \{t_{\{who, \{D, \dots\}\}}, vP\}\}\}$
- f. $\{C, \{\{who, \{D, \dots\}\}, \{T, \dots\}\}\}$
- g. $\{who, \{C, \{\{t_{who, \{D, \dots\}\}}, \{T, \dots\}\}\}\}$

(9a) shows the stage of the derivation before the subject is introduced to Spec- v . Assuming that D as well as C and v is a phase head (see Citko (2014) and references therein), *who* must be extracted to the edge of D as in (9b); otherwise, *wh*-extraction violates the PIC, whereby movement out of the phase-head-complement (PHC) is barred after completion of a phase. Then, the subject is externally merged into Spec- v , yielding (9c). After introducing T as in (9d), the subject internally merges into Spec-T, yielding (9e). The derivation reaches a phase level when C is introduced as in (9f). In (9g), *who* undergoes IM to Spec-C, the SOs in the PHC of C is labeled, and the PHC is transferred. Crucially, the masked SO in (9g), repeated here as (10), cannot be labeled owing to the SCL.

$$(10) \{\{t_{who}, \{D_{[\phi]}, \dots\}\}, \{T_{[\phi]}, \dots\}\}$$

To label (10), LA must find the phi-features on T and D. In (10), however, LA cannot find out the relevant heads, since (10) violates the SCL: D is embedded more deeply than T (i.e., D is a member of a member of a member of the set (10), whereas T is a member of a member of (10)).⁴ Thus, (8a) results in labeling failure.

⁴ One might claim that the SCL incorrectly rules out the sentence like *John's pictures are (beautiful)* on the ground that it is of the form $\{\{John, \{D_{[\phi]}, pictures\}\}, \{T_{[\phi]}, \dots\}\}$, where the genitive phrase occupies Spec-D. In this structure, LA cannot locate the phi-features on D

One might claim that (8a) can be derived without labeling failure if it undergoes the following derivation.

- (11) a. $\{T, \{\{who, \{D, \dots\}\}, \nu P\}\}$
 b. $\{\{D, \dots\}, \{T, \{\{who, t_{\{D, \dots\}}\}, \nu P\}\}\}$
 c. $\{C, \{\{D, \dots\}, \{T, \{\{who, t_{\{D, \dots\}}\}, \nu P\}\}\}\}$
 d. $\{who, \{C, \{\{D, \dots\}, \{T, \{\{t_{who}, t_{\{D, \dots\}}\}, \nu P\}\}\}\}\}$

(11a) shows the stage of the derivation where T is introduced to the structure. A crucial difference with (9) is that in (11b), $\{D, \dots\}$ is extracted to Spec-T, leaving *who* behind. After the introduction of C as in (11c), *who* is extracted to Spec-C. Given this derivation, the PHC of C is labeled $\langle \varphi, \varphi \rangle$, observing the SCL. However, the SO = $\{who, \{D, \dots\}\}$ cannot be labeled because both *who* and $\{D, \dots\}$ are lower copies. Thus, the derivation in (11) results in labeling failure.

The proposed analysis also accounts for freezing effects in A'-movement like (8b). Assume with Cable 2010 and Chomsky 2013 that *wh*-phrases are headed by a question particle

owing to the SCL.

This article speculates that genitive subjects are adjuncts in some relevant sense, and they are introduced to structure counter-cyclically (Lebeaux 1988), or introduced by pair-Merge (Chomsky 2004). Consider (i).

- (i) a. *Which report [that John_i was incompetent] did he_i submit *t*?
 b. Which report [that John_i revised] did he_i submit *t*? (Freidin 1986:179)

Q, the locus of the interrogative Q-feature. Suppose also, following Bošković (2014), that Q is the phase head of a *wh*-phrase, since it is the highest functional category of a lexical category (noun). Owing to the PIC, *who* must be extracted to Spec-Q before the object is merged with the verb. Given that, *wh*-movement of the object to the embedded Spec-C yields the structure in (12).

(12) $\{\{t_{\text{who}}, \{Q_{[Q]}, \{\text{which}, \dots\}\}\}, \{C_{[Q]}, \text{TP}\}\}$

To label (12), LA must simultaneously locate Q and C with the interrogative Q-features. However, again, LA cannot find out them, since Q and C do not have the same embedding depth. Thus, the structure cannot provide a label.⁵

(i) shows that the *wh*-movement with an argument CP does not bleed Binding Condition C violation in the base position, whereas the one with an adjunct CP does. This contrast suggests that an adjunct, but not an argument, is counter-cyclically introduced to the structure (Lebeaux 1988), or undergo SIMPL (Chomsky 2004) after *wh*-movement.

With this much, consider (ii).

- (ii) a. *That guy_i he_i says Eva loves *t*.
 b. ?That guy_i's mother he_i really hates *t*. (Safir 1999: 598)

(ii) illustrates that Topicalization of DP does not bleed Binding Condition C in the base position, whereas it bleeds Binding Condition C if the R-expression is a genitive subject of the DP. This contrast suggests that a genitive subject is an adjunct, and it is introduced counter-cyclically, or undergoes SIMPL after Topicalization. Based on this observation, this article

Next, we consider extraction out of objects. (13) illustrates that a *wh*-phrase cannot be moved out of a shifted object, whereas it is successfully extracted from a non-shifted object.

- (13) a. *Who did Mary call [friends of *t*] up?
 b. Who did Mary call up [friends of *t*]? (Lasnik 2001: 110)

Lasnik 2001 argues that shifted objects obligatorily undergo movement to Spec-AgrO, but non-shifted objects may remain in the base position. Following this, let us assume that the shifted object in (13a) moves from the base position to Spec-V, whereas the non-shifted object in (13b) remains in Comp-V (cf. Chomsky 2008). Then, the sentences in (13) are structured as follows.

suggests that *John's pictures are (beautiful)* is of the form $\{\{D_{[\phi]}, \text{pictures}\}, \{T_{[\phi]}, \dots\}\}$ when it undergoes labeling, observing the SCL. After that, the genitive subject *John's* is introduced to the structure counter-cyclically, or undergoes SIMPL to yield $\{\{John, \{D_{[\phi]}, \text{pictures}\}\}, \{T_{[\phi]}, \dots\}\}$. If this analysis is correct, genitive subjects pose no problem to the proposed condition.

⁵ One might wonder how the sentences involving pied-piping like *To whom did John talk t?* are derived in accordance with the SCL. If this sentence is of the form $\{\{P, \{D_{[Q]}, \dots\}\}, \{C_{[Q]}, \dots\}\}$, the proposed SCL incorrectly rule it out, since MS cannot locate D involving [Q].

This problem is solved since we adopt Cable's 2010 Q-system, according to which a pied-piped phrase is headed by a question particle Q, which is the locus of the interrogative [Q] feature (Chomsky 2013). Given this, *To whom did John talk t?* is structured as $\{\{Q_{[Q]}, \{P, \text{whom}\}\}, \{C_{[Q]}, \dots\}\}$. Then, MS locates Q involving the interrogative feature and C simultaneously, observing the SCL.

- (14) a. $\{\{t_{\text{who}}, \{D_{[\phi]}, \{\text{friends}, \dots\}\}\}, \{V_{[\phi]}, t_{\text{Obj}}\}\}$
 b. $\{V_{[\phi]}, \{t_{\text{who}}, \{D_{[\phi]}, \{\text{friends}, \dots\}\}\}\}$

(14a) is an XP-YP structure. The SCL prohibits (14a) from providing a label via feature sharing, since D is embedded more deeply than V. By contrast, there is no labeling failure in (14b), since it is of the form V-DP. Thus, the contrast between (14a) and (14b) is accounted for in terms of labeling.

The proposed analysis also explains the subextraction asymmetry between objects and Exceptional Case Marking (ECM) subjects, as in (15).

- (15) a. Which artist do you admire [paintings by *t*]?
 b. ?/* Which artist do you expect [paintings by *t*] to sell the best?

(Polinsky 2013: 580)

Polinsky (2013: 580) notes that (15a) is unproblematic, whereas (15b) is “marginal at best, and many native speakers reject this extraction altogether.” Suppose that the direct object in (15a) optionally moves to Spec-V, whereas the ECM subject in (15b) obligatorily moves from Spec-T to Spec-V. Then, (15a) does not result in labeling failure, since the verb phrase is of the form V-DP. In contrast, (15b) creates a DP-VP configuration like (16).

- (16) $\{\{t_{\text{which artist}}, \{D_{[\phi]}, \dots\}\}, \{V_{[\phi]}, \text{TP}\}\}$

To label this structure, LA must simultaneously locate D and V with phi-features. However, MS looking for D and V violates the SCL, since they do not have the same embedding depth. Thus, the derivation crashes at the interfaces.

The proposed analysis also explains the finite/nonfinite asymmetry with respect to extraction out of clausal subjects like (17).

- (17) a. *Who does [that she can bake ginger cookies for *t*] give her great pleasure?
 b. ??Who does [(for her) to be able to bake ginger cookies for *t*] give her great pleasure?
 c. ?Who does [being able to bake ginger cookies for *t*] give her great pleasure?

(adapted from Kluender 2004: 118-119)⁶

Kluender (2004: 118) observes that extraction out of the nonfinite subject clauses in (17b, c) is better than extraction out of the finite clause in (17a). We first consider (17a). (18) illustrates the stage of the derivation where the subject clause in (17a) internally merges into Spec-T (notice that *who* is extracted to Spec-C before EM of the subject into Spec-*v*, since C is a phase-head).

- (18) $\{\{t_{who}, \{C_{[\varphi]}, \{she, \dots\}\}\}, \{T_{[\varphi]}, vP\}\}$

Under the assumption that C involves phi-features to agree with T, LA must locate C and T simultaneously to provide the label $\langle \varphi, \varphi \rangle$. However, LA cannot identify them owing to the SCL, thereby causing labeling failure. Let us next consider (17b, c). Suppose that nonfinite C is not a phase head (Kanno (2008)).⁷ Then, *who* need not to be extracted to Spec-C before

⁶ Although Kluender 2004 notes that (17b, c) is noticeably better than (17a), and (17b) is more ferocious than (17c), he gives no diacritic marks to these sentences. I gave ? to (17b) and ?? to (17c) to show relative acceptability among (17a-c).

⁷ Kanno 2008 assumes with Chomsky 2008 that C bears phi-features and tense features at the

the subject clause is externally merged with the independent SO. Given that, (17b, c) have the following structures at some point in their derivations.

- (19) a. $\{\{C_{[\varphi]}, \{\text{her}, \{\text{to}, \{t_{\text{who}}, \{v, \dots\}\}\}\}\}\}, \{T_{[\varphi]}, vP\}\}$
 b. $\{\{C_{[\varphi]}, \{\text{PRO}, \{\text{being}, \{t_{\text{who}}, \{v, \dots\}\}\}\}\}\}, \{T_{[\varphi]}, vP\}\}$

In (19a, b), *who* is located in Spec-*v*, the highest phase edge of the subject clause. Since C and T have the same embedding depth, LA locates C and T simultaneously, providing the label $\langle\varphi, \varphi\rangle$. Thus, the sentences in (17b, c) do not result in labeling failure.

4. *Wh*-Island Effects

This subsection explains the *wh*-island effects in terms of labeling. (20) illustrates that a *wh*-phrase cannot be extracted from a finite clause when its Spec-C is occupied by another *wh*-phrase.

- (20) *?To whom_{*j*} did you wonder what_{*i*} they gave *t_i* *t_j*? (Cinque 1990: 52)

Owing to the PIC, *to whom* must undergo successive-cyclic movement to the embedded Spec-C, creating configurations like (21), where the two *wh*-phrases occupy multiple Specs-C of the embedded clause.

stage where it is introduced, and subsequently they are inherited by T. On the basis of this, Kanno proposes that C loses its phrasehood if C lacks either of these features.

- (21) a. $\{\{Q_{[Q]}, \text{what}\}, \{\{Q, \{\text{to}, \{\text{whom}, \dots\}\}\}, \{C_{[Q]}, \text{TP}\}\}\}$
 b. $\{\{Q, \{\text{to}, \{\text{whom}, \dots\}\}\}, \{\{Q_{[Q]}, \text{what}\}, \{C_{[Q]}, \text{TP}\}\}\}$

Notably, given free Merge, no principle of narrow syntax precludes extraction of *to whom* toward either the inner Spec-C as in (21a) or the outer one as in (21b). Accordingly, in order to explain *wh*-island effects, we must consider what excludes both of these derivations.

We first consider (21a). To label this structure, LA must locate Q involving [Q], on the one hand, and C with [Q], on the other. However, the structure in (21a) does not satisfy the SCL, because C is embedded more deeply than Q. Thus, (21a) cannot provide a label, causing a crash at the interfaces.

Now, consider (21b); this structure does not cause labeling failure because $SO_i = \{\{Q_{[Q]}, \text{what}\}, \{C_{[Q]}, \text{TP}\}\}$ is labeled $\langle Q, Q \rangle$, satisfying the SCL. $SO_j = \{\{Q, \{\text{to}, \{\text{whom}, \dots\}\}\}, SO_i\}$ is an XP-YP structure, but is labeled $\langle Q, Q \rangle$ because the lower copy *to whom* = $\{Q, \{\text{to}, \{\text{whom}, \dots\}\}\}$ keeps moving and is “invisible” to LA. Thus, every term in (21b) is successfully labeled. This article, however, suggests that (21b) results in an anomalous interpretation at the CI interface. Chomsky 2013 and Epstein, Kitahara & Seely 2015 assume that an SO labeled $\langle Q, Q \rangle$ is interpreted as a *wh*-question at the CI interface. Then, it is natural to postulate that the SO with the label $\langle Q, Q \rangle$ is interpreted as an operator-scope configuration at CI. Suppose, for example, we have the sentence *What did you eat?*, which is of the form $\{\{Q_{[Q]}, \text{what}\}, \{C_{[Q]}, \dots\}\}$. Then, the CI interface interprets *what* as a *wh*-operator, and $\{C_{[Q]}, \dots\}$ as its scope. Given this much, consider (21b) again; it is an XP-YP structure with the label $\langle Q, Q \rangle$. Then, XP = *to whom* must be interpreted as a *wh*-operator, and YP = $\{\{Q_{[Q]}, \text{what}\}, \{C_{[Q]}, \text{TP}\}\}$ as the scope of XP. However, this results in an anomalous interpretation at the CI interface: Since *to whom* is an intermediate copy, it cannot

behave as an operator.⁸ Although the CI interface must interpret (21b) as an operator-scope configuration in accordance with its label $\langle Q, Q \rangle$, it contains no *wh*-element that qualifies as an interrogative operator. Thus, (21b) is also correctly ruled out at the CI interface.

It is observed that *wh*-extraction out of an infinitival indirect question like (20) is relatively better than extraction out of a finite question like (22) (Ross 1968, Chomsky 1986, and Cinque 1990, among others).

(22) To whom_j did you wonder what_i to give $t_i t_j$? (Cinque 1990: 52)

This fact is accounted for by the SCL. Since nonfinite C is not a phase head (Kanno 2008), *to whom* does not have to move toward the embedded Spec-C. Then, the embedded clause is structured as in (23), where *to whom* is located in the highest phase-edge, Spec-*v*:

(23) $\{\{Q_{[Q]}, \text{what}\}, \{C_{[Q]}, \{\text{PRO}, \{T, \{\{Q, \{\text{to}, \{\text{whom}, \dots\}\}\}, \nu P\}\}\}\}\}$

This structure is labeled $\langle Q, Q \rangle$, since MS locates interrogative Q features on Q and C simultaneously, observing the SCL. Thus, (23) can be successfully interpreted at the

⁸ More precisely, to interpret a *wh*-phrase as an interrogative operator, it must enter into agreement with C to receive an interrogative feature value. Since an intermediate copy does not establish agreement relation with C, it does not qualify as an interrogative operator. However, the interpretive requirement at CI forces (21b) to be construed as an operator-scope configuration, owing to its label $\langle Q, Q \rangle$. Thus, $\langle Q, Q \rangle$ labeling without agreement yields anomalous interpretation at the CI interface.

interfaces.

5. Proper Binding Condition Effects

This section attempts to explain the PBC effects shown in (24) in terms of labeling.⁹

(24) *[Which picture of t_i] $_j$ do you wonder who $_i$ John likes t_j (Saito 1989: 187)

In (24), *who* is extracted to the embedded Spec-C, and subsequently the phrase containing a lower copy of *who* undergoes movement to the matrix Spec-C (the first movement is called internal movement, and the latter remnant movement). This type of derivations results in severe degradation in acceptability, which is greater than that in freezing cases like (25).

(25) ??Who $_i$ do you wonder [which picture of t_i] $_j$ John likes t_j (Saito 1989: 187)

This section accounts for why PBC effects arise, and why sentences with PBC effects are worse than those with freezing effects.

Consider the derivation of (24) illustrated in (26) (notice again that although *who* is a phrase,

⁹ Cecchetto 2001 tries to account for PBC effects in terms of phase theory. According to him, (24) is ungrammatical because remnant movement violates the PIC: After internal movement, the domain including the remnant is rendered inaccessible to further operation. Although his phase-based analysis is attractive, it is not without a problem. For his theory to work, it must block the derivation in which both the internal movement and remnant movement target the embedded multiple Specs-C (i.e., the derivation in (26)). Otherwise, the PBC cases are successfully derived without PIC violations.

its internal structure is abstracted away for simplicity of illustration).

- (26) a. $\{\{\text{who}, \{\text{Q}, \dots\}\}, \{\text{C}, \dots\}\}$
 b. $\{\text{who}, \{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{\text{C}, \dots\}\}\}$
 c. $\{v, \{\text{wonder}, \{\text{who}, \{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{\text{C}, \dots\}\}\}\}\}$
 d. $\{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{v, \{\text{wonder}, \{\text{who}, \{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{\text{C}, \dots\}\}\}\}\}\}$

(26a) shows the stage of derivation in which *which picture of who* is extracted to the embedded Spec-C. Crucially, *who* is placed at the edge of Q owing to the PIC. In (26b), *who* involving [Q] undergoes movement to the outer Spec-C. After the introduction of V and *v* as in (26c), $\{t_{\text{who}}, \{\text{Q}, \dots\}\}$ is extracted to the edge of *v*, and the PHC of *v* is labeled and transferred as in (26d). However, this derivation results in labeling failure, since the SO in (27) (i.e., the embedded clause) cannot be labeled owing to the SCL.

- (27) $\{\text{who}_{[\text{Q}]}, \{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{\text{C}_{[\text{Q}]}, \dots\}\}\}$

To label this structure $\langle \text{Q}, \text{Q} \rangle$, MS must find the interrogative Q-features on *who* and C simultaneously. However, (27) is a multiple-Spec configuration involving agreement of C with the outer Spec-C, so that it is ruled out by the SCL, as the *wh*-island configuration in (21a) is. Thus, (27) cannot provide a label.¹⁰ Furthermore, the matrix clause also causes a labeling

¹⁰ Notably, (25) may have the structure $\{\{t_{\text{who}}, \{\text{Q}, \dots\}\}, \{\text{who}_{[\text{Q}]}, \{\text{C}_{[\text{Q}]}, \dots\}\}\}$, whereby *who* and *which picture of* occupies the inner Spec-C and the outer Spec-C, respectively. In this structure, LA provides the label $\langle \text{Q}, \text{Q} \rangle$, observing the SCL. However, the embedded clause yields an anomalous interpretation at the CI interface, similar to the *wh*-island case in (21b):

failure. (28) illustrates the stage of the derivation where *which picture of t* is extracted to the matrix Spec-C.

(28) $\{\{t_{who}, \{Q[Q], \dots\}\}, \{C[Q], \dots\}\}$

Again, this structure cannot be labeled $\langle Q, Q \rangle$ because it violates the SCL. Thus, the sentence in (24) is faced with labeling failure twice.¹¹ This accounts for the fact that PBC effects lead to more severe degradation in acceptability than freezing effects, as shown in (24) and (25). In PBC cases like (24), both the root and embedded CPs cause labeling failure. In freezing cases like (25), by contrast, the derivation results in labeling failure only once: in the embedded CP (see the discussion in Section 3). Thus, this cumulative effect of mislabeling yields severe degradation in acceptability in (25).¹²

Although the label $\langle Q, Q \rangle$ forces the embedded clause to be construed as an operator-scope configuration, $\{t_{who}, \{Q, \dots\}\}$ in the outer Spec-C, an intermediate copy, cannot behave as an operator.

¹¹ The proposed analysis predicts that PBC effect is relaxed when the remnant is extracted out of a nonfinite clause, since it skips the embedded Spec-C without violation of the PIC. Although we must investigate more closely whether PBC effects are relaxed in nonfinite cases, judgement by my informant seems to support the proposed analysis: He observes that there is difference in acceptability between the nonfinite case in (ia) and the finite one in (ib), and the former is slightly better than the later.

- (i) a. Which picture does John wonder of whom to buy?
b. Which picture does John wonder of whom he should buy?

¹² One might wonder how we account for PBC effects in Japanese scrambling like (ia), which

is contrasted with the acceptable freezing cases like (ib).

- (i) a. *[Hanako-ga t_i yonda to] $_j$ [sono hon-o] $_i$ Taro-ga t_j itta.
Hanako-Nom read Comp that book-Acc Taro said
lit. ‘That Hanako read, that book, Taro said.’
- b. Sono hon-o $_i$ (kinoo) [Hanakoga t_i yom daro to] Taro-ga t_j itta.
that book-Acc yesterday Hanako-Nom read will Comp Taro-Nom said
lit. ‘That book, that Hanako would read the book, Taro said (yesterday).’

If scrambling does not involve feature sharing, and the XP-YP problem is circumvented by the anti-labeling feature on Case particles (Saito 2016, see also discussion in Section 6), the proposed system incorrectly predicts that (ia) as well as (ib) is acceptable, since there is no feature sharing in the landing sites of scrambling.

Since cross-linguistic variation of PBC effects is not within the scope of this article and must be investigated in my future study, I speculate that some independent condition on scrambling renders (ia) unacceptable. Consider (ii).

- (ii) a. ?*Bill-ni $_i$ sono mura-ni $_j$ John-ga t_i [Mary-ga t_j sundeiru to] itta.
Bill-Dat that village-Loc John-Nom Mary-Nom live Comp sai
‘Bill, in that village, John told that Mary lives.’
- b. Sono mura-ni $_j$ Bill-ni $_i$ John-ga t_i [Mary-ga t_j sundeiru to] $_j$ itta.
That village-Dat Bill-Loc John-Nom Mary-Nom live Comp said
‘In that village, Bill, John told that Mary lives.’

(adapted from Ceccetto 2001: 110)

6. Notes on Multiple Specifiers

This section briefly examines another consequence of the SCL: ban on building multiple-Specs via feature sharing. Under the theory of Bare Phrase Structure (BPS) by Chomsky 1995a, 1995b, the presence of a multiple-Spec configuration is a null hypothesis. The BPS defines Merge as an operation to take two SOs α and β and yield $SO = \{\gamma, \{\alpha, \beta\}\}$, where γ is the label of the SO. The label γ is constructed from one or the other of α, β : the label of either α or β becomes the label γ . Given this formulation of Merge, nothing precludes the generation of a structure with multiple-Specs. However, under the simplest Merge (Chomsky 2004, 2007, 2008, 2013, 2015), whereby Merge is defined as an operation to take two SOs α and β and yield $SO = \{\alpha, \beta\}$, and the theory of labeling by Chomsky 2013, 2015, whereby the label of an SO is determined by an independent algorithm, LA, availability of multiple-Specs is not self-evident: It crucially relies on how far MS will locate heads or features that provide a label. To see this, consider the structure like $SO = \{\{U_{[F]}, \dots\}, \{X_{[F]}, \dots\}, \{Y_{[F]}, ZP\}\}$, where U and X, the heads of UP and XP, involve features to be shared with Y. If the search domain of LA is unbounded, MS may locate U, X, and Y, providing F as the label of the SO. On the other

(iia) shows that multiple scrambling is barred when the long distance scrambling (A'-scrambling) is followed by the short-distance scrambling (A-scrambling). By contrast, (iib) illustrates that the acceptability improves when the short distance scrambling (A-scrambling) is followed by the long-distance scrambling (A'-scrambling).

The contrast in (i) seems to be reduced to the contrast in (ii): (ia) is unacceptable since the A-scrambling of the CP takes place after the A'-scrambling of *sono hon-o* 'that book.' By contrast, (ib) is acceptable since the A-scrambling takes place before the A'-scrambling.

hand, if the MS of LA does not involve extra steps to identify the loci of agreement features, a structure involving multiple-Spec is not available. Thus, the proposed system predicts that there are no multiple-Spec configurations created by feature sharing, thereby requiring reconsideration of constructions analyzed in terms of multiple-Specs. Vermeulen 2005 provides a list of constructions that have been analyzed in terms of multiple-Specs: Multiple Nominative Constructions (MNCs) in Japanese (Ura 1993, 1994 and Koizumi 1995), Transitive Expletive Constructions (TECs) in Germanic languages (Chomsky 1995b), and embedded Topicalization and Focalization in English (Koizumi 1995).¹³ This list should include Multiple *Wh*-Fronting (MWF) in Slavic languages, which has been analyzed in terms of multiple Specs-C (Koizumi 1995, Pesetsky 2000, and Richards 2001, among others). If these constructions have multiple-Spec structures created by feature sharing, they pose problems to the SCL. In the literature, however, there have been analyses without multiple-Spec configurations created by feature sharing.

For Multiple Nominative Constructions in Japanese, Saito 2016 proposes that the Case particle in Japanese involves an anti-labeling feature, which makes available multiple-Spec configurations without feature sharing. If Saito's analysis is correct, MNCs do not pose a problem to the SCL.¹⁴

¹³ Vermeulen's 2005 list also includes *wh*-islands (Sabel 2002) and LF Super-Raising in Japanese (Ura 1994). *Wh*-islands have already been examined in Section 4. This article does not address the question whether LF-movement really exists, and it leaves open the question of whether it is problematic to the proposed condition.

¹⁴ Epstein, Kitahara & Seely 2020 try to clarify how LA works in multiple-Spec configurations, permitting MS into asymmetric XP-YP structures to accommodate MNCs in Japanese. Although their analysis is attractive, it leaves unclear how to restrict the search space for LA.

Next, we consider TECs in Germanic languages. Chomsky 1995b argues that the expletive subject and the external argument of the TECs occupy multiple-Specs of T. However, Chomsky's 1995b analysis sheds little light on cross-linguistic differences in the availability of TECs. TECs are available in languages like Icelandic, German, and Dutch, whereas they are unavailable in languages like English, Danish, Norwegian, and Swedish. To account for this contrast, Chomsky 1995b simply stipulates that languages with TECs may check the EPP feature on T twice, whereas languages without TECs cannot check it more than once. How is the cross-linguistic difference captured without stipulating the EPP feature on T? Previous approaches have shown that availability of TECs is related to the presence of V-to-I movement (Vikner's Generalization: see Bobaljik and Thráinsson 1998, Koenenman and Neelman 2001), or the presence of Object Shift (Bures's Generalization: see Bobaljik and Joans 1996, Koster and Zwart 2001).¹⁵ These approaches commonly share the idea that in languages with TECs, two-layered functional projections in the IP area provide positions for an expletive and an EA, whereas in languages without TECs, the Spec position for an EA is not available. Vermeulen 2005 argues for split-IP analyses of TECs and against the multiple-Spec analysis, claiming that only the former accounts for Vikner's Generalization: A language with a split-IP structure provides the positions for a raised verb and an EA within the lower IP domain, whereas languages without it do not have positions for verb movement and merger of an EA. By contrast, Chomsky's analysis 1995b leaves unexplained the co-relation between V-to-I movement and the availability of TECs. This line of argument also makes sense when we adopt Bures's Generalization: Under the split-IP analyses, the lower IP provides positions

Additionally, it does not provide a unified explanation of freezing effects, *wh*-islands, and PBC effects. For these reasons, I leave open whether their analysis of MNCs is correct.

¹⁵ See also Richards 2006 for discussion.

for merger of EA and Object Shift, whereas under the multiple-Spec analysis, the cross-linguistic co-relation cannot be captured. Thus, the split-IP analyses are empirically preferable to the multiple-Spec analysis, and TECs pose no problem to the SCL.

Regarding the embedded Topicalization and Focalization in English, Koizumi 1995 proposes that a topicalized phrase occupies the outer-Spec of Polarity Phrase (PolP), a dedicated position for a focused phrase. If this multiple-Spec analysis is the only way to accommodate the relevant construction (and Pol shares features with the elements in the multiple-Specs), the SCL is no longer tenable. However, the literature on cartographic approaches to the left periphery (Rizzi 1997, 2004, among others) have argued that a topicalized phrase and a focalized one occupy Specs of dedicated projections, TopP and FocP. Thus, to the extent that this line of approach is on the right track, co-occurrence of topic and focus does not falsify the SCL.

We finally consider MWF in Slavic languages such as Bulgarian. Some researchers have argued that the multiple *wh*-phrases in Bulgarian are substituted into multiple Specs-C, forming structures like $\{Wh_1, \{Wh_2, \{C, TP\}\}\}$ (Koizumi 1995, Pesetsky 2000, and Richards 2001, among others). If the MWF in Bulgarian is derived by sharing of interrogative features among the multiple *wh*-phrases and C, it poses a problem to the SCL. However, it has been claimed that MWF in Slavic languages is driven not by the interrogative feature but by focus. Stjepanović 1999 argues that *wh*-phrases in Serbo-Croatian are inherently contrastively focused, and obligatorily undergo focus movement to the initial position. This focus movement analysis has also been extended to Bulgarian (Bošković 1999, Lambova 2001, and Bošković 2002). Based on this observation, Lambova 2001 argues that the first *wh*-phrase of MWF in Bulgarian moves to Spec-C to check the interrogative feature on C, whereas the second and the following *wh*-phrases move to Spec- Δ P, a dedicated position for discourse-related elements, to form a single *wh*-cluster. Given this, the MWF does not involve a

multiple-Spec configuration but two-layered split functional projections. Thus, if this analysis is correct, MWF does not pose a problem to the SCL.

To summarize, constructions that have been analyzed in terms of multiple-Specs, MNCs in Japanese, TECs in Germanic languages, embedded Topicalization and Focalization in English, and MWF in Slavic languages, do not seem to pose a serious problem to the SCL, since plausible alternative analyses may accommodate these constructions without multiple-Specs created by feature sharing.

7. Conclusion

Chomsky 2013, 2015 proposes that a label of an SO is provided via LA, an instantiation of MS. However, the notion of LA and MS has not been clarified in Chomsky 2013, 2015, and previous research has scarcely focused on to the question of what is the domain within which MS locates heads that provide a label. This article has addressed this issue, proposing that an XP-YP structure provides its label via feature sharing only if X and Y have the same embedding depth. This condition provides a unified account of freezing effects, *wh*-island effects, and the PBC effects. Since the proposed condition predicts that there are no multiple-Spec configurations created by feature sharing, this article has examined *prima facie* counterexamples, demonstrating that none of them falsifies the proposed condition. If this proposal is on the right track, it is suggested that the domain of LA is not unbounded; it is narrowly restricted by a third factor principle that minimizes the search space for computation.

References

- Bobaljik, J. D. & H. Thráinsson 1998. Two heads aren't always better than one. *Syntax* 1:37-71.
- Bobaljik, J. D. & D. Joans 1996. Subject positions and the roles of TP. *Linguistic Inquiry*

27:195-236.

- Bošković, Ž. 1999. On multiple feature checking: Multiple *wh*-fronting and multiple head movement. In *Working minimalism*, eds. S. D. Epstein & N. Hornstein, 159-187. Cambridge, MA: MIT Press.
- Bošković, Ž. 2002. On multiple *wh*-fronting. *Linguistic Inquiry* 33: 351-383.
- Bošković, Ž. 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, Ž. 2018. On movement out of moved elements, labels, and phases. *Linguistic Inquiry* 49:247-282.
- Cable, S. 2010. *The grammar of Q: Q-particles, wh-movement and pied-piping*. Oxford: Oxford University Press.
- Cecchetto, C. 2001. Proper binding condition effects are phase impenetrability condition effects. *NELS* 31: 99-115.
- Chomsky, N. 1986. *Barriers*. Cambridge, MA: MIT Press.
- Chomsky, N. 1995a. Bare phrase structure. In *Government and binding theory and the minimalist program*, ed. G. Webelhuth, 383-439. Cambridge, MA: Blackwell.
- Chomsky, Noam 1995b. *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, N. 2000. Minimalist inquiries: The framework. In *Step by Step: Essays on minimalist syntax in honor of Howard Lasnik*, eds. R. Martin, D. Michaels, & J. Uriagereka, 98-155. Cambridge, MA: MIT Press.
- Chomsky, N. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. M. Kenstowicz, 1-52. Cambridge, MA: MIT Press.
- Chomsky, N. 2004. Beyond explanatory adequacy. In *Structures and beyond*, ed. A. Belletti, 104-131. Oxford: Oxford University Press.
- Chomsky, N. 2005. Three factors in language design. *Linguistic Inquiry* 36:1-22.

- Chomsky, N. 2007. Approaching UG from below. In *Interfaces + recursion = language?: Chomsky's minimalism and the view from syntax-semantics*, eds. U. Sauerland & H.-M. Gärtner, 1-30. Berlin: Mouton de Gruyter.
- Chomsky, N. 2008. On Phases. In *Foundational issues in linguistic theory: essays in honor of Jean-Roger Vergnaud*, eds. R. Freidin, C. P. Otero, & M. L. Zubizarreta, 291-231. Cambridge, MA: MIT Press.
- Chomsky, N. 2013. Problems of projection, *Lingua* 130:33-49.
- Chomsky, N. 2015. Problems of projection: Extensions. In *Structures, strategies and beyond: Studies in honor of Adriana Belletti*, eds. E. Di Domenico, C. Hamann & S. Matteini, 1-16. Amsterdam: John Benjamins.
- Citko, B. 2014. *Phase theory*. New York: Cambridge University Press.
- Cinque, G. 1990. *Types of A'-dependencies*. Cambridge, MA: MIT Press.
- Epstein, S. D., H. Kitahara, & T. D. Seely 2015. What do we wonder is not syntactic?. In *Explorations in maximizing syntactic minimization*, eds. S. D. Epstein, H. Kitahara, & T. D. Seely, 222-239. New York: Routledge.
- Epstein, S. D., H. Kitahara, & T. D. Seely 2020. "Unifying labeling under minimal search in 'single-' and 'multiple- specifier' configurations," *Coyote Papers* 22, 1-11.
- Freidin, R. 1986. Fundamental issues in the theory of binding. In *Studies in the acquisition of anaphora*. ed. B. Lust, 151-188. Dordrecht: Reidel.
- Joans, D. 1996. Clause structure, expletives, and verb movement. *Minimal ideas*, eds. W. Abraham, S. D. Epstein, H. Thrainsson, & C. J.-W. Zwart, Amsterdam: John Benjamins.
- Kanno, S. 2008. On the phasehood and non-phasehood of CP. *English Linguistics* 25:21-55.
- Kluender, R. 2004. Are subject islands subject to a processing account?. *WCCFL* 23:101-125.
- Koenenman, O. & A. Neelman 2001. Predication, verb movement, and the distribution of expletives. *Lingua* 111, 189-233.

- Koizumi, M. 1995. *Phrase structure in minimalist syntax*. Doctoral thesis, MIT.
- Koster, J. & J.-W. Zwart 2001. Transitive expletive constructions and the object shift parameter. In *Linguistics in the netherlands 2000*, eds. H. de Hoop & T. van der Wouden, 159-170. Amsterdam: John Benjamins.
- Lambova, M. 2001. On A-bar movements in Bulgarian and their interaction. *The Linguistic Review*, 327-374.
- Lasnik, H. 2001. Subjects, objects, and the EPP. In *Objects and other subjects, grammatical functions, functional categories, and configurationality*. eds. W. D. Davies & S. Dubinsky, 103-121. Dordrecht: Kluwer.
- Lasnik, H. & M. Saito 1993. *Move α : Condition on its application and output*. Cambridge, MA: MIT Press.
- Lebeaux, D. 1988. *Language acquisition and the form of grammar*. Doctoral thesis, University of Massachusetts.
- Pesetsky, D. 2000. *Phrasal movement and its kin*, Cambridge, MA: MIT Press.
- Polinsky, M. 2013. Raising and control. In *The Cambridge handbook of generative syntax*, ed. M. den Dikken, 578-606. New York: Cambridge University Press.
- Richards, M. 2006. Object shift, phases, and transitive expletive constructions in Germanic. *Linguistic Variation Yearbook* 6: 139-159.
- Richards, N. 2001. *Movement language, interaction and architectures*. Oxford: Oxford University Press.
- Rizzi, L. 1997. The fine structure of the left periphery. In *Elements of Grammar*, ed. L. Haegeman, 289-330. Dordrecht, Kluwer.
- Rizzi, L. 2004. Locality and left periphery. In *Structures and Beyond*, ed. A. Belletti, 223-251. Oxford, Oxford University Press.
- Ross, J. R. 1967. *Constraints on variables in syntax*. Doctoral thesis, MIT.

- Sabel, J. 2002. A minimalist analysis of syntactic islands, *The linguistic review* 19, 271-315.
- Safir, K. 1999. Vehicle change and reconstruction in A'-chains. *Linguistic Inquiry* 30:587-620.
- Saito, M. 1989. Scrambling as semantically vacuous A'-movement. In *Alternative conceptions of phrase structure*. eds. M. R. Baltin & A. S. Kroch, 182-200. Chicago & London: The University of Chicago Press.
- Saito, M. 2016. (A) case for labeling: Labeling in languages without ϕ -feature agreement," *The Linguistic Review* 33:129-175.
- Stjepanović, S. 1999. *What do second position cliticization, scrambling, and multiple wh-fronting have in common?*. Doctoral thesis, University of Connecticut.
- Ura, H. 1993. L-relatedness and its parametric variation. *MIT Working Papers in Linguistics* 19, 377-399.
- Ura, H. 1994. Superraising in Japanese. *MIT Working Papers in Linguistics* 24, 355-347.
- Vermeulen, R. 2005. *The syntax of external possession: Its basis in theta-theory*, Doctoral thesis, University College London.

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Takanori Nakashima

Faculty of Arts and Letters

Tohoku University

27-1, Kawauchi, Aoba-ku, Sendai,

980-8576

takanori.nakashima.c7@tohoku.ac.jp