On Headless XP Ellipsis and Its Implication for CP Ellipsis in Japanese and Korean*

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1   Introduction

Since Lasnik (1999), it has been argued how XP ellipsis is prohibited if the X head is moved out of XP (see also Funakoshi (2012) for the relevant discussion). This generalization is schematized in (1).

(1)   a. [$_{YP}$ Y [$_{XP}$ ~~ZP X WP~~]]
        b. *[$_{YP}$ X-Y [$_{XP}$ ~~ZP t_X WP~~]]

One such case is matrix sluicing in English. Take a look at the typical example, as shown in (2).

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(2)   A: Mary will see someone.
       B: Who C [~~TP~~ ~~Mary will see~~ t_{who}]?
       B′: *Who will-C [~~TP~~ ~~Mary~~ t_{will} ~~see~~ t_{who}]?

As a reaction to (2A), (2B) is available while (2B′) is not. This contrast in grammaticality seems to be at first odd since overt head movement is obligatory in matrix interrogative sentences. Therefore, one might expect that the grammaticality in (2B) and (2B′) was reversed, contrary to fact. This peculiar behavior of the head movement involved in relation to ellipsis follows from the generalization in (1). In (2B), sine the auxiliary *will*, which is resided in T, stays inside TP, ellipsis of TP is permitted. On the other hand, in (2B′) the auxiliary undergoes head movement to C. Consequently, TP turns to be a head-less projection, and thereby TP ellipsis is prohibited. This phenomenon is extended to ellipsis in the vP/VP domain in English:

(3)   a.   Mary ate a pizza and Tom did [$_{v*P}$ v* [~~VP~~ ~~a banana R(V)~~ $t_{a\,banana}$]] too.
       b.   *Mary [R(V)-v*(ate) [$_{VP}$ a banana $t_{R(V)}$ $t_{a\,banana}$]] and Tom [$_{v*P}$ R(V)-v*(ate) [~~VP~~ ~~a banana~~ $t_{R(V)}$ $t_{a\,banana}$]], too.

In (3a), the VP in the elliptical clause is a possible deletion site, yielding to a typical case of VP-ellipsis. By contrast, in (3b), head movement of R(V) to v* takes place. This results in prohibiting deletion of VP according to the generalization in (1). However, clear though these contrasts may be from the generalization in (1), it still lacks a principled explanation as to why headless XP ellipsis is not allowed. In this paper, I will pursue this enigma based on the Phase Theory, the current framework of the Minimalist Program, proposed by Chomsky (2000, 2001, 2004, 2008), and the idea of transition of phase-hood, presented by Chomsky (2015).

    This paper is organized as follows. In section 2, we will overview the framework adopted in this paper: the correlation between phases and ellipsis, and the recent proposal of transition of phase-hood put forth by Chomsky (2015). Based on the framework set up in section 2, section 3 is devoted to the proposals. In section 4, as implications of the current proposals, the so-called Null Complement Anaphora in English and CP deletion in Korean and Japanese will be discussed. Section 5 concludes this paper.

2   Framework

In this section, I overview the framework of this paper. First, in section 2.1, the correlation between phase and ellipsis is touched on. In section 2.2, I introduce the idea of transition of phase-hood proposed by Chomsky (2015).

2.1 Phase and Ellipsis

Since the Phase Theory advanced by Chomsky (2000, 2001, 2004, 2008), some researchers have proposed that licensing of deletion has something to do with phase (e.g. Boeckx (2009), Gallego and Yoshida (2008), Gengel (2009), Goto (2011), Takahashi (2002), among others). Now, let us consider how syntactic computations proceed under the Phase Theory (see Chomsky (2000)):

(4)

YP   α

                Transfer

Edge PhH   ZP
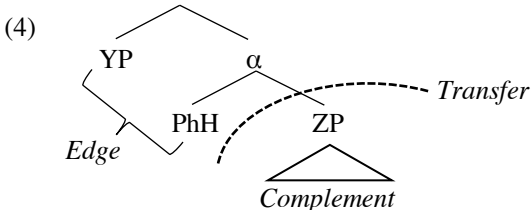
          Complement

In (4), first, the syntactic object ZP and a phase head PhH merge, yielding another syntactic object α. Then, YP merges to α. Once the phase is completed, the complement of PhH, namely ZP, is transferred to the Interfaces. The transferred domain is opaque for further syntactic computations (the Phase Impenetrability Condition (PIC)). Among the advocates who claim that licensing of deletion is arguably accounted for in terms of the Phase Theory, Takahashi (2002) proposes that deletion operation always targets the complement of a phase head, as represented in (5).

(5)

YP

    PhH   ZP
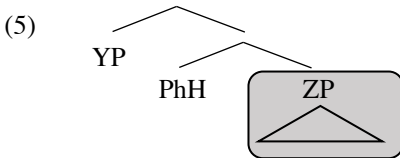
If this proposal is on the track, then, again, how syntactically are (2B′) and (3b) excluded with the generalization that head-less XP is not eligible for deletion? To account for this, let us touch on Chomsky's (2015) proposal for transition of phase-hood in section 2.2.

2.2 Transition of Phase-hood

As for phase-hood, it has been widely accepted that v* and C constitute a phase head since Chomsky (2000). Chomsky (2015) puts forth an intriguing

idea that states phase-hood can be inherited to a non-phase head.[1] For example, as for the v*-R(V) relation, phase-hood transition proceeds, as shown in (6).[2]

(6)　v*-R(V) relation
　　　[R(V)-v*_ [$t_{R(V) [phase]}$]]
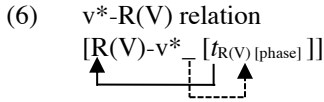
In (6), as Chomsky (2015) argues, universally R(V) moves to v* to make a verb. Then, once R(V) moves to v*, v* gets invisible because of its affixal nature. Further, at the point of the derivation, the phase-head feature of v* is inherited to the copy of R(V). As a result, v* ceases to be a phase head and, in turn, the copy of R(V) takes on a role as a phase head.

　　Extending Chomsky's (2015) idea, I assume that the same procedure can be applied to the C-T relation iff T head-moves to C:[3]

(7)　C-T relation
　　　[T-C_ [$t_{T [phase]}$]]
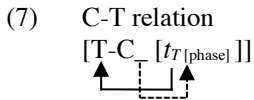
In (7), much in the same way as the v*-R(V) relation in (6), after T moves to C, C turns to be invisible. Then, the phase-food feature in C is inherited to the copy of T. Subsequently, the copy of T is transformed into a phase head.

　　With these assumptions in mind, I will present an account of why headless XP ellipsis is illicit in the next section.

3　Proposal

As we have seen in section 1, even if deletion targets the complement of a phase head, which is clearly a viable operation, deletion is not possible if the X head is moved out of the XP projection. This is observed in sluicing in English, as shown in (2), which is reproduced in (8).

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[1] Although I omit Feature Inheritance of uninterpretable features such as uPhi features throughout this paper, I assume that syntax needs this mechanism, according to Chomsky (2007, 2008).
[2] Since v* is used for transitive verb (and unergative verbs), there can be an object in (6). However, for the purpose of ease, an object is omitted.
[3] For the purpose of ease, specifiers such as subjects or a possible XP in Spec-CP are not represented in (7).

(8)   A: Mary will see someone.
        B: Who C [~~$_{TP}$ Mary will see t_{who}~~]?
        B′: *Who will-C [~~$_{TP}$ Mary t_{will} see t_{who}~~]?

For (8B), the explanation of its grammaticality is straightforward: Since the deletion operation targets the complement of the C head, which is a phase head, deletion of TP is possible. Some might wonder if the resulting syntactic representation would yield an unwanted outcome since overt head movement does not occur. However, according to Lasnik (1995, 1999), illegitimate PF objects, which emerge as a result of failure of checking strong features, do not raise a problem if the relevant illegitimate part is phonologically deleted. Therefore, the derivation in (8B), where no head movement takes place, is saved by deletion. On the other hand, for (8B′), adopting Chomsky's (2015) idea of transition of phase-hood, I propose that (8B′) is ungrammatical since C is no longer a phase head. Taking a closer look at (8B′), according to the assumption in (7), since the auxiliary *will* in T undergoes head movement to C, the C head becomes invisible and its phase-head feature is inherited to the copy of T, whereby it turns to be a phase head. As a result, the actual deletion operation fails to target the complement of a phase head. Thus, it follows that the ungrammaticality of (8B′) is led from the illegitimate deletion operation targeting the complement of a non-phase head.

    In turn, the current proposal implies that if the copy of T takes on a role as a phase head due to head movement, the complement of the copy of T should be a possible deletion site. This is borne out by the following examples:

(9)   a. If the prisoners can't escape by breaking the lock, then how CAN-
        C [$_{TP}$ they $t_{can\ [phase]}$ [~~$_{v*P}$ escape~~]]?
    b. Mary woke up at 7:00. When did-C [$_{TP}$ JOHN $t_{T[phase]}$ [~~$_{v*P}$ t_{John} wake up~~]]?

                                             (Hartman (2011: 385))

Now let us shift our attention to the v*-R(V) relation. First let us consider the situation where head movement from R(V) to v* does not occur.[4] Unlike what happens in (6), if head movement does not take place, v* remains as a phase head. In this case, the complement of v* should be the possible deletion site, bringing about VP-ellipsis, as illustrated in (10).

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[4] Chomsky (2013) argues that, under the tenet of Distributed Morphology, R universally head-moves to v*. However, in this paper, I regard it as more of the traditional V rather than R even though I use R(V) for convenience.

(10) $[_{v*P} v*_{[phase]} [_{VP} \text{DP R(V)} t_{DP}]]$

The idea that VP can be the target of deletion is demonstrated by the following example, where a quantifier seems to be remain in Spec-v*P:

(11) ?I think that some of the boys have done the assignment, but I'm pretty sure that they haven't $[_{v*P}$ all $[_{VP} \text{done the assignment}]]$.

(Baker (1981: 313))

Accordingly, if head movement does not occur between v* and R(V), the complement of v*can be a deletion site since the v* head keeps the status as a phase head.

The current proposal also offers another implication on the lack of Argument Ellipsis (AE) in English. As is well known, AE is not possible in English, as shown in (12).

(12) *Mary ate a pizza and Tom bought $[_{DP} \text{a pizza}]$.

The impossibility of (12) is accounted for as follows:

(13) $[_{v*P} \text{R(V)-v*} [_{VP} \text{DP} [t_{R(V)[phase]} t_{DP}]]]$

In (13), first the DP and R(V) merge. Then the DP moves to the Spec-R(V) (under the idea of Free Merge (Chomsky (2013, 2015))). Next, v* is introduced into the derivation. After v* discharging the relevant features to R(V), the DP and R(V) undergo agreement. Further, R(V) head-moves to v*, thereby v* gets invisible and the phase-head feature is inherited to the copy of R(V). Consequently, now the complement of R(V)-v* is not a possible deletion site since it is no longer a phase head. Further, since the complement of the copy of R(V) is now a phase, the complement of it should be a possible deletion site. However, since the DP is already moved to Spec-R(V), it is outside the deletion site. Thus, the current system can also successfully explain the lack of AE in English.

4   Extensions

In this section, extending the current proposal to CP complements, I will discuss whether deletion of CP complements is possible and how it is (im) possible in English, Japanese and Korean.

4.1 Null Complement Anaphora as CP Deletion in English

Traditionally, when apparently complement CPs are missing, it has been re-garded that there is no abstract syntactic structure in the missing part and it gets its meaning from the non-linguistic context (see Hankamer and Sag (1976)), Sag and Hankamer (1984), Shopen (1972), among others). Therefore, given the traditional background, one would argue against the idea that the missing CP is derived from deletion and claim that when CP complements are missing, they should be the case of Null Complement Anaphora (NCA). However, if missing CPs are the result of NCA, any type of verbs should allow its complement to be elided, contrary to fact. For example, manner-of-speaking verbs allow missing CPs while typically verbs such as bridge verbs or factive verbs do not, as illustrated in (14) and (15).

(14)   a. John mumbled/lisped (that he had seen Mary).
        b. John said *(that he had seen Mary).

(Erteschik-shir (2007: 197))

        c. *The missile test had failed, but only Prof. Hicks {said / thought / expected /predicted / admitted / wanted}.

(Kennedy and Merchant (2000: 1))

(15)   A: I regret/asserted [$_{CP}$ that we bought the charcoal grill].
        B: *I regret/asserted [$_{CP}$_], too.

(Sohn (2012: 108))

In this paper, I assume that CP NCA is derived through deletion and argue that when CP NCA is not possible, verbs which take CP complements do not constitute a phase. Now let us discuss how verbs and a CP complement merge. First, it is often claimed that verbs and CP complements do not undergo agreement, unlike between verbs and DP objects. Therefore, given a deriva-tion, where there is a CP and a verb has uPhi features, there would be a crash in the course of the derivation since the uPhi features of a verb is not valued. In principle, there seem to be two ways to merge a verb to a CP complement without uPhi features. First, Epstein, Kitahara and Seely (2016) propose that by External Pair Merge of v* and R, the features in v* are removed and v* ceases to be a phase head. Therefore, in this case no Transfer takes place. Another proposal is put forth by Legate (2003), where she argues that in ac-cusative and passive sentences v serves as a phase head, as well as v*, while it does not have uPhi features. In Legate's (2003) approach, Transfer occurs. These approaches are summarized in the table below:

(16)

	Phase-hood	Transfer
EKS (2016)	R-v*: No	No
Legate (2003)	v: Yes	Yes

Bearing these approaches in mind, if the idea that only the complement of a phase head can be the target of deletion operations is correct, then it should be expected that only verbs which consist of the v phase head allow CP deletion:

(17)   a. v* and R(V) undergo External Pair Merge: No CP deletion
        b. v and R(V) undergo Internal Pair Merge: CP deletion Possible

From the observations in (14) and (15), bridge and factive verbs are applied to the EKS's (2016) External Pair Merge while manner-of-speaking verbs are to the Legate's (2003) v as a phase head.
    The derivations of these types of Merge are illustrated in (18).

(18)   a. [R(V)-v* [[$_{CP}$ that he had seen Mary]]]
        b. [R(V)-v_ [$t_{R(V)[phase]}$ [$_{CP}$ that he had seen Mary]]]

In (18a), since v* and R(V) undergo External Merger, v* is no longer a phase head nor is the complex head R(V)-v*. Therefore, nothing can direct the CP complement to be marked as a deletion site. Consequently, CP deletion is not possible in (18a). Meanwhile, in (18b), v and R(V) are introduced into the derivation separately. Then, R(V) head-moves to v, whereby the phase-head feature in v is inherited to the copy of R(V). This leads to the possibility of CP deletion in English.
    The validity of these two types of Merge for v*/v and R(V) which take CP complements come from the (im)mobility of CPs:

(19)   a. That Bill betrayed his secret, John regretted. (Hiroe (1999: 57))
        b. That John be given the leave to go, I request. (Hiroe (1999: 57))
        c. That Mary made Tom angry, I think.

(20)   a. That Bill betrayed his secret was regretted by all of the students
          there.   (Hiroe (1999: 58))
        b. That John be given the leave to go has been requested by the-
          school authorities.   (Hiroe (1999: 57))
        c. That Mary made Tom angry was thought by every student.

(21) a. *That Denny was playing too much poker, which Bill muttered, ….
      b. *That he was sick of not getting fed, I think that Ben sighed _.
                                                      (Stowell (1981: 399))

(22) a. *That Denny was playing too much poker was muttered by Bill.
      b. *That we should turn down the stereo was whispered by Francine.
                                                      (Stowell (1981: 399))

As shown in (19) and (20), it is possible to topicalize or passivize the complement CPs and move them to a sentence initial position. This is straightforward given the non-phase status of R(V)-v*, which does not prevent anything or the complement itself from moving out of the complement position, since Transfer does not take place. Further, the ungrammaticality of (21) and (22) is accounted for under the current idea of v as a phase head since Transfer makes the complement clause opaque for further syntactic computations.

     To wrap up, under the principled idea of how to merge v*/v and R(V), this section has been devoted to missing CP complements in terms of deletion operation.

4.2 CP Deletion in Japanese and Korean

With the accounts suggested in section 4.1, I will discuss CP deletion in Japanese and Korean. First, in Korean, it has been observed that CP deletion is not always possible and verbs such as *sayngkakha* 'think' do not permit CP deletion while verbs such as *mit* 'believe' do, as presented in (23) and (24).

(23) A: na-nun [$_{CP}$ Yenghi-ka Toli-lul salangha-n-ta-ko]
          I-Top   Y.-Nom   T.-Acc love-Pres-Dec-C
          sayngkakha-n-ta.
          think-Pres-Dec
          'I think Yenghi loves Toli.'
      B: *na-to __ **sayngkakha**-n-ta.
          I-also   **think**-Pres-Dec
          'I also think.'
                                                      (Ahn and Cho (2011: 7))

(24) A: na-nun [$_{CP}$ Yenghi-ka Toli-lul salangha-n-ta-ko]
          I-Top   Y.-Nom   T.-Acc love-Pres-Dec-C
          mit-nun-ta.
          believe-Pres-Dec
          'I believe Yenghi loves Toli.'

B: na-to __ **mit**-nun-ta.
   I-also   **believe**-Pres-Dec
   'I also believe.'

<div align="right">(Ahn and Cho (2011: 8))</div>

Interestingly, these verbs also behave differently when it comes to the possibility of taking a DP as its complement:

(25) a. na-to ku kes/sasil-ul/pro   *__sayngkakhac__i-n-ta.
        I-too that thing/fact-Acc   **think**-Pres-Dec
        'I also think the fact.'
     b. na-to ku kes/sasil-ul/pro **mit**-nun-ta
        I-too that thing/fact-Acc   **believe**-Pres-Dec
        'I also believe the fact.'

<div align="right">(Ahn and Cho (2011: 10))</div>

Based on this observation, Ahn and Cho (2011) propose that null CP is *pro* (Contra Lee (2011), Lee and Kim (2010)). However, Lee and Kim (2010) present the following example:

(26) A: Yenghi-nun [caki-uy   nonmwun-i   hwullyungha-ta-ko]
        Y.-Top.   self-Gen paper-Nom   great-Pres-Dec-C
        mit-nun-ta
        believe-Pres-Dec
        'Yenghi believes that her paper is great.'
     B: haci-man, Toli-nun __ mit-ci-anh-nun-ta
        but   T-Top   believe-Not-Pres-Dec.
        'But, Toli does not believe.'

<div align="right">(Lee and Kim (2010: 1015))</div>

In (26), a sloppy interpretation is also possible as well as a strict interpretation, as shown in (27).

(27)   A: haci-man, Toli-nun [Yenghi-uy   nonmwun-i
          but   T-Top   Y-Gen   paper-Nom
          hwullyungha-ta-ko] mit-ci-anh-nun-ta
          great-Pres-Dec-C   believe-Not-Pres-Dec
          'Toli believes that Yenghi's paper is great.'   (Strict)

B: haci-man, Toli-nun [Toli-uy nonmwun-i
    but   T-Top   T-Gen   paper-Nom
    hwullyungha-ta-ko] mit-ci-anh-nun-ta
    great-Pres-Dec-C   believe-Not-Pres-Dec
    'Toli believes that his (Toli's) paper is great.' (Sloppy)

(Lee and Kim (2010: 1016))

The *pro*-based analysis by Ahn and Cho (2011) cannot predict the possibility of the sloppy interpretation. Therefore, here I assume that CP is missing by deletion. Then, I argue that for the THINK type verbs External Pair Merge of v* and R(V) applies and for the BELIEVE type verbs Internal Pair Merge of v and R(V) applies. For the THINK type verbs, like Phi features, according to Miyagawa's (2010) idea of topic/focus features, I assume that discourse configurational languages such as Korean and Japanese have δ features. The idea that the THINK type verbs undergo External Pair Merge is further demonstrated by the fact that they cannot take DPs as its complement, as shown in (25a). On the other hand, since for the BELIEVE type verbs δ features remain, they take DPs, as exemplified in (25b).

Now, let us turn to CP deletion in Japanese. Unlike Korean, it seems that any type of verbs in Japanese allows CP complements to be elided. One case is shown in (28).

(28)   Taroo-wa [CP Hanako-ga   kekkon-siteiru to] omo-tta.
       Taroo-Top Hanako-NOM married-be   C thought
       Jiroo-mo __ omo-tta.
       Jiroo-also   thought
       'Taro thought that Hanako got married. Jiro thought so, too.'

From this observation, I speculate that v* and R undergo Internal Merge in Japanese, which makes CP deletion possible. As is the case with the BELIEVE type verbs in Korean, this type of verbs in Japanese can take a DP as its complement, where agreement for δ features is possible:

(29)   Jiroo-mo sore-o omotta.
       Jiroo-also it   thought
       'Jiro thought about it, too.'

5   Conclusion

In this paper, following the idea that deletion always targets the complement of a phase head, I have investigated the correlation between the possibility of

deletion and head movement. The key insight to account for this is the proposal put forth by Chomsky (2015), where he argues that head movement makes the original phase head, in his sense v*, a non-phase head, and the originally non-phase head one down from v*, the copy of R, turns to be a phase head. Extending Chomsky's idea, I have argued that the same system holds true of the relation between C and T. Based on this assumption, I have proposed that ungrammatical cases of sluicing in English with an overt auxiliary in the C position due to the head movement is excluded by the idea that the complement of the C head is no longer the complement of a phase head. This further implies that the complement of a non-phase head, which turns to be a phase head due to the inheritance of the phase-head feature, can be a possible deletion site. This is supported by the examples, where the complement of T is deleted after head movement of T to C. Further, the lack of AE in English is expected since the deletion targets the complement of the copy of R(V). At the point of the derivation, the DP is already in Spec-R(V). Therefore, it escapes the deletion site. Finally, I have extended the current proposal to CP deletion in English, Japanese and Korean. I have claimed that the so-called NCA can be analyzed as CP deletion, and insisted that (un)availability of CP deletion is attributed to how v*/v and R(V) are merged.

As an important consequence in this paper, I have demonstrated that the current proposal strongly supports the idea that deletion can only target the complement of a phase head. Thus, the research on the correlation between deletion and head movement awaits further assessment in other languages.

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