How to Derive a Sprouting Sentence[*]
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1. Introduction

In this paper, I am concerned with how the sentences in (1), in which the operation called sprouting by Chung, Ladusaw, and McCloskey (henceforth, CLM) (1995) is involved, are derived.

(1)   a.   He's writing, but you can't imagine where / why / how fast / with whom.   (CLM (1995:241))

        b.   She's reading.   I can't imagine what.   (CLM (1995:242))

In the sentences in (1), there is no linguistic form in the antecedent clause that corresponds to the *wh*-phrase. The difference between the two sentences is that while the correlate is an adjunct in (1a), it is an implicit argument in (1b). One important point to be mentioned is that in sluicing sentences derived through sprouting, island effects arise in elided clauses even though they involve ellipsis. Observe the following:

(2)   a.   * Sandy was trying to work out which students would speak, but she refused to say who to / to who(m).

        b.   * That Tom will win is likely, but it's not clear which race.

        c.   * Tony sent Mo a picture that he painted, but it's not clear with what.

                                  (CLM (1995:279))

Each sentence in (2) is ruled out as a violation of the *Wh*-Island Constraint, the Subject Condition, and the Complex NP Constraint, respectively. This fact is quite surprising, given that in the literature, it is generally argued that island effects can be repaired by sluicing (Ross (1969), CLM (1995), Merchant (2001, 2008), Fox and Lasnik (2003), to name a few). In other words, the sentences constitute a case of failure of island repair. Boeckx (2008a) also points out this fact by providing a contrast shown in (3):[1]

(3)   a.   Agnes wondered how John managed to cook a certain food, but it's

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[1] Boeckx (2008a) calls what we call island repair "island circumvention," suggesting that ellipsis itself is irrelevant to the nullification of island effects. See section 2 for an argument against it.

not clear what food [~~Agnes wondered how John managed to cook pro~~].

b. * Agnes wondered how John managed to cook, but it's not clear what food [~~Agnes wondered how John managed to cook~~].

(Boeckx (2008a:217))

Sentence (3a), in which there is an element *a certain food*, which corresponds to the *wh*-phrase *what food*, is impeccable. On the other hand, sentence (3b), which is derived via sprouting, is not acceptable. This in turn means that sluicing involving sprouting is not able to repair island effects.

As easily recognized, there exists a puzzling asymmetry between sentence (3a) and sentences (2) and (3b). While sluicing repairs the island violation in the former, it does not in the latter. As mentioned above, many researchers have paid attention to the island repair effects, exemplified in (3a), and many proposals have appeared in the literature. In contrast, to my knowledge, there are fewer serious studies which deal with the unacceptability of such sentences as (2) and (3b). In order to account for it, it is necessary to consider the way a sprouting sentence is derived. Naturally, the proposed derivation throws light on the nature of the island, which has been one of controversial issues in linguistic theory.

The organization of the paper is as follows. In section 2, I will outline Boeckx's (2008a) analysis of the difference in the acceptability between the sentence in (3a) and that in (3b) and point out a problematic aspect of his analysis. In section 3, in order to solve it, I will first propose the derivation of a sprouting sentence and then explore the source of the island effect. In section 4, I will discuss theoretical and empirical implications of the proposed analysis. In section 5, a brief summary of this paper will be presented.

2. Overview of Previous Study: Boeckx (2008a)

In this section, as a first step, I will review Boeckx's (2008a) analysis of so-called island repair. As mentioned in note 1, he claims that ellipsis makes no contribution to repair island effects, which causes him to call the phenomenon island circumvention. Under his analysis, it is the existence of a resumptive pronoun in the elided clause that plays a crucial role in nullifying the effects. In order to give the gist of it, let us consider sentences (3), repeated as (4):

(4) a. Agnes wondered how John managed to cook a certain food, but it's not clear what food [~~Agnes wondered how John managed to cook pro~~].

b. * Agnes wondered how John managed to cook, but it's not clear what food [~~Agnes wondered how John managed to cook~~].

As alluded to above, the only and decisive difference between the two sentences is the existence or absence of a correlate of the *wh*-phrase, i.e. an indefinite *a certain food* in (4a). Boeckx proposes that the resumptive pronoun is licensed by an indefinite in the antecedent clause. In fact, in (4a), there is a resumptive pronoun, represented as *pro*, in the elided clause, while there is not in (4b). Given Boeckx's proposal that the existence or absence of the island effect depends on the availability of the resumptive pronoun in the elided clause, the difference in the acceptability between sentences (4) follows naturally.[2]

His analysis is conceptually appealing in that it unifies two island alleviation phenomena, i.e. resumption and ellipsis, in a single framework.[3] However, there is an empirical argument against the analysis. Consider the following sentences:

(5) a. * They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) [$_{IP}$ they want to hire someone

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[2] Generalizing this, it is reasonable to state that an indefinite in the antecedent clause which is the correlate of the *wh*-phrase plays a pivotal role in the licensing of a sluiced sentence. This point is illustrated by the following pair:

(i) a. * They didn't hire anyone who speaks a Balkan language, but I don't remember which.
    b. ? They didn't hire anyone who speaks a certain Balkan language, but I don't remember which (Balkan language).

(Lasnik (2005:263))

Evidently, the addition of the element *certain* to the sentence in (ia) improves the acceptability of that in (ib). At least at an intuitive level, this addition makes the expression behave more like an indefinite, more specifically, forces it to have a non-specific reading. As shown in section 3, I claim that the existence of the indefinite in question is crucial to the island repair effect. Given the fact that the expression *a Balkan language* in (ia) can be said to be an indefinite as well, however, the proposed analysis cannot distinguish the two sentences. We leave this issue open for future research.

[3] It is of course well known that the existence of a resumptive pronoun rather than a trace can ameliorate the island effect, which is shown by the following sentences:

(i) a. * Which woman$_i$ did John laugh after Bill kissed t_i?
    b. Which woman$_i$ did John laugh after Bill kissed her$_i$?

(Boeckx (2008b:155))

In sentence (ia), the *wh*-phrase moves from a position inside the adjunct clause. This movement yields a violation of the Adjunct Condition, hence the unacceptability of the sentence. On the other hand, in the acceptable sentence in (ib), the resumptive pronoun is replaced with the trace in (ia). This fact indicates that it avoids the violation of the Adjunct Condition; more generally, it evades the island effect.

who speaks *t*].

b. They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) [~IP~ ~they~ ~want~ ~to~ ~hire~ ~someone~ ~who~ ~speaks~ ~t~].

c. * They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) they do [~VP~ ~want~ ~to~ ~hire~ ~someone~ ~who~ ~speaks~ ~t~].

(Fox and Lasnik (2003:147))

Sentence (5a), in which the *wh*-phrase *which (Balkan language)* moves from IP, is unacceptable due to a violation of the Complex NP Constraint. However, sentence (5b), which is derived from sentence (5a) via TP-ellipsis, becomes acceptable. On the other hand, sentence (5c), which involves VP-ellipsis, remains unacceptable. Notice that the sentences in (5b) and (5c) have an indefinite in the antecedent clause. It follows that Boeckx's analysis predicts that there is no asymmetry between the two sentences, contrary to fact. Rather, the difference should be attributed to the asymmetry between the two types of ellipsis and this in turn suggests that the island ameliorating effect observed in the sentences above is associated with ellipsis.[4, 5]

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[4] Akihiko Sakamoto (personal communication) provides me with the following data:

(i) a. * Which article$_i$ did you file t_i without asking who had read pg?
    b. ? Which article$_i$ did you file t_i without asking who else had [$_{VP}$ e]?

(Kim and Lyle (1996:295))

The sentences in (i) are instances of the parasitic gap construction, and it is often assumed that the parasitic gap, which is notated as pg in (ia), is a trace of null operator movement (cf. Chomsky (1986)). Sentence (ia) is ruled out as a violation of the *Wh*-Island Constraint. Interestingly, as shown in (ib), the acceptability improves when the VP containing the parasitic gap is elided. This data indicates the fact that VP-ellipsis in principle can repair island effects. It in turn suggests that the unacceptability of sentence (5c) must be treated as a failure of VP-ellipsis to repair the island violation. See also Fox and Lasnik (2003) for other cases where VP-ellipsis does ameliorate the island effect.

[5] There are notable cases where VP-ellipsis is involved. Consider the following sentences:

(i) a. * They said they heard about a Balkan language, but I don't know which Balkan language they did.
    b. * They heard a lecture about a Balkan language, but I don't know which Balkan language they did.

(Fox and Lasnik (2003:148))

Sentences (i), which are derived by means of VP-ellipsis, are all unacceptable. Notice that the antecedent clauses contain no island. Hence, it is impossible to attribute the unacceptability of the sentences to the failure of island repair.

Merchant (2008) proposes that MaxElide, formulated in (ii), should be relevant in accounting for the unacceptability.

Given the fact that ellipsis can remedy island effects, it poses an interesting question why sluicing involving sprouting cannot do this, as illustrated in (4b). Rejecting Boeckx's account, I must propose an alternative analysis which refers to the relevance of ellipsis to island repair effects and elucidate the nature of islands.

In this section, I have overviewed Boeckx's (2008a) analysis of island repair effects and confirmed that ellipsis should be the crucial factor for them.

3. Proposal

In this section, I address the question why it is not possible for sluicing involving sprouting to ameliorate island effects. In doing this, I will first present the derivation of a sprouting sentence. After that, based on the proposed derivation, I will focus on the question.

3.1. The Derivation of a Sprouting Sentence

Thus far, there have been some proposals regarding how a sprouting sentence is derived. In this subsection, before offering my own proposal, I review Tanaka's (2009) and CLM's (2006) analyses and decide which of the analyses the proposed derivation should be based on.

Emphasizing the importance of syntactic identity condition on ellipsis, Tanaka (2009) proposes a mechanism to create an appropriate antecedent clause. In order to describe the gist of his proposal, let us take a following example:

(6) a. The police know that the defendant killed the victim. They also know when [TP ~~he killed the victim~~].

b. [CP   that [TP the defendant [T′ T   [VP killed the victim]]]]

(Tanaka (2009:28))

Sentence (6a) is an instance of sprouting sentences, since there is no element in the

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(ii)   MaxElide
Let XP be an elided constituent containing an Ā-trace.   Let YP be a possible target for deletion.   YP must not properly contain XP (XP⊄YP).   (Merchant (2008:141))

In sentence (ib), for example, the TP *they did hear a lecture about a Balkan language*, which is a possible target for deletion, properly contains the elided VP *hear a lecture about a Balkan language*. Therefore, the sentence should be ruled out as a violation of MaxElide.

Obviously, the same account applies to the contrast between the sentence in (5b) and that in (5c). In this paper, I assume that the account is on the right track. Note in passing that this constitutes circumstantial evidence for the relevance of ellipsis to island repair effects;   To account for the unacceptability of sentence (5c) with recourse to MaxElide, sentence (5b) must be derived via TP-ellipsis and it is minimally different from sentence (5a) in that the former involves sluicing.

antecedent clause corresponding to the *wh*-phrase *when*. The structure of the *that*-clause in the antecedent clause is depicted in (6b). Given the syntactic identity condition on ellipsis, the elided TP in (6a) should have the TP structure within (6b). However, this structure must be excluded because it has no variable bound by the *wh*-phrase *when* and it involves vacuous quantification. To avoid this situation in the framework which incorporates a syntactic identity condition, the variable must be created in the antecedent clause. Tanaka implements this by assuming that the *wh*-phrase *when* is added to structure (6b) and moves to the spec-CP, as shown in (7):

(7) [CP   that [TP the defendant [T′ T [VP killed the victim when]]]]

(Tanaka (2009:29))

As a result of this movement, the antecedent clause becomes appropriate in that it contains a variable to be bound by the *wh*-element. Note that the resulting TP structure within (7) is syntactically identical with the elided TP in (6a). Hence, the ellipsis is fully licensed in his analysis.

As a piece of empirical evidence for his proposal, he argues that it can capture the fact that sprouting fails to remedy the island effect. Consider the sentence in (2c), repeated as (8) below:

(8) * Tony sent Mo a picture that he painted, but it's not clear with what.

Under his analysis, the appropriate antecedent clause is to be created as follows:

(9) a. [CP C [TP Tony sent Mo a picture that he painted]]
     b. [CP what$_i$ C [TP Tony sent Mo a picture that he painted t_i]]

(Tanaka (2009:31), with slight modifications)

The structure of the antecedent clause is shown in (9a). As mentioned above, it is not appropriate for the licensing of the TP-ellipsis, since it has no variable bound by the *wh*-element *what*. To avoid vacuous quantification, the *wh*-element *what* is added to the structure in (9a) and moves to the spec-CP, as shown in (9b). This movement of *what* violates the Complex NP Constraint and structure (9b) is not a legitimate one. This means that it is impossible to create the appropriate antecedent clause which licenses the ellipsis in (8), and the unacceptability of sentence (8) follows.

It is thus reasonable to say that Tanaka's proposal is empirically successful. At the same time, however, it seems to suffer from a theoretical flaw. It is the fact that the *wh*-phrase moves to the specifier position of the non-interrogative C. To be fair to him, it is important to note that his paper discusses how this movement is motivated. Even if the problem is affirmatively solved, another question remains open: How is the *wh*-feature, which is assumed to be uninterpretable, checked? This question can be restated informally by saying that it is not clear how to distinguish declarative sentences from interrogative sentences. It seems to me that this issue should be seriously considered before we adopt his proposal.

CLM (2006) propose a derivation of a sprouting sentence on the basis of the assumption that ellipsis involves the reuse of linguistic material. Under their proposal, the derivation of the sprouting sentence in (10) proceeds as shown in (11):

(10)   They were firing, but at what was unclear.
(11)   a.   [$_{CP}$ at what C [$_{TP}$] was unclear]
         b.   [$_{CP}$ at what C [$_{TP}$ they were firing] was unclear]
         c.   [$_{CP}$ <at what> C [$_{TP}$ they were firing at what] was unclear]
                                          (CLM (2006:3), with slight modifications)

The structure of the second conjunct of (10) is depicted in (11a), where the elided site is actually an empty TP. As alluded to just above, the essence of their proposal is to reuse the antecedent clause and to replace with it the empty TP. The result of this process is indicated in (11b). This structure is not yet interpretable, because "there is no way to integrate the *wh*-phrase into the composition of the meaning of the question." (CLM (2006:3)) To solve the problem, CLM claim that the *wh*-phrase *at what* moves to a position immediately dominated by VP.[6, 7] As a result of the movement, in (11c), the *wh*-phrase is properly related to the predicate and the semantic problem mentioned above is successfully resolved.[8]

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[6] As CLM themselves notice, Phillips (2003) proposes that the derivation proceeds from left to right, or from top to down. If we follow his proposal, it forces us to assume that the movement in question takes place in narrow syntax.

[7] Given the fact that the *wh*-phrase in question can be an adjunct, as exemplified in sentence (1a), the movement cannot always be due to a theta-theoretic reason as Phillips (2003) claims. At this moment, it is impossible to identify exactly the feature that motivates the movement, and we leave this question for future investigation. For empirical evidence for this movement, see CLM (1995:247-249).

[8] Although CLM do not argue this explicitly, given that the rightward movement in (11c) allows the structure to be semantically interpretable, it must be assumed that it is transferred to the interfaces. This assumption poses an immediate question: What is the PF-interface effect of this transfer? In this paper, I assume that at PF, the reused material undergoes ellipsis, which derives the surface string.

In contrast to Tanaka's (2009) proposal, the unacceptability of sentence (8) is associated with some problem in the elided site. To confirm this, let us consider how the sentence is derived under their proposal.

(12) * Tony sent Mo a picture that he painted, but it's not clear with what.

(=(8))

(13) a. [CP with what C [TP   ]]
     b. [CP with what C [TP Tony sent Mo a picture that he painted]]
     c. [CP <with what> C [TP Tony sent Mo a picture that he painted with what]]

The structure in (13a) is that of the embedded CP of the second conjunct of sentence (12). The empty TP in (13a) is replaced with the antecedent TP, which results in structure (13b). Finally, for the structure to be semantically interpretable, the *wh*-phrase moves to the rightmost position, as depicted in (13c). Notice that this *wh*-movement crosses the Complex NP. According to CLM, on the assumption that the movement takes place in narrow syntax, the unacceptability of sentence (12) is accounted for straightforwardly.[9]

Comparing Tanaka's (2009) analysis with CLM's (2006) analysis, in light of the problem of the former mentioned above, I claim that the latter is more preferable (at least less problematic).[10] As a next step, following the basic properties of their

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[9] As assumed in note 8, the reused TP undergoes ellipsis. This assumption allows us to expect that the island effect should be repaired, contrary to fact. For a more detailed comment on this point and the account of the failure of island repair under my proposal, see section 3.2.

[10] Tanaka (2009) provides the data in (i), which he claims supports his proposal.

(i) a. The police know who the defendant killed. They also know when.
    b. ?*The police know whether the defendant killed the victim. They also know when.

(Tanaka (2009:30))

In order to show the preference of CLM's (2006) analysis over Tanaka's, it is necessary to examine whether the former can capture the difference in the acceptability of the two sentences. However, it cannot accommodate sentence (ia) straightforwardly. To confirm this, consider the following:

(ii) a. [CP when C [TP   ]]
     b. [CP when C [TP the defendant killed t_{who}]]

Under CLM's analysis, the *wh*-phrase *when* is base-generated in spec-CP, as depicted in (iia), and then the empty TP is replaced with the antecedent TP, which derives structure (iib). Notice that the TP in (iib) contains the trace of *who*. This trace cannot be bound in (iib), and the sentence is predicted to be unacceptable, contrary to fact. To solve the problem, additional assumptions are required. Since it is not the main concern in this paper to give an exact formulation of them, I do not discuss the derivation of sentence (ia) any further.

analysis, I propose my own derivation by adding some ingredients to it.

In the theory of ellipsis, it has been argued that a functional head can license ellipsis of its complement only when it undergoes spec-head agreement (cf. Lobeck (1990)). It follows that in CLM's analysis, the C enters into an agreement relation with the *wh*-phrase base-generated in spec-CP. With respect to this point, Fortin (2008) claims that the *wh*-feature of the *wh*-phrase is valued when it is merged with the C. It is quite reasonable to regard this valuation as an instance of agreement. Thus, this enables us to satisfy the licensing condition of TP-ellipsis.

At this point, let us propose the derivation of a sprouting sentence. In my system, a sprouting sentence is generated as follows:

(14)   a.   She's reading.   I can't imagine what.   (=(1b))

       b.   [$_{CP}$ what C [$_{TP}$]]

       c.   [$_{CP}$ what C [$_{TP}$ she's reading]]

       d.   [$_{CP}$ <what> C [$_{TP}$ she's reading what]]

The structure in (14b) is that of the complement clause of *imagine* in sentence (14a). In this structure, because the C and the *wh*-phrase are merged, they establish an agreement relation and the *wh*-feature of the *wh*-phrase is valued, as shown in (14b). Then, the empty TP is replaced with the antecedent clause, which produces the structure in (14c). Finally, as depicted in (14d), in order to satisfy the semantic requirement, the *wh*-phrase in spec-CP moves to the rightmost position. When the structure is transferred to the interfaces, the TP undergoes ellipsis at PF, successfully deriving the surface string of (14a).

In this derivation, the rightward movement of the *wh*-phrase is necessary for convergence. Then, if the Conservation Law of Agree in the sense of Hiraiwa (2005), formulated below, is on the right track, another relation must be established between the C and the lower copy of the *wh*-phrase.[11]

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[11] Notice that the agreement relation between the C and the base-generated *wh*-phrase cannot be mediated by Agree, since the former does not c-command the latter, which violates the condition that the probe c-commands the goal. This in turn indicates that strictly speaking, the agreement relation between the C and the lower of the *wh*-phrase cannot be obtained by the Conservation Law of Agree. However, it is strongly reminiscent of Adger and Ramchand's (2005) analysis of *wh*-dependencies. In fact, their analysis has a striking similarity to the one presented here, in that both analyses assume that the *wh*-phrase is base-generated in spec-CP. In light of the similarity, adapting the Conservation Law of Agree, this paper assumes that the C enters into an agreement relation with the lower of the *wh*-phrase. We further assume, with Adger and Ramchand (2005), that Agree is constrained by the Phase Impenetrability Condition (PIC).

(15) The Conservation Law of Agree
      Agree relations are unchanged and retained after Merge.

$$P \quad \dots \quad G_1 \quad \rightarrow \quad G_1 \quad \dots \quad P \quad \dots \quad G_1$$
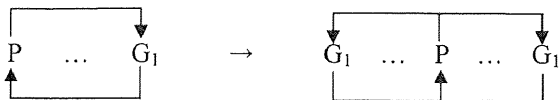
(Hiraiwa (2005:41))

As mentioned just above, in (14b), an agreement relation is established between the C and the base-generated *wh*-phrase. The *wh*-movement of the *wh*-phrase takes place at a later stage of the derivation. It follows from the principle in (15) that in (14d), the C enters into an agreement relation with the lower copy of the *wh*-phrase, as shown in (16):[12]

(16) [$_{CP}$ <what> C [$_{TP}$ she's [$_{v*P}$ v^* [$_{VP}$ reading what]]]]
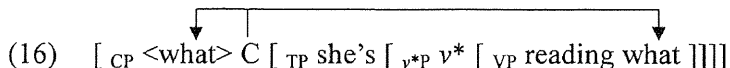
Actually, the structure in (16) rather than that in (14d) is transferred to the interfaces. As mentioned in note 11, the agreement relation between the C and the lower copy of *what* is constrained by the PIC, which is formulated below:

(17) For strong phase HP with head H, the domain of H is not accessible to operations outside HP; only H and its edge are accessible to such operations. The edge includes the residue outside the H′, either Specs or elements adjoined to HP.   (Chomsky (2001:13))

Taking the PIC at face value, we predict that the agreement relation in question cannot be licensed, contrary to fact. As shown in (16), the landing site of the *wh*-movement is within VP, which is the complement domain of v^*. It is generally assumed that C and v^* constitute phases (cf. Chomsky 2000, 2001)). Since the C is outside of v^*P, the PIC prevents it from entering into the agreement relation with the lower copy of the *wh*-phrase. To solve the problem, I claim that the v^* plays a key role in the licensing of the relation. Specifically, I assume that it first establishes an Agree relation with the *wh*-phrase and then the C establishes an Agree relation with the v^*. Notice that the PIC does not exclude the latter Agree relation, because the v^* is not transferred to the interfaces when the C searches its goal. Assuming further that Agree is a transitive operation, we can argue that the Agree relation

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[12] As shown in (15), it is generally assumed that the probe also receives some value from its goal. Because this valuation is irrelevant to the following discussion, however, we do not take it into account.
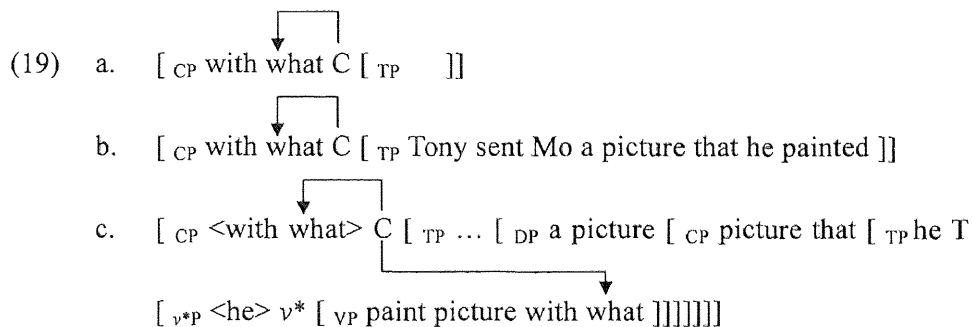
between the C and the lower copy of the *wh*-phrase is successfully established. At the last stage of the derivation, the TP of the structure in (16) undergoes ellipsis at PF, resulting in the surface structure of sentence (14a).

3.2. The Island Effect of a Sprouting Sentence

We are now in a position to discuss what exactly prevents sluicing involving sprouting from circumventing island effects. To do this, let us first examine the derivation of the sentence in (2c), repeated as (18) below:

(18) * Tony sent Mo a picture that he painted, but it's not clear with what.

If we attempt to derive this sentence from the procedure described in the last subsection, the derivation proceeds as follows:[13]

(19) a. [CP with what C [TP   ]]

  b. [CP with what C [TP Tony sent Mo a picture that he painted]]

  c. [CP <with what> C [TP ... [DP a picture [CP picture that [TP he T

  [v*P <he> v* [VP paint picture with what]]]]]]]]

The derivation of sentence (18) starts with structure (19a), in which the empty TP corresponds to the elided clause. The structure also contains the functional head C and the *wh*-phrase in spec-CP, which are merged with each other. At this point, they establish an agreement relation and the *wh*-feature of the *wh*-phrase is valued. Then, the empty TP is replaced with the antecedent clause, deriving the structure in (19b). Finally, the *wh*-phrase moves to a position immediately dominated by VP headed by *painted* in order to satisfy the semantic requirement. This movement forces the C to establish an agreement relation with the lower copy of the *wh*-phrase, as indicated in (19c). The derivation is completed after the structure in (19c) is transferred to the interfaces and the TP undergoes ellipsis at PF. The derived PF representation is shown below:
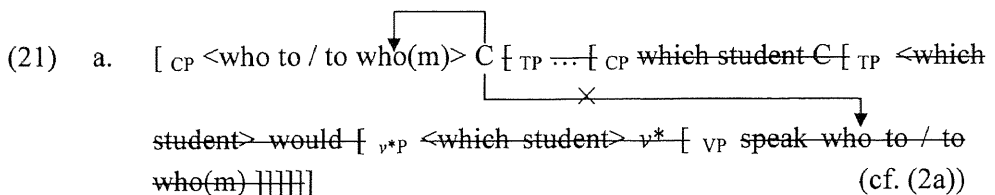
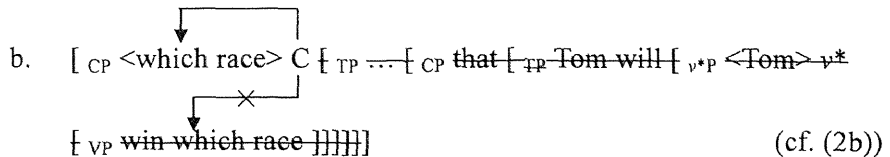(20) [CP <with what> C-[TP ~~Tony sent Mo a picture that he painted with what~~]]

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[13] In this paper, for convenience, I follow Henderson's (2007) analysis of relative clauses.

The unacceptability of the sentence in (18) indicates that the TP-ellipsis in (20) is insufficient for evading the violation of the Complex NP Constraint.   This fact is quite puzzling under any approach which either adopts or adapts Chomsky's (1972) analysis.   Loosely speaking, he proposes that some PF-uninterpretable feature be assigned to an island when it is crossed by a moved element.   Notice that in the PF representation in (20), the island, i.e. Complex NP, is elided and as a result, it has no offending feature at PF.   Hence, it is expected that the island repair effect should be observed, contrary to fact.   Then, it is really necessary to identify the factor that prevents the TP-ellipsis from ameliorating the island effect.

My conjecture is that the failure of island repair is attributed to the fact that the functional head C enters into an agreement relation with the lower copy of the *wh*-phrase.   Given the assumption stated in note 11 that Agree is constrained by the PIC, the lower copy of *with what* must first enter into an Agree relation with the $v*$. Then, the relative complementizer, which is the next higher phase head, establishes an Agree relation with the $v*$.   According to Henderson (2007), however, the Q-feature of the complementizer has already been checked in the course of deriving the relative clause.   At the point that it establishes Agree relation with the $v*$, it has no uninterpretable feature, i.e. is inactive.   Hence, the Agree relation in question is blocked.   Notice that the PIC forces the complement of the complementizer to be transferred to the interfaces.   This means that the $v*$, which is inside the complement, cannot enter into an Agree relation with any higher phase head.   It follows that even under the assumption that Agree is a transitive operation, the Agree relation between the C and the lower copy of *with what* cannot be established. Accordingly, sentence (18) is be excluded for a purely syntactic reason.   One might argue that this violation can be nullified by the ellipsis at PF, depicted in (20). However, it is quite natural to assume that it only remedies PF defectiveness.   If this assumption is on the right track, the ellipsis cannot in principle repair the syntactic violation.   Hence, the unacceptability of sentence (18).

The same explanation applies to the unacceptability of the sentence in (2a) and (2b).   For ease of exposure, let us provide the PF representations of them with relevant information added.   Consider the following:

(21)   a.   [CP <who to / to who(m)> C [TP ...[CP ~~which student C~~ [TP ~~<which student> would~~ [$_{v*}$P ~~<which student> $v*$~~ [VP ~~speak who to / to who(m)~~]]]]]]   (cf. (2a))

b.   [$_{CP}$ <which race> C [$_{TP}$ ... [$_{CP}$ ~~that~~ [~~$_{TP}$ Tom will~~ [$_{v*P}$ <~~Tom~~> v*

[$_{VP}$ ~~win which race~~]]]]]   (cf. (2b))

In representations (21), the *wh*-phrases move to a position immediately dominated by VP and the movement forces the C to enter into an Agree relation with them. Given the PIC, however, it should be blocked. In (21a), the v* first establishes an Agree relation with the *wh*-phrase and then the interrogative C should enter into an Agree relation with the former. However, the Q-feature of the C has been checked against the *wh*-feature of *which student*, which makes the C inactive. In the same way, in (21b), the C, the specifier position of which is not occupied by any element, arguably does not have no uninterpretable feature. It follows that in both cases, the C cannot establish an Agree relation with the v*. Since the latter is included in the complement domain of the former, the Agree relation between the v* and a higher phase head than the C is blocked due to the PIC. Thus, the transitivity of Agree does not establish an Agree relation between the C and the *wh*-phrases. The unacceptability of sentences (2a) and (2b) is attributed to this fact.

Note in passing that the derivational procedure presented in this paper can also account for the acceptability of the sentence in (3a), repeated as (22) with a modification:

(22)   Agnes wondered how John managed to cook a certain food, but it's not clear what food [~~Agnes wondered how John managed to cook~~].

In (22), in contrast to the sentence derived via sprouting, there is an overt expression *a certain food* in the antecedent clause, which corresponds to the *wh*-phrase. The procedure derives this sentence as follows:

(23)   a.   [$_{CP}$ what food C [$_{TP}$]]

       b.   [$_{CP}$ what food C [$_{TP}$ Agnes wondered how John managed to cook a certain food]]
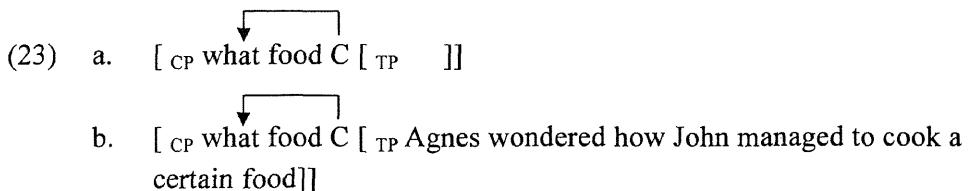
The most remarkable property of this derivation is the absence of the movement of the *wh*-phrase. The reused TP in (23b) contains an indefinite, which is thematically related with *cook*. If some relation (for example, a binding relation) is established

between the *wh*-phrase and the indefinite, the former should not need to be moved.[14] It follows that no agreement relation crossing the island can be established. The derivation does not violate the PIC and it converges, yielding the sentence in (22).

Summarizing section 3, I have proposed the derivation of a sprouting sentence, and more interestingly, claimed that the island effect is correlated to the existence of the agreement relation.[15]

4. Implications of the Analysis

The aim of this section is to explore theoretical and empirical implications of the analysis developed in the last section.

The claim that the island effect should be linked to the agreement relation is entirely consistent with the recent formulation of the Minimalist Program. In the earlier versions of generative syntactic theory, it is generally accepted that the island effect serves as a useful diagnosis for whether movement has occurred or not. More recently, the movement operation is conceived of as a type of Merge, i.e. Internal Merge, hence it is not constrained at all (cf. Chomsky (2004)). Given this property of the 'movement' operation, it is impossible to ascribe the island effect to the operation itself. It is also worth mentioning that an application of Internal Merge is generally triggered by the establishment of an agreement relation, which is often carried out by what is called in the recent framework Agree. Under this view, it is perfectly reasonable to associate the island effect with the agreement relation, as Boeckx (2008a) actually does. If the analysis presented in this paper is on the right track, it provides an empirical support for the current model of syntactic theorizing within the Minimalist Program.

Furthermore, the proposed analysis predicts that if a movement is triggered not by Agree but a pure EPP, the island effect cannot be observed. This prediction is borne out by the following sentences:

(24) a. Sono inu-ni₁   [daremo-ga   [t_1 esa-o   yari   nagara]
          the   dog-DAT   everyone-NOM   food-ACC   give   as

---

[14] CLM (2006) does not propose the derivation of such sentences as sentence (22) and it is unclear whether the establishment of the relation in question is sufficient for convergence. At least, however, in light of the fact that the indefinite corresponds to the *wh*-phrase, the movement of the latter does not contribute to the licensing of the sentences. To the extent that the derivation of them does not involve the movement, the agreement relation between the C and the lower copy of the *wh*-phrase cannot be established. It explains the absence of the island effect observed in sentence (22).

[15] Boeckx (2008a), whose analysis of island circumvention effects is criticized in section 2, tries to implement this idea with recourse to the resumption strategy. He claims that "the presence of a resumptive pronoun inside the island essentially allows the moving element to not be involved in any checking relation other than the one relating it to its final landing site." (p.208)

hon-o   yondeita].

book-ACC   was-reading

'Everyone was reading a book, feeding the dog.'

b. ? Sono hana-ni$_1$ John-ga   [zibun-ga t_1 mizu-o

that   flower-DAT John-NOM   self-NOM   water-ACC

yatte   kara] dekaketa   (koto).

give   after   went-out   (fact)

'John went out after he watered that flower.'

(Fukui and Kasai (2004:121))

Sentences (24) undergo clause-internal scrambling of the indirect objects out of the adjunct clauses.   Given the Adjunct Condition, they would be incorrectly predicted to be unacceptable, contrary to fact.   It should be noticed that scrambling has been widely analyzed as a strictly optional movement, which is not driven by a need to check a feature.   In fact, Yamashita (2006) claims that A-scrambling is Agree-free EPP-only movement.   To the extent that these analyses of scrambling are on the right track, sentences (24) constitute convincing evidence for the proposed analysis. Interestingly enough, it has been observed that in Japanese, *wh*-movement, which is uncontroversially a feature-driven movement, is sensitive to island effects (cf. Watanabe (1992)).   This contrast between scrambling and *wh*-movement leads to a generalization that the island effect is induced by the agreement relation, which is a consequence following from the derivation of a sprouting sentence.

Summarizing this section, I have shown that the treatment of the island effect presented in this paper is in complete accord with recent syntactic theorizing and that it receives further empirical support.

5. Summary

My purpose in this paper has been to propose how a sprouting sentence is derived and, more importantly, to understand the reason why the island effect cannot be ameliorated by sluicing in such a case.   The most fundamental claim of this paper has been that the island effect is closely connected with the agreement relation. As a final remark, I have also discussed theoretical and empirical implications of the claim.

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