Labeling XP-YP Configurations*

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Abstract

This paper proposes a new bottom-up labeling mechanism, based on Chomsky (2013, 2015) and Mizuguchi (2019). In our proposal, labeling applies to a set of {XP, YP}, so-called an XP-YP configuration, and identifies the head of XP or YP as the label of the set. Nonetheless, labeling still conspires with Internal Merge to restrict the cases of the ambiguous XP-YP configuration to a minimum. We also argue that labeling applies upon transfer to the phasal complement and the labels thus determined are transferred to and evaluated at the Conceptual-Intentional (CI) interface. More precisely, labels are involved in the formation of selectional relations and clausal typing at the CI interface. This proposal explains such stranding phenomena as floating quantifiers and VP-adverbs stranded by VP-preposing. Finally, we derive the invisibility of copies with respect to labeling from economy considerations: the labeling of copies is put off until it detects the highest copy within a transfer domain and assigns the same label to the lower copies across the board, which thus reduces the number of applications of the labeling procedure to a minimum regardless of how many copies are contained within the transfer domain. We will also discuss one surprising consequence the suggestion has, by showing that the syntactic object that undergoes inter-phasal movement receives different labels in different transfer domains.

***Keywords*:** ambiguous labeling, copy invisibility, economy, FORMCOPY, transfer,

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selection, clausal typing

1. Introduction

Since Chomsky (2013, 2015), many studies have paid a great deal of attention to labeling theory and we have gained theoretically and empirically important insights from Chomsky's (2013, 2015) Labeling Algorithm (LA). Some studies have refined Chomsky's (2013, 2015) LA and tried to capture a wide variety of phenomena. One such study is Mizuguchi (2019), who rejects the requirement that labels be uniquely determined, or the ban on labeling ambiguity by Chomsky (2013, 2015). Mizuguchi (2019) proposes that an XP-YP configuration can be labeled as the head of XP or YP and thus in itself does not cause any labeling failure. Let us call this pattern of labeling, rather paradoxically, ambiguous labeling. Moreover, Mizuguchi's (2019) proposal removes one of the key assumptions in Chomsky's (2013, 2015) LA: copies are invisible to labeling. In this way, this revised labeling system attributes the abundance of linguistic phenomena to XP-YP configurations.

Given this background of the labeling theory, this paper aims to provide a new bottom-up labeling mechanism by combining Chomsky's (2013, 2015) LA and Mizuguchi's (2019) labeling system, in the sense that our mechanism adopts ambiguous labeling as in Mizuguchi (2019). At the same time, our mechanism also makes use of the copy invisibility to labeling in Chomsky (2013, 2015), which we deduce from economy considerations, and restricts cases of ambiguous labeling to the ones in which minimal search cannot uniquely determine their labels with recourse to Internal Merge (IM). We also argue that labeling applies upon transfer to the phasal complement and labels are evaluated at the Conceptual-Intentional (CI) interface in terms of whether selectional relations are properly formed or whether clauses are properly typed. In this sense, we argue that labels play a more direct role at the CI interface. We will show that our new labeling mechanism accounts for the

distributions of floating quantifiers and VP-adverbs stranded by VP-preposing in a unified manner. Furthermore, we suggest based on economy considerations that copies in a single transfer domain are assigned the same label in an across-the-board manner. This results in the segregation of the copy (copies) at the phase edge, which escapes from the transfer domain, from the lower copies within the domain. Consequently, we will offer a doubly-labeling analysis of degree fronting, exclamatory constructions and so on, where different labels are assigned to copies in different transfer domains.

This paper is organized as follows. Section 2 introduces Chomsky's (2013, 2015) LA and Mizuguchi's (2019) labeling system. In section 3, we present a new labeling mechanism and analyze the distributions of floating quantifiers and VP-adverbs stranded by VP-preposing. Section 4 addresses how copies become invisible to labeling. In section 5, we address apparent puzzles posed for labeling by degree fronting and exclamatory constructions including *what* and show that they constitute evidence for our labeling mechanism. Section 6 concludes the paper.

2. Previous Studies

2.1. Chomsky (2013, 2015)

Chomsky (2013, 2015) proposes that a syntactic object (SO) must be assigned a label by Labeling Algorithm (LA), which involves minimal search, for the object to be interpreted at the interfaces. According to Chomsky (2013, 2015), LA operates as follows:

(1) a. $\{_{\alpha}$ H, XP$\}$ α=H
b. $\{_{\alpha}$ XP, YP$\}$ α=??

(1a) shows that when a set of {H, XP} is formed, H is selected as the label of the SO by LA. On the other hand, in the case of (1b) where an SO is a set of {XP, YP}, LA

cannot determine the label of the SO because minimal search locates two heads X and Y. Facing this problem of labeling failure, Chomsky (2013, 2015) proposes that there are two routes through which the set of {XP, YP} can be labeled, as illustrated in (2).

(2) a. XP … {$_{\alpha}$ XP, YP} α=YP
b. {$_{\alpha}$ $XP_{[F]}$, $YP_{[F]}$} α= <F, F>

One of the strategies is shown in (2a). If one of the two phrases, here XP, raises and leaves its copy, the copy (the shaded one) is invisible to LA. Then, the SO can uniquely be assigned the label of YP. The other strategy is feature-sharing, as shown in (2b). The prominent feature F shared by XP and YP becomes the label of the SO.

As argued by Chomsky (2013, 2015), the labeling failure in (1b) is involved in the derivation of the ungrammatical example in (3b):

(3) a. **Which book**$_i$ do you think that the student read t_i?
b. *Do you think **which book**$_i$ that the student read t_i?

(Mizuguchi (2019: 567))

In (3a), the *wh*-phrase moves to the final landing site in the matrix clause, originating from the complement of the verb *read* in the embedded declarative clause. On the other hand, in (3b), it stays at the intermediate landing site, the specifier position of the embedded declarative clause. The difference in grammaticality between (3a) and (3b) can be deduced from Chomsky's (2013, 2015) LA: in both cases, the highest copy of the *wh*-phrase and CP form the set of the phrases, {*wh*P, CP}. The resulting SO is labeled as <Q, Q> in (3a) because they share the Q(uestion)-feature. On the other hand, labeling failure occurs in (3b) because the *wh*-phrase does not move further and does not carry any relevant feature that is shared with the declarative CP.

Thus, the *wh*-phrase still has to move to the position where it can share the Q-feature with its sister. Note that the same type of labeling failure as occurs in (3b) is circumvented in (3a): the copy left by successive cyclic movement in the intermediate landing site is invisible to labeling.

However, Chomsky's (2013, 2015) LA faces a problem: Mizuguchi (2019) points out that an XP-YP configuration exists where neither movement nor feature-sharing enables labeling to determine its label uniquely. In German, in contrast to English, the so-called partial *wh*-movement is possible (van Riemsdijk (1982), McDaniel (1989)). Let us consider (4a, b), which receive the same interpretation.

(4) a. **Wen**$_i$ meinst du [t'_i daß [Peter Hans t_i
who.ACC think you.NOM that Peter.NOM Hans.DAT
Vorgestellt hat]]?
introduced has
'Who do you think Peter has introduced to Hans?'
(Sabel (2000: 411))

b. *Was* meinst du [**wen**$_i$ [Peter Hans t_i
WH think you.NOM who.ACC Peter.NOM Hans.DAT
vorgestellt hat]]?
introduced hat (Sabel (2000: 410))

In (4a), the *wh*-phrase *wen* moves to the final landing site in the matrix clause, originating from the complement of the verb *vorstellen* (*introduce*) in the embedded declarative clause. On the other hand, in (4b), it stays at the intermediate landing site, the specifier position of the embedded declarative clause and instead, the *wh*-expletive *was* occupies the sentence-initial position. In other words, the derivation of (4b) is comparable to the illicit derivation in English, i.e. (3b), though it is allowed in German. In (4b), the *wh*-phrase and the declarative CP form a set of {*wh*P, CP},

where the two phrases are both visible to LA and do not have any shared feature. Therefore, Chomsky's (2013, 2015) LA predicts that (4b) is ungrammatical due to labeling failure, contra the fact (see Mizuguchi (2019) and section 2.2 for other cases of an XP-YP configuration).

2.2. Mizuguchi (2019)

Mizuguchi (2019) proposes a labeling system in (5), under which minimal search can detect both of the two heads X and Y in the set of {XP, YP} and label the set as either of the two. According to Mizuguchi (2019), this ambiguous labeling should be possible provided that no part of it violates third-factor principles, so it can only be eliminated by a stipulation. Mizuguchi (2019) argues that the set of {XP, YP} does not end with labeling failure even if XP or YP does not raise or X and Y do not have any shared feature.

(5) $\{_{\alpha}$ XP, YP$\}$ α=XP/YP

(5) shows that the labeling algorithm can freely select either the head of XP or YP as the label of α. Thus, labeling ambiguity in the sense of Chomsky (2013, 2015) is tolerated in Mizuguchi's (2019) system.

In this connection, Mizuguchi (2019) argues that his system dispenses with the role of movement in solving the problem of labeling failure in an {XP, YP} configuration, assumed by Chomsky (2013, 2015). Given simplest Merge, no significant difference is expected to be made with respect to syntactic computation between two copies created by Internal Merge. It does only matter to the interfaces whether an SO is a copy or not (i.e. a repetition). Thus, copies are not distinguished from the repetitions of the same SO introduced by External Merge (EM) in syntax and remain visible to minimal search, which is a natural consequence of Mizuguchi's (2019) labeling system.

Furthermore, Mizuguchi (2019) proposes that it is determined at the CI interface whether the labeled set is ruled in or out: the well-formedness of the set depends on whether it satisfies the properties of the CI system. For example, Mizuguchi (2019) assumes that selection is one of the properties of the CI system. Then, it follows that the outcomes of labeling must satisfy selectional restrictions at the CI system.

To illustrate how labeling interacts with selection at the CI interface, let us reconsider the example of the partial *wh*-movement in (4b), which is repeated below as (6).

(6) *Was* meinst du [**wen**$_i$ [Peter Hans t_i
WH think you.NOM who.ACC Peter.NOM Hans.DAT
vorgestellt hat]]?
introduced hat (Sabel (2000: 410))

Recall that (6) is incorrectly ruled out under Chomsky's (2013, 2015) LA, due to the labeling failure of {$_\alpha$ *wh*P, CP} in the embedded clause. On the other hand, Mizuguchi (2019) predicts that (6) is grammatical because α can be assigned a label of either *wh*P or CP, so that labeling failure does not occur. If *wh*P is the label of α, α is interpreted as a nominal element at the CI interface, violating the selectional requirement of the verb *meinen* (*think*), which should select a clausal complement. Then, only when α is labeled as CP, it satisfies the verb's selectional requirement and is ruled in at the CI interface.[1, 2]

Mizuguchi's (2019) proposal is also supported by many other examples. For example, Mizuguchi (2019) analyzes the complement structure of the examples in (7) by positing the configuration of labeling ambiguity for their underlying structure. Note that the complements consisting of the same set of lexical items are interpreted to be an interrogative clause, as in (7a), or a free relative, as in (7b) (see also Donati

and Cecchetto (2011) and Cecchetto and Donati (2015)).

(7) a. I'll ask what he's selling.
b. I'll buy what he's selling. (McCawley (1988: 431))

Mizuguchi (2019) analyzes the complements in (7) as a set consisting of *wh*P and CP, which is labeled as either CP or *wh*P, as follows:

(8) $\{_{\alpha}$ *wh*P, CP$\}$ α=CP (7a)
α=*wh*P (7b)

In (7a), the complement labeled as CP is ruled in at the CI interface because it satisfies the selectional requirement by the verb *ask*, which selects an interrogative clausal complement. On the other hand, the complement labeled as *wh*P is ruled in when it forms a selectional relation with the verbs that take a nominal complement such as the verb *buy* as in (7b).

Besides the phenomena analyzed by Mizuguchi (2019), we can add the example in (9), where the complement of *believe* is interpreted to be nominal (9a) or clausal (9b):

(9) I believed John sober.
a. I believed John when he was sober.
b. I believed at some point in time "that John was sober".
(Safir (1983: 733))

If *John* and *sober* in (9) also form an XP-YP configuration, the ambiguity of (9) can also be accounted for in the same manner as in (7) under Mizuguchi's (2019) labeling system. The set of *John* and *sober* may be labeled as in (10), in which *sober* is

included in the phrase YP (we will return to this issue in section 5.2).

(10) $\{_{\alpha}\ \{_{DP}$ John$\}, \{_{YP}$ sober$\}\}$ α=DP (9a)

α=YP (9b)

(10) shows that α can be labeled as either DP or YP. If DP becomes the label, it follows that *believe* selects *John* as its object, which precedes the secondary predicate *sober*, as in (9a). Conversely, if YP becomes the label, *believe* is interpreted as selecting a clausal element at the CI interface.[3]

This subsection has reviewed Chomsky's (2013, 2015) LA and Mizuguchi's (2019) labeling system and showed that Mizuguchi's (2019) ambiguous labeling is validated by pointing out the abundance of XP-YP configurations. Based on them, the next section proposes a new labeling algorithm: integrating Mizuguchi's (2019) ambiguous labeling and its disambiguation through IM proposed by Chomsky (2013, 2015) leads to explanation for such stranding phenomena as floating quantifiers and VP-adverbs stranded by VP-preposing.

3. Proposal and Analysis

3.1. Labeling XP-YP configurations

Integrating Mizuguchi's (2019) ambiguous labeling with Chomsky's (2013, 2015) LA, we propose a new labeling mechanism. First of all, we assume that labeling applies upon transfer to the phasal complement, i.e. the transfer domain (see also McInnerney (2022)), in a bottom-up fashion. In other words, the labeling procedure starts with the SO most deeply embedded within the transfer domain and proceeds upwards until the entire phasal complement is labeled (see also section 4).

Under our proposal, labels are assigned as follows:

(11) a. $\{_{\alpha}$ H, XP$\}$ α=H

b. $\{_{\alpha}$ XP, YP$\}$ α=XP/YP

The set in (11a) is formed by a head H and a phrase XP. In this case, minimal search finds H and α is labeled as H. On the other hand, in (11b), two phrases create a set of {XP, YP}. Chomsky (2013, 2015) and Mizuguchi (2019) have conflicting views on the possibility of labeling such a set: while in Chomsky (2013, 2015), α cannot be labeled and thus cannot be interpreted at the interfaces, in Mizuguchi (2019), α can be labeled as either XP or YP, so that the outcome of labeling is evaluated at the CI interface. This paper follows Mizuguchi (2019) in assuming that ambiguous labeling in (11b) is possible.

Then, let us consider the case where XP moves out of the set of {XP, YP} in (11b). Recall that Chomsky (2013, 2015) and Mizuguchi (2019) also take different positions on whether the remaining copy of XP is visible or invisible to LA.[4] For Chomsky (2013, 2015), it is invisible to LA as it is part of a discontinuous element and, as a result, YP becomes the label of {XP, YP}. Conversely, Mizuguchi (2019) argues that copy invisibility is just a stipulation. For Mizuguchi (2019), copies are not distinguished from repetitions of the same SO by EM in syntax and so, they are taken to be visible to LA. Thus, either XP or YP can, in principle, be selected as the label. In this respect, following Chomsky (2013, 2015), this paper argues that the label of α is uniquely determined as YP, as follows:

(12) XP … $\{_{\alpha}$ XP, YP$\}$ α=YP

Indeed, as noted by Mizuguchi (2019), the distinction between copies and repetitions is not brought about by IM per se. However, we argue that they are already distinguished at the time of labeling. We adopt FORMCOPY (FC) proposed by Chomsky (2021), where FC applies to the *v*P/CP phase that is completed and assigns a copy relation to identical inscriptions (copies, so to speak). Moreover, we assume

FC applies before labeling applies, i.e., the completion of the *v*P/CP phase is followed by the application of FC to it, which is then followed by the application of bottom-up labeling to the transfer domain. Then, it follows that XP in {XP, YP} in (12) is clearly identified as a copy of XP before labeling applies. Further details of the mechanism of deriving the copy invisibility to labeling will be discussed in section 4. The point here is that we employ Chomsky's (2013, 2015) assumption that if one of the constituents in {XP, YP} is a copy, the other is used as the label of the set, though the validity of the assumption is derived differently from Chomsky (2013, 2015).

Finally, let us consider the cases of the disambiguation of ambiguous labeling by feature-sharing/agreement proposed by Chomsky (2013, 2015). We argue with Mizuguchi (2019) that there is no need to assume feature-sharing/agreement for labeling because XP-YP configurations no longer cause labeling failure. This means, for example, that the set of $\{wh\text{P}_{[Q]}, \text{CP}_{[Q]}\}$, if it is to be interpreted as an interrogative clause, will be labeled as CP, not <Q, Q>. Thus, our proposal requires another way of distinguishing semantic types of clauses in order for the clause to be interpreted not as declarative but as interrogative, for example. In this regard, this paper argues that clauses are typed by the elements located at the CP edge, in accordance with the clausal typing hypothesis (see e.g. Cheng (1991)). For example, to derive an interrogative clause, *wh*P must be located at the CP edge for clausal typing purposes. Thus, CP in (13) can be properly typed as an interrogative clause, a topicalization construction, a focalization construction and so on, when the configuration is transferred to the interfaces:

(13) $\{_{\text{CP}}\ \text{XP}_{[+\text{wh}, +\text{Top}, +\text{Foc} \ldots]}, \{_{\text{CP}}\ \text{C}, \{\text{TP}\}\}\}$

As shown in (13), the CP edge must be occupied by an element that has a feature determining the type of the clause, such as [+wh], [+Top] and [+Foc]. If the CP edge

is null, the CP is interpreted as declarative at the CI interface. To be more precise, for example, in order for a clause to be typed as interrogative, an element at the CP edge must be interpreted as an SO headed by $X_{[+wh]}$ at the CI interface. This suggests that labels are evaluated at the CI interface not only in terms of whether they satisfy selectional restrictions but also in terms of whether they properly determine the type of the clause.[5, 6]

In this subsection, we have proposed a new bottom-up labeling mechanism, under which labeling applies upon transfer to the phasal complement domain. In our proposal, ambiguous labeling of $\{_{\alpha}$ XP, YP$\}$ is possible, but if one of the constituents of α is a copy, then the other is selected as the label of α. As a result, we have devised a labeling mechanism that integrates Mizuguchi's (2019) ambiguous labeling and Chomsky's (2013, 2015) disambiguation by IM. Furthermore, we have argued that the outcome of labeling is evaluated at the CI interface in terms of selection and clausal typing.

Given our proposal, it is predicted that if a head Z takes the set of {XP, YP} as its complement and should form a selectional relation with XP, XP must stay in situ; if it underwent movement, Z would form a selectional relation with the set labeled with the head of YP. Both cases are schematically shown in (14).

(14) a. $\{Z, \{_{\alpha}$ XP, YP$\}\}$ α=XP/YP

b. XP … $\{Z, \{_{\alpha}$ XP, YP$\}\}$ α=YP

The configuration in (14a) is ruled in at the CI interface because α can be labeled as XP. On the other hand, in (14b), XP in α is a copy and becomes invisible to LA, so that the label of α is uniquely determined as YP. As a result, Z cannot select XP at the CI interface, leading to the ungrammaticality of (14b). Sections 3.2 and 3.3 will show that the prediction is correct, by accounting for the distributions of floating quantifiers and VP-adverbs stranded by VP-preposing.

3.2. Floating Quantifier

Quantifiers such as *all* can immediately precede noun phrases, as follows.

(15) Mary hates all the students. (Sedrins (2011: 207))

The quantifier *all* can also be separated from its associate noun and immediately precede the verb, as shown in (16), where the associate is *the students*.

(16) The students were all failed by Mary. (Bošković (2004: 696))

Such a quantifier is called a floating quantifier. We now give an account of its distribution under our labeling system. First, this paper follows Sportiche (1988) in assuming that floating quantities are stranded by IM of their associate noun.

Moreover, this paper assumes that *all* and its associate noun establish an XP-YP configuration first, as shown in (17).

(17) $\{_{\alpha}\ \{_{FP}$ all$\}, \{_{DP}$ the students$\}\}$ α=FP/DP

Thus, in (17), α can be labeled as either F(unctional)P or DP as far as the outcome of labeling satisfies the requirements of selection and clausal typing.

Then, let us assume that the example in (16) has the following structure:

(18) a. $\{_{\delta}\ \{_{\alpha 2}$ FP, $DP_{[\varphi]}\}, \{_{\gamma}\ v, \{_{\beta}$ V, $\{_{\alpha 1}$ FP, $DP_{[\varphi]}\}\}\}\}$ *v*P phase

b. $\{_{\eta}$ C, $\{_{\zeta}\ DP_{[\varphi]}, \{_{\varepsilon}\ T_{[\varphi]}, \{_{\delta}\ \{_{\alpha 2}$ FP, $DP_{[\varphi]}\}, \{_{\gamma}\ v, \{VP\}\}\}\}\}$ CP phase

Regarding the structure of passives and unaccusatives, we assume that the internal argument does not raise to the specifier of VP due to the lack of the φ-feature in V, unlike in the case of transitives (Chomsky (2001)), but that *v* is a phase head that

transfers its complement, just like transitive *v* (Legate (2003)). With these in mind, first, let us look at the *v*P phase. In (18a), the entire set of α undergoes IM from the complement of VP to the *v*P edge. After the *v*P phase is completed, FC identifies α_1 as a copy. Then, bottom-up labeling applies to the transfer domain β. Since α_1 is a copy invisible to labeling and minimal search detects the head V, the label of β is uniquely determined as VP (see section 4 for the discussion of how α_1 itself is labeled and how it satisfies V's selectional restriction). Next, in the CP phase in (18b), only DP undergoes IM out of α_2, resulting in the φ-agreement with T.[7] After the CP phase is completed, FC identifies DP in the *v*P edge as a copy. Then, bottom-up labeling applies to the transfer domain ζ. First, since minimal search finds *v*, γ is labeled as *v*P. As for α_2, it is labeled as FP because its constituent DP is invisible to labeling. Then, in the set δ of {FP, *v*P}, both FP and *v*P are candidates for the label. In this case, δ must be assigned the *v*P label because T selects *v*P at the CI interface. Subsequently, T is chosen as the label of ε and then, the set ζ of {DP, TP} is labeled as TP for C's selectional restriction. Finally, η is labeled as CP upon the transfer of η. Importantly, α_2 being labeled as FP does not yield an illegitimate outcome because the position of α_2 is not subject to any restrictions of selection and clausal typing. This kind of quantifier float is thus allowed.

Conversely, our proposal predicts that the structure in (19) is ungrammatical because DP is a copy invisible to labeling and the resulting label of α, i.e. FP, cannot satisfy the verb's selectional requirement.

(19) *… $\{_{vP}$ $DP_{[\varphi]}$, $\{_{vP}$ *v*, $\{_{VP}$ V, $\{_{\alpha}$ FP, $DP_{[\varphi]}\}\}\}\}$

In (19), DP moves to the edge of *v*P out of {FP, DP} and leaves its copy within the transfer domain. Then, since DP in α is invisible to labeling, only FP can be selected as the label of α. This results in the violation of the verb's selectional requirement at the CI interface. This is borne out by (20).

(20) a. *The students arrived all.
b. *The students were arrested all.
c. *Mary hates the students all. (Bošković (2004: 682))

However, the example of (20c) seems to satisfy the relevant requirement because the verb *hate* and the DP *the students* are adjacent. This paper analyzes (20c) as follows:

(21) *{$_{vP}$ SubjDP, {$_{vP}$ *v*, {$_{VP}$ ObjDP $_{[\varphi]}$, {$_{VP}$ V$_{[\varphi]}$, {$_{\alpha}$ FP, ObjDP$_{[\varphi]}$}}}}}

In (21), ObjDP undergoes IM to the specifier of VP to undergo φ-agreement (Chomsky (2001)). Thus, when labeling applies to α, the lower ObjDP copy is invisible to labeling and α is labeled as FP, leading to the violation of the selectional restriction.

This subsection has argued that the (im)possibility of quantifier float depends on whether the outcome of labeling satisfies the selectional restriction. Eventually, our analysis has given an account of the following generalization proposed by Bošković (2004):[8]

(22) Quantifiers cannot be floated in θ-positions. (Bošković (2004: 685))

3.3. Preposing of *v*P with VP-Adverbs

In English, verbal phrases can be fronted to the sentence-initial position, as shown in (23).

(23) Ralph says that he will clean his room, and [clean his room] he will.
(Aarts (2018: 202))

In (23), the verb phrase *clean his room* in the second conjunct is fronted. This

phenomenon is called VP-preposing, VP-fronting or VP-topicalization.

Based on the observations by Huang (1993) and Takano (1995), we assume that the moved constituent is *v*P, including the lower copy of the external argument (see also Zagona (1988) and Emoto (2008) for movement analyses of VP-preposing). Then, (23) is analyzed as having the following structure:

(24) $\{_{CP}\ v\mathrm{P}_{[+Top]},\ \{_{CP}\ \mathrm{C},\ \{_{TP}\ \mathrm{DP},\ \{_{TP}\ \mathrm{T},\ v\mathrm{P}_{[+Top]}\}\}\}\}$

In (24), *v*P undergoes IM to the specifier of CP. We assume that the clause where *v*P is preposed is interpreted as a topicalization construction at the CI interface by merging CP and *v*P headed by $v_{[+Top]}$.

*v*P can be modified by adverbs, as shown by the following examples (see Jackendoff (1972) and Ernst (1984) for the classification of adverbs):

(25) a. Ralph says that he will clean his room meticulously.
(Aarts (2018: 204))

b. Ralph says that he will carefully clean his room. (Aarts (2018: 205))

Let us assume here that the adverb and *v*P in (25) form an XP-YP configuration. Thus, the *v*P structure in (25) has the following structure:

(26) $\{_{CP}\ \mathrm{C},\ \{_{TP}\ \mathrm{DP},\ \{_{TP}\ \mathrm{T},\ \{_{\alpha}\ \mathrm{AdvP},\ v\mathrm{P}\}\}\}\}$

In (26), where ambiguous labeling is allowed, either AdvP or *v*P becomes the label of α. However, T should select *v*P at the CI interface and thus, α receives the label of *v*P. This predicts that *v*P cannot undergo movement stranding AdvP, as illustrated in (27).

(27) *{$_{CP}$ *v*P$_{[+Top]}$, {$_{CP}$ C, {$_{TP}$ DP, {$_{TP}$ T, {$_{\alpha}$ AdvP, *v*P$_{[+Top]}$}}}}}

In (27), *v*P in α becomes a copy invisible to labeling. As a result, minimal search uniquely determines the label of α as AdvP. The outcome is ruled out at the CI interface because of the violation of T's selectional restriction. This is borne out by (28).[9]

(28) a. *Ralph says that he will clean his room meticulously, and [clean his room] he will meticulously. (Aarts (2018: 204))
b. *Ralph says that he will carefully clean his room, and [clean his room] he will carefully. (Aarts (2018: 205))

Thus, the impossibility of stranding VP-adverbs by VP-preposing can be accounted for in terms of labeling.

In this connection, let us consider VP-ellipsis. Johnson (2001) and Maeda (2018) argue that VP-ellipsis is derived from VP-preposing. If it is on the right track, the ill-formedness of (29) is predicted under our proposal:

(29) *{$_{CP}$ ~~*v*P,~~ {$_{CP}$ C, {$_{TP}$ DP, {$_{TP}$ T, {$_{\alpha}$ AdvP, *v*P}}}}}

In (29), *v*P undergoes IM to a higher position and is deleted there. Importantly, the lower *v*P becomes a copy, so that minimal search uniquely determines the label of α as AdvP. As a result, (29) is ruled out for the same reason as (27): T fails to select *v*P at the CI interface. Although it has been reported that VP-adverbs cannot occur adjacent to the VP-ellipsis site (e.g. Jackendoff (1971), Brodie (1985), Lobeck (1995), Oku (1998) and Engels (2004)), we can in fact find acceptable cases pointed out in several studies (Philips (2003), Engels (2010), Larson (2013), Aarts (2018), Takaki (2020) and Suzuki (2022a, b)).[10]

(30) a. Mary read all the books quickly, and John did slowly.
(Phillips (2003: 56))

b. Ivan ran slowly and Iris did quickly. (Larson (2013: 618))

c. Ray will rudely interrupt the speaker, but Bruce will politely.
(Aarts (2018: 221))

d. Mary must beautifully walk and Peter must energetically, too.
(Takaki (2020: 65))

e. John fixed the car carefully, and Mary did carelessly.
(Suzuki (2022a: 34))

This suggests that these sentences do not have the structure in (29), i.e., the structure that causes a selectional violation at the CI interface. To put it differently, the fact suggests that VP-ellipsis is not derived from VP-preposing (see also Aelbrecht and Haegeman (2012)). Instead of (29), the examples in (30) are analyzed as having the structure in (31), where *v*P does not move out.

(31) $\{_{CP}$ C, $\{_{TP}$ DP, $\{_{TP}$ T, $\{_{\alpha}$ AdvP, ~~*v*P~~$\}\}\}\}$

As shown in (31), under this analysis, *v*P is a non-copy, and it will undergo PF deletion after transfer. Therefore, *v*P can become the label of α, satisfying T's selectional restriction at the CI interface.[11]

In sections 3.2 and 3.3, we have shown that the prediction made from our labeling mechanism, namely the prediction that stranding phenomena violating selectional restrictions are not allowed, is borne out. In the next section, we will discuss how copy invisibility is derived. We will also present a more detailed analysis of the distributions of floating quantifiers and VP-adverbs in VP-preposing seen in this section, in terms of this refined labeling system.

4. Deducing Copy Invisibility from Economy Considerations

In section 3, we have proposed a new bottom-up labeling mechanism, under which labeling is applied to the phasal complement upon transfer. Under the mechanism, XP-YP configurations are labeled as follows:

(32) a. $\{_{\alpha}$ XP, YP$\}$ α=XP/YP
b. XP … $\{_{\alpha}$ XP, YP$\}$ α= YP

As shown in (32a), ambiguous labeling is permitted when α is a set composed of two phrases. However, as shown in (32b), the application of such labeling is restricted to the case where neither of the constituents is a copy: if one of them XP is a copy and the other one, YP, is not, the copy XP is invisible to labeling and thus the label of α is uniquely determined as YP. This section argues that this copy invisibility is motivated by economy considerations.

This paper proposes that the invisibility of copies to labeling can be attributed to the underspecification of the labels of copies themselves. More precisely, we propose that the determination of the labels of copies is put off until bottom-up labeling detects the topmost copy in the transfer domain. That is, in (32b), when α is labeled, the label of the SO indicated as XP has not actually been determined yet. As a result, the label of the SO indicated as XP cannot be a candidate for the label of α, so that α is automatically labeled as YP. As for the label of XP, once bottom-up labeling locates and labels its highest copy in the transfer domain, all the lower XPs receive the same label across the board. We argue that this across-the-board labeling to copies follows from economy considerations; it minimizes the number of applications of search and labeling.

With this in mind, let us consider how the labels of α, β and γ are determined in (33a), where PH is a phase head.

(33) a. {PH, {α, … {$_{\gamma}$ α, β}}}

b. {PH, {α, … {$_{\gamma}$ α_{DEL}, β}}} *FC's identification of α in γ as a copy*

c. {PH, {α, … {$_{\gamma}$ α_{DEL}, YP}}} *labeling of β as YP*

d. {PH, {α, … {$_{YP}$ α_{DEL}, YP}}} *labeling of γ as YP*

e. {PH, {XP, … {$_{YP}$ XP_{DEL}, YP}}}

across-the-board labeling of α as XP

In (33a), α undergoes IM out of γ. After a phase is completed, FC applies to the phase. Let us assume that at this point, lower copies are assigned the mark DELETE (DEL) (see Chomsky (2021: 23)). In (33b), FC assigns a copy relation to the two occurrences of α and marks DEL on the lower α in γ. Subsequently, bottom-up labeling applies to the phasal complement. Here, β and the copy of α marked with DEL are included in γ. Then, as shown in (33c), β is labeled as YP. As for labeling the lower α, it is put off based on the information that the α is a DEL-marked copy. In (33d), γ is uniquely labeled as YP, since one of the constituents α does not have any label. Then, as shown in (33e), when labeling detects the highest non-DEL-marked α and assigns the label of XP to it, all copies of α receive the same label across the board.

Next, consider the case where the highest copy occupies the phase edge, as shown in (34).

(34) a. {α, {PH, {$_{\delta}$ α, Z … {$_{\gamma}$ α, β}}}}

b. {α, {PH, {$_{\delta}$ α_{DEL}, Z … {$_{\gamma}$ α_{DEL}, β}}}}

FC's identification of αs in γ as copies

c. {α, {PH, {$_{\delta}$ α_{DEL}, Z … {$_{\gamma}$ α_{DEL}, YP}}}} *labeling of β as YP*

d. {α, {PH, {$_{\delta}$ α_{DEL}, Z … {$_{YP}$ α_{DEL}, YP}}} *labeling of γ as YP*

e {α, {PH, {$_{ZP}$ α_{DEL}, Z … {$_{YP}$ α_{DEL}, YP}}}

labeling of the entire phasal complement δ *as ZP*

f. $\{\alpha, \{PH, \{_{ZP}\ XP_{DEL}, Z \ldots \{_{YP}\ XP_{DEL}, YP\}\}\}\}$

across-the-board labeling of αs as XP

In (34a), α undergoes IM within the phasal complement and then, undergoes further IM to the phase edge. In (34b), after the phase is completed, FC assigns a copy relation to the three occurrences of α and marks DEL on the lower αs. Then, bottom-up labeling applies within the phasal complement δ. First, as shown in (34c), β is labeled as YP. On the other hand, labeling α in γ is put off based on the information that the α is a DEL-marked copy. In (34d), γ is uniquely labeled as YP, since α does not have any label. Subsequently, bottom-up labeling encounters the highest DEL-marked α in δ. Since it only has access to the information that the α in δ is just a copy, its labeling is put off as well as the lower copy of α in γ. In this case, the DEL-marked αs are labeled after bottom-up labeling reaches the stage where it labels the whole transfer domain. Thus, in (34e), the transfer domain δ is labeled as, for example, ZP, and then, in (34f), the DEL-marked αs are labeled as XP across the board by labeling the highest DEL-marked copy. Note that at the stage of labeling of the whole transfer domain, labeling by minimal search has access to the information as to which copy is the highest one, i.e. the highest DEL-marked copy. Thus, copy invisibility is derived from the postponement of labeling DEL-marked copies, under the proposal that copies receive the same label across the board, which reduces the number of applications of search and labeling. In this way, the copy invisibility to labeling is deduced from economy considerations.

In the rest of this section, the analysis of the two stranding phenomena analyzed in section 3 will be restated in terms of the proposed deduction of copy invisibility.

First, the example of (35a), where the quantifier *all* is not floated, is analyzed as having the structure in (35b).

(35) a. Mary hates all the students. (Sedrins (2011: 207))

b. … {{Mary}, {*v*, {VP {γ_2 α_2, β_2,}, {VP V, {γ_1 {α_1 all}, {β_1 the, students}}}}}}

In (35b), the entire set of γ undergoes IM to the specifier of VP. The *v*P phase is completed and FC applies and identifies γ_1 as a copy. Then, bottom-up labeling applies to the transfer domain. Since γ_1 is a copy marked with DEL, here shaded, labeling of the whole copy (and its constituents α_1 and β_1) is put off until labeling detects the highest copy in the transfer domain. After the highest copy γ_2 is detected and labeled, the lower copy receives the same label across the board. Then, let us consider how γ_2 in the landing site is labeled. First, α_2 and β_2 are labeled as FP and DP, respectively. At the same time, the lower copies α_1 and β_1 receive the same labels. Then, γ_2 can be labeled as either FP or DP. Since γ_2 is the highest copy within the transfer domain, the same label FP or DP is also assigned to the lower copy γ_1. The DP label of γ_1 satisfies the verb's selectional requirement at the CI interface, so only the derivation where the DP label is assigned to γ_1 and γ_2 converges.

Next, the example of (36), where *all* is floated, has the structure in (37).

(36) The students were all failed by Mary. (Bošković (2004: 696))

(37) a. {{γ_2 α_2, β_2,}, {*v*, {VP V, {γ_1 {α_1 all}, {β_1 the, students}}}}}

b. {CP C, {TP β_3, {TP T, {*v*P {γ_2 α_2, β_2,}, {*v*P *v*, {VP}}}}}}

In (37a), the entire set of γ undergoes IM from the complement of VP to the *v*P edge. After the *v*P phase is completed and FC applies, bottom-up labeling applies to the complement of *v*P. Let us consider the labels of γ_1 and its constituents. This issue was made open in section 3.2. In (37a), γ_1 and its constituents are DEL-marked copies. Thus, the determination of their labels is put off (and thus, the whole transfer domain is labeled as VP). Then, labeling first applies to its constituents, and α_1 and β_1 are labeled as FP and DP, respectively. Thus, γ_1 is then labeled as either FP or DP. In

(37a), γ_1 is labeled as DP for V's selectional restriction. Next, in the CP phase in (37b), β undergoes movement from γ_2. FC applies to the CP phase and identifies β_2 as a copy. Then, the label of γ_2 is uniquely determined as FP after α_2 is labeled as FP. This does not yield an illegitimate outcome because the position of γ_2 is not subject to any restrictions of selection and clausal typing. Thus, quantifier float in (36) is possible.

Next, let us illustrate how the examples of (38) are ruled out, as argued in section 3.2, due to the violation of V's selectional requirement.

(38) a. *The students arrived all.
b. *The students were arrested all.
c. *Mary hates the students all. (Bošković (2004: 682))

(39) *{(β), {*v*, {$_{VP}$ (β), {$_{VP}$ V, {$_{\gamma}$ {$_{\alpha}$ all}, {$_{\beta}$ the, students}}}}}}

In (39), β undergoes IM out of γ. In the cases of (38a, b), it moves to the *v*P edge, while in the case of (38c), it moves to the specifier of VP. That is, in all cases, *all* is stranded in the complement of VP by the IM of β. Therefore, after the *v*P phase is completed, β in γ is identified as a copy by FC. Bottom-up labeling then postpones the labeling of the lower β until the highest copy is detected or labeling of the transfer domain is finished. Thus, γ is automatically labeled as FP after α is labeled as FP. As a result, the derivation of (39) crashes because the FP label of γ violates the selectional restriction of V.

Next, let us consider the cases of VP-adverbs stranded by VP-preposing. The examples of (40) are analyzed as having the structure in (41):

(40) a. *Ralph says that he will clean his room meticulously, and [clean his room] he will meticulously. (Aarts (2018: 204))

b. *Ralph says that he will carefully clean his room, and [clean his room] he will carefully. (Aarts (2018: 205))

(41) *{$_{CP}$ β_2, {$_{CP}$ C, {$_{TP}$ DP, {$_{TP}$ T, {$_{\delta}$ {$_{\gamma}$ meticulously/carefully}, {$_{\beta 1}$ Subj, {$_{\alpha}$ $v_{[+Top]}$, {VP}}}}}}}}}

In (41), β undergoes IM from δ to the CP edge. After the CP phase is completed, FC identifies β_1 in δ as a copy. Then, bottom-up labeling applies to the transfer domain TP. Since β_1 in δ and its constituents are DEL-marked copies and labeling of them is deferred, only γ is labeled as AdvP. As a result, labeling uniquely determines the label of δ as AdvP. At this stage, δ has already been assigned AdvP and so, the outcome is evaluated as ill-formed due to the failure of the formation of a selectional relation with T, regardless of whether β is labeled after labeling applies to the transfer domain.

Based on the analysis given so far, we predict that if VP-preposing pied-pipes the VP-adverbs, the resulting sentences sound acceptable. The schematic structure is given in (42).

(42) {$_{CP}$ {$_{\delta 2}$ γ_2, β_2}, {$_{CP}$ C, {$_{TP}$ DP, {$_{TP}$ T, {$_{\delta 1}$ {$_{\gamma 1}$ meticulously/carefully}, {$_{\beta 1}$ DP, {$_{\alpha 1}$ $v_{[+Top]}$, {VP}}}}}}}}}

In (42), the entire set of δ undergoes IM to the specifier of CP. Since δ_1 itself is a DEL-marked copy, the labeling of α_1, β_1 and γ_1 are also postponed. After labeling applies to the transfer domain, β_1 is regarded as an XP-YP configuration which consists of DP and *v*P. Here if DP is used as the label of β_1, it cannot form a modification relation with the adverb *meticulously*/*carefully* at the CI interface under the assumption that modification is also a type of selection in a broad sense. Thus, β_1 must be labeled as *v*P. Then, labeling applies to δ_1, which also forms an ambiguous labeling configuration. In order to satisfy T's selectional restriction at the CI interface,

the *v*P label is assigned to δ_1. Next, consider the label of δ_2, which is included in the different transfer domain from δ_1. As assumed in section 3.1, clauses must have their edges occupied by elements of appropriate types for clausal typing purposes. In (42), the element must be headed by $v_{[+\text{Top}]}$ in order for CP to be interpreted as a topicalization construction. If so, *v*P must become the label of δ_2 so that $\{v\text{P}_{[+\text{Top}]}$, CP$\}$ is formed. Thus, (42) does not give rise to any problem in terms of selection and clausal typing. This is borne out by (43), where the VP-adverbs are fronted with *v*P.

(43) a. Ralph says that he will clean his room meticulously, and [clean his room meticulously] he will. (Aarts (2018: 204))

b. Ralph says that he will carefully clean his room, and [carefully clean his room] he will. (Aarts (2018: 205))

So far, we have shown that our labeling system in section 3.1 can still account for the distributions of floating quantifiers and VP-adverbs in VP-preposing if the copy invisibility our system makes full use of is deduced from economy considerations in such way as discussed in this section.[12]

Attentive readers might have already noticed that in (37), the two copies of the same SO, γ_1 and γ_2, are labeled differently: γ_1 and γ_2 are labeled as DP and FP, respectively. Such a case will happen under our deduction of copy invisibility when they are separated by a transfer domain. We have proposed so far that labeling applies upon transfer to the phasal complement and copies within a single transfer domain receive the same label across the board in order to minimize the number of applications of the labeling procedure. However, this does not necessarily mean that all copies within the entire sentence are assigned the same label. That is, different labels may be assigned to copies if they are separated by a transfer domain, as in the case of γ_1 and γ_2 in (37), because labels are determined within each transfer domain.

In (37), the set γ_1 of {FP, DP} in the complement position of the verb is labeled as DP for the selectional requirement, while γ_2 at the *v*P edge is labeled as FP by virtue of DP's invisibility to labeling. In section 5.1, as a further consequence of this proposal, we present cases where the copies of the XP-YP configuration are labeled differently to meet the selectional and clausal typing requirements imposed within each transfer domain.

However, it should be noted that copies in different transfer domains may not always be labeled differently. Consider the examples of (44).

(44) a. Whatever books she has *is/are marked up with her notes.
(Bresnan and Grimshaw (1978: 339))

b. What books he has written hasn't/*haven't been established.
(McCawley (1988: 432))

The number agreement and the selectional restriction of the verb *mark* in (44a) show that the subject in the matrix clause is interpreted as a free relative. On the other hand, those in (44b) show that the subject in the matrix clause is interpreted as an interrogative clause. As argued in section 2.2, both a free relative and an interrogative clause are analyzed as forming {*wh*P, CP}: if it is labeled as *wh*P, it is interpreted to be a free relative; it is interpreted to be an interrogative clause if it is labeled as CP. Then, the examples of (44a, b) are analyzed as (45a, b), respectively.

(45) a. $\{_{TP}\ \{_{whP}\ wh\text{P, CP}\},\ \{_{TP}\ \text{T, …}\ \{_{VP}\ \text{mark, }\{_{whP}\ wh\text{P, CP}\}\}\}\}$ (44a)

b. $\{_{TP}\ \{_{CP}\ wh\text{P, CP}\},\ \{_{TP}\ \text{T, …}\ \{_{VP}\ \text{establish, }\{_{CP}\ wh\text{P, CP}\}\}\}\}$ (44b)

As shown in (45a), the subject should be labeled as *wh*P, given the interpretation as a free relative, and its copy in the original position should also be labeled as *wh*P for the selectional requirement of the verb *mark*. On the other hand, in (45b), the subject

should be labeled as CP, because of the interpretation as an interrogative clause, and its lower copy should also be labeled as CP for the selectional requirement of the verb *establish*. In this way, the examples in (45) show that copies appearing in different transfer domains receive the same label when such labeling is required for interpretation. We leave a more detailed investigation of this issue for future research. Nonetheless, as mentioned above, the proposal in this paper predicts that copies, in principle, can receive different labels if they are included in different transfer domains.

5. Consequences

5.1. Copies and Labels

Our proposal predicts that copies can be assigned different labels when they occur in different transfer domains, as follows.

(46) $\{_{\mathbf{XP}}$ XP, YP$\}$ … {PH $\overbrace{\{$ … $\{_{\mathbf{YP}}$ XP, YP$\}\}}$
Transfer Domain 2 Transfer Domain 1

It will be shown in this subsection that the prediction is borne out by such constructions as degree fronting and so-called discontinuous spellout. First, let us consider the cases of degree fronting. Relevant examples of degree fronting are given in (47). The adjectives with degree expressions (hereafter, Deg(ree)P) appear on the left side of the indefinite article.

(47) a. He's that/too/as/so reliable a man. (Bresnan (1973: 287))
b. How tall a man did Jane see? (Hendrick (1990: 249))

As shown in (47), a variety of degree expressions (*that*, *too*, *as*, so, *how*) are used in degree fronting. In (47a), the whole nominal phrase involving degree fronting

functions as a predicate. In (47b), the entire noun phrase *how tall a man* is moved from the object position to the sentence-initial position. As will be clear later, this paper argues that in (47b), the moved nominal expression receives a different label at the sentence-initial position and the original position.

Noun phrases involving degree fronting are argued to be an XP-YP configuration by many researchers, though the details of their analyses differ in, for example, whether it adopts the movement analysis or the base-generation analysis of the DegP (e.g. Bresnan (1973), Baker (1989), Radford (1989), Hendrick (1990), Kennedy and Merchant (2000), Matushansky (2002) and Troseth (2009)). Let us assume the following XP-YP configuration for noun phrases involving degree fronting:

(48) $\{\{_{\text{DegP}}$ how tall$\}, \{_{\text{DP}}$ a man$\}\}$

Thus, it produces ambiguous labeling, as shown in (49).

(49) $\{_{\alpha}$ DegP, DP$\}$ α=DegP
α=DP

Given this, (47b), repeated as (50), is analyzed as in (51), where irrelevant details are omitted.

(50) How tall a man did Jane see? (Hendrick (1990: 249))

(51) a. … $\{v, \boxed{\{_{\text{VP}} \{_{\alpha 2}\ \text{DegP}_{[+\text{wh}]}, \text{DP}_{[\varphi]}\}, \{_{\text{VP}}\ \text{V}_{[\varphi]}, \{_{\alpha 1}\ \text{DegP}_{[+\text{wh}]}, \text{DP}_{[\varphi]}\}\}\}}\}$

b. $\boxed{\{_{\text{CP}} \{_{\alpha 3}\ \text{DegP}_{[+\text{wh}]}, \text{DP}_{[\varphi]}\}, \{_{\text{CP}}\ \text{C}\ ,}$ …

The boxed areas in (51a, b) indicate that α_3 is included in a different transfer domain from α_1 and α_2. In (51a), α_1 and α_2 are required to be labeled as DP because the verb

see selects a nominal element. On the other hand, turning to (51b), α_3 must be labeled as DegP. This is because the $\text{DegP}_{[+\text{wh}]}$-CP configuration is needed for typing the clause as interrogative. It is not DP that has the [+wh]-feature, but DegP containing *how*. Therefore, although α_1, α_2 and α_3 form a copy relation, they are analyzed as having different labels, due to the restrictions on each position.

The same argument holds for the following examples of exclamatory constructions.

(52) a. What lovely teeth you have, my dear! (Elliot (1974: 233))

b. What a delicious dinner you've made!

(Zanuttini and Portner (2003: 54))

Assuming that the fronted nominal is analyzed as an XP-YP structure consisting of *wh*P headed by *what* and DP *lovely teeth*/*a delicious dinner*, the examples of (52) have the following derivation:

(53) a. … $\{v, \boxed{\{_{\text{VP}} \{_{\alpha 2}\ wh\text{P}_{[+\text{excl}]}, \text{DP}_{[\varphi]}\}, \{_{\text{VP}}\ \text{V}_{[\varphi]}, \{_{\alpha 1}\ wh\text{P}_{[+\text{excl}]}, \text{DP}_{[\varphi]}\}\}\}}\}$

b. $\boxed{\{_{\text{CP}} \{_{\alpha 3}\ wh\text{P}_{[+\text{excl}]}, \text{DP}_{[\varphi]}\}, \{_{\text{CP}}\ \text{C}, \}}$ …

As in the case of degree fronting, α_1 and α_2 are labeled as DP for selection at the stage in (53a). On the other hand, α_3 is assigned the *wh*P label upon transfer because *wh*P and CP must form the set of $\{wh\text{P}_{[+\text{excl}]}, \text{CP}\}$ for clausal typing.

Next, let us turn to the following examples:

(54) a. You think they went *how far inside the tunnel*?

b. *How far inside the tunnel* do you think they went?

(Radford (2016: 361))

In (54b), *how far inside the tunnel* moves from the complement position of the verb in the embedded clause to the sentence-initial position. (54b) can be analyzed in the same way as the cases of degree fronting and exclamatory constructions by assuming that the moved element forms an XP-YP configuration: in the original position, the set of {*wh*P, PP} is labeled as PP for the selectional requirement of the verb *go*, while in the final landing site, it is labeled as *wh*P for clausal typing. If *how far inside the tunnel* forms an XP-YP configuration, we predict that the PP *inside the tunnel* can be stranded by IM of *how far*, as shown in (55) (the lower copy of the external argument is omitted due to space limitations).

(55) a. $\{_{CP}$ *wh*P, $\{_{CP}$ C, … $\{_{VP}$ go, $\{_{\alpha}$ *wh*P, PP$\}\}\}\}$

b. $\{_{CP}$ *wh*P, $\{_{CP}$ C, … $\{_{CP}$ $\{_{\alpha 2}$ *wh*P, PP$\}$, $\{_{CP}$ C, … go, $\{_{\alpha 1}$ *wh*P, PP$\}\}\}\}$

In (55a), PP is stranded in the complement position of the verb *go*. In this case, since the verb *go* selects PP, no problem arises even if *wh*P undergoes IM and cannot be a candidate for the label of α. In addition, a *wh*P-CP configuration can also be created by moving only *wh*P, so the requirement of clausal typing will be observed. In (55b), PP is stranded in the embedded CP phase edge. In this case, PP can be chosen as the label of α_1 for selection because both constituents in α_1 are lower copies. Moreover, since no restrictions are imposed on the label of α_2, again, no problem arises even if *wh*P is a lower copy and PP is automatically selected as the label. This is borne out by the following examples of so-called discontinuous spellout:

(56) a. *How far* do you think they went *inside the tunnel*?

b. *How far* do you think *inside the tunnel* they went?

(Radford (2016: 361))

In light of the discussion above, our labeling mechanism predicts that degree

fronting like (57) is also well-formed, where only DegP move, because the DP label of α and the DegP label in the edge of CP meet the requirements for selection and clausal typing by the CI interface, respectively.

(57) $\{_{CP}$ DegP, $\{_{CP}$ C, … $\{_{VP}$ V, $\{_{\alpha}$ DegP, DP$\}\}\}\}$

However, as shown in (58), such sentences are ungrammatical, contrary to the prediction.

(58) a. Texas is indeed that large a state.
b. *It is indeed **that large** that Texas is a state. (Clefting)
c. *What Texas is indeed a state is **that large**. (Pseudoclefting)
d. *… and **that large** Texas is indeed a state. (Topicalization)
e. *… How is Texas indeed a state? - ***That large**. (Answer fragment)
(cf. Osborne (2021: 257))

We assume here that (58) can be ruled out independently of labeling: by Left Branch Condition imposed on noun phrases in English (Ross (1986)), which prohibits extraction of the leftmost constituent of a nominal expression from the set labeled as DP. In fact, such extraction is possible in Japanese (see Yatabe (1996) and Takahashi and Funakoshi (2013)) and Serbo-Croatian (see Bošković (2005)), which may be explained if we assume that Left Branch Condition does not hold for those languages. Therefore, the ungrammaticality of (58) would not cause a crucial problem for our proposal.

5.2. Small Clauses and Nominals with Secondary Predicates

Section 2.2 has shown that the ambiguity of the sentence in (59) is deducible from Mizuguchi's (2019) labeling system.

(59) I believed John sober.

a. I believed John when he was sober.

b. I believed at some point in time “that John was sober”.

(Safir (1983: 733))

Small clauses have often been analyzed as forming a constituent (e.g. Safir (1983)). Carreira (2019) argues that nominals with object-oriented secondary predicates also form a constituent, in opposition to Williams (1980), Stowell (1981,1983) and Rothstein (1983, 2001), explaining the ambiguity of (59) in terms of adjunction. This paper adopts the argument by Carreira (2019) that small clauses and nominals with object-oriented secondary predicates both form an XP-YP configuration in (60). If α is labeled as DP, it provides the nominal interpretation shown in (59a). On the other hand, if α is labeled as YP, a clausal interpretation arises, as in (59b).

(60) $\{_{\alpha}\ \{_{DP}$ John$\}, \{_{YP}$ sober$\}\}$ α=DP (59a)

α=YP (59b)

This yields the following predictions, under our proposal:

(61) a. DP can be extracted out of α if it should be interpreted as a clausal element.

DP … $\{_{\alpha}$ DP, YP$\}$ α=YP

b. YP can be extracted out of α if it should be interpreted as a nominal element.

YP … $\{_{\alpha}$ DP, YP$\}$ α=DP

c. YP cannot be extracted out of α if it should be interpreted as a clausal element.

*YP … $\{_{\alpha}$ DP, YP$\}$ α=DP

d. DP cannot be extracted out of α if it should be interpreted as a nominal element.

*DP … {$_{\alpha}$ DP, YP} α=YP

The predictions in (61a, b) are borne out by (62) and (63), respectively.

(62) a. Who do you consider the best candidate? (Nakajima (1986: 235))

b. Who do you consider so clever?

(Jiménez-Fernández and Spyropoulos (2013: 187))

(63) How rare did John eat the meat? (Hoshi (1992: 2))

In (62), the subject is extracted out of the small clause, stranding the predicate. In (63), the secondary predicate undergoes *wh*-movement and the object DP remains in the original position.

However, contrary to the prediction in (61c), the predicate of the small clause can be extracted, as shown in (64).

(64) a. What did you say you called him?

b. What did they consider her? (Aarts (1992: 167))

Based on the structure in (60), (64) should be excluded due to the following structure:

(65) *YP … {call/consider, {$_{DP}$ DP, YP}}

{DP, YP} must be labeled as YP to be interpreted as a small clause selected by *call* and *consider*. However, IM of YP makes it impossible to label the set as YP. As a result, (64) is incorrectly ruled out.

This problem does not arise in Mizuguchi (2019), who argues that copies are visible to minimal search, and syntax does not care about the distinction between copies and non-copies: YP can be the label in (65). However, this paper can also avoid this problem by assuming that Pred head (Bowers (1993)) or R(elator) head (den Dikken (2006)) takes YP as its complement, as follows.

(66) $\{_{\alpha}$ DP, $\{_{\text{RP/PredP}}$ R/Pred, YP$\}\}$

Based on (66), the examples of (64) are reanalyzed as having the following structure:

(67) YP … {call/consider, $\{_{\text{RP/PredP}}$ DP, $\{_{\text{RP/PredP}}$ R/Pred, YP$\}\}\}$

In (67), it is YP that is extracted out of {DP, RP/PredP}, not RP/PredP. As a result, RP/PredP can become the label of the set, allowing the interpretation of the small clause.

Finally, the prediction in (61d) is also not borne out by (68).

(68) a. The fish you should never eat raw. (Larson (2014: 306))

b. What kind of fish does John eat raw?

(Rochemont and Culicover (1991: 76))

If *raw* remains in the original position, namely the complement position of the verb, (68) is incorrectly ruled out under our proposal, as shown in (69).

(69) *DP … {eat, $\{_{\text{RP/PredP}}$ DP, RP/PredP$\}\}$

One possible explanation may be that *raw* in (68) is stranded in the *v*P edge, not in the complement position of the verb.

(70) DP … {$_{vP}$ {$_{\alpha 3}$ DP, RP/PredP}, {$_{vP}$ Subj, {$_{vP}$ *v*, {$_{VP}$ {$_{\alpha 2}$ DP, RP/PredP}, {$_{VP}$ V, {$_{\alpha 1}$ DP, RP/PredP}}}}}}

In (70), the entire set of α moves up to *v*P and then, DP is extracted out of α_3. As a result, *v*P and α_3 form a set of {α_3, *v*P}. In this case, even if RP/PredP becomes the label of α_3, the outcome of labeling is ruled in, because the label of DP is not required in the relevant position by the CI interface. Then, if the set of {RP/PredP, *v*P} is externalized so that *v*P precedes RP/PredP, (68) can be derived from the structure in (70).

6. Conclusion

This paper has proposed the labeling mechanism shown in (71), based on Chomsky (2013, 2015) and Mizuguchi (2019).

(71) a. {$_{\alpha}$ H, XP} α=H
b. {$_{\alpha}$ XP, YP} α=XP/YP
c. XP … {$_{\alpha}$ XP, YP} α=YP

In our proposal, minimal search identifies either XP or YP as the label of the set {XP, YP}. However, as shown in (71c), if XP is designated as a lower copy by FC, YP is uniquely selected as the label of the set because labeling XP itself is put off. We have argued that the same label must be assigned to copies in a single transfer domain when bottom-up labeling detects the highest copy in the domain. In cases where the highest copy is outside of the domain, copies are labeled across the board after the entire phasal complement is labeled, at which point labeling has access to the information as to which copy is the highest copy in the transfer domain. This paper has proposed that this across-the-board labeling follows from economy considerations because it reduces the number of applications of labeling to a

minimum. Furthermore, this paper has argued that labels are ruled in or out at the CI interface. More precisely, labels are subject to selection and clausal typing requirements at the CI interface. This proposal has accounted for (i) the generalization that quantifiers cannot be floated in θ-positions and (ii) the fact that VP-adverbs cannot be stranded by VP-preposing. As a consequence of our proposal, we have offered several examples such as degree fronting, in which different labels can be assigned to copies in different transfer domains.

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Notes

1) According to Mizuguchi (2019), the ungrammaticality of (3b) is accounted for by assuming that in English, *wh*-phrases can be interpreted only if it merges to a set of CP whose head carries the Q-feature. On the other hand, in German, there is another option for them to be interpreted: they are in the c-command domain of *wh*-expletives in the specifier of CP.

2) See Obata (2016) for another solution to the labeling ambiguity yielded by the partial *wh*-movement.

3) Mizuguchi's (2019) ambiguous labeling can also be extended to the subject-*because* construction and predicational *wh*-pseudocleft. See Matsuyama (2022).

4) Murphy and Shim (2020) take a different position from both Chomsky (2013, 2015) and Mizuguchi (2019) regarding copy invisibility, in that they argue that all copies, including the highest copy, are invisible to labeling. See Murphy and Shim (2020) for further details.

5) Chomsky (2015) provides an account of criterial freezing (Rizzi (2006)) in terms of labeling. In (i), the *wh*-phrase *which dog* undergoes further IM from the criterial position, the specifier of CP in the embedded clause.

(i) *which dog do you wonder [$_{\alpha}$ which dog [C_Q John likes which dog]]

(Chomsky (2015: 8))

According to Chomsky (2015), α is labeled as C_Q rather than <Q, Q> and is interpreted as a yes-no question, which yields gibberish at the CI interface. Although Rizzi (2017) also tries to capture criterial freezing from the viewpoint of labeling, we explain the ungrammaticality of (i) by adopting another suggestion by Rizzi (2017) that the example of (i) violates Bijection Principle (Koopman and Sportiche (1982)): in (i), the two *wh*-operators binds a single variable at the CI interface.

6) In the case of partial *wh*-movement constructions, we assume with Cheng (2000) that the *wh*-expletive *was* in the specifier of the matrix CP is the [+wh]-feature of the *wh*-phrase which undergoes partial movement. Thus, due to the presence or absence of the [+wh]-feature, the matrix clause is typed as interrogative, while the embedded clause that includes the *wh*-phrase is typed as declarative. See Cheng (1991) for other cases of clausal typing.

7) Note that the φ-agreement between the subject and T does not take place for the purpose of labeling the set of {DP, TP}, which can be labeled as either DP or TP independently from the φ-agreement under our analysis.

8) Our analysis can explain the distribution of the floating quantifier whose associate is the external argument. Consider (i).

(i) a. The students all completely understood.
b. *The students completely all understood.
c. The students obviously all understood.
d. The students all obviously understood. (Bošković (2004: 685))

The examples of (i) show that the floating quantifier *all* can either precede or follow the sentential adverb *obviously*, whereas it cannot follow the manner adverb *completely*. The example of (ib) is analyzed as having the following structure:

(ii) *{$_{CP}$ C, {$_{TP}$ DP, {$_{TP}$ T, {$_{vP}$ completely, {$_{vP}$ {$_{\alpha}$ FP, DP}, {$_{vP}$ *v*, VP}}}}}}

The ungrammaticality of (ib) is accounted for by appealing the selectional relation between the verb *understand* and its external argument: in (ii), it fails to select DP *the students* because the FP label is assigned to the set of α at the position where the external argument is introduced. On the other hand, the examples of (ia, c, d) are ruled in at the CI interface because FP *all* occupies the position which is not subject to any selectional restriction. See also Kawamitsu (2021) for another analysis of quantifier float in terms of labeling.

9) In fact, PP adjuncts can be stranded by VP-preposing, as shown in (i) (see Pesetsky (1995) and Bode (2020)).

(i) He could go to the party with a friend.
  a. … and go to the party with a friend he did.
  b. … and go to the party he did with a friend. (Bode (2020: 11))

Our proposal predicts that *with a friend* cannot be stranded if it is in the position which is related to the selectional relation with the verb *go*. For the moment, this paper assumes that such a PP adjunct undergoes extraction and avoids violating the restrictions imposed by the interfaces.

10) Thoms and Walkden (2019) point out that VP-ellipsis and VP-preposing are commonly impossible when they strand adverbs like *probably*, as shown in (i).

(i) a. *You said John would vote Green, and vote Green he will probably.
  b. *Fred has not voted Green, but Bill has probably.
(Thoms and Walkden (2019: 167))

This paper analyzes (ia) as ungrammatical because T selects AdvP at the CI interface, but (ib) is ruled out by another factor. Let us consider (ii).

(ii) a. *Fritz has read this book, and Otto has probably, too.
  b. Fritz has read this book, and Otto probably has, too. (Sag (1978: 149))

As shown in the examples in (ii), the grammaticality of adverb-stranding VP-ellipsis is improved when *probably* precedes the auxiliary. Based on this observation, (ib) and (iia) are assumed to be excluded by an independent constraint imposed on the position of the adverbs like *probably*.

11) We assume that an SO to be deleted at the PF side is visible to minimal search,

unlike Emoto (2013), who assumes its invisibility to minimal search.

12) This paper has restricted the discussion of copy invisibility to the case of IM. However, the labeling mechanism proposed in this paper may also be extended to the case of the so-called Markovian gap (M-gap) in Chomsky's (2021) term, which is a copy relation assigned to externally merged elements by FC. That is, we may assume that lower copies in M-gaps are also invisible to labeling. Let us consider the following example of obligatory control, in which *all* is floated.

(i) *They tried all to leave. (Baltin (1995: 200))

(i) can be analyzed as follows:

(ii) … $\{_{vP}$ $\{_{\delta}$ they$\}$, $\{_{vP}$ *v*, $\boxed{\{_{VP}$ try, $\{_{CP}$ C, $\{_{TP}$ $\{_{\gamma 2}$ α_2, $\beta_2\}$, $\{_{TP}$ T, $\{\{_{\gamma 1}$ $\{_{\alpha 1}$ all$\}$, $\{_{\beta 1}$ they$\}\}$, $\{_{vP}$ *v*, $\}$ $\{_{VP}$ leave$\}\}\}\}\}\}\}\}\}$

Given the assumption that control clauses do not constitute phases (see e.g. Kanno (2008) and Grano and Lasnik (2018)), the boxed area in (ii) is a single transfer domain. In (ii), γ_1 undergoes EM to *v*P and then, undergoes IM to the specifier of TP in the embedded clause. Then, δ undergoes EM to *v*P in the matrix clause. After the matrix *v*P is completed, FC assigns a copy relation to γ_1 and γ_2, e.g. $<\gamma_2, \gamma_1>$, and β_2 and δ, e.g. $<\delta, \beta_2>$, which is a configuration of an M-gap. Subsequently, bottom-up labeling applies to the transfer domain, namely the boxed area. The labeling of γ_1 and its constituents is put off until γ_2 is labeled and the labeling of β_2 is also put off until bottom-up labeling within the transfer domain is finished because β_2 is marked with DEL. Thus, β_2 is invisible when γ_2 is labeled. Since α_2 is not a copy and can be labeled as FP, γ_2 is automatically labeled as FP. Then, γ_1 receives the same FP label. As a result, the FP label of γ_1 violates the selectional restriction of *leave*, resulting in the crash of the derivation. Thus, our proposal can

account for the impossibility of (i), which involves an M-gap. However, we leave further discussion of this issue for future research.

References

Aarts, Bas (1992) *Small Clauses in English*, Mouton de Gruyter, Berlin.

Aarts, Bas (2018) *English Syntax and Argumentation*, 5th ed., Palgrave Macmillan, London.

Aelbrecht, Lobke and Liliane Haegeman (2012) "VP-Ellipsis is not Licensed by VP-Topicalization," *Linguistic Inquiry* 43, 591-614.

Baker, Carl L. (1989) *English Syntax*, MIT Press, Cambridge, MA.

Baltin, Mark R. (1995) "Floating Quantifiers, PRO, Predication," *Linguistic Inquiry* 26, 199-248.

Bode, Stefanie (2020) *Casting a Minimalist Eye on Adjuncts*, Routledge, New York.

Bošković, Željko (2004) "Be Careful Where You Float Your Quantifiers," *Natural Language and Linguistic Theory* 22, 681-742.

Bošković, Željko (2005) "On the Locality of Left Branch Extraction and the Structure of NP," *Studia Linguistica* 59, 1-45.

Bowers, John (1993) "The Syntax of Predication," *Linguistic Inquiry* 24, 591-656.

Bresnan, Joan (1973) "Syntax of the Comparative Clause Construction in English," *Linguistic Inquiry* 4, 275-343.

Bresnan, Joan and Jane Grimshaw (1978) "The Syntax of Free Relatives in English," *Linguistic Inquiry* 9, 331-391.

Brodie, Belinda Lea (1985) "English Adverb Placement in Generalized Phrase Structure Grammar," *OSU Working Papers in Linguistics* 31, 1-63.

Carreira, Marcos Barbosa (2019) "The Ambiguity of Projection and the Chomskyan Adjunction as a Formal Way of Approaching Predication in Small Clauses and

Secondary Predication," *Diadorim* 21, 227-250.

Cecchetto, Carlo and Caterina Donati (2015) *(Re)labeling*, MIT Press, Cambridge, MA.

Cheng, Lisa Lai-Shen (1991) *On the Typology of Wh-Questions*, Doctoral dissertation, MIT.

Cheng, Lisa Lai-Shen (2000) "Moving Just the Feature," *Wh-Scope Marking*, ed. by Uli Lutz, Gereon Müller and Arnim von Stechow, 77-99, John Benjamins, Amsterdam.

Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 1-52, MIT Press, Cambridge, MA.

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, Amsterdam.

Chomsky, Noam (2021) "Minimalism: Where Are We Now, and Where Can We Hope to Go," *Gengo Kenkyu* 160, 1-41.

Den Dikken, Marcel (2006) *Relators and Linkers: The Syntax of Predication, Predicate Inversion, and Copulas*, MIT Press, Cambridge, MA.

Donati, Caterina and Carlo Cecchetto (2011) "*Relabeling Heads: A Unified Account for Relativization Structures*," *Linguistic Inquiry* 42, 519-560.

Elliot, Dale E. (1974) "Toward a Grammar of Exclamations," *Foundations of Language* 11, 231-246.

Emoto, Hiroaki (2008) "Phases as the Only Movable Elements," *Explorations in English Linguistics* 22, 1-31.

Emoto, Hiroaki (2013) "The Labeling Algorithm and Obligatory Ellipsis," *Explorations in English Linguistics* 27, 39-56.

Engels, Eva (2004) *Adverb Placement: An Optimality Theoretic Approach*, Doctoral

dissertation, University of Potsdam.

Engels, Eva (2010) “Adverb Placement in English VP Ellipsis Constructions,” *Memory, Mind and Language*, ed. by Hans Gotzsche, 149-162, Cambridge Scholars Publishing, Newcastle upon Tyne.

Ernst, Thomas (1984) *Toward an Integrated Theory of Adverb Position in English*, Indiana University Linguistics Club, Bloomington, Indiana.

Grano, Thomas and Howard Lasnik (2018) “How to Neutralize a Finite Clause Boundary: Phase Theory and the Grammar of Bound Pronouns,” *Linguistic Inquiry* 49, 465-499.

Hendrick, Randall (1990) “Operator Movement within NP,” *WCCFL* 9, 249-261.

Hoshi, Hidehito (1992) “Circumstantial Predicates, PRO, and D-Structure Adjunction,” *English Linguistics* 9, 1-20.

Huang, C.-T. James (1993) “Reconstruction and the Structure of VP: Some Theoretical Consequences,” *Linguistic Inquiry* 24, 103-138.

Jackendoff, Ray (1971) “Gapping and Related Rules,” *Linguistic Inquiry* 2, 21-35.

Jackendoff, Ray (1972) *Semantic Interpretation in Generative Grammar*, MIT Press, Cambridge, MA.

Jiménez-Fernández, Ángel L. and Vassilios Spyropoulos (2013) “Feature Inheritance, VP Phases and the Information Structure of Small Clauses,” *Studia Linguistica* 67, 185-224.

Johnson, Kyle (2001) “What VP-Ellipsis Can Do, and What It Can’t, but Not Why,” *The Handbook of Contemporary Syntactic Theory*, ed. by Mark Baltin and Chris Collins, 439-479, Blackwell, Oxford.

Kanno, Satoru (2008) “On the Phasehood and Non-Phasehood of CP,” *English Linguistics* 25, 21-55.

Kawamitsu, Jun (2021) “A Labeling Analysis of Quantifier Float in English,” *Kyushu University English Review* 63, 107-128.

Kennedy, Christopher and Jason Merchant (2000) “Attributive Comparative

Deletion," *Natural Language and Linguistic Theory* 18, 89-146.

Koopman, Hilda and Dominique Sportiche (1982) "Variables and the Bijection Principle," *The Linguistic Review* 2, 139-160.

Larson, Bradley (2013) "Arabic Conjunct-Sensitive Agreement and Primitive Operations," *Linguistic Inquiry* 44, 611-631.

Larson, Richard K. (2014) *On Shell Structure*, Routledge, New York.

Legate, Julie A. (2003) "Some Interface Properties of the Phase," *Linguistic Inquiry* 34, 506-516.

Lobeck, Anne (1995) *Ellipsis: Functional Heads, Licensing and Identification*, Oxford University Press, Oxford

Maeda, Masako (2018) "Ellipsis as Topicalization in Derivational Cartographic Structures," *English Linguistics* 34, 331-347.

Matsuyama, Tetsuya (2022) "Ambiguous Labeling and Non-Agreeing Subjects," *Studies in English Linguistics and Literature* 32, 79-92.

Matushansky, Ora (2002) *Movement of Degree/Degree of Movement*, Doctoral dissertation, MIT.

McCawley, James D. (1988) *The Syntactic Phenomena of English*, Volume 2, The University of Chicago Press, Chicago and London.

McDaniel, Dana (1989) "Partial and Multiple Wh-Movement," *Natural Language and Linguistic Theory* 7, 565-604.

McInnerney, Andrew (2022) "The Position of *Wh*-Subjects in Labeling Theory," to appear in *Linguistic Inquiry*.

Mizuguchi, Manabu (2019) "Ambiguous Labeling and Full Interpretation," *Studia Linguistica* 73, 563-603.

Murphy, Elliot and Jae-Young Shim (2020) "Copy Invisibility and (Non)-Categorial Labeling," *Linguistic Research* 37, 187-215.

Nakajima, Heizo (1986) "Three Empty Category Principles as Licensing Conditions on Binding Paths," *The Linguistic Review* 5, 223-245.

Obata, Miki (2016) “Unlabeled Syntactic Objects and their Interpretation at the Interfaces,” *NELS* 46, 63-70.

Oku, Satoshi (1998) *A Theory of Selection and Reconstruction in the Minimalist Perspective*, Doctoral dissertation, University of Connecticut.

Osborne, Timothy (2021) “Adjectives as Roots of Nominal Groups: The Big Mess Construction in Dependency Grammar,” *Folia Linguistica* 55, 231-263.

Pesetsky, David (1995) *Zero Syntax*, MIT Press, Cambridge, MA.

Phillips, Colin (2003) “Linear Order and Constituency,” *Linguistic Inquiry* 34, 37-90.

Radford, Andrew (1989) *The Syntax of Attributive Adjectives in English and the Problems of Inheritance*, ms., University of Essex.

Radford, Andrew (2016) *Analysing English Sentences*, 2nd ed., Cambridge University Press, Cambridge.

Riemsdijk, Henk, van (1982) “Correspondence Effects and the Empty Category Principle,” *Tilburg Papers in Language and Literature* 12, University of Tilburg.

Rizzi, Luigi (2006) “On the Form of Chains: Criterial Positions and ECP Effects,” *Wh-Movement: Moving On*, ed. by Lisa Lai-Shen Cheng and Norbert Corver, 97-133, MIT Press, Cambridge, MA.

Rizzi, Luigi (2017) “Types of Criterial Freezing,” *Research in Generative Grammar* 39, 1-21.

Rochemont, Michael S. and Peter W. Culicover (1991) “In Defence of Rightward Movement,” *Toronto Working Papers in Linguistics* 11, 75-86.

Ross, John Robert (1986) *Infinite Syntax!*, Ablex Publishing, New Jersey.

Rothstein, Susan (1983) *The Syntactic Forms of Predication*, Doctoral dissertation, MIT.

Rothstein, Susan (2001) *Predicates and Their Subjects*, Kluwer, Dordrecht.

Sabel, Joachim (2000) “Partial Wh-Movement and the Typology of Wh-Questions,” *Wh-Scope Marking*, ed. by Uli Lutz, Gereon Müller and Arnim von Stechow,

409-446, John Benjamins, Amsterdam.

Safir, Ken (1983) “On Small Clauses as Constituents,” *Linguistics Inquiry* 14, 730-735.

Sag, Ivan A. (1978) “Floated Quantifiers, Adverbs, and Extraction Sites,” *Linguistic Inquiry* 9, 146-150.

Sedrins, Adeilson Pinheiro (2011) “The Quantifier *Todos* (All) in Brazilian Portuguese: Word Order and Inflectional Patterns,” *Estudos Longuísticos* 40, 207-219.

Sportiche, Dominique (1988) “A Theory of Floating Quantifiers and its Corollaries for Constituent Structure,” *Linguistic Inquiry* 19, 425-449.

Stowell, Tim (1981) *Origins of Phrase Structure*, Doctoral dissertation, MIT.

Stowell, Tim (1983) “Subject across Categories,” *The Linguistic Review* 2, 285-312.

Suzuki, Maya (2022a) “On Adverb-Stranding VP Ellipsis,” *Bunka* (*Culture*) 85, 34-54.

Suzuki, Maya (2022b) “Hukushi Zanchi Doushiku nai Shouryaku no Bunseki: VP Shouryaku / Gijikuushoka to Hikaku shite (An Analysis of Adverb-Stranding VP-Ellipsis: A Comparison with VP-Ellipsis and Pseudogapping),” *Proceedings of the 94th General Meeting of the English Literary Society of Japan.*

Takahashi, Masahiko and Kenshi Funakoshi (2013) “On PP Left-Branch Extraction in Japanese,” *University of Pennsylvania Working Papers in Linguistics* 19, 237-246.

Takaki, Rumi (2020) *Phase and Ellipsis: A Minimalist Analysis of Silent Structures*, Kyushu University Press, Fukuoka.

Takano, Yuji (1995) “Predicate Fronting and Internal Subjects,” *Linguistic Inquiry* 26, 327-340.

Thoms, Gary and George Walkden (2019) “*v*P-Fronting with and without Remnant Movement,” *Journal of Linguistics* 55, 161-214.

Troseth, Erika (2009) “Degree Inversion and Negative Intensifier Inversion in the English DP,” *The Linguistic Review* 26, 37-65.

Williams, Edwin (1980) “Predication,” *Linguistic Inquiry* 11, 203-238.

Yatabe, Shuichi (1996) “Long-Distance Scrambling via Partial Compaction,” *MIT Working Papers in Linguistics* 29, 303-317.

Zagona, Karen (1988) *Verb Phrase Syntax: A Parametric Study of English and Spanish*, Kluwer, Dordrecht.

Zanuttini, Raffaella and Paul Portner (2003) “Exclamative Clauses: At the Syntax-Semantics Interface,” *Language* 79, 39-81.

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