Free Merge and Phases

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1. Introduction

Since Chomsky (2000), it has been hypothesized that CP and v*P are phases, and this idea has been adopted in various generative studies. Moreover, it has also been argued that DP and PP function as a phase (e.g., see Svenonius (2004), Hiraiwa (2005), and Matushansky (2005) for DP phases, and Raposo (2002) and Bošković (2004a) for PP phases). Furthermore, phases are claimed to be determined contextually in some other studies (e.g., see Bošković (2014) and references therein). In this way, many empirical investigations have been conducted to develop the research based on phases.

For the advancement of Phase Theory, it is necessary to legitimate ways to check phasehood with pertinent evidence. So far, varieties of diagnostics of phasehood have been proposed in the previous works (e.g., see Chomsky (2008), Citko (2014), and van Urk (2020), among many others). For example, the claims have been made that phases can be determined by utilizing the facts concerning quantifier floating (e.g., McCloskey (2000), Henry (2012)), reconstruction effects (e.g., Fox (1999, 2000), Legate (2003)), ellipsis (e.g., Gengel (2009), Bošković (2014), Takaki (2017), Todorović (2020)), extraction morpheme (e.g., Rackowski and Richards (2005), Bennett et al. (2012), and van Urk (2020)).

The fundamental idea of generative grammar has been drastically changed and developed under Chomsky's (2013, 2015) framework. Therefore, it is inevitable to reconsider traditional ideas from the prior studies in light of the advancement of the theory (e.g., see Otsuka (2017a, b), and Sakumoto (2022b) for the attempt). This

article points out that some types of diagnostics proposed in previous works seem unsustainable in terms of the framework in Chomsky (2013, 2015). This is because the view of Free Merge in Chomsky (2013, 2015) drastically differs from the previous one: under the Free Merge hypothesis, Merge can apply freely, so we need not assume anything to trigger syntactic operations, and this is clearly different from Chomsky's (2008) perspective: "only phase heads trigger operations [.] (Chomsky (2008: 144))" However, empirical evidence seems to cast doubt on the Free Merge assumption by Chomsky (2013, 2015). Since movement (Internal Merge) should be applied anywhere regardless of the presence of phase heads under the Free Merge assumption, evidence of movement has to be found anywhere. However, some of the diagnostics like successive-cyclic movement seem to suggest that movement bypasses only CP and v*P spec positions. Is the idea of Free Merge wrong? We pursue the possibility that the idea of Free Merge is right, and derive the solution based on the third factor (Chomsky (2005)).

The structure of this article is as follows. Section 2 introduces the basic notion of Phase Theory and the framework of Chomsky (2013, 2015). Then, we discuss two types of phasehood diagnostics, reconstruction effects and stranding (quantifier floating), and point out their problems. Section 3 overviews the evidence of the successive-cyclic movement and works on the issues raised by it. Section 4 concludes this paper. Section 5 is an appendix on Ellipsis.

2. Phase Theory

Before investigating phasehood diagnostics, let us briefly introduce the idea of Phase Theory and the framework in Chomsky (2013, 2015). The idea of phases is proposed by Chomsky (2000), which reduces the computational burden (e.g., see Chomsky 2001: 13). Under the assumption of Phase Theory, "[d]erivations proceed phase by phase (Chomsky (2000: 107))." As briefly discussed in Section 1, it has been standardly hypothesized that CP and v*P function as a phase (Chomsky (2000)):

(1)   A phase is CP or vP, but not TP or a verbal phrase headed by H lacking φ-features and therefore not entering into Case/agreement checking: neither

finite TP nor unaccusative/passive verbal phrase is a phase.

(Chomsky (2000: 106-107))

As for the definition of a phase, Chomsky (2000) proposes that "[p]hases are propositional (Chomsky 2000: 107)." Although a lot of other definitions have also been proposed (e.g., see Chomsky (2008, 2015), Kanno (2008), Takahashi (2010), Bošković (2014), Gallego (2010), Legate (2012)), we tentatively take the assumption that CP and v(*)P constitute a phase here. What is notable about Phase Theory is the Phase Impenetrability Condition (henceforth, PIC), as shown in (2).

(2)　　　Phase-Impenetrability Condition

In 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 operations.

(Chomsky (2000: 108))

Following this condition, further syntactic operations in transferred complements are not permitted, and Chomsky (2000) states that "[t]he Phase-Impenetrability Condition yields a strong form of Subjacency (Chomsky (2000: 18))." Thus, every movement has to target the phase edge, namely CP spec and v*P spec positions: movement takes place in successive-cyclic manners. As briefly touched above, Chomsky (2008) also makes the following assumption:

(3)　　　If only phase heads trigger operations (as I will assume), then IM will satisfy EF only for phase heads[.]　　　(Chomsky (2008: 144))

That is to say, only phase heads have a function to trigger syntactic operations like movement (Internal Merge). However, this assumption is different under the Free Merge hypothesis of Chomsky (2013, 2015), because (Internal/External) Merge can apply freely without any triggers as long as all syntactic objects receive a label properly.[1] Let us briefly consider how Chomsky's (2013, 2015) framework functions. Chomsky (2013) hypothesizes the following on the Labeling Algorithm (henceforth, LA):

(4)　a.　For a syntactic object SO to be interpreted, some information is necessary about it: what kind of object is it?　Labeling is the process of providing that information.

b.　…there is a fixed labeling algorithm LA that licenses SOs so that they can be interpreted at the interfaces, operating at the phase level along with other operations.　(Chomsky (2013: 43))

Minimal Search constitutes an essential ingredient of LA and looks for the nearest syntactic head as a label. The simplest case is the configuration of {X, YP}. In this instance, X is chosen as a label because it is the nearest. Then, consider the XP-YP configuration as shown in (5).

(5)　　　{XP, YP}

In this situation, minimal search cannot determine which is the nearest head. Under Chomsky (2013, 2015), there are two possibilities for labeling syntactic objects:

(6)　a.　{X̶P̶, YP}

　　　b.　{XP$_{[phi\ or\ Q]}$, YP$_{[phi\ or\ Q]}$}

The first possibility is movement: if XP becomes the copy, Y is chosen as a label because "the lower copy is invisible to LA (see Chomsky 2013: 44)." Second one is the prominent feature sharing:

(7)　　　Searching {XP, YP}, then, LA finds the same most prominent element – Q – in both terms, and can take that to be the label of α.

(Chomsky (2013: 45))

In (6b), the label can be determined as <phi, phi> or <Q, Q> through sharing the prominent feature. This is the idea of Chomsky (2013, 2015), and what is vital for the present paper is that movement takes place freely as long as all syntactic objects properly get a label for interpretation at the interfaces.

So far, we have introduced the idea of Chomsky's (2013, 2015) framework. Clearly, it is necessary to reconsider how Phase Theory works under Chomsky's (2013, 2015) Free Merge assumptions (see Sakumoto (2022b), who attempts to accommodate *wh*-island and critical freezing effects under Free Merge in Chomsky (2013, 2015) and Phase Theory). The aim of this paper is to scrutinize phasehood diagnostics under Free Merge.

2.1 Diagnostics of Phases

As briefly touched in Section 1, many diagnostics of phasehood have been proposed in previous studies. This section goes over two types of well-known diagnostics, such as reconstruction effects and stranding and points out their problems in terms of Free Merge in Chomsky (2013, 2015).

2.1.1 Reconstruction Effects

Let us first consider the reconstruction effects as the evidence of CP and v*P phases (see Lebeaux (1990), Fox (1999, 2000), Legate (2003), Sauerland (2003), and Citko (2014), among others):

(8)   a.   [Which (of the) paper(s) that he_1 gave to Ms. $Brown_2$] did every $student_1$
            hope t' that she_2 will read t ?

<div align="right">(Fox (1999: 173), citing Lebeaux (1990))</div>

       b.*[Which (of the) paper(s) that he_1 gave to Ms. $Brown_2$] did she_2 hope t' that
            every $student_1$ will revise t?

<div align="right">(Fox (1999: 173), citing Lebeaux (1990))</div>

(9)   a.   [Which of the books that he_1 asked Ms. $Brown_2$ for] did every $student_1$
            [____] get from her_2 _*_ ?   (Fox (1999: 175))

       b. *[Which of the books that he_1 asked Ms. $Brown_2$ for] did she _*_ give
            every $student_1$ _*_ ?   (Fox (1999: 174))

Examples in (8a, b) and (9a, b) indicate that the *wh*-phrases move through the edges of CP and v*P phases, respectively.[2] Let us consider the evidence of v*P phases in (9) as typical examples. Based on Lebeaux's (1990) work, Fox (1999) claims that successive-cyclic movement targets transitive v*P edges. In (9a), there is a reconstruction site in which a bound pronoun *he* is properly bound by *every student* and R-expression *Ms. Brown* is not bound by *her* (see Fox (1999: 175)). In contrast, (9b) does not have such a possible reconstruction site where a bound pronoun *he* is bound by *every student* and R-expression *Ms. Brown* is free. Therefore, the sentence in (9b) is ungrammatical no matter how reconstruction takes place.

Based on Fox's (1999) argument, Legate (2003) provides the evidence that even unaccusative and passive vPs constitute a phase, as shown in (10) (see also Legate

(2003: 508) for the examples with an unaccusative verb).

(10) a.   [At which of the parties that he$_i$ invited Mary$_j$ to]$_k$ was every man$_i$ t_k introduced to her$_j$ t_k?   (Legate (2003: 2))

   b.   *[At which of the parties that he$_i$ invited Mary$_j$ to]$_k$ was she$_j$ t_k introduced to every man$_i$ t_k?   (ibid.)

Given the reconstruction data in (10), vP behaves like a phase head, as argued by Legate (2003) (see Otsuka (2014) for his analysis). Furthermore, let us consider the data with regard to Condition A in (11) (see also Barss (1986: 25), Radford (2004)).

(11) a.   Which picture of herself$_{i/j}$ did Sam$_i$ say [Kim$_j$ likes __]?

                                                         (van Urk (2020: 114))

   b.   Which picture of herself$_{i/j}$ did you tell Sam$_i$ [Kim likes __]?

                                                         (van Urk (2020: 114))

van Urk (2020) argues that data like (11a) can be accounted for if we assume an intermediate copy in CP spec position or v*P spec position, and (11b) indicates the existence of a copy only in CP spec position "since the intermediate position must at least be below the indirect object (van Urk (2020: 114))." Thus, these reconstruction effects seem to support for CP and v*P phases.

   However, under Free Merge in Chomsky (2013, 2015), (Internal) Merge can apply freely in any position unless labeling issues occur. Therefore, the landing site does not have to be the edge of phases, and *wh*-phrases can be reconstructed anywhere in principle under Free Merge, contrary to Chomsky's (2000, 2008) assumption.[3] This suggests that reconstruction effects are no longer strong evidence in favor of CP and v*P phases.[4]

   If the Free-Merge assumption is correct, reconstruction effects arise regardless of the presence of a phase head (see also footnote 3). This can explain why unaccusative and passive vP behaves like phase heads such as transitive verbs when it comes to reconstruction effects, as observed by Legate (2003) (see (11a, b)): reconstruction can target anywhere under the idea of Free Merge in Chomsky (2013, 2015) (similar possibilities are suggested by Boeckx (2012: 48) and Legate (2012: 233-234), among others).

2.1.2 Stranding

Next, let us focus on stranding, which is also taken to be evidence of phases. What is most famous for stranding is quantifier floating (McCloskey (2000), Henry (2012), and Citko (2014), among others). It is observed in Henry (2000) that in West Ulster English, quantifier floating is possible even for A'-movement, unlike Standard English: a quantifier *all* can be floated at CP spec position in West Ulster English.

(12)　a.　　What did he say all (that) he wanted t?　　　　(McCloskey (2000: 61))

　　　b.　　What did he say (that) he wanted all?　　　　　　　(ibid.)

　　　c.　　What all did he say (that) he wanted t?　　　　　　(ibid.)

McCloskey (2000) adopts the stranding analysis of quantifier float (Sportiche (1988), among others): if quantifier floating results from successive-cyclic movement, floated positions indicate the place through which *wh*-movement is passed (McCloskey (2000)). Therefore, data in (12a) suggests that successive-cyclic movement targets the CP Spec position. Interestingly, Henry (2012) observes that the quantifier *all* can be stranded at the v*P edge position but not CP edge position in South Derry English, as shown in (13).

(13)　a.　　What did he do all on holiday?　　　　　　　(Henry (2012: 28))

　　　b.　　What did he all [$_{vP}$ do on holiday]?　　　　　　　(ibid.)

　　　c.　　What did he all [$_{vP}$ say that he did on holiday]?　　　(ibid.)

　　　d.　　*What did he [$_{vP}$ say all [$_{CP}$ that he did on holiday]]?　(ibid.)

In contrast, both v*P and CP strandings are possible in East Derry English:

(14)　a.　　What did he all [$_{vP}$ do in Derry]?　　　　　　(Henry (2012: 31))

　　　b.　　Where did he all [$_{vP}$ go in Derry]?　　　　　　　(ibid.)

　　　c.　　What did he say all [$_{CP}$ that he did in Derry]?　　　(ibid.)

Though the place to be stranded varies among languages, these stranding data seem to provide evidence for the CP and v*P phases.

At first sight, the argument based on quantifier stranding strengthens the idea that CP and v(*)P are phases, but it is important to notice that quantifier *all* can be floated in positions other than the phase edges even in the standard English (see also Bošković (2004) and references therein for the extensive data of quantifier floating):[5]

(15)   The patients (all) may (all) have (all) been (all) being examined.

(Cirillo (2009: 26))

As Kawamitsu (2021) claims, quantifier phrases can move in any position in principle under Free Merge. Thus, as with the reconstruction effects discussed above, quantifier floating cannot be strong evidence of the CP and v*P phases. Moreover, as Citko (2014) argues, quantifier floating can be analyzed not only by the stranding analysis but also by the adverbial analysis (see Bobaljik (2003), Mizuguchi (2014) and references therein for the adverbial analysis). For this matter, Boeckx (2008) argues (see also Boeckx (2008: 27) for the detail and Mizuguchi (2014) and Blümel (2018: 65)) for the similar point and discussions):

(16)   [T]he stranding data are good insofar as actual stranding is taking place. An alternative view on floated quantifiers (which exists; see Bobaljik 1998 for review) may nullify the evidence.   (Boeckx (2008: 27))

Hence, if the adverbial analysis is correct, instead of the stranding analysis, it seems complicated for us to check phasehood from the position of quantifier floating (see Bobaljik 2003 for the argument against the stranding analysis and Cirillo (2012) for argument in favor of it).

Although the detailed analysis of quantifier floating is beyond the scope of this paper, let us briefly discuss its dialectal variation. As noted by van Urk (2020), it is not clear why there is a dialectal variation:

(17)   [T]he question arises why all stranding languages do not behave like East Derry English, with stranding at both the CP and vP edge.   An open question here is what mechanism could restrict stranding to specific edges.

(van Urk (2020: 109))

Henry (2012) proposes a possible answer for this matter:

(18)   UG prescribes the positions where elements appear or transit and thus where copies occur, but individual grammars select a subset of those positions as possible for pronunciation of a floated quantifier.

(Henry (2012: 1))

This simply states that individual grammars determine where a floated quantifier is

pronounced. Though it is still not clear how exactly the pronunciation rule is applied (which is not our focus in this paper), the Free-Merge-based analysis can also account for the distributions of quantifier floating with (18): a quantifier *all* can move anywhere in principle under Free Merge (Kawamitsu (2021)), and its distribution is further restricted by individual grammars as in (18) (see Bošković (2004b) and Kawamitsu (2021) for their analyses of quantifier floating). What this paper attempts to argue here is that quantifier floating is no longer evidence for phasehood under the concept of Free Merge (e.g., see also Radford (2004), Citko (2014), references therein for other pieces of evidence of stranding).[6]

3. Free Merge and Successive-Cyclic Movement

So far, we have argued that reconstruction effects and quantifier floating are not strong evidence for indicating the phasehood under the idea of Free Merge. This section then considers the evidence of successive-cyclic movement, which at first glance seems to suggest that the idea of Free Merge is wrong.

First, let us think about *wh*-copying (see Felser (2004), Radford (2004), Lahne (2008), Citko (2014), among others):[7]

(19) a. Wen   glaubt   Du   wen   sie   getroffen hat?   German
        Who   think   you   who   she   met   has
        'Who do you think she has met?'   (Felser (2004: 544))

     b. Waarvoor   dink julle waarvoor   werk   ons?   Afrikaans
        Wherefore think you   wherefore   work   we
        'What do you think we are working for?'
                            (Felser (2004: 544, citing from Du Plessis (1977: 725)))

     c. Who do you think who is in the box?   Child English
                            (Citko (2014: 80, citing from Thornton (1990: 204)))

As is exemplified in these examples, the copy of the *wh*-phrase is pronounced in the intermediate position. This phenomenon is observed, for example, in German, Afrikaans, and even child English, as shown in (19a-c). Felser (2004) and Citko (2014) argue that *wh*-copying indeed shows evidence in favor of successive-cyclic

movement, though *wh*-copying has unique properties (e.g., see Felser (2004), Citko (2014) for its details). It has also been well known that partial movement is evidence for the successive-cyclic movement (e.g., see Felser (2004), Citko (2014), references therein):

(20) a. Was glaubt Hans [mit wem Jacob jetzt spricht]? [German]
　　　 what believe Hans　win　wem Jacob now talks
　　　 'Who do you think Maria has spoken with?'

　　　　　　　　　　　　　　　(Citko 2014: 82, cf. McDaniel 1989: 569)

　　 b. Jak myślisz [co Maria zrobi]? 　　　　　[Polish]
　　　 how think.2.$_{SG}$ what Maria do.3$_{SG}$
　　　 What do you think Maria will do?' 　　　　(Citko (2014: 82))

Just as in the case of *wh*-copying, two *wh*-phrases appear in CPs in the embedded and matrix clauses: in partial *wh*-movement, "the expletive *wh*-pronoun *was* 'what' — rather than a copy of a contentful *wh*-phrase—occupies the (Spec,CP) position of the matrix clause[.] (Felser (2004: 551))" These two constructions are similar, but partial *wh*-movement exhibits different properties from *wh*-copying (the copy construction) (e.g., see Felser (2004), Citko (2014), and references therein for the detail).

　　　Inversion is also taken as evidence of successive-cyclic movement in many languages (e.g., see Henry (1995), Radford (2004), van Urk (2015), and references therein), and hence it also supports the argument of phases. Let us consider the data from Belfast English:

(22) a. Who did John hope [$_{CP}$ would he see t]?

　　　　　　　　　　　　　　　(Henry 1995:109), Belfast English)

　　 b. What did Mary claim [$_{CP}$ did they steal t?]

　　　　　　　　　　　　　　　(Henry 1995:109), Belfast English)

In (22a, b), it can be argued that T-to-C movement arises due to *wh*-movement, as claimed by Henry (1995). If inversion is caused by *wh*-movement, data like (22) suggest the CP edge position, as claimed by Henry (1995), van Urk (2015) (see van Urk (2015) and references therein for the evidence in *v*P area).

　　　Let us next discuss morphological reflexes as evidence for phasehood (e.g.,

Rackowski and Richards (2005), Bennett et al. (2012), and van Urk (2020)). Bennett et a1. (2012) argue that in Defaka, extraction morpheme *ke* appears at the verb phrase as the result of successive-cyclic movement, as illustrated in (23) and (24).

(23)   Bòmá **ndò**   ì ésé-kà-rè-**kè**

         Boma **FOC**   I see-FUT-NEG-**KE**

         'I will not see Boma' (focused object)   (Bennett et al. (2012 : 294))

(24)   Brucei   **ndò/*kò**   Bòmá   jírí-*(**kè**) [t_i á   ésé-mà]$_{CP}$

         Bruce   **FOC/*F.SBJ**   Boma   know-**KE**   her   see-NFUT

         'Boma knows (that) Bruce saw her'   (Bennett et al. (2012: 297))

In (23), focus movement takes place to move the object to the sentence initial position. In (24), the focus phrase moves from the embedded subject position. In both sentences, extraction morpheme *ke* appears at verb phrases. Interestingly, Bennett et a1. (2012) observe that the extraction morpheme does not appear in the case of local subject extraction, as shown in (25).

(25)   ì   **kò**   Bòmá ésé-kà-rè

         I   **F.SBJ**   Boma see-FUT-NEG

         'I will not see Boma' (focused subject)   (Bennett et al. (2012: 294))

These data make Bennett et al. (2012) conclude that extraction morpheme *ke* appears as the result of "successive-cyclic movement through the edge of the *v*P phase (Bennett et a1. (2012: 301))." Furthermore, Boeckx (2008) uses the following Bantu data on aspectual auxiliaries (from Carstens (2001)) as evidence of successive-cyclic movement).

(26)   (Mini)   ni-li-kuwa   ni-ngali   ni-ki-fanya   kazi.

         (1SG-PRON)   1SG-PAST-be 1SG-still 1SG-PERF-do   9work

         'I was still working.'   (Carstens (2001: 150))

Also, Boeckx (2008) presents the data on the past participle agreement in French:

(27)   Les   chaises   ont   été   repaintes.

         the   chairs   have.pl.   been   repainted.fem.pl

         'The chairs were repainted.'   (Boeckx (2008: 33))

There is much other evidence for indicating the successive-cyclic movement via the

CP spec position: complementizer agreement (e.g., McCloskey (2001) (e.g., see Boeckx (2008), Citko (2014) for other evidence). Chomsky (2015) makes the following statement on morphological evidence:

(28)   "[I]t follows that movement must be successive strict cyclic, universally, with visible effects in some languages at v*P (Indonesian, Dinka) just as at CP (in many languages)."   (Chomsky (2015: 11))

In this way, morphological evidence is also thought to support the idea of successive-cyclic movement (see also Boeckx (2008) for argument against *wh*-agreement as successive-cyclic movement).

Notice that these pieces of evidence seem to suggest that movement bypasses phase edge positions (but e.g., see Boeckx (2008)).[8] However, if the assumption of Free Merge is correct, syntactic objects can move anywhere as long as labeling issues do not arise as in Chomsky's (2013, 2015) framework. Then, why does successive-cyclic movement mainly target only phase edges positions but not other positions? The movement copy, for example, should appear anywhere if the application of Internal Merge is free, but *wh*-copying in German appears only in CP spec position (e.g., Felser (2004)). Does this mean that the Free Merge assumption is not correct? Then, is it necessary to restrict the application of Merge by assuming edge features in Chomsky (2008), for example? Following the spirit of the Strong Minimalist Thesis (SMT) (Chomsky (2000)), we argue that the Free Merge assumption is correct, and solve the problems based on the idea of the third factor.

3.1 Solution and Discussions

The problem discussed in the last section is why evidence for successive-cyclic movement appears only phase edge positions under the idea of Free Merge. This means that such movement only targets phase edge positions. This can be related to the problem pointed out by Otsuka (2017b). He argues that traces can be generated infinitely as long as the final derivation is successful under Chomsky's (2013, 2015) idea, as shown in (29).

(29)   [$_{<phi, phi>}$ <u>John</u> seems [$t\ t\ t\ t\ t\ t…$ to be a genius]].

(Otsuka (2017b: 133, partially modified))

He argues that such a derivation is not economy but allowed under the Free Merge assumption (see Otsuka (2017b) for his solution). It seems that redundant operations are disallowed in the narrow syntax even under the Free Merge assumption. This is reminiscent of economy principle, specifically least effort principle in Chomsky (1991):

(30)   The intuitive meaning is that derivations must be as economical as possible: there is no superfluous rule application. The intuitive content of this idea, however, is spelled out in terms of specific notions of cost that distinguish UG principles from language-particular properties, introduce locality considerations, and so on. We thus have a plausible "least effort" principle, but a principle that is apparently specific to the language faculty in its actual formulation.   (Chomsky (1991: 437))

We argue that the idea of least effort principle works even under Free Merge of Chomsky (2013, 2015) (but see Hayashi (2022: 76)). As in (30), Chomsky (1991) originally considers that least effort principle is "specific to the language faculty in its actual formulation (Chomsky (1991: 437))." Now, it is considered that economy principle is reduced to the third factor property (see Chomsky (2008: 134), Narita (2018: 199) and Chomsky (2021: 36) for this point and Chomsky (2005, 2013: 37) for the third factor), so this principle does not restrict Merge itself. Hence, we argue that assuming least effort principle under Free Merge is validate. Let us take a derivation of a simple sentence for an example:

(31)   Who do you think {~~who~~ {C {$_{<phi, phi>}$ John likes ~~who~~}}}.

In this derivation, the *wh*-phrase in the embedded clause can move anywhere freely in the narrow syntax. However, it must move to the CP spec position for further computation because of PIC. Of course, movement can target anywhere in principle in the narrow syntax under the idea of Chomsky (2013, 2015), but moving to other positions is prohibited by the economy principle (see Chomsky (1991: 433) for successive-cyclic movement and Subjacency (Chomsky (1973)) or island (Ross (1967)). Therefore, it is correctly expected that successive-cyclic movement discussed

here targets only phase edge positions even under Free Merge based on Chomsky's (1991) idea.

It has been assumed that successive-cyclic movement is blocked by island effects (e.g., see Ross (1967) and Chomsky (1973), among others). Many studies analyze island effects in light of phases or PIC (e.g., Chomsky (2008), Kanno (2008), among many others). For example, Kanno (2008) argues island effects disappear if CP in the embedded clause does not form a phase from the following examples (see also Grano and Lasnik (2018), Sakumoto (2021a, b, 2022a, b), among others).

(32) a. *Sam, who I know when you said you saw t,…   (Frampton (1990: 69-70))

 b. *The Matterhorn, which I found out why he announced that he climbed t,…   (Frampton (1990: 69-70))

(33) a. Sam, who I know when t try to see t,…   (Frampton (1990: 69-70))

 b. The Matterhorn, which I've decided when to attempt to climb t,…

(Frampton (1990: 69-70))

Kanno (2008) argues that phases are defined by the presence of two features (Tense features and Agree features) (see also Chomsky (2008, 2015), Saito (2017a, b), Legate (2012), Sakumoto (2021a, 2022b), among others for the discussion of phi (Agree) features and phases and related arguments). If the phase-based accounts of island effects are on the right track, it serves as phasehood diagnostics (see Sakumoto (2022b) for the analysis of island effects under Free Merge and PIC).[9]

4. Conclusion

We have reconsidered some previously proposed diagnostics for phasehood. And we conclude that the arguments based on reconstruction effects, quantifier floating cannot be maintained under the Free Merge hypothesis of Chomsky (2013, 2015). Furthermore, this paper has presented the solution to the apparent problem of the Free Merge assumption.

5. Appendix: Brief Discussion of Ellipsis

Let us here briefly consider another way to diagnose phasehood, Ellipsis (which is not affected by the hypothesis of Free Merge in Chomsky (2013, 2015)).[10] In the literature, many researchers emphasize the relationship between phases and Ellipsis (e.g., see Boeckx (2009), Gengel (2009), Boškovic (2014), Takaki (2017), and Todorović (2020), among others).   For example, sluicing can be explained under Phase Theory: the complement of a phase head (= IP) undergoes ellipsis, as shown in (34).

(34)   They arrested someone, but I don't know [CP who C [IP they arrested]].

(Boškovic (2014: 42))

The same analysis can be applied to NP-ellipsis and VP-ellipsis, as shown in (30) and (35).

(35)   You like Jane's book, and I like [DP Peter's [NP book]].

(Boškovic (2014: 42))

(36)   Luis will run the race and Nana will too.   (Boškovic (2014: 48))

However, it is difficult to investigate whether CP or v*P is a phase or not through Ellipsis for the following reasons: it is controversial what forms a phase when it comes to Ellipsis (e.g. CP, VP, PP, AP, DP, NP) and whether the phasal complements or phases themselves can undergo ellipsis, depending on the literature (see Boškovic (2014) for an overview and his analysis). Therefore, it is theoretically intriguing to analyze Ellipsis under Phase Theory, but we cannot say that it is strong evidence for phasehood.

Notes

[1] Note that the idea of Free Merge (which is first proposed in Chomsky (2004)) is already incorporated in Chomsky's (2008) framework, though it still requires a *trigger*, as in (3). However, Boeckx (2012) argues that "landing sites for 'movement' can be formed in the absence of phases, because every lexical item, not only phase heads, have an edge property enabling further merge, and no condition on phase edge accessibility can be imposed (Boeckx (2012: 48))." Hence, he concludes that "the motivation behind the two main roles of phases within narrow syntax—enabling successive cyclic movement and forming islands for movement—turn out to be theoretically very weak indeed." See also Legate (2012: 233-234) for related discussion.

[2] More specifically, (8a) can be explained even if reconstruction site is other than CP spec position. See van Urk (2020: 115) for the discussion and modified data, which argues for an embedded CP spec position.

[3] Boeckx (2008: 61) argues for the view that "movement proceeds through all available sites that separate the original position of the moving element and its ultimate landing site (Boeckx (2008: 40))." Müller (2010) also argues for the similar idea. See Abels (2003) for the opposite idea and Boeckx (2008), Müller (2010) and references therein for the detail discussions and Abel's problems. See also footnote 6.

[4] Den Dikken (2006) argues against Legate's (2003) idea for vP phases and provides the possibility that *wh*-phrases could be reconstructed to the edge of TP, arguing for the existence of TP phases. Under Free Merge, reconstruction can theoretically target either the v*P or TP edge position.

[5] Bošković (2004b) argues that floated quantifier cannot occur in theta positions.

[6] Thivierge (2021) also points out the following (see Thivierge (2021: 32) for the detail and Keine (2020) for the similar idea):

(i)   That is, reconstruction effects and *wh*-quantifier float only show that moving a phrase through the edge position is a possibility, not that it is a *necessity*.   (Thivierge (2021: 35))

[7] Falter (2004: 550, fn.6) argues that *wh*-copying does not appear at *v*P spec positions in German (but see van Urk (2020: 107) and references therein for copies at the *v*P spec position in Dinka).

[8] We put aside evidence of DP and PP phases and leave the discussion on it for future research. See, for example, Citko (2014), van Urk (2020), and references therein for PP and DP phases.

[9] But e.g., see Boeckx and Grohmann (2007) and Citko (2014) for problems.

[10] See Kanno (2008), Citko (2014), Thivierge (2021) and references therein for other diagnostics and discussions.

References

Abels, Klaus (2003) *Successive Cyclicity, Antilocality and Adposition Stranding*, Doctoral dissertation, University of Connecticut.

Barrs, Andrew (1986) *Chains and Anaphoric Dependence*, Doctoral Dissertation, MIT.

Bennett, Will, Aklnblyi Aklnlabi, and Bruce Connell (2012) "Two Subject Asymmetries in Dejaka Focus Constructions," *WCCFL* 29, 294-302.

Blümel, Andreas (2018) "Q-Float in West Ulster English and labeling," *Yearbook of the Poznań Linguistic Meeting* 4, 55-73.

Bobaljik, Jonathan David (2003) "Floating Quantifiers: Handle With Care," *The Second Glot International State-of-the-Article Book*, ed. by L. Cheng and R. Sybesma, 107-148, Berlin and New York: Mouton de Gruyter.

Boeckx, Cedric (2008) *Understanding Minimalist Syntax: Lessons from Locality in Long-Distance Dependencies*, Blackwell, Malden, MA.

Boeckx, Cedric (2009) "On the Locus of Asymmetry in UG," *Catalan Journal of*

Linguistics 8, 41-53.

Boeckx, Cedric (2012) "Phases beyond explanatory adequacy," Phases ed. by A. J. Gallego, 45-66, De Gruyter, Berlin.

Bošković, Željko (2004a) "Object Shift and the Clause/PP Parallelism Hypothesis," *WCCFL* 23, 101-114.

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

Bošković, Željko (2014) "Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis," *Linguistic Inquiry* 45, 27-89.

Carstens, Vicki (2001) "Multiple Agreement and Case-deletion: Against Phi-completeness," *Syntax* 4, 143-163.

Chomsky, Noam (1973) "Conditions on Transformation," *A Festschrift for Morris Halle*, ed. by Stephen R. Anderson and Paul Kiparsky, 232-286, Holt, Rinehart and Winston, New York.

Chomsky, Noam (1991) "Some Notes on Economy of Derivation and Representation," *Principles and Parameters in Comparative Syntax*, ed. by Robert Freidin, 417-454, Cambridge, MA: MIT Press. [Reprinted in The Minimalist Program, 1995, 129-166, MIT Press, Cambridge, MA.]

Chomsky, Noam (2000) "Minimalist Inquiries: The Framework," *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. by Roger Martin, David Michaels and Juan Uriagereka, 89-155, MIT Press, Cambridge, MA.

Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 1-52, 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 (2005) "Three Factors in Language Design," *Linguistic Inquiry* 36, 1-22.

Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory*, ed. by Robert Freidin, Carls P. Otero and Maria L. Zubizarreta, 133-166, MIT Press,

Cambridge, MA.

Chomsky, Noam (2013) "Problems of Projection," *Lingua* 130, 33-49.

Chomsky, Noam (2015) "Problems of Projection: Extensions," *Structures, Strategies and Beyond: Studies in Honour of Adriana Belletti*, ed. by Elisa Di Domenico, Cornelia Hamann and Simona Matteini, 3-16, John Benjamins, Amsterdam.

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

Cirillo, Robert John (2009) *The Syntax of Floating Quantifiers: Stranding Revisited*, Doctoral Dissertation, Universiteit van Amsterdam.

Cirillo, Robert John (2012) "A Fresh Look at the Debate on Floating Quantification," *Language and Linguistic Compass* 6, 796-815.

Citko, Barbara (2014) *Phase Theory: An Introduction*, Cambridge University Press: Cambridge.

Den Dikken, Marcel (2006) "A Reappraisal of *v*P Being Phasal – A Reply to Legate," ms., CUNY Graduate Center.

Du Plessis, Hans (1977) Wh movement in Afrikaans, *Linguistic inquiry* 8, 723-726.

Felser, Claudia (2004) "Wh-Copying, Phases, and Successive Cyclicity," *Lingua* 114, 543-574.

Fox, Danny (1999) "Reconstruction, Binding Theory, and the Interpretation of Chains," *Linguistic Inquiry* 30, 157-96.

Fox, Danny (2000) *Economy and Semantic Interpretation Cambridge*, MA: MIT Press.

Frampton, J. (1990) "Parasitic Gaps and the Theory of *WH*-Chains, *Linguistic Inquiry* 21, 49-77.

Gallego, Ángel J. (2010) *Phase Theory*, John Benjamins, Amsterdam.

Gengel, Kirsten (2009) "Phases and Ellipsis," *Linguistic Analysis* 35, 21-42.

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

Hayashi, Norimasa (2022) *Labels at the Interfaces: on the Notions and the*

Consequences of Merge and Contain, Kyushu University Press.

Henry, Alison (1995) *Belfast English and Standard English: Dialect variation and parameter setting*, Oxford University Press.

Henry, Alison (2012) "Phase Edges, Quantifier Float and the Nature of (Micro-)Variation," *Iberia* 4, 23-39.

Hiraiwa, Ken (2005) Dimensions of Symmetry in Syntax: Agreement and Clausal Architecture, Doctoral dissertation, MIT.

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

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

Keine, Stefan (2020) *Probes and Their Horizons*, MA: MIT Press.

Lahne, Antje (2008) *Where There Is Fire There Is Smoke: Local Modelling of Successive-Cyclic Movement*, Doctoral dissertation, University of Leipzig.

Lebeaux, David (1990) "Relative Clauses, Licensing, and the Nature of the Derivation.' *NELS* 20, 318-332.

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

Legate, Julie Anne (2012) "The Size of Phases," *Phases* ed. by A. J. Gallego, 233-250, De Gruyter, Berlin.

Matushansky, Ora (2005) "Going through a Phase." *Perspectives on Phases*: *MIT Working Paper in Linguistics 49*, 157-181.

McCloskey, James (2000) "Quantifier float and wh-movement in an Irish English," *Linguistic Inquiry* 31, 57-84.

McCloskey, James (2001) "The Morphosyntax of WH-Extraction in Irish," *Journal of Linguistics* 37, 67-100.

Mizuguchi, Manabu (2014) "Superiority Effects in Minimalism: A Case Study of A-Movement," *English Linguistics* 31, 563-582.

Müller, Gereon (2010) "On Deriving CED Effects from the PIC," Linguistic Inquiry 41, 35-82.

Narita, Hiroki (2018) "Review Article: The Minimalist Program: the Nature and Plausibility of Chomsky's Biolinguistics, by Fahad Rashed Al-Mutairi, 2014," Cambridge University Press, Cambridge.

Otsuka, Tomonori (2014) "An Extension of Feature-Inheritance," *English Linguistics* 31, 509-544.

Otsuka, Tomonori (2017a) "Radical Free Merger," *English Linguistics* 34, 34-68.

Otsuka, Tomonori (2017b) "A Reconsideration of the A/A-bar Distinction and Improper Movement," *JELS* 35, 131-137.

Rackowski, Andrea, and Norvin Richards (2005) "Phase Edge and Extraction: A Tagalog Case Study," *Linguistic Inquiry* 36, 565-599.

Radford, Andrew (2004) *Minimalist Syntax: Exploring the structure of English*, Cambridge University Press, Cambridge.

Raposo, Eduardo (2002) "Nominal Gaps with Prepositional Modifiers in Spanish and Portuguese." *Cuadernos de Lingüística* IX, Instituto Universitario Ortega y Gasset: 127-144.

Ross, John Robert (1967) *Constraints on Variables in Syntax*, Doctoral dissertation, MIT.

Saito, Mamoru (2017a) "Notes on the Locality of Anaphor Binding and A-Movement," *English Linguistics* 34, 1-33.

Saito, Mamoru (2017b) "A Note on Transfer Domain," *Nanzan Linguistics* 12, 61- 69.

Sakumoto, Y. (2021a). What Defines Phases? *Proceedings of the 27th English Linguistic Society of Japan* (JELS) 38, pp. 218–224.

Sakumoto, Y. (2021b). A Phase-based Analysis for Adjuncts, *Studies in English Linguistics and Literature* 31, pp. 195–221.

Sakumoto, Yuya (2022a) "An Analysis of Chinese Island in Phase Theory," *Proceedings of the Conference of the Student Organization of Linguistics in Europe* (ConSOLE) 30, 184-200.

Sakumoto, Yuya (2022b) "How to Restrict Movement under Free Merge," *English Linguistics* 39, 71-81.

Sauerland, Uli (2003) "Intermediate Adjunction with A-Movement," *Linguistic*

Inquiry 34, 308-314.

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

Svenonius, Peter (2004) "On the Edge," Peripheries, ed. by Davia Adger, Cécile de Cat and George Tsoulas, 259-287, Kluwer, Dordrecht.

Thivierge, Sigwan (2021) *Phasehood and Phi-Intervention*, Doctoral dissertation, University of Maryland, College Park.

Thornton, Rosalind Jean (1990) *Adventures in Long-Distance Moving: The Acquisition of Complex Wh-Questions*, Doctoral dissertation, University of Connecticut.

Takaki, Rumi (2017) "A Unified Account of Elliptical Constructions in Terms of Labeling Theory," *English Linguistics* 33, 445-477.

Todorović, Neda (2020) "Aspect Interacts with Phasehood: Evidence from Serbian VP-ellipsis", *Recent Developments in Phase Theory: Studies in Generative Grammar*, ed. by N. Corver, H. van der Hulst, R. Pancheva, 11-34, de Gruyter, Berlin.

van Urk, Coppe (2015) *A Uniform Syntax for Phrasal Movement: A Case Study of Dinka Bor*, Doctoral dissertation, MIT.

van Urk, Coppe (2020) "How to Detect a Phase," *Recent Developments in Phase Theory* (Studies in Generative Grammar), ed. by N. Corver, H. van der Hulst, R. Pancheva, 89-129 de Gruyter, Berlin.