Peer-reviewed Article

A Representational Approach to the *Wh*-Island Constraint

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Abstract:
This paper argues for a representational approach to the *Wh*-Island Constraint (*Wh*IC), contra the derivational one in Chomsky (2000). Specifically, it is proposed that the *Wh*IC can be deduced from a proper application of Cyclic Linearization, a PF-representational constraint. The proposal in this paper is based on the assumption that Agree into Spell-Out domain is possible, a natural consequence of the Activation Condition and the Phase-Impenetrability Condition. Island-repair by sluicing and asymmetric sluicing effects in *Wh*IC and the Superiority Condition are explained. A proposal to eliminate the Defective Intervention Condition is also maintained.

Key words: *Wh*-Island Constraint, Cyclic Linearization, Activation Condition, Island-repair, Defective Intervention Condition

1. Introduction

It is well-known that *wh*-movement must obey locality constraints. One of them is the *Wh*-Island Constraint (*Wh*IC), which prohibits *wh*-movement across [Spec, CP] filled with another *wh*-element, as illustrated in (1).

(1) ?* [$_{CP1}$ Which book$_1$ do you wonder [$_{CP2}$ to whom$_2$ [$_{TP}$ John gave t_1 t_2]]]?

Since Chomsky's (1973) first formulation of this constraint, a lot of work has contributed to the understanding of the nature of this constraint as to why such a constraint exists, when and where it applies and how it works. The purpose of this paper is to investigate these issues and to propose a possible account by means of a representational approach to the *Wh*IC as a ramification of Cyclic Linearization (Fox and Pesetsky (2005), Bošković (2007), Ko (2005, 2007)).

The organization of this paper goes as follows. Section 2 argues against the derivational approach to the *Wh*IC by observing island-repair phenomena in sluicing constructions and a

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conflicting requirement between the Defective Intervention Condition (DIC) and the Activation Condition (AC). Section 3 proposes to deduce the *Wh*IC from Cyclic Linearization. It is shown that a key notion to achieve this goal, successive cyclicity of *wh*-movement, is associated with phonological considerations rather than syntactic constraints such as the Phase-Impenetrability Condition (PIC). Section 4 argues for some theoretical consequences of this proposal. In particular, *Wh*IC cancellation by sluicing and asymmetric sluicing effects in the *Wh*IC and the Superiority Condition are examined. The elimination of the DIC is also referred to. Section 5 concludes this paper.

2. Against the Derivational Approach

2.1 Sluicing

Within the framework of the Minimalist Program, at least two kinds of approaches to the *Wh*IC have been proposed. One assumes that it is a derivational constraint (Chomsky (1977, 1986, 1995, 2000, 2001), Müller (2010, 2011), Stroik (2009)). The other assumes that it is a representational constraint (Rizzi (1990), Boeckx and Lasnik (2006), Bošković (2011)). This paper argues for the latter approach, namely the *Wh*IC as a representational constraint.

A strong reason why the representational approach should be favored comes from observations concerning sluicing constructions. Since the pioneering work by Ross (1969), it has been argued that *wh*-movement is insensitive to some locality constraints if it occurs in sluicing contexts. For instance, the violation of the Complex NP Constraint, as shown in (2a), does not occur in (2b).

(2) a. *I don't remember [$_{DP}$ which Balkan language]$_1$ they want to hire [$_{DP}$ someone [$_{CP}$ who speaks t_1]].
b. They want to hire someone who speaks a Balkan language, but I don't remember which. (Merchant 2001: 87)

Following Merchant (2001, 2008), I assume that (2b) is generated by *wh*-movement followed by the application of ellipsis, as illustrated in (3).

(3) …, but I don't remember [$_{CP}$ [$_{DP}$ which (Balkan language)]$_1$ C [~~$_{TP}$ they want to hire [$_{DP}$ someone [$_{CP}$ who speaks t_1]]]~~].

In (3), although the movement of *which (Balkan language)* takes place across a complex NP island on a par with (2a), the result is fine with the deletion of the embedded TP including the island. On

the basis of this kind of observation, a lot of researchers (Merchant (2001, 2008), Bošković (2011), Lasnik (2001), İnce (2009) and Nakao (2009) among others) argue that locality constraints such as the Complex NP Constraint are violable in sluicing contexts since they are representational constraints at PF[1]. Unless they are PF-representational, such violations would cause crashes of derivation, a fatal situation salvaged by no PF-operations.

Notice that this kind of amelioration effects hold for the *Wh*IC as well, as illustrated in (4)[2].

(4) a. ?*Which book$_1$ did every journalist go out today to find out [$_{CP}$ who was selling t_1]?
b. Every journalist went out today to find out who was selling a certain book, but I don't know which. (Boeckx 2008: 140)

The relevant parts of the structure of (4b) are represented in (5).

(5) …, but I don't know [$_{CP}$ which (book)$_1$ C [~~$_{TP}$ every journalist went out today to find out [$_{CP}$ who was selling t_1]~~]].

In this representation, too, although *wh*-movement takes place across a *wh*-island, an expected violation of the *Wh*IC is cancelled. This implies that the *Wh*IC should be analyzed as a PF-representational constraint as well.

2.2 A DIC-based Account

As far as I know, in the literature of the Minimalist Program, *wh*-island effects have widely been accounted for by the DIC, defined in (6).

(6) *$\alpha > \beta > \gamma$, where (a) "$>$" indicates c-command, and (b) β and γ match the probe α, but β is inactive so that the effects of matching are blocked.
(adapted from Chomsky 2000: 123)

This derivational constraint accounts for *wh*-island effects in the following way. Suppose that (1) has reached the following stage of derivation[3].

(7) [$_{CP1}$ C$_{1[Q]}$ … [$_{CP2}$ to whom$_{2[Q,\ \sout{wh}]}$ C$_{2[\sout{Q}]}$ [John gave which book$_{1[Q,\ wh]}$ t_2]]]

In (7), *to whom*$_2$ is raised to [Spec, CP$_2$] for checking purposes and its uninterpretable *wh*-feature is valued. In this configuration, where C$_1$ is looking for its matching goal *which book*$_1$, another *wh*-phrase *to whom*$_2$ intervenes between them. According to the DIC, *to whom*$_2$ is inactive but still effective to block the matching relation between C$_1$ and *which book*$_1$. As a result, C$_1$ cannot find its matching goal and the derivation crashes.

However, the inactive-but-effective property of the DIC seems at least to me only an ad hoc stipulation. This speculation stems from an observation that the DIC, in essence, contradicts the AC, defined in (8).

(8) Goal as well as probe must be active for Agree to apply. (Chomsky 2001: 6)

To see it in more detail, let us consider the ill-formedness of (9).

(9) *What$_1$ do you wonder [$_{CP}$ t_1 C [$_{TP}$ John bought t_1]]? (Bošković 2008: 256)

In its intermediate step of derivation, depicted in (10), the *wh*-feature of *what$_1$* is valued and, according to the AC, *what$_1$* is inactive for further Agree to apply[4].

(10) [$_{CP2}$ what$_{1[Q, \sout{wh}]}$ C$_{2[\sout{Q}]}$ [$_{TP}$ John bought t_1]]

The derivation, then, proceeds to yield (11), where the matrix C$_{1[Q]}$ is seeking its matching goal.

(11) [$_{CP1}$ C$_{1[Q]}$ do you wonder [$_{CP2}$ what$_{1[Q, \sout{wh}]}$ C$_{2[\sout{Q}]}$ [$_{TP}$ John bought t_1]]]

Agree

According to the AC, as illustrated above, the matrix C$_1$ cannot enter into an Agree relation with the inactive element *what$_1$*. As a result, C$_1$ cannot value its uninterpretable Q-feature and the derivation crashes, causing the ill-formedness of (9), a desired result.

With this in mind, let us consider (7), repeated in (12).

(12) [$_{CP1}$ C$_{1[Q]}$ … [$_{CP2}$ to whom$_{2[Q, \sout{wh}]}$ C$_{2[\sout{Q}]}$ [John gave which book$_{1[Q, wh]}$ t_2]]]

As mentioned earlier, the uninterpretable *wh*-feature of *to whom$_2$* has already been valued. Assuming the AC, we must admit that this situation renders *to whom$_2$* inactive for further Agree to apply. This implies, as a result, that *to whom$_2$* no longer tolerates Agree from C$_1$, as illustrated in (13).

(13) [$_{CP1}$ C$_{1[Q]}$ … [$_{CP2}$ to whom$_{2[Q, \sout{wh}]}$ C$_{2[\sout{Q}]}$ [John gave which book$_{1[Q, wh]}$ t_2]]]

Agree

This falls into a contradiction. Why and how does *to whom$_2$* , an invisible element for Agree from C$_1$, still preserve the power of an intervener blocking Agree relation of others, C$_1$ and *which book$_1$*? As far as I know, there is no convincing way to solve this contradiction.

On the basis of this analysis, in what follows, I will abandon assuming the DIC at least as a locality constraint on *wh*-movement[5].

3. Deducing the *Wh*-Island Constrain

3.1 Successive Cyclicity and Cyclic Linearization

It is widely assumed that *wh*-elements undergo successive-cyclic movement, as illustrated in (14).

(14) What$_1$ do you think t_1' that Mary likes t_1?

I believe that this is a key notion to understand the nature of the *Wh*IC. Specifically, I argue, following Fox and Pesetsky (2005) and Bošković (2007), that the successive cyclicity is attributed to a PF constraint called Cyclic Linearization, defined in (15)[6].

(15) No more than one spell-out unit can send information to the phonology regarding any element Y.

To illustrate it schematically, let us consider the derivational steps in (16)-(17), which represent a case where successive-cyclic *wh*-movement does not take place and the one where it does, respectively[7].

(16) a. [$_{HP}$ H [$_{YP}$ … XP…]]
b. [$_{ZP}$ Z … [$_{HP}$ H [$_{YP}$ … XP…]]]
c. [$_{ZP}$ XP Z … [$_{HP}$ H [$_{YP}$ … XP…]]]
d. [$_{ZP}$ XP Z … [$_{HP}$ H [$_{YP}$ … XP…]]]

(17) a. [$_{HP}$ H [$_{YP}$ … XP…]]
b. [$_{HP}$ XP H [$_{YP}$ … XP…]]
c. [$_{ZP}$ Z … [$_{HP}$ XP H [$_{YP}$ … XP…]]]
d. [$_{ZP}$ XP Z … [$_{HP}$ XP H [$_{YP}$ … XP…]]]
e. [$_{ZP}$ XP Z … [$_{HP}$ XP H [$_{YP}$ … XP…]]]

Suppose that H and Z are phase heads and that XP stands for a *wh*-phrase and its copies. In (16a), XP is contained in the complement YP of the phase head H. In (16b), XP does not undergo cyclic movement before the higher phase head Z is merged into the structure. At this point, Spell-Out applies to YP containing XP. We assume, following Bošković (2007), that pronunciation is fixed only for heads of trivial chains, not for lower elements (traces/copies) in non-trivial chains[8]. Since XP in (16b) is the head of a trivial chain, pronunciation of XP is fixed here. We also assume, following Bošković (2007), that materials sent to Spell-Out are not frozen for further syntactic computation[9]. This assumption makes it possible for XP to move to [Spec, ZP], as in (16c), and

forms a non-trivial chain (XP, XP). Finally, in (16d), Spell-Out sends all the rest of the materials to the phonology. Since the final representation (16d) includes the higher copy of the non-trivial chain (XP, XP) in [Spec, ZP], the information about the pronunciation of XP is sent to the phonology twice. Consequently, the derivational steps in (16) are ruled out as a violation of the Cyclic Linearization (15). On the contrary, in the derivational steps shown in (17), XP does undergo intermediate movement, as in (17b), before the higher phase head Z is merged into the structure[10]. At the point when Z is merged, as in (17c), Spell-Out applies to YP. In this case, XP contained in YP is not the head of a trivial chain but the lower copy of a non-trivial chain (XP, XP). Hence, the pronunciation of XP is not fixed here. The higher copy of XP further moves to [Spec, ZP], as in (17d), and the final Spell-Out applies in (17e), sending all the rest of the materials to the phonology. In the final representation (17e), although all the copies of the chain (XP, XP, XP) are spelled out, only the highest copy of the chain located in [Spec, ZP] is pronounced, other lower copies being deleted at PF. Hence, In contrast to (16), the information about the pronunciation of XP is sent to the phonology only once. Therefore, the derivational steps in (17) meet Cyclic Linearization.

Let us exemplify (16)-(17) as in (18)-(19), respectively.

(18) a. [$_{CP1}$ C_1 do you think [$_{CP2}$ C_2 [$_{TP}$ Mary likes what$_1$]]]

b. *[$_{CP1}$ what$_1$ C_1 do you think [$_{CP2}$ C_2 [$_{TP}$ Mary likes what$_1$]]]

(19) a. [$_{CP1}$ C_1 do you think [$_{CP2}$ what$_1$ C_2 [$_{TP}$ Mary likes what$_1$]]]

b. [$_{CP1}$ what$_1$ C_1 do you think [$_{CP2}$ what$_1$ C_2 [$_{TP}$ Mary likes what$_1$]]]

In (18a), Spell-Out applies to TP including *what$_1$*, the head of a trivial chain, and the pronunciation of *what$_1$* is fixed here. In (18b), Spell-Out applies to the root CP_1 after the movement of *what$_1$*, and all the rest of the materials are sent to the phonology. In this representation, the pronunciation of *what$_1$* is fixed again in [Spec, CP_1]. Therefore, the information about the pronunciation of *what$_1$* is duplicated and Cyclic Linearization is violated; hence the ill-formedness of (18). In contrast to (18), *what$_1$* in (19a) first moves to [Spec, CP_2] and escapes from TP. Although TP contains the lower copy of *what$_1$*, the pronunciation of *what$_1$* is not fixed here since it is not the head of a trivial chain. In (19b), Spell-Out applies after the successive movement of *what$_1$*, and all the rest of the materials are sent to the phonology. At this point, only the highest copy of the chain (*what$_1$*, *what$_1$*, *what$_1$*) is pronounced. As a result, the information about the pronunciation of *what$_1$* is seen in the phonology only once and Cyclic Linearization is satisfied; hence the well-formedness of (19).

3.2 Agree into Spell-Out Domain

The analysis thus far have tacitly assumed that Agree into Spell-Out domain is basically possible and that *wh*-movement in one fell swoop is syntactically allowed. One might argue against these assumptions in favor of the PIC, defined as follows.

(20) In a phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operation. (Chomsky 2000: 108)

The PIC (20), in fact, not only prohibits Agree into Spell-Out domain but also drives successive cyclic *wh*-movement via phase-edges. As illustrated below, Agree cannot take place into the Spell-Out domain TP, as in (21), whereas it *can* do if *what*$_1$ is moved to the edge of the phase head C_2, as in (22).

(21) [$_{CP1}$ C_1 do you think [$_{CP2}$ C_2 [$_{TP}$ Mary likes what$_1$]]]?

Agree

(22) [$_{CP1}$ C_1 do you think [$_{CP2}$ what$_1$ C_2 [$_{TP}$ Mary likes t_1]]]?

Agree

However, the assumption of Agree into Spell-Out domain is still tenable. As discussed in Bošković (2007), this assumption is empirically justified, as exhibited in the following example from Chukchee[11].

(23) ənan qəlɣilu ləŋərkə-nin-et [iŋqun Ø-rətcəmŋəv-nen-at qora-t].
he-inst regrets-3-pl that 3sg-lost-3-pl reindeer-pl(nom)
'He regrets that he lost the reindeers.'

In (23), the matrix *v* agrees with the embedded clause object, an Agree relation that violates the PIC. If our approach is correct, the well-formedness of (23) will follow as expected. Moreover, the assumption of Agree into Spell-Out domain is theoretically desirable. Let us look at the configuration in (24).

(24) [$_{ZP}$ Z … [$_{HP}$ H [$_{YP}$ …XP …]]]

In (24), YP has two discrete functions; a redundancy exists in the characterization of the PIC. For one thing, it is a syntactically opaque domain no syntactic operation from higher positions can penetrate. For the other thing, it is a chunk of the structure shipped to Spell-Out within the framework of Multiple Spell-Out. According to our approach, successive cyclicity of *wh*-

movement is reduced to Cyclic Linearization, hence YP as an opaque domain for Agree is superfluous and no longer necessary. The roles of the PIC are now reduced to the sole function to determine chunks of structures to be shipped to Spell-Out.

Consequently, our approach is not problematic but, instead, it has advantages over the PIC approach empirically and theoretically.

3.3 Back to the *Wh*-Island Constraint

Now, let us attempt to show how the *Wh*IC is deduced from Cyclic Linearization. Let us consider the example (1), repeated in (25).

(25) ?*[$_{CP1}$ Which book$_1$ do you wonder [$_{CP2}$ to whom$_2$ [$_{TP}$ John gave t_1 t_2]]]?

Suppose the derivation of (25) has reached the following stages.

(26) [$_{CP2}$ to whom$_2$ C_2 [$_{TP}$ John gave which book$_1$ t_2]]

(27) *[$_{CP2}$ which book$_1$ to whom$_2$ C_2 [$_{TP}$ John gave t_1 t_2]]

The step from (26) to (27) should be prohibited for two reasons. As we saw in (17), we assume that the movement of *which book*$_1$ is driven by the EPP-feature of [+*wh*] C. Since the EPP-feature of C_2 has already been satisfied in (26), the movement of *which book*$_1$ in (27) should be prohibited by the Last Resort. (27) is also prohibited since English is not a multiple *wh*-fronting language and disallows an interrogative Spec to be filled with multiple *wh*-elements in overt syntax, as in (28).

(28) *I wonder which book$_1$ to whom$_2$ John gave t_1 t_2.

Therefore, the derivation must proceed without moving *which book*$_1$ to [Spec, CP_2] as follows.

(29) [$_{CP1}$ $C_{1[Q]}$ … [$_{CP2}$ to whom$_{2[Q,\ \sout{wh}]}$ $C_{2[\sout{Q}]}$ [$_{TP}$ John gave which book$_{1[Q,\ \sout{wh}]}$ t_2]]]

At this point, Spell-Out applies to TP and it is sent to the phonology. The pronunciation of *which book*$_1$ is fixed here since it is the head of a trivial chain. As discussed above, we assume that Agree into Spell-Out domain is possible. We also assume that a material sent to Spell-Out is not frozen for further syntactic computation. Under these assumptions, although TP including *which book*$_1$ is sent to the phonology, nothing prevents C_1 from performing Agree directly to *which book*$_1$ as follows.

(30) [$_{CP1}$ $C_{1[\sout{Q}]}$ … [$_{CP2}$ to whom$_{2[Q,\ \sout{wh}]}$ $C_{2[\sout{Q}]}$ [$_{TP}$ John gave which book$_{1[Q,\ \sout{wh}]}$ t_2]]]

Agree

We assume that the AC works here, too. According to the definition (8), neither *to whom*$_2$ nor C_2 are active for Agree to apply since their uninterpretable features have already been valued. More specifically, in the sense of Attract Closest, *to whom*$_2$, being inactive, is not the goal closest to the probe C_1[12]. In addition to this, C_2, being inactive, is not the probe to seek *which book*$_1$ as its goal. Thus, the intermediate elements, *to whom*$_2$ and C_2, no longer intervene in the Agree relation between the probe C_1 and its closest goal *which book*$_1$. Notice also that, as discussed in section 2, we discarded the DIC as a constraint on *wh*-movement[13]. Nothing in syntax, then, prevents *which book*$_1$ from moving directly to [Spec, CP_1] in one fell swoop as follows.

(31) [$_{CP1}$ which book$_{1[Q,\ \sout{wh}]}$ $C_{1[Q]}$ …[$_{CP2}$ to whom$_{2[Q,\ \sout{wh}]}$ $C_{2[\sout{Q}]}$ [$_{TP}$ John gave which book$_1$ t_2]]]

Finally, Spell-Out applies to the root CP_1 and sends all the rest of the materials to the phonology as follows.

(32) [$_{CP1}$ which book$_{1[Q,\ \sout{wh}]}$ $C_{1[\sout{Q}]}$ …[$_{CP2}$ to whom$_{2[Q,\ \sout{wh}]}$ $C_{2[\sout{Q}]}$ [$_{TP}$ John gave which book$_1$ t_2]]]

In this representation, the pronunciation of *which book*$_1$ is fixed again in [Spec, CP_1]. At this stage, two pieces of information of the pronunciation of *which book*$_1$ are sent to the phonology. Cyclic Linearization is, therefore, violated at PF and, as a result of this, the ill-formedness of (25) is accounted for. Thus, we can deduce the *Wh*IC from Cyclic Linearization, a representational constraint at PF.

3.4 Insensitivity to the *Wh*-Island Constraint

If our approach is on the right track, it will be predicted that a language allowing multiple CP-Specs in overt syntax is insensitive to the *Wh*IC, as shown in the following steps of derivation.

(33) a. [$_{CP}$ wh_2 C_2 [$_{TP}$ … wh_1 …wh_2]]
b. [$_{CP}$ wh_1 wh_2 C_2 [$_{TP}$ …wh_1 …wh_2]]
c. [$_{CP}$ C_1 …[$_{CP}$ wh_1 wh_2 C_2 [$_{TP}$ …wh_1 …wh_2]]]
d. [$_{CP}$ wh_1 C_1 …[$_{CP}$ wh_1 wh_2 C_2 [$_{TP}$ …wh_1 …wh_2]]]
e. [$_{CP}$ wh_1 C_1 …[$_{CP}$ wh_1 wh_2 C_2 [$_{TP}$ …wh_1 …wh_2]]]

Since this language allows wh_1, as well as wh_2, to undergo intermediate movement as in (33b), it can escape from the Spell-Out domain as in (33c) and the pronunciation of its lower copy is not fixed at this stage. In the final step (33e), all the copies of wh_1 are spelled out, but only the highest copy survives in PF. This results in satisfying Cyclic Linearization, hence the insensitivity to the *Wh*IC is predicted. The following data from Bulgarian suggest that this prediction is bourn out.

(34) a. Vidjah edna kniga, *kojato*$_1$ se čudja *koj* znae *koj* prodava t_1
saw-1s a book which wonder-1s who knows who sells
'I saw a book *which* I wonder *who* knows *who* sells (it).'
b. ?*Koja ot tezi knigi*$_1$ se čudiš *koj* znae *koj* prodava t_1?
which of these books wonder-2s who knows who sells
'*Which of these books* do you wonder *who* knows *who* sells?' (Rudin 1988: 457)

Following Rudin (1988), we assume that there are two types of multiple *wh*-fronting languages. In one type, represented in Bulgarian, all fronted *wh*-phrases are located in [Spec, CP], while in the other type, represented by Serbo-Croatian, only the first fronted *wh*-phrase is located in [Spec, CP]. Under this assumption, we can account for the absence of the *Wh*IC in Bulgarian as a result of the derivational steps in (33).

4. Some Theoretical Consequences

4.1 Island-Repair by Sluicing

Our proposal will derive an interesting prediction, shown schematically in (35).

(35) a. [$_{HP}$ H [$_{YP}$ …XP …]]
b. [$_{ZP}$ Z … [$_{HP}$ H [$_{YP}$ …XP …]]]
c. [$_{ZP}$ XP Z … [$_{HP}$ H [$_{YP}$ …XP …]]]
d. [$_{ZP}$ XP Z … [$_{HP}$ H [$_{YP}$ …XP …]]]
e. [$_{ZP}$ XP Z … [~~$_{HP}$ H [$_{YP}$ …XP …]~~]]

This derivation proceed in the same way as in (16) except for the final step in (35e). In (35e), a deletion operation applies in PF and some parts of the structure including the lower copy of XP are unpronounced. Before Cyclic Linearization applies, two pieces of information about the pronunciation of XP have been sent to the phonology but one of them is lost here. If our approach is on the right track, this operation will save the structure from a violation of Cyclic Linearization.

This prediction, in fact, mirrors the amelioration of the *Wh*IC in sluicing contexts, as repeated in (36).

(36) a. ?*Which book$_1$ did every journalist go out today to find out [$_{CP}$ who was selling t_1]?
b. Every journalist went out today to find out who was selling a certain book, but I don't know which. (Boeckx 2008: 140)

According to our analysis, (36b) has the following PF-representation before ellipsis applies.

(37) …but I don't know [$_{CP}$ *which (book)$_1$* C [every journalist went out today to find out [$_{CP}$ who was selling *which (book)$_1$*]]].

In this representation, as illustrated in (35d), the two copies of *which (book)$_1$* are sent to the phonology, in violation of Cyclic Linearization. The violation, however, will be voided by the application of ellipsis to the relevant portions of the structure as in (38).

(38) …but I don't know [$_{CP}$ *which (book)$_1$* C ~~[every journalist went out today to find out [$_{CP}$ who was selling *which (book)$_1$*]]~~].

In this representation, the lower copy of *which (book)$_1$* has disappeared and the higher copy of *which (book)$_1$* is its single appearance. This satisfies Cyclic Linearization and, consequently, the *Wh*IC amelioration is accounted for.

In the literature of the Minimalist Program, a lot of researchers have attempted to account for this phenomenon by means of derivational mechanisms; *-marking (Bošković (2011), Merchant (2008), İnce (2009)) and ✓-loss (Lasnik (2001) and Nakao (2009)) are the representative cases. For instance, Bošković (2011) assumes that island repair realizes if an uninterpretable *-feature, syntactically assigned to a trouble maker, namely an intervening *wh*-phrase in his analysis, is deleted in PF. Specifically, in the following representation, ellipsis actually performs to achieve this outcome.

(39) …but I don't know [$_{CP}$ *which (book)$_1$* C ~~[$_{TP}$ …[$_{CP}$ *who** was selling *which (book)$_1$*]~~].

Our representational account has an advantage over these derivational ones in that the former dispenses with *-assignment, which violates the Inclusiveness Condition (Chomsky (1995, 2000, 2001)), and ✓-loss, which violates the No-Tampering Condition (Chomsky 2008)[14]. Our approach can do without these troublesome implementations[15].

4.2 Asymmetric Sluicing Effects

Our hypothesis accounts for an interesting contrast between the *Wh*IC and the Superiority Condition. Boeckx and Lasnik (2006) argues that *wh*-island effects disappear under sluicing, while superiority effects do not. Let us look at the following data from Serbo-Croatian.

(40) a. Every journalist went out today to find out who was selling a certain book…
b. ali ne znam koju (knjigu).
but NEG know which book (Boeckx and Lasnik 2006: 152)

(41) Somebody bought something, but…
a. Ivan i Marko ne znaju ko šta.
I. and M. NEG know who what
b. *Ivan i Marko ne znaju šta ko.
I. and M. NEG know what who (ibid.)

As mentioned earlier, following Rudin (1988), we assume that Serbo-Croatian is a multiple *wh*-fronting language, in which only the first fronted *wh*-phrase is located in [Spec, CP]. This assumption is confirmed by the fact that this language, in contrast to Bulgarian, disallows extraction out of *wh*-islands, as exhibited in (42).

(42) a. *Sta_1 si me pitao *ko* može da uradi t_1?
what have-2s me asked who can to do
'What did you ask me who can do?'
b. *...osoba, $koja_1$ sam ti rekao *gde* (on) živi t_1...
individual who have-1s you told where he lives
'... the individual who you asked me where (he) lives...' (Rudin 1988: 459)

On the basis of this analysis, we can account for the amelioration effects in (40) by the same way as we discussed for English cases. To recap briefly, PF-deletion nullifies the violation of Cyclic Linearization, raised by a phonological contradiction between the two copies of *wh*-movement across a *wh*-island.

As for the absence of Superiority amelioration in (40), it can be accounted for by means either of the two types of approaches to the Superiority Condition: one regards it as a derivational constraint, such as Shortest Move (Chomsky (1993)), Minimal Link Condition (Chomsky (1995)), Attract Closest (Chomsky (1995)) and Agree Closest (Chomsky (2000, 2001))[16], while the other regards it as a representational constraint at LF (Aoun and Li (2003))[17]. Deciding which approach is correct is beyond the purpose of this paper. No matter whether it is derivational or representational, in so far as the Superiority Condition is a constraint in narrow syntax, the results in (41) are obvious since no PF-operation can save the fatal problem born in narrow syntax[18].

4.3 Eliminating the DIC

So far, we have assumed that the DIC does not constrain *wh*-movement. We have also seen that *wh*-island effects can be explained by Cyclic Linearization without recourse to the DIC. Now, it is important to argue here that our proposal thus far can extend to A-movement as well. Let us

revisit the A-movement type of DIC effects, Super-raising, exemplified in (43) with its relevant parts of structure shown in (44).

(43) *John$_1$ seems that it is likely t_1 to win.

(44) [$_{TP1}$ $T_{1[\varphi]}$ seems [$_{CP}$ that [$_{TP2}$ it$_{[\text{NOM}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{[\text{NOM}, \varphi]}$ to win]]]].

In (44), [Spec, TP_2] is occupied by *it*, whose uninterpretable Case-feature is valued. According to a familiar DIC-based account, the defective intervener *it* blocks movement of *John* to [Spec, TP_1], causing the derivation to crash.

However, our Cyclic-Linearization-based account can do without the DIC. Look at the following stage of derivation.

(45) [$_{CP}$ that [$_{TP2}$ it$_{[\text{NOM}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{[\text{NOM}, \varphi]}$ to win]]]

At this embedded CP-phase level, the complement TP_2 is sent to Spell-Out. This includes *John*$_{[\text{NOM}, \varphi]}$, staying in-situ without movement. Since it is the head of a trivial chain, its pronunciation must be fixed here. In the next stage, depicted in (46), $T_{1[\varphi]}$ agrees with *John*$_{[\text{NOM}, \varphi]}$.

(46) [$_{TP1}$ $T_{1[\varphi]}$ seems [$_{CP}$ that [$_{TP2}$ it$_{[\text{NOM}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{[\text{NOM}, \varphi]}$ to win]]]]

Agree

Notice that nothing prevents Agree from taking place as in (46). Agree into Spell-Out domain is basically possible. Moreover, neither of the intermediate elements, *it*$_{[\text{NOM}, \varphi]}$ and $T_{2[\varphi]}$, valued and inactive under the AC, intervene between T_1 and *John*. This Agree relation drives the movement of *John*, checking the EPP feature of T_1 as follows[19].

(47) [$_{TP1}$ John$_{[\text{NOM}, \varphi]}$ $T_{1[\varphi]}$ seems [$_{CP}$ that [$_{TP2}$ it$_{[\text{NOM}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{[\text{NOM}, \varphi]}$ to win]]]]

Finally, Spell-Out applies to the root structure as follows.

(48) [$_{TP1}$ John$_{[\text{NOM}, \varphi]}$$T_{1[\varphi]}$ seems [$_{CP}$ that [$_{TP2}$ it$_{[\text{NOM}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{[\text{NOM}, \varphi]}$ to win]]]]

In this representation, the upper copy of *John* in the Spec of TP_1 is sent to the phonology once again. Therefore, the information about the pronunciation of *John* is sent to the phonology twice in total, which results in a phonological contradiction between the two copies of *John*, violating Cyclic Linearization. Consequently, Super-raising in (43) is correctly ruled out[20].

Our hypothesis, thus, renders the DIC superfluous with respect to Super-raising. As far as the *Wh*IC (a representative constraint on A'-movement) and Super-raising (a representative

constraint on A-movement) are concerned, they can be deduced from Cyclic Linearization and other modules of grammar without recourse to the DIC. This turns out to suggest that the DIC can be eliminated from grammar altogether[21].

5. Conclusion

In this paper, we have argued for a representational approach to the *Wh*IC. It was made clear that the *Wh*IC can be deduced from Cyclic Linearization, a PF-representational constraint. It was shown that the *Wh*IC cancellation in sluicing contexts can be explained as a natural consequence of copy-deletion in PF, which circumvents the violation of Cyclic Linearization. Asymmetric slicing effects in the *Wh*IC and the Superiority Condition were also explained as a contrast between the two constraint-types: PF-representational vs. narrow syntax. The elimination of the DIC was put forth by proposing a Cyclic-Linearization-based account of Super-raising.

Notes

I am grateful to anonymous *JISRD* reviewers for insightful comments and suggestions. All remaining errors and inadequacies are solely my responsibility.

1 See Aelbrecht (2010) for a derivational account of island-repair phenomena. I will leave a detailed examination of this work for future research.

2 The following example from Merchant (2001) will be added here.

(i) Sandy was trying to work out which students would be able to solve a certain problem, but she wouldn't tell us which one. (Merchant 2001: 88)

3 Irrelevant parts of the structure are omitted here.

4 Following Chomsky (2000), we assume the intermediate step of *wh*-movement is driven by the EPP-feature of [+*wh*] C.

5 In section 4, I will propose to eliminate the DIC from grammar altogether.

6 In this paper, I adopt Bošković's (2007) definition of Cyclic Linearization for ease of exposition. Fox and Pesetsky (2005), instead, defines it as follows.

(i) Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation. (Fox and Pesetsky (2005: 6))

Which definition is chosen is irrelevant for the discussion in what follows.

7 The spelled-out parts of the structure are shaded. In what follows, I will use this illustration in order to highlight Spell-Out domain. Irrelevant parts are omitted from the structure.

8 We assume the copy theory of movement, which states that traces left behind are copies of the moved elements.

9 We also assume that Agree into Spell-Out domain is possible. This matter is discussed later in this section.

10 I will assume, as mentioned in note 4, that this movement is motivated by the EPP-feature of the phase head H.

11 In order to support this claim, Bošković (2007) observes a lot of other cases such as agreement in existential constructions in English, LF anaphor movement, Agree in control constructions and First conjunct agreement.

12 Agree Closest is defined as follows.

(i) Agree Closest
Matching holds of a probe P and a goal G if
a. D(P) is the c-command domain of a probe P, and
b. matching feature of a goal G, is closest to P if there is no G' in D(P) matching P such that G is in D(G') (Chomsky 2000: 122)

13 See section 4 for a proposal to eliminate the DIC from grammar altogether.

14 No-Tampering Condition requires that no elements introduced by syntax are deleted or modified in the course of derivation.

15 A residual issue is how to account for other island-repair phenomena without recourse to *-assignment/✓-loss. I will leave this issue for future research.

16 The original formulation of the Superiority Condition is defined as follows:

(i) No rule can involve, X, Y in the structure
… X … [$_{\alpha}$ … Z … -WYZ …] …
where the rule applies ambiguously to Z and Y and Z is superior to Y. (Chomsky 1973: 246)

Minimal Link Condition and Attract Closest are defined in (ii) and (iii), respectively. See note 12 for the definition of Agree Closest.

(ii) Minimal Link Condition
α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K. (Chomsky 1995: 296)

(iii) Attract Closest

K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K. (Chomsky 1995: 297)

17 Aoun and Li (2003) argues for the Minimal Match Condition, a representational refinement of the Superiority Condition, defined as follows:

(i) An operator must form a chain with the closest XP it c-commands that contains the same relevant features. (Aoun and Li 2003: 29)

18 An anonymous reviewer suggested to me that there exists a curious situation in this strategy. In my account, structural "closeness" does not count (i.e. Agree into Spell-Out domain is possible) when it involves a long-distance dependency: the matrix C can ignore the closest embedded C (or the element in its Spec) and search farther into the Spell-Out domain. This, however, contradicts the situation, where structural "closeness" *does* matter (as in the case of Superiority) when it involves a local dependency: in the search within a simplex clause [C ...wh_1 ...wh_2 ...], C can only see/agree with the structurally superior wh_1.

My answer lies in the appropriate formulation of the notion "closeness." In my view, it must be defined under the control of the AC. Let us revisit the relevant configuration (30), repeated as (i), where C_1 can probe wh_1.

(i) [C_1 ... [wh_2 C_2 ...[...wh_1 ...]]]

Both wh_2 and C_2 are valued and inactivated by the AC, hence they can be ignored as transparent elements when Agree takes place from C_1. Consequently, wh_1 is certified as the closest goal for Agree/Attract from C_1. Contrastively, Superiority contexts, illustrated below, do not involve any inactivation of *wh*-elements before Agree takes place .

(ii) [C ...wh_1 ...wh_2 ...]

Since the structurally superior *wh*-element wh_1 preserves its uninterpretable feature at this stage, it must be the sole candidate of the closest goal for Attract/Agree; hence the Superiority effect.

19 Recall that we have assumed that movement in one fell swoop itself is syntactically allowed in general.

20 There is, however, another route to rule out (43) without recourse to the DIC. Bošković (2007) proposes to account for Super-raising by Agree Closest under the assumption of closeness defined as follows.

(i) In a structure $\alpha \ldots [\ldots \beta_{[F]} \ldots \gamma_{[F]} \ldots]$, probe α can only agree with the category bearing the [F] feature that is closer to α, where β is close to α than γ if β dominates or c-commands γ. (adapted from Müller 2011: 53)

Look at the following stage of derivation.

(ii) [T_1 seems [$_{CP(\varphi)}$ that [$_{TP2}$ it$_{[\text{~~NOM~~}, \varphi]}$ $T_{2[\varphi]}$ [is likely John$_{(\varphi)}$ to win]]]].

Since closeness is defined not only by c-command but also by domination, $CP_{(\varphi)}$ is closer to T_1 than *John*$_{(\varphi)}$ as a φ-feature holder. Therefore, T_1 cannot probe *John*$_{(\varphi)}$, interrupted by the presence of $CP_{(\varphi)}$, causing the derivation to crash. A problem of this strategy is to presuppose the conjunctive definition of closeness (i.e. c-command or domination.) Our Cyclic-Linearization-based approach can do without this ad hoc stipulation.

21 Another type of the DIC effect we must examine is the Head-Movement Constraint. I will leave this matter for future research.

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