Subject Extraction and the Two EPP Requirements*

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Abstract

This paper considers the EPP requirements imposed on subject extraction. I argue that Chomsky's (2015) analysis based upon the weak T requirement is insufficient for a full account of the *that*-trace effect, particularly in the light of the adverb effect. I propose that in addition to the modified version of the weak T requirement, the other EPP requirement must be met at PF: the Overt Subject Requirement (OSR) proposed by McFadden and Sundaresan (2018). I argue that subject extraction from the embedded clause is subject to these two requirements.

Keywords: EPP, Labeling Algorithm, prosody, *that*-trace effect, adverb effect

1.   Introduction

Since Chomsky (1982) first proposed the Extended Projection Principle (EPP) to ensure that clauses must have subjects, how to derive the EPP requirement has been a controversial issue in the literature. One of the most remarkable suppositions of late is Chomsky's (2015) attempt to attribute it to the theory of the Labeling Algorithm (LA). Chomsky (2015) tries to explain the EPP effect under the LA and thereby give an account for the *that*-trace effect illustrated in (1).

(1) a.   What did he say (that) Laura bought?

     b.   Who did he say (*that) bought the rutabaga?

Kunio Yanagisawa

The complementizer *that* does not interfere with the object extraction of *what* from the embedded clause in (1a). On the other hand, the subject extraction of *who* is not acceptable when *that* is overt as in (1b).

Chomsky's analysis of the *that*-trace effect, however, fails to account for the adverb effect, the amelioration triggered by an adverbial phrase, as illustrated in (2).

(2) a. *Who do you think that *t* made no reply?

   b. Who do you think that *unfortunately t* made no reply?

(Frey (2003: 196))

Intervention of adverbial phrases between the complementizer *that* and the trace of the subject can obviate the *that*-trace effect, which poses a serious problem to Chomsky's approach to (1). In this paper, I try to provide an alternative analysis of the *that*-trace effect by assuming that the EPP requirement must be satisfied in the syntactic and phonological components.

This paper is organized as follows: in section 2, I overview the two analyses of the *that*-trace effect proposed by Chomsky (2015) and McFadden and Sundaresan (2018), and point out their problems. I offer my proposal in terms of the two types of the EPP requirements in section 3, and give an alternative analysis for the *that*-trace effect and the adverb effect in section 4. Section 5 shows that my proposal can also correctly predict the ban on subject topicalization and its adverb effect. Section 6 concludes this paper.

2. Previous Studies

2.1. Chomsky (2015)

Chomsky's (2015) analysis of the *that*-trace effect is based on the Labeling

Algorithm (LA) proposed by Chomsky (2013):

(3) The Labeling Algorithm (Chomsky (2013))

    a. {X, YP} = XP

    b. {XP, YP} = ?

      (i) {t, YP} = YP

      (ii) {XP$_{[F]}$, YP$_{[F]}$} = <F, F>

A syntactic object (SO) of the form {X, YP}, where a head X is merged with a phrase YP, is labeled as XP as seen in (3a) because the LA selects the closest element to be the label via the operation called minimal search. In the case of an SO {XP, YP} in (3b), however, the LA cannot determine which of its members to be the label because both of the members are phrases and equally close in the eyes of the LA. There are two ways to circumvent this situation: the first one is to move one of the members and make it a trace, as in (3bi). On the assumption that traces are invisible to LA, minimal search only detects the other member of the SO, and hence it serves as the label. The second option is to take the most prominent feature shared with both of the members to be the label, as in (3bii).

Given the LA in (3), Chomsky (2015) reduces the EPP effect to T's inability to provide a label, as stated below:

(4) T is too "weak" to serve as a label. With overt subject, the SPEC-TP construction is labeled <φ, φ> by the agreeing features. Therefore, English satisfies EPP. (Chomsky (2015: 9))

Chomsky supposes that the head T itself cannot be a label, and in order for the traditional TP to be get properly labeled in this framework, there must be an element with the features shared with T in its Spec position.

Kunio Yanagisawa

Now let us take a closer look at how this weak T requirement plays a role in the *that*-trace effect. Chomsky will give the sentence (5a) the structure (5b) at some stage of its derivation:

(5) a. *Who did he say that bought the rutabaga?

 b. [$_\gamma$ that [$_\beta$ who$_{[\varphi]}$ T$_{[\text{н}\varphi]}$ [$_\alpha$ *t* v …]]]

Once the *wh*-subject *who* moves to Spec TP, it needs to remain in this position until the timing of Transfer because the weak T can only be labeled via feature sharing strategy (3bii). Therefore, it gets transferred without moving to Spec CP and becomes inaccessible to the operations of the next phase. In (6a), where *that* is not overt, Chomsky (2015) assumes that the deletion of C causes phasehood inheritance to T, as illustrated in (6b).

(6) a. Who did he say bought the rutabaga?

 b. [$_\gamma$ ~~that~~ [$_\beta$ who$_{[\varphi]}$ T$_{[\text{н}\varphi]}$ [$_\alpha$ *t* v …]]]

The derivation in (6b) is the same as in (5b) except for the deletion of C. The *wh*-subject *who* needs to stay at Spec TP for labeling of β, but it ends up outside the Transfer domain thanks to phasehood inheritance to T.

While Chomsky (2015) accounts for the *that*-trace effect by the LA, his analysis does not deal with the adverb effect in (7a). Chomsky's system will give (7a) two possible derivations (7b, c):

(7) a. Who do you think that unfortunately made no reply?

 b. [$_{CP}$ that [$_{<\varphi, \varphi>}$ unfortunately who$_{[\varphi]}$ T$_{[\text{н}\varphi]}$ […

 c. [$_{CP}$ that [$_{XP}$ unfortunately [$_{<\varphi, \varphi>}$ who$_{[\varphi]}$ T$_{[\text{н}\varphi]}$ […

In these derivations, the merger of the adverbial *unfortunately* with T does not seems to make any sense to help the *wh*-subject *who* to escape from the Transfer domain. This scenario would not change if *unfortunately* works as an adjunct merged with TP as in (7b) or if it merges to the Spec position of other functional categories (e.g. TopP or MoodP) as in (7c). One may assume that *unfortunately* works the same as a subject DP. The SO {*unfortunately*, TP}, in fact, remains unlabeled because adjuncts including adverbials do not have any sharing features with T.

Thus, Chomsky's (2015) approach based on the weak T requirement seems insufficient to account for the full picture of the *that*-trace effect including its adverb effect.

2.2. McFadden and Sundaresan (2018)

Next, let us turn to McFadden and Sundaresan's (2018) analysis of the *that*-trace effect. They argue that there is a prosodic constraint that the edge of an Intonational Phrase (IntP) must be filled by an overt element, adopting An's (2007) proposal below:

(8) Intonational Phrase Edge Generalization (IPEG)

The edge of an IntP cannot be empty (where the notion of edge encompasses the specifier and the head of the relevant syntactic constituent).   (An (2007: 61))

An (2007) derives the IPEG from Nespor and Vogel's (1986) proposal that the boundary of an IntP must correspond to the boundary of a prosodic word in the prosodic structure illustrated in (9).

(9)　[… … … … … … … … … … … … …　]　Utterance

　　　[… … … … …][… … … … … …　]　I-phrase

　　　[…][… … …][… … …][… …]　Prosodic words

　　　[…][…][…][…][… ..][…][… …]　Foot, syllable

(An (2007: 61))

McFadden and Sundaresan propose that alignment of IntPs is determined not only by extrasyntactic factors like a prosodic break introduced by an adverbial, but also by the chunk of the structure sent to the interface by the Transfer operation. They assume the two different ways to align IntPs as in below:

(10)　IntP alignment

　　　a.　The categorial route

　　　　　the complement of a phase head

　　　b.　The positional route

　　　　　a syntactic phrase in a non-canonical position (e.g. subject, adjunct, topicalized or extraposed position (Ann (2007)))

They argue that the edge of the Transfer domain is aligned with the left edge of an IntP by default. They thus reduce the EPP to the IPEG and propose the prosodic version of the EPP as summarized in (11).

(11)　Overt Subject Requirement (OSR)

　　　The standard subject position corresponds to the left edge of an IntP since it is the left edge of the Transder domain of a CP phase. Thus, it must be filled by an overt element in order to satisfy IPEG.

Given that TPs, complements of phase heads, are in general identified as IntPs, the

Subject Extraction and the Two EPP Requirements

EPP requirement can be reinterpreted in terms of the IPEG.[1]

McFadden and Sundaresan thereby analyze the *that*-trace effect as the OSR violation. Consider the example paradigm in (12).

(12) a. Who$_i$ did you say ($_{IntP}$ Alex punched t_i?

b. Who$_i$ did you say that ($_{IntP}$ Alex punched t_i?

c. *Who$_i$ did you say that ($_{IntP}$ t_i punched Alex?

d. Who$_i$ did you say t_i punched Alex?

(McFadden and Sundaresan (2018: 16))

When the object is extracted as in (12a, b), the subject DP *Alex* in Spec TP, which is aligned with the left edge of an IntP, satisfies the OSR. In the case of (13c), where the subject is extracted, the edge is filled by the phonetically empty trace of the *wh*-subject, which causes the OSR violation.

This analysis, however, does not provide any account of why the *that*-trace effect disappears when the complementizer *that* is not overt in (12d). The OSR would rule out any instances of subject extraction, contrary to the fact. In order to deal with this problem, McFadden and Sundaresan stipulate that an IntP boundary can be extended by movement, as defined in (13).

(13) IntP Extension

Given a syntactic constituent XP that would normally be aligned with an IntP boundary by the categorial route, if an element moves from the edge of XP into a constituent YP which contains XP, the IntP will be aligned with YP instead. (McFadden and Sundaresan (2018: 16))

According to (13), *wh*-movement triggers an IntP boundary in the embedded TP in (14a) to extend to the embedded CP as in (14b), and then finally to the matrix CP as

in (14c).

(14) a. [$_{TP}$ ($_{IntP}$ who punched Alex]

 b. [$_{CP}$ ($_{IntP}$ Who$_i$ [$_{TP}$ t_i punched Alex]]

 c. [$_{CP}$ ($_{IntP}$ Who$_i$ did you say [$_{CP}$ t_i [$_{TP}$ t_i punched Alex]]]?

(McFadden and Sundaresan (2018: 22))

For the sake of the IntP Extension, the embedded TP is not aligned with the IntP, which does away with the need to satisfy the OSR.

McFadden and Sundaresan also assume that the IntP extension is blocked by an overt complementizer, as illustrated in (15), in order to make a difference between (12c) and (12d).

(15) a. *… [$_{CP}$ who$_i$ that [$_{TP}$ ($_{IntP}$ who$_i$ punched Alex]]

 b. … [$_{CP}$ ($_{IntP}$ who$_i$ [$_{TP}$ (~~IntP~~ who$_i$ punched Alex]]

They rationalize this blocking effect in (15a) in terms of linearization. They presume that "the first step of the extension relies on treating the subject as though it were simultaneously in the Spec-TP and the Spec-CP (p. 22)", and an overt intervener breaks this indistinguishable situation of the two positions. Thus, the IntP boundary in the embedded TP in (15a) does not extend to the embedded CP due to the overt *that*, and therefore only (12c) is subject to the OSR. This OSR violation yields the *that*-trace effect.

McFadden and Sundaresan further suppose that the IntP Extension is not blocked in the configuration of the adverb effect. Consider the example below:

(16) Who$_i$ do you think [that, against better judgment, t_i punched Alex]?

(McFadden and Sundaresan (2018: 6))

The intervening adverbial *against better judgement* introduces an intonational break between *that* and the following, and it creates an additional IntP boundary. McFadden and Sundaresan suppose that this prosodic restructuring enables the IntP Extension from TP to CP in spite of the overt *that*, as in (17).

(17)   [CP (IntP who that [(IntP against better judgement [TP (IntP *t* punched Alex]

This appealing approach of McFadden and Sundaresan's, however, would fail to capture a cross-linguistic variation of the *that*-trace effect, one of which is so-called the *que-qui* alternation in French.

(18) a.   Quel   livre   crois-tu   que/*qui les filles vont acheter *t*?
            which   book   think-you   that   the girls will   buy
            'Which book do you think that girl will buy?'

      b.   Quelles filles crois-tu   *que/qui t   vont acheter ce   livre-la?
            Which   girls think-you   that   will   buy   that book-there
            'Which girls do you think will buy that book there?'

                                                            (Taraldsen (2002: 29))

French shows a contrast between non-subject and subject extraction in that the former is accompanied with the complementizer *que* and the latter with *qui*, but not the other way around. In French, where all the complementizer paradigms are overt, it is predicted that the IntP Extension is always blocked by the intervention of the complementizer, as shown in (19).

(19) a.   [CP quelles filles_k que [FinP (IntP *t*_k Fin [TP *t*_k vont_i+T [vP *t*_k *t*_i acheter …

      b.   [CP quelles filles_k qui [FinP (IntP *t*_k Fin [TP *t*_k vont_i+T [vP *t*_k *t*_i acheter …

McFadden and Sundaresan argue that when an overt element like an auxiliary occupies as a T head, a subject moves up from Spec TP to Spec FinP in the end (see fn. 1). French subjects then should always move up to Spec FinP since French involves verb movement to T, as observed for *vont* in (19). The left edge of the Transfer domain turns out to be FinP and the IntP boundary is aligned there. This IntP though is never extended to the embedded CP due to the presence of the overt intervener *que* and *qui*, which induces the OSR violation. The OSR analysis incorrectly predicts sentence (19b) with *qui* to be ungrammatical as well as fails to make a distinction between *qui* and *que*.

Thus, application of the IntP Extension and its blocking effect by an intervener still have room for some refinement in terms of syntactic structure. I will propose in the next section, instead of adopting the IntP Extension, that the IntP alignment differs between clauses with and without the overt complementizer *that*.

3. Proposal

3.1. The Labeling EPP Requirement

Under the system of Chomsky's (2015), the *wh*-subject needs to stay in Spec TP until the timing of the Transfer to satisfy the weak T requirement as in (20a). On the other hand, it must move up to Spec CP in order to escape from the Transfer domain and to be accessible to the next phase as in (20b).

(20) a. $[_\gamma$ that $[_\beta$ wh$_{[\varphi]}$ T$_{[u\varphi]}$ $[_\alpha$ t v …]]]$ \qquad $\beta = <\varphi, \varphi>$

b. $[_\gamma$ wh$_{[\varphi]}$ that $[_\beta$ t T$_{[u\varphi]}$ $[_\alpha$ t v …]]]$ \qquad $\beta = ?$

To reconcile this consideration with the amelioration effect by adverbs, the *wh*-subject should move from the Transfer domain to Spec CP, leaving no labeling problem on T as in (21).

Subject Extraction and the Two EPP Requirements

(21) $[_\gamma$ wh$_{[\phi]}$ that $[_\beta$ Adv t T$_{[u\phi]}$ $[_\alpha$ t v ...]]] $\beta = <\phi, \phi>$

Thus, I propose that not only an overt element XP (22a) but also its trace (22b) can participate in labeling via feature sharing.

(22) a. $\{XP_{[F]}, YP_{[F]}\} = FP$

       b. $XP_{[F]} ... \{t_{[F]}, YP_{[F]}\} = FP$

       cf. $XP ... \{t, YP\} = YP$

I assume that a trace is not completely invisible but at least visible in terms of features it bears. Accordingly, the weak T requirement (henceforth the WTR) is also reformulated as follows:

(23)   The Weak T Requirement (WTR)

         T is too "weak" to serve as a label. With overt subject <u>or its trace</u>, the Spec TP construction is labeled $<\phi, \phi>$ by the agreeing features. Therefore, English satisfies EPP.

3.2. The Prosodical EPP Requirement

Notice that the revised version of the WTR now brings Chomsky's (2015) original analysis to naught. Consider the derivation below:

(24) $[_\gamma$ wh$_{[\phi]}$ that $[_\beta$ $t_{[\phi]}$ T$_{[u\phi]}$ $[_\alpha$ t v ...]]] $\beta = <\phi, \phi>$

The revised WTR alone does not suffice to block the derivation in (24). It allows the *wh*-subject to escape from the Transfer domain without the labeling failure because the trace of the *wh*-subject instead can participate in labeling β via feature sharing.

         Here, I propose that the other EPP requirement must be satisfied besides the

WTR; that is the OSR of McFadden and Sundaresan's (2018).

(25)   The Overt Subject Requirement (OSR)

The standard subject position corresponding to the left edge of an IntP must be filled by an overt element in order to satisfy IPEG.

Given the OSR in (25), the derivation in (24) is ruled out because there is no overt element at the edge of the IntP on T. Thus, it is necessary to satisfy the two different EPP requirements, the WTR and the OSR.

3.3. The *That*-less Clause and the IntP Alignment

My proposal based upon the OSR rules out any subject extraction from embedded clause, in the same manner as McFadden and Sundaresan (2018). Consider the derivation below:

(26) a. $[_\gamma \text{wh}_{[\phi]} \text{ that } [_\beta (_{\text{IntP}} t_{[\phi]} \text{ T}_{[\text{Hφ}]} [_\alpha t \text{ v} \dots]]]]$

b. $[_\gamma \text{wh}_{[\phi]} \varnothing [_\beta (_{\text{IntP}} t_{[\phi]} \text{ T}_{[\text{Hφ}]} [_\alpha t \text{ v} \dots]]]]$

The OSR is imposed on the left edge of T in both (26a) with overt *that* and (26b) with the null C. Thus, subject extraction from the *that*-less clause is incorrectly ruled out.

Here I propose that the IntP alignment depends on how C and T are merged. Mizuguchi (2019) argues that the realization of the complementizer *that* depends on the structural relation of T and C: in the structure (27), where T and C are separately merged, C is spelled out as *that*, while the amalgamated head <C, T> merges with the clausal spine if T and C are externally pair-merged, as in (28b).

Subject Extraction and the Two EPP Requirements

(27) a. $[_\lambda$ T $[_\alpha \dots]]$

   b. $[_\kappa$ C $[_\lambda$ T $[_\alpha \dots]]]$

(28) a. $\langle$C, T$\rangle$

   b. $[_\delta \langle$C, T$\rangle [_\alpha \dots]]$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀(Mizuguchi (2019: 333))

When the pair-merged SO $\langle$C, T$\rangle$ is set merged with a set headed by v/v*, Mizuguchi assumes with Chomsky (2004, 2015) that the pair-merged T becomes syntactically invisible. Accordingly, $\langle$C, T$\rangle$ is syntactically on a par with C, and hence it can work as a label as well as a phase head. The φ features of C's are also not inherited by T because T is no longer available in the derivation. The unvalued φ features on $\langle$C, T$\rangle$ form the agreement relation with the subject in Spec $\langle$C, T$\rangle$.

⠀⠀⠀I argue that the IntP assignment differs between the two derivational possibilities in (27) and (28).

(29) a. $[_{\langle C, T\rangle}$ wh $\langle$C, T$\rangle [_{vP} (_{IntP} \dots$

   b. $[_{CP}$ wh C $[_{TP} (_{IntP} \, t \, T \, [_{vP} \dots$

When *that* is not overt, the amalgamated head $\langle$C, T$\rangle$ is created and the *wh*-subject moves to its Spec position as in (29a). In this case, the IntP is aligned with vP rather than TP because the head $\langle$C, T$\rangle$ is assumed to work as the phase head and transfer its complement vP. On the other hand, the IntP is always aligned with TP when C and T are merged separately as in (29b).

⠀⠀⠀This assumption implies that the amalgamated $\langle$C, T$\rangle$ is not created when there exists an element between C and T. Consider the possible derivations below:

(30) a. $[_{CP}$ wh C $[_{YP} (_{IntP} XP \, Y \, [_{TP} \, t \, T \, [\, \dots$

   b. $[_{CP}$ wh C $[_{TP} (_{IntP} XP \, t \, T \, [\, \dots$

Kunio Yanagisawa

In such a configuration, the subject does not occupy the edge of the Transfer domain. Here I argue that the edge of the IntP aligned via the Transfer operation can be filled either with an element in a non-phasal phrase as in (30a) or an adjunct merged with TP as in (30b). The OSR is not imposed on the subject position in either case, and the intervening element at the edge of the Transfer domain can satisfy the OSR instead.[2]

One might consider that this way of OSR satisfaction would overgenerate ungrammatical sentences like (31c).

(31) a. It seems that John made no reply.

   b. *seems that John made no reply.

   c. *Unfortunately seems that John made no reply.

My proposal consisting of the two EPP requirements can wipe out this reservation because adverbs, unlike subjects, do not have any sharing features with T to meet the WTR, even if they satisfy the OSR.

In the subsequent section, I give a detailed analysis for the *that*-trace effect and the adverb effect under my proposal consisting of the WTR and the OSR.

4. Proposed Analysis

4.1. The *That*-trace Effect

My analysis assigns the *that*-trace example (32a) the structure in (32b).

(32) a. *Who did he say that bought the rutabaga?

   b. $[_\gamma$ who that $[_\beta$ $(_{\text{IntP}}$ t T $[_\alpha$ t bought the rutabaga$]]]$

The *wh*-subject *who* no longer needs to stay in Spec TP under my version of the LA since its trace can also participate in labeling of β and satisfies the WTR. The label of β is determined as $<\phi, \phi>$ via feature sharing, and *who* finally moves up to Spec

CP and becomes accessible to the next phase after the Transfer. This configuration (32b), however, fails to satisfy the OSR because the edge of the IntP aligned with TP remains empty. This OSR violation yields the *that*-trace effect.

On the other hand, (33a) lacking the overt complementizer *that* must have the derivation in (33b).

(33) a. Who did he say bought the rutabaga?

b. [$_\lambda$ wh <C, T> [$_\alpha$ ($_{IntP}$ *t* bought the rutabaga]]

Given Mizuguchi (2019), T is externally pair-merged with C and this creates the amalgamated head <C, T>. T is now syntactically invisible and the head <C, T> works the same as C in terms of the labeling and phase theory, which means that the WTR in a precise sense is ineffective anymore. The edge of the IntP boundary determined in this phase is vP, and the IPEG imposed there is always satisfied with the presence of the verb. As for ϕ feature agreement, the *wh*-subject *who* moves to the Spec position of <C, T> and enters the agreement relation with <C, T> since the ϕ features on C are not inherited by T.

Next, let us move on to how my proposal works for the adverb effect. Consider the example and its derivation below:

(34) a. Who do you think that unfortunately made no reply?

b. [$_\kappa$ who that [$_\delta$ ($_{IntP}$ unfortunately [$_\beta$ *t* T [$_\alpha$ *t* made no reply]]]

The WTR is satisfied in the same way as seen in the case of the *that*-trace effect in (32). The trace of the *wh*-subject *who* in Spec TP plays the role in determining the label of β, and therefore *who* itself can reach the phase edge. Regarding the OSR, the intervening adverbial *unfortunately* occupies the edge of the IntP instead of the moved subject. This OSR satisfaction repairs the *that*-trace effect.

Kunio Yanagisawa

4.2. The *Que-Qui* Alternation

I analyze the *que-qui* alternation in the same way as the *that*-trace effect as in (32) and (33). Consider the example and its derivation.

(35) a. Quelles filles crois-tu *que *t* vont acheter ce livre-la?

b. [$_{CP}$ quelles filles$_k$ que [$_{FinP}$ ($_{IntP}$ t_k Fin [$_{TP}$ t_k vont$_i$+T [$_{vP}$ t_k t_i acheter …

When the subject *quelles filles* is extracted from the *que* clause as in (35a), the edge of the IntP boundary aligned with FinP remains empty, which violates the OSR. On the other hand, in the case of the *qui* clause, I assume that the complementizer *qui* is the result of the realization of the amalgamated head <C, T>, as in (36b).[3]

(36) a. Quelles filles crois-tu qui *t* vont acheter ce livre-la?

b. [$_{<C, T>}$ quelles filles$_k$ qui [$_{vP}$ ($_{IntP}$ t_k vont acheter …[4]

The OSR violation observed in (35) does not appear in (36). This is because the IntP is aligned with the Transfer domain of the phasehead <C, T>, but not with the subject positions like Spec TP and Spec FinP.

5. Subject Topicalization

My analysis also accounts for the ban on subject topicalization and its adverb effect, as illustrated below:

(37) a. John thinks that Bill, Mary would never love.

b. *John thinks that Mary, would never love Bill.

c. John thinks that Mary, under no circumstances would ever love Bill.

(Douglas (2017: 19-20))

As opposed to object topicalization (37a), subjects cannot be topicalized as in (37b). Furthermore, the intervening adverbial *under no circumstances* improves the acceptability of subject topicalization just as in the same manner as the adverb effect on the *that*-trace effect.[5]

The cause of the ban on subject topicalization can be analyzed as the OSR violation under my proposal. The derivation of (37b) must be as in (38).

(38) $[_\kappa\ \emptyset\ [_\delta\ (_{IntP}\ DP\ Top\ [_\beta\ (_{IntP}\ t\ T\ [\ \dots$

The subject in Spec TP gets topicalized and moves to Spec TopP. The WTR is satisfied with the trace of the subject left in Spec TP. Given that Top is the phase head, the OSR violation at TP yields the ban on subject topicalization.[6]

The adverb effect (37c) works the same as the adverb effect. Consider the derivation in (39).

(39) $[_\kappa\ \emptyset\ [_\delta\ (_{IntP}\ DP\ Top\ [_\gamma\ (_{IntP}\ Adv\ [_\beta\ t\ T\ [\ \dots$

The OSR is no longer imposed on Spec TP because the left edge of the Transfer domain is now occupied by the adverbial *under no circumstances*. This intervening element satisfies the OSR instead of the topicalized subject.

6.   Conclusion

I have argued that Chomsky's (2015) weak T requirement, which reduces the EPP effect to T's inability to provide a label, is insufficient for a full account of the *that*-trace effect, particularly in the light of the adverb effect. I propose that the "weak" T can be strengthened not only by a subject but also by its trace. In addition to this modified version of the weak T requirement, I also adopt the other EPP requirement to be met at PF: an overt element must occupy the left edge of the IntP aligned with

Kunio Yanagisawa

Spec TP. I have claimed that these two EPP requirements are critical for availability of extraction from the subject position.

Notes

1)   One might think that there is no need for an overt subject in Spec TP when an auxiliary occupies as a T head as in (i), where *ec* indicates a null subject, since it satisfies the OSR. This derivation, however, is not acceptable.

(i)   *Celine said that [$_{TP}$ *ec* will$_T$ [play hockey]].

(McFadden and Sundaresan (2018: 14))

McFadden and Sundaresan assume that there exists another functional head FinP above T, which hosts an overt subject in its Spec position. Then, in the configuration like (ii), the left edge of the IntP is FinP, not TP. The OSR violation occurs unless the overt subject *she* moves to Spec FinP and fills the IntP edge.

(ii) a. *Celine said that [Fin ($_{IntP}$ ec$_i$ Fin [$_{TP}$ t_i will$_T$ [t_i play hockey]]].
       b.   Celine said that [Fin ($_{IntP}$ she$_i$ Fin [$_{TP}$ t_i will$_T$ [t_i play hockey]]].

(McFadden and Sundaresan (2018: 15))

Subject Extraction and the Two EPP Requirements

For explanatory convenience, I do not represent FinP projection in this paper unless needed.

2)   McFadden and Sundaresan (2018) assume that locative phrases in locative inversion like (i) can satisfy the OSR instead of subjects.

(i)   Across the table marched an army of ants.

(McFadden and Sundaresan (2018: 29))

Though the syntactic subject *an army of ants* is extraposed to the postverbal position, sentence (i) poses no problem because the PP *across the table* is placed at the edge of the IntP instead of the subject and satisfies the OSR. McFadden and Sundaresan simply stipulate that this position, which can satisfy the OSR, is distinct from that occupied by clause-initial adverbials and presume that "this must be a functional position projected in the left periphery of the clause that can exceptionally be filled by something other than the subject. (p30)"

3)   Note that Mizuguchi (2018, 2019) does not assume that the *qui* clause is formed via external pair-merge of <C, T>. Mizuguchi suggests instead that the subject extracted from the *qui* clause moves directly from Spec vP to Spec CP, according to Taraldsen (2002) analyzing *qui* as *que* followed by the expletive-like element *-i* in Spec TP.

(i)   [$_\gamma$ wh que [$_\beta$ *-i* T [$_\alpha$ *t* v …]]]

The *wh*-subject does not need to move to Spec TP because the expletive *-i* strengthens the weak T. Therefore, it can escape from the Transfer domain and become accessible to the next phase. This analysis, however, does not deal with the fact that *-i* in *qui* cannot necessarily satisfy the EPP requirement. For example, the expletive subject *il* in (iia)

cannot be replaced by -*i* in *qui* as in (iib).

    (ii) a.   Je crois qu'il reste beaucoup de choses à faire.

          b. *Je crois qui reste beaucoup de choses à faire.   (Mackenzie (2018: 34))

4)   As for V-to-T movement in the <C, T> clause, I assume that the verb moves up to some other functional category lower than T (e.g. Mod or Aux). I do not represent in (36b) the detailed derivation as such for explanatory purposes.

5)   Note that McFadden and Sundaresan's (2018) original system incorrectly rules in subject topicalization. This is because the OSR is not imposed at the edge of TP due to the IntP Extension. Movement from Spec TP to Spec TopP induces the IntP Extension by definition, and the edge of the IntP on TP gets extended to TopP as in (i).

    (i)   [$_{CP}$ C [$_{TopP}$ ($_{IntP}$ Mary Top [$_{TP}$ ~~($_{IntP}$~~ *t* T [...

6)   If Top is not the phase head, the edge of the Transfer domain is supposed to be Spec TopP, not Spec TP. Then, no IntP boundary is aligned between the topicalized subject and its adjacent element, as in (i).

    (i)   [$_{CP}$ C [$_{TopP}$ ($_{IntP}$ DP Top [$_{TP}$ *t* T [...

Here I assume that this IntP alignment is not acceptable because it comes to be indistinguishable from that of the canonical subject. Canonical subjects and the topicalized ones must be differentiated from each other by introducing an intonational break, an IntP boundary.

Subject Extraction and the Two EPP Requirements

References

An, Duk-Ho (2007) "Clauses in Noncanonical Positions at the Syntax-phonology Interface," *Syntax* 10, 38-79.

Chomsky, Noam (1982) *Some Concepts and Consequences of the Theory of Government and Binding*, MIT Press, Cambridge, MA.

Chomsky, Noam (2004) "Beyond Explanatory Adequacy," *Structures and Beyond: The Cartography of Syntactic Structures* 3, ed. by Adriana Belletti, 104-131, Oxford University Press, Oxford.

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.

Douglas, Jamie (2017) "Unifying the *That*-trace and Anti-*that*-trace Effects," *Glossa: A Journal of General Linguistics* 2(1), 60, 1-28.

Frey, Werner (2003) "Syntactic Conditions on Adjunct Classes," *Modifying Adjuncts,* ed. by Ewald Lang, Claudia Maienborn, and Cathrine Fabricius-Hansen, 163-209, Mouton de Gruyter, Berlin.

Mackenzie, Ian (2018) "The Case of Special *Qui*," *Journal of French Language* 28(1), 21-41.

Mizuguchi, Manabu (2018) "Subject Extraction and Clause Size," *Proceedings of the Florida Linguistics Yearly Meeting* 4.

Mizuguchi, Manabu (2019) "Ways of Solving (counter-)cyclic A-movement in Phase Theory," *Linguistic Research* 36(3), 325-363.

McFadden, Thomas and Sandhya Sundaresan (2018) "What the EPP and Comp-trace Effects Have in Common: Constraining Silent Elements at the Edge," *Glossa: a journal of general linguistics* 3(1), 1-34.

Nespor, Marina and Irene Vogel (1986) *Prosodic phonology*, Foris, Dordrecht.

Kunio Yanagisawa

Perlmutter, David (1971) *Deep and Surface Structure Constraints in Syntax*, Holt, Rinehart and Winston, New York.

Taraldsen, Knut Tarald (2002) "The *Que*/*Qui* Alternation and the Distribution of Expletives," *Subjects, Expletives, and the EPP*, ed. by Peter Svenonius, 29-42, Oxford University Press, Oxford.

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