

## **VP is elided during the course of derivation**

### **1. Introduction**

In spite of much study, there has been no consensus among researchers on the exact mechanism of ellipsis. One of the most widely accepted analyses claims that ellipsis occurs at PF after the whole sentence containing both the ellipsis licensor and the phrase that deletes are sent to PF (Merchant 2001, Lasnik 2001, *inter alia*). I will call this the traditional PF deletion approach. Recently, a school of thought has emerged arguing that ellipsis occurs during the course of derivation (Baltin 2012, Aelbrecht 2010, Park 2017). This approach will be called the derivational deletion approach. Although different in detail, the variants of the latter approach have one aspect in common in that the elision of a phrase occurs as soon as some syntactic operation caused by the ellipsis licensor is completed in narrow syntax.

Despite heated debates between these two approaches, there has been no consensus among researchers about exactly when English VP ellipsis (VPE) occurs. This is because both the traditional PF deletion approach and the derivational deletion approach make identical predictions on the properties of VPE with respect to extraction and scope (cf. Aelbrecht 2010, Baltin 2012). In this squib, I first introduce a novel paradox based on affixation facts found in VPE and ellipsis generating reprise fragments (RFs). Then, I argue this paradox can be straightforwardly resolved if VPE occurs during the course of derivation, while ellipsis generating RFs (ERF) does so at PF, under the assumption that it is at morphology that inflection occurs (Halle and Marantz 1993; Bobaljik 1995).

### **2. Inflection and the affixation paradox**

RFs refer to a type of non-sentential questions generated by repeating a part of preceding utterance with a prominent accent. They are uttered for expressing surprise or for the speaker's

confirmation of what they just heard in discourse. RFs are exemplified in (1).

- (1) A: Is John a sociolinguist?                      B: sociolinguist?  
      B: Tom wrote a black book.                    B: A black book?  
      C: Jessie ate dinner with her ex.            B: with her who?

Given that English standard fragments are derived through movement and deletion (Merchant 2004; van Craenenbroeck 2010; Shen 2018), syntactic constituents including heads and phrases can serve as standard fragments (Lobeck 1995; Merchant 2004, Sato and Hayashi 2018, *inter alia*). Meanwhile, according to Griffiths et al. (2020), RFs can be subwords, non-movable heads, and X's, as illustrated in (2).<sup>1</sup>

- (2) a. A: Did she bebother the children?  
      B: {BEBOTHER/be-WHAT-er}?

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<sup>1</sup> According to Griffith et al., several constituents (reflexively) dominating the focused element can function as RFs due to focus projection, as illustrated in (i). This shows that not only the focused element in (iBa), but also phrases containing it can be RFs.

- (i) A: John often thinks that Pete introduced him to Dracula.  
    B: a. [{WHO/DRACULA}]?  
      b. [to {WHO/DRACULA}]?  
      c. [introduced him to {WHO/DRACULA}]?  
      d. [that Pete introduced him to {WHO/DRACULA}]?  
      e. [thinks that Pete introduced him to {WHO/DRACULA}]?

b. A: She often sleeps under the bed.

B: UNDER?

b. A: Will the boss fire Dracula and Cthulhu on Monday?

B: and CTHULHU?

c. A: John's a neurophysiologist now.

B: NEURO?

(Griffiths et al. 2020)

To account for this difference, they suggest that standard fragments and RFs are derived in a different way. Since elements serving as standard fragments escape from ellipsis sites during the course of derivation through movement, they can survive ellipsis. On the other hand, elements functioning as RFs remain in their in-situ positions at the point of ellipsis, and every element except a focused one is elided at PF (cf. Abe 2015).<sup>2</sup>

Given that RFs are generated through ellipsis at PF, consider now the inflection facts in VPE and ERF. In the GB era, it was considered that inflected forms of verbs were created through T lowering. However, due to some syntactic constraints on movement such as the ECP,

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<sup>2</sup> Cho (in preparation) suggests that the following asymmetry supports the idea that RFs remain in their in-situ positions at the point of ellipsis.

(i) a. John told a rumor to someone, but I don't know who to. (SWIPING)

b. A: John told a rumor to Tom. B: To whom?/\*Who to? (RF)

If RFs involved movement and deletion as does swiping in (ia), then it would be predicted that preposition inversion would be permitted. The fixed order between the preposition and its complement both in the RF and its antecedent indicates that RFs do not escape the ellipsis site.

affixation began to be regarded as a post-syntactic operation (Bobaljik 1995, Lasnik 1995).

First, let us assume that inflection occurs at PF. According to the traditional PF deletion approach, VPE occurs after sentences are sent to PF. If VPE and affixation occurs at the same component PF, this approach must assume that affixation not only occurs at PF but also after VPE in order to generate the sentence in (3a). The reason is as follows: since the verb which the affix is supposed to attach to becomes phonologically deficient before affixation, *do*-support occurs as a last resort. If the order of the two operations were reversed, the affix that has already attached to the verb would be elided along with VP, and thus, *do*-support is bled. Then, it is expected that the grammatical sentence in (3a) would be incorrectly ruled out, and the ungrammatical sentence in (3b) would be erroneously ruled in.

(3) a. John sold his books, and Bill did ~~sell his books~~, too.

b. \*John sold his books, and Bill ~~sold his books~~, too.

Since RFs involve ellipsis at PF as Griffith et al. propose, the fixed order between ellipsis and affixation at PF instructs that ERF also be followed by affixation at PF. However, in what follows, I argue that this is not what happens in ERF. The sentences in (4) all show that the verb must be inflected when RFs are headed by a verb.

(4) a. A: John definitely criticized that book.

B: [F Criticize\*(d) WHAT]?

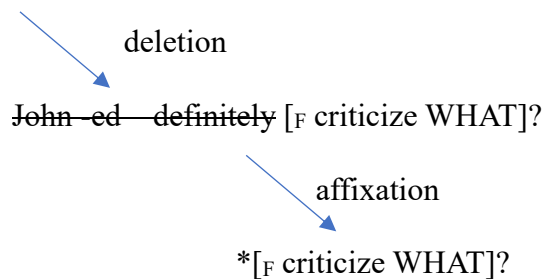
b. A: John had contracted pneumonia.

B: [F had/\*have contracted WHAT]?

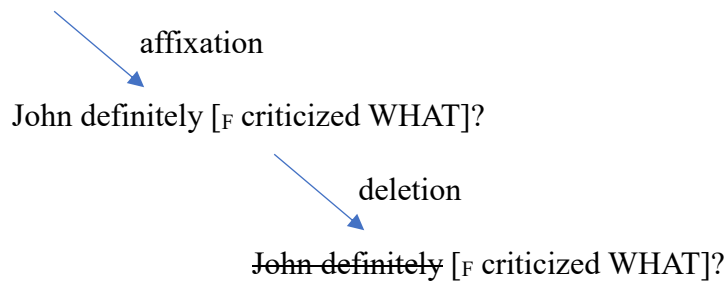
B': [F contracted/\*contract WHAT]?

(5a) illustrates what happens at PF when deletion is followed by affixation in (4aB). If this were right, then it would be expected that RFs headed by the verb with the bare form in (4) should be erroneously ruled in. This is because the tense morpheme is outside the focused verbal domain, and thus, it must be stripped away at PF. On the other hand, its corresponding acceptable RF is derived only when deletion is preceded by affixation, as shown in (5b).

(5) a. John -ed definitely [<sub>F</sub> criticize WHAT]?



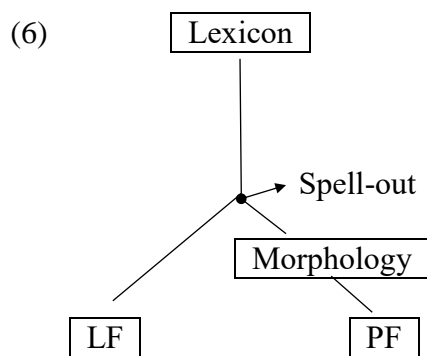
b. John -ed definitely [<sub>F</sub> criticize WHAT]?



To summarize, if VPE occurs at PF, as the traditional PF deletion approach assumes, and inflection occurs at PF as well, then it must be concluded that deletion must be followed by inflection. However, this cannot be compatible with the fact that ERF occurs at PF, even though ERF also involves ellipsis occurring at PF. This is because in order to generate acceptable RFs, deletion must be preceded by affixation at PF. On the other hand, acceptable RFs are derived, only when deletion is preceded by affixation at PF. The fact that the properties of affixation in VPE and ERF cannot be fully accounted for with one fixed order between inflection and ellipsis

will be referred to as the affixation paradox throughout this squib.

Now, let us consider the possibility that inflection occurs at morphology, while both VPE and ERF occur at PF. Marantz and Halle (1993) and Bobaljik (1995) argue that inflection occurs at morphology. Syntactic objects encounter this component en route to PF after spell-out, and every morphological operation occurs at this component, as illustrated in (6).



This model can successfully explain why the verb must be inflected when the verbal domain functions as the RF – the affix attaches to the verb at morphology, and elements outside the verbal domain are elided at PF, and thus, the affix can survive ellipsis. However, this model incorrectly predicts that affixes will be elided along with the verb in VPE. This is because the affix attaches to the verb before VPE occurs, insofar as we do not postulate an additional constraint preventing the affix from attaching to the verb at morphology. That is, this model encounters the same affixation paradox.

One might claim that the reason the verbs in the RFs in (4) are inflected since RFs are derived through predicate fronting followed by the elision of the rest of the sentence, given that inflected verb can project the fronted  $vP$ , as shown in (7a).

- (7) a. Everyone said that Susan lost her temper, and [ $vP$  lost her temper] she did.  
b. Everyone said that Susan lost her temper, and [ $vP$  lose her temper] she did.

(Thoms and Walkden 2018)

However, this possibility can be rejected for the following reasons: First, predicate fronting is considered as a special type of topicalization (Ott 2010). It would then be expected that information structural crash should occur. The reason is that the RF conveying a topic interpretation contains a *wh*-element inducing a focus interpretation, which results in a contradiction in information structure. Second, verbs heading fronted predicates can be non-inflected as well as inflected ones, as shown in (6b). If the RFs in (4) were a fronted predicate, it would be incorrectly predicted that the absence of the tense morpheme would be allowed, *contra to fact*. Additionally, we can easily find cases where verbal domains which cannot be fronted can function as RFs, as shown in (8) and (9).

- (8) Phrases headed by verbs with the passive/past participle morphemes cannot be fronted
- a. \*[Also examined for body parts] is being the tonnes of rubble being removed from the site.
  - b. \*[Also been examined for body parts] has the tonnes of rubble being removed from the site.
- (Harwood 2015)

- (9) Phrases headed by verbs with the passive/past participle morphemes can function as RFs

A: John must have been being hassled by the police.

- a. B: hassled by whom?
- b. B: been being hassled by whom?

The discussion so far has shown that as long as both VPE and ERF occur at PF, the

affixation paradox cannot be resolved regardless of whether inflection occurs at morphology or at PF. In the next section, I argue that the inflection paradox can easily be accounted for if VPE, ERF, and inflection differ in their timing.

### **3. The timing of VPE, ERF and inflection**

Aelbrecht (2010) proposes that XP ellipsis occurs when the licensor of XPE and the sister head of XP, which may or may not be identical to the ellipsis licensor and contains the E-feature, establish an Agree relation. Once this operation is completed, XP is sent to PF and every element inside XP becomes phonologically null. Inspired by this, Park (2017) develops an elaborate version of the derivational ellipsis approach. He assumes that every head, including lexical items, bears phonological featural matrices (PFMs) in narrow syntax, which are filled with phonological features through vocabulary insertion. Given this, he argues that ellipsis is the operation getting rid of the PFMs of every head inside the ellipsis site, and that this operation occurs during the derivation. When heads which have been deprived of their PFMs in narrow syntax are sent to the interfaces, vocabulary insertion fails to occur, and thus none of the heads inside the ellipsis site are pronounced. In this approach, XP ellipsis occurs as soon as all the featural requirements of the licensor of XP are satisfied in narrow syntax.

I propose that if VPE occurs during the course of derivation adopting Aelbrecht (2012) and Park (2017), while ERF and inflection do so at PF and at morphology respectively, the affixation paradox mentioned in the previous section can be accounted for straightforwardly. Consider the sentence with VPE in (10).

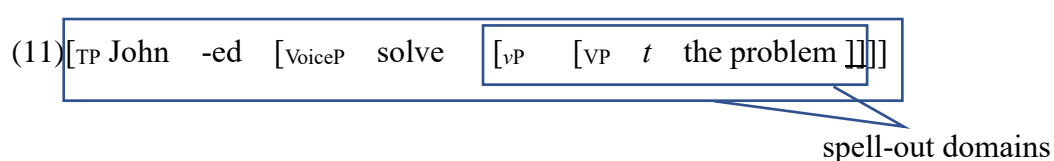
(10) John solved the problem, and Tom did, too.

In Aelbrecht's system, the ellipsis site of VPE is  $vP$ , its licensor is T, and it is Voice taking  $vP$



as its complement that contains the E-feature. When T establishes an Agree relation with Voice,  $vP$  is sent to PF, and every element in  $vP$  including the verb is not pronounced. In Park's approach, the elision of  $vP$  occurs when the two featural requirements of the licensor T –  $\phi$ -agreement and the EPP – are satisfied during the course of derivation. Then, the PFMs of elements inside the ellipsis site are removed in narrow syntax, and thus, those elements fail to undergo vocabulary insertion. For the simplicity of the explanation, we can say that in both approaches,  $vP$  in (10) is elided when TP is completed, which does not make any difference for the matter under discussion.

Let us see how these derivational ellipsis approaches can be interwoven with the Distributed Morphology view on inflection, and how this can resolve the aforementioned paradox. The non-elliptical sentence in (10) is generated as follows: the highest projection of the verbal domain is VoiceP, which is the phase (see Boskovic 2014), and the verb raises up to Voice. As such, the tense morpheme and the verb are located in the same spell-out domain (Chomsky 2000 *et seq.*). Due to this, these two items are sent to morphology at the same time, and subsequently, inflection occurs. This is illustrated in (11).



In the sentence containing the elided constituent in (10), the ellipsis site of VPE is  $vP$ , the complement of Voice. Given the fact that head movement of X is blocked by XP ellipsis (Lasnik 2001, Messick and Thoms 2016, Landau 2020), the verb in the elliptical sentence in (10) does not move to Voice, and remains inside the ellipsis site at the point where ellipsis occurs in narrow syntax, as illustrated in (12).

(12)[<sub>TP</sub> John -ed [<sub>VoiceP</sub> [~~<sub>vP</sub> solve [~~<sub>VP</sub> t the problem ]]]]]]~~~~

When the tense morpheme is sent to morphology, the verb is not visible for inflection since the lower spell-domain containing the verb has already left the morphology component. Thus, the affix is stranded at morphology, and thus, *do*-support occurs.

The present analysis can account for the reason why verbs projecting RFs are always inflected without any idiosyncratic assumptions. Note that all the transferred elements are sent to PF via morphology. That is, inflection occurring at the morphology component is always followed by ellipsis at PF. Then, the tense morpheme attached to the verb must be inside the focused phrase, namely the lower VoiceP segment, and thus, it must survive ellipsis. This can be represented, as shown in (13).

(13)a. A: John definitely criticized that book.

B: ~~John definitely~~ [<sub>vP</sub> Criticized WHAT]?

b. Narrow syntax: [<sub>TP</sub> John -ed [<sub>VoiceP</sub> definitely [<sub>VoiceP</sub> criticize<sub>i</sub> [<sub>vP</sub> t<sub>i</sub> WHAT]]]]?

Morphology: [<sub>TP</sub> John [<sub>VoiceP</sub> definitely [<sub>VoiceP</sub> criticize<sub>i</sub>-ed [<sub>vP</sub> t<sub>i</sub> WHAT]]]]?

PF: [~~<sub>TP</sub> John~~ [~~<sub>VoiceP</sub> definitely~~ [<sub>VoiceP</sub> criticize<sub>i</sub>-ed [<sub>vP</sub> t<sub>i</sub> WHAT]]]]?

To summarize, since the timing of VPE always precedes that of inflection occurring at morphology, the affix in T always survives ellipsis, which induces *do*-support. Meanwhile, ERF occurs at PF, preceded by inflection at morphology, and thus, RFs headed by a verb must be inflected ones. This resolves the aforementioned affixation paradox.

#### 4. Alternatives

In this paper, I adopted the idea that inflection occurs at morphology. It is noteworthy

considering the possibility that some interaction between this idea and Merchant's (2001) E-feature might resolve the inflection paradox under the traditional PF approach as follows: Merchant proposes that T, the licenser of VPE, contains the E-feature which ensures that elements inside the ellipsis site are phonologically null at PF. Suppose that morphology is assessible to the E-feature on affixes. When an affix in T containing the E-feature reaches morphology, this component knows in advance that affixes in T containing the E-feature will be stranded at PF, and thus, *do*-support occurs at morphology. Subsequently, *vP* is elided at PF. Then, the affix is never elided in VPE. On the other hand, if the affix does not bear the E-feature, *do*-support never occurs, and the affix attaches to the verb at morphology. Since the affixed form of the verb is sent to PF, and ERF occurs at PF, the verb heading the RFs must be inflected.

At first glance, this possibility can resolve the inflection paradox. However, I reject this for the following reasons: First, in order for this approach to work, we have to postulate a conjunctive condition consisting of sub-conditions on *do*-support. The reason is as follows. In addition to sentences with VPE, there are other cases where *do*-support occurs even when affixes in T do not contain the E-feature – interrogative sentences with T-to-C movement and sentences with the sentential negation located between TP and *vP*. Assuming such a conjunctive condition complicates grammar, and thus, we can say that this possibility is untenable.<sup>3</sup> Second, according to Aelbrecht (2010) and Baltin (2012), it is not T but Voice that contains the E-feature.

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<sup>3</sup> Given that the cases above allowing *do*-support have one aspect in common in that affixes are stranded at PF, one might claim that *do*-support occurs at morphology when affixes are stranded at PF. This can alleviate the problem of complicating grammar. However, this has a look-ahead problem, since an operation occurring at morphology is based on what will happen at its following separate component, namely PF.

If this is right, then it is not easy to explain how affixes in T allow *do*-support based on its interaction with the E-feature on Voice at morphology.

Next, let us consider the pronominal approach to VPE, whereby the ellipsis site is occupied by a phonologically null pronominal element in narrow syntax (Lobeck 1995; Hardt 1993, 1999; Schwarz 2000). This approach would resolve the affixation paradox as follows: in the VPE sentence, the null element is located at the ellipsis site in narrow syntax, and thus, the affix in T is stranded at morphology, which induces *do*-support. On the other hand, in the case of RFs occurring at PF, affix stranding does not occur at morphology. As a result, verbs heading RFs are always inflected.

This can easily account for the paradox. However, there are some reasons VPE must be analyzed with the deletion approaches rather than the pronominal approach. First, Merchant's (2001) P-stranding generalization is observed in VPE, as illustrated in (14) and (15). This implies that unlike the deletion approaches, this alternative needs some extra mechanism accounting for the P-stranding generalization in VP. Thus, this generalization favors the deletion approach over the pronominal approach.

(14)a. Who will Bill do away with?

b. \*With whom will Bill do away?

(15)a. Who will Bill do away with and who will Mary?

b. \*With whom will Bill do away and with whom will Jenny?

Second, it is not easy for this alternative approach to explain MaxElide effects without postulating the MaxElide constraint. Adopting the deletion approach, Messick and Thoms' (2016) account for MaxElide effects through parallelism, with the abandonment of MaxElide

constraint (Takahashi and Fox 2005, Merchant 2008, Hartman 2011). Given that the pronominal approach assumes that there is a phonologically null anaphoric element at a syntactic structure, the lexical array for the elliptical sentences must contain the null element. This indicates that an additional assumption allowing only elidable constituents with respect to MaxElide effects to be generated must be postulated, which is less economical than the deletion approach.

The analysis advanced in this squib can explain inflection facts in VPE and ERF without such theoretically ungrounded assumptions. Given that inflection occurs at morphology, while ERF occurs at PF, we can conclude that English VP is elided during the course of derivation.

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