To be or not to be elided: VP ellipsis revisited

Abstract

The main question that this paper addresses is: what happens to nonfinite auxiliaries under English VP ellipsis (VPE)? Do they remain overt like finite auxiliaries, or do they disappear together with lexical verbs? Akmajian & Wasow (1975) and Sag (1976) observed the following pattern: nonfinite *have* always stays overt, *being* is obligatorily elided, and *be* and *been* are optionally elided. We provide an analysis for this pattern. As preliminaries for our account we follow Chomsky (1993) and Lasnik (1995b) in assuming that English auxiliaries carry uninterpretable inflectional features which force the auxiliary to raise to the relevant inflectional head for feature checking at PF. As we argue that VPE includes the progressive projections in the ellipsis site, but nothing higher, the *have* and *being* data automatically fall out: *have* is base-generated outside the ellipsis site, so is never elided, whilst *being*'s landing site is inside the ellipsis site, so *being* is always elided. For *be* and *been*, which are base-generated in the ellipsis site and raise out of it to get their inflectional features checked, we take an optional raising approach: in non-elliptical sentences raising is obligatory, otherwise the derivation crashes at PF because of unchecked features. Ellipsis contexts, on the other hand, provide the option of not raising for *be* and *been*, because ellipsis then deletes *be* and *been* in their base positions, along with their unchecked features, avoiding the PF violation. We extend this account to other phenomena, such as VP fronting, tag questions, pseudo-clefts and predicate inversion.

Keywords: VP ellipsis, PF deletion, auxiliary verbs, head movement

1. Introduction: the puzzle

VP ellipsis (VPE) typically involves non-pronunciation of the verb phrase. This phenomenon, which has already been widely discussed for English in the literature, is illustrated in (1). The second conjunct of this sentence is interpreted as "…*and Peter was hassled by the police, too*", but the verb phrase is omitted because there is a salient antecedent in the first conjunct that renders the verb phrase in the second conjunct interpretable for the hearer (in fact, repetition of the full verb phrase often feels redundant).

(1) Betsy was hassled by the police, and Peter was, too.

In English VPE it is quite clear that finite auxiliaries cannot be elided, as in (2)a,b. The lexical verb, on the other hand, cannot survive ellipsis.[1] Even when finite, the English lexical verb is still elided under VPE, leading to insertion of the finite dummy auxiliary *do*, see (2)c,d.[2]

(2) a. An elephant can't fly, but maybe a rhino *(could) [~~fly~~].
b. I thought the auxiliary hadn't disappeared, but it *(had) [~~disappeared~~].
c. * The chicken didn't put the tuna on the table, but the penguin put [~~the tuna on the table~~].
d. The chicken didn't put the tuna on the table, but the penguin did [~~put the tuna on the table~~].

This is why it has been assumed that either finite auxiliaries or finite T act as the licensor for VPE, and that what is elided is VP, or more recently vP (Zagona 1982, 1988; Lobeck 1995; Johnson 2001; Merchant 2001; Gengel 2007a; Aelbrecht 2010), as is schematized in (3):

(3) Betsy was hassled by the police, and [$_{TP}$ Peter [$_{T^\circ}$ was [$_{~~vP/VP~~}$ ~~hassled…~~]], too.

The question this paper addresses is: what happens to nonfinite auxiliaries under VPE: do they pattern with the finite auxiliary and survive ellipsis, or do they disappear just like the lexical verb? Consider the maximum range of auxiliaries that one clause can contain, as exemplified in (4)a with (4)b as a schematic summary of the auxiliary sequence.[3]

(4) a. Betsy must have been being hassled.
b. finite modal > perfect HAVE > progressive BE > passive BE > lexical verb

Sag (1976) and Akmajian & Wasow (1975) observed that when VPE is applied to such an auxiliary sequence, not all auxiliaries behave alike, as (5) shows (from Sag 1976:31). Specifically, they assume that perfect *have* cannot

[1] Unlike with Verb-stranding VPE in languages such as Portuguese (see Cyrino & Matos 2005).
[2] We indicate a VP ellipsis site with strike-through. This notation is mainly used here for clarity, although our approach does adopt a PF deletion analysis of VPE.
[3] The auxiliary types (perfect, progressive, passive), abstracting away from surface forms, are indicated with capitals, whereas the actual morphological forms (*have*, *be*, *being*, *was* etc) will be given in italics.

be elided (see (5)a), whilst *been* can be optionally elided (see (5)b,c).[4] *Being*, on the other hand, is obligatorily included in the ellipsis site, (see (5)d). The table in (6) below summarises this pattern.

(5) Betsy must have been being hassled by the police, and…
   a. * Peter must ~~have been being hassled by the police~~, too.
   b. Peter must have ~~been being hassled by the police~~, too.
   c. Peter must have been ~~being hassled by the police~~, too.
   d. * Peter must have been being ~~hassled by the police~~, too.

(6)

	modal/finite aux	have	be[5]	been	being	lexical verb
elided	*	*	✓	✓	✓	✓
remaining	✓	✓	✓	✓	*	*

Table 1: Deletion of verbal elements in VP ellipsis

Since this pattern was first discovered, it has received little to no attention.[6] The aim of this paper therefore is to account for this pattern. The puzzle thus consists of three parts which an adequate analysis of English VPE has to cover. It needs to explain why VPE (i) never deletes *have*, (ii) optionally elides *be/been*, and (iii) always elides *being*. Our main claims are that VPE targets the progressive aspectual layer (when present), and that optional auxiliary deletion is the result of optional auxiliary raising out of the ellipsis site and rescue by PF-deletion in the case of non-raising.[7]

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[4] There is some discussion in the literature on whether or not the non-finite perfect auxiliary *have* can be elided under VPE. We address this issue in more detail in section 3.2. As the results of our exploration will be that *have* generally cannot be elided, we agree with the pattern observed by Sag (1976) and Akmajian and Wasow (1975), though admit that some dialectal variation may be involved..

It has been pointed out to us that the obligatory deletion of *being* could also be contested. Again, we keep the original pattern in mind as the one our analysis has to account for, and come back to the potential non-deletion of *being* in section 7.1 at the end of this paper.

[5] The data in (5) do not actually mention the behaviour of non-finite *be*. As is illustrated in section 3.1, however, this auxiliary patterns similar to *been* in that it can also be optionally elided.

[6] See, however, Akmajian, Steele & Wasow (1979) for an analysis, as well as Sailor (2012), Thoms (2012) and Bošković (to appear). In sections 4, 5 and 7 we discuss these approaches and their major drawbacks.

[7] We purposely only discuss VPE in finite clauses and stay away from infinitival clauses and gerunds. The judgements we collected on such clauses were too inconsistent to draw any generalisations from. We do not go into this issue here, and refer the interested reader to Thoms (2011: section 3.5.1) for some discussion. Thoms notes as well that VPE in infinitivals behaves differently from finite VPE in some respects and similarly in others. Although we do

Section 2 discusses some preliminaries needed for our analysis regarding the structure of the English verbal domain. The analysis itself is presented in sections 3 and 4, where we also show ways in which this approach is superior to other recent analyses of the data. Section 5 extends this account to related phenomena, namely VP fronting, pseudo-clefting, predicate inversion and tag questions. In section 6 we formalise how the progressive aspectual layer can be elided by framing VPE in terms of phasal ellipsis. Section 7 tackles some remaining issues, and section 8 concludes.

2. Preliminary ingredients of the analysis

2.1 The structure of the verb phrase

Following Tenny (1987), Kayne (1993), Cinque (1999), Iatridou, Anagnastopoulou & Izvorski (2001), Harwood (to appear b) and Bošković (to appear a), we take (7)a to have the structure in (7)b. Here, only the subject occupies its surface position. The capitalised auxiliaries are the abstract, uninflected verb forms in their base positions.

Crucially, we assume a modal layer just below T°, which precedes the perfect aspectual layer, which itself precedes the progressive aspectual layer, which precedes the Voice layer, which precedes VP. We also assume a paired layering in which each layer is comprised of two projections. The higher of the two projections is headed by the relevant auxiliary verb, whilst the lower projection licenses the inflectional form of the following verb.

Concretely, we take modals to be merged in their own independent ModP, whose head selects an infinitival phrase (InfP) licensing infinitival verb forms. The aspectual auxiliaries (perfect *have* and progressive *be*) are inserted in their own vP_{perf} and vP_{prog} shells, which select an aspectual PerfP and ProgP, respectively, licensing perfect and progressive verb forms. We also assume that these aspectual projections encode aspectual interpretations.[8] In the next subsection we clarify the role of these projections in relation to verbal inflection.

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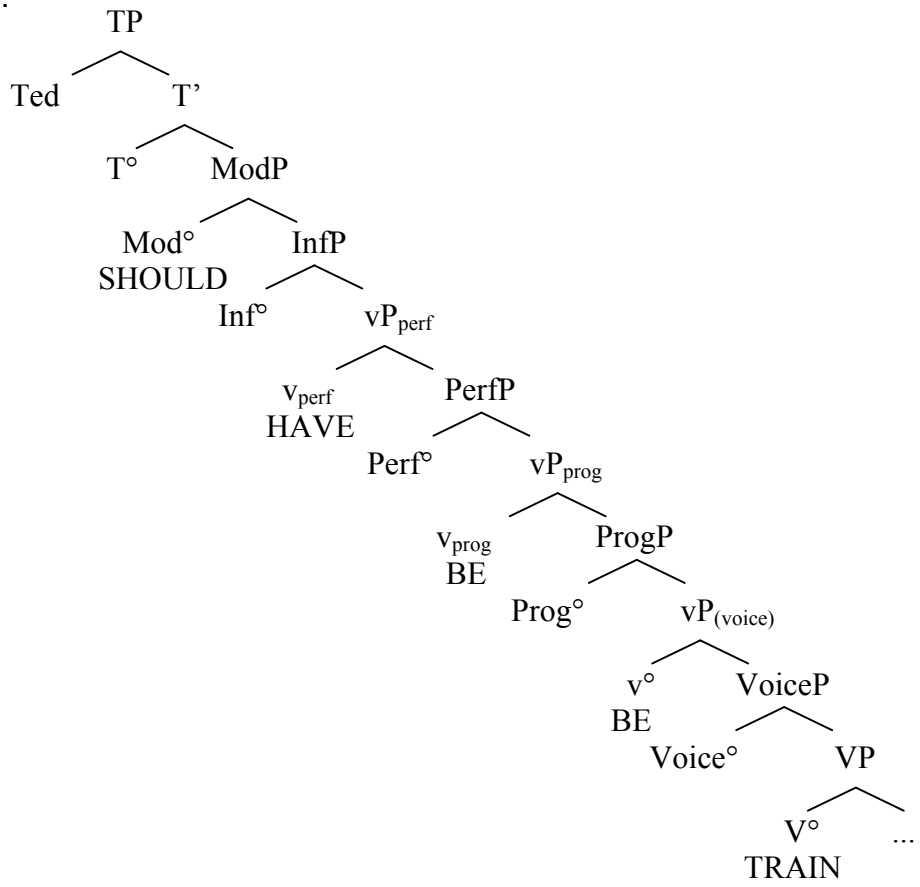
not agree with his conclusion that perhaps infinitival VPE involves a null proform instead of PF deletion, we adhere to his suggestion that we might not want to capture all cases of VPE with one and the same analysis. One argument in favour of a different approach is that Hebrew only allows for VPE in finite clauses. As for VPE in gerunds, there too the data are not clear. Thoms (2011: footnote 23) already mentions some variation in judgements given in the literature (see also Sag 1976, Aelbrecht 2010). For this reason we stick to the finite clauses, as these are already proving to be complicated enough at this point.

[8] In other words, neither the auxiliaries themselves, nor the vP shells they head are where the aspectual interpretation is encoded. This differs from the modal layer, because there it is the modal itself, in Mod°, that triggers the modal meaning, and not the InfP selected by it. This is not a crucial aspect of our analysis, however.

(7) a. Ted should have been being trained by a lion tamer.

b.



Since they are in complimentary distribution, we assume that passive *be* and copular *be* are both base-generated in the lowest vP shell which – following our notation – could also be labelled vP_{voice} (see Baker 1997; Eide and Åfarli 1997; Bowers 2002; Bošković 2004, to appear a; Harwood to appear b). VoiceP is situated below this, encoding the passive/active status of the clause.[9]

We assume a 'What You See Is What You Get' approach (WYSIWYG) to the English auxiliary/aspectual system in that the aforementioned functional projections are only present in the underlying derivation if the relevant aspectual meaning is expressed in the clause.[10] Since auxiliaries are closely

[9] The analysis does not hinge upon the assumption that passive and copular BE are merged in the same position. It is entirely possible to have a slightly different structure, with, for instance, a separate vP_{voice} and VoiceP for the passive auxiliary and have copular BE introduced in vP proper, dominating VP.

[10] This does not imply that a clause without passive or copular BE automatically lacks a vP. The lowest vP is still present in transitive and unergative clauses to introduce the external argument, as per Chomsky (1995) and Kratzer (1996). In the structure suggested in the previous footnote this would mean that vP_{voice} could potentially be absent, but the vP in which copular BE can be introduced is always present, even without copular BE.

tied to the aspectual inflections they trigger, in the sense that when you get one, you always get the other, we assume that if a certain aspectual projection is absent from the derivation, so is the vP shell introducing it, and vice versa.

2.2 Verbal inflections

With respect to the question of how verb forms acquire their inflections, we adopt Chomsky's (1993) and Lasnik's (1995b) approaches to the inflectional system. We claim, as per Chomsky (1993) and Lasnik (1995b), that English auxiliaries enter the derivation already inflected, but bearing uninterpretable inflectional features. These features need checking against the relevant inflectional head T°, Inf°, Perf°, or Prog°, which carry the matching interpretable inflectional feature. If the auxiliary fails to check its feature, the derivation crashes. Moreover, we take this checking of inflectional features to cause auxiliaries to overtly raise to the relevant inflectional head.[11]

Concretely, finite auxiliaries are merged bearing a [*u*T] feature which causes them to raise to T° to be checked against T°'s interpretable feature. Infinitival *have* and *be* enter the derivation bearing [*u*Inf] and raise to Inf° to be checked against [*i*Inf]. *Been* bears a [*u*Perf] feature and raises to Perf° to be checked against [*i*Perf]. Finally, *being* bears a [*u*Prog] feature which must raise and check against Prog°'s [*i*Prog].[12] This is illustrated in (8):[13]

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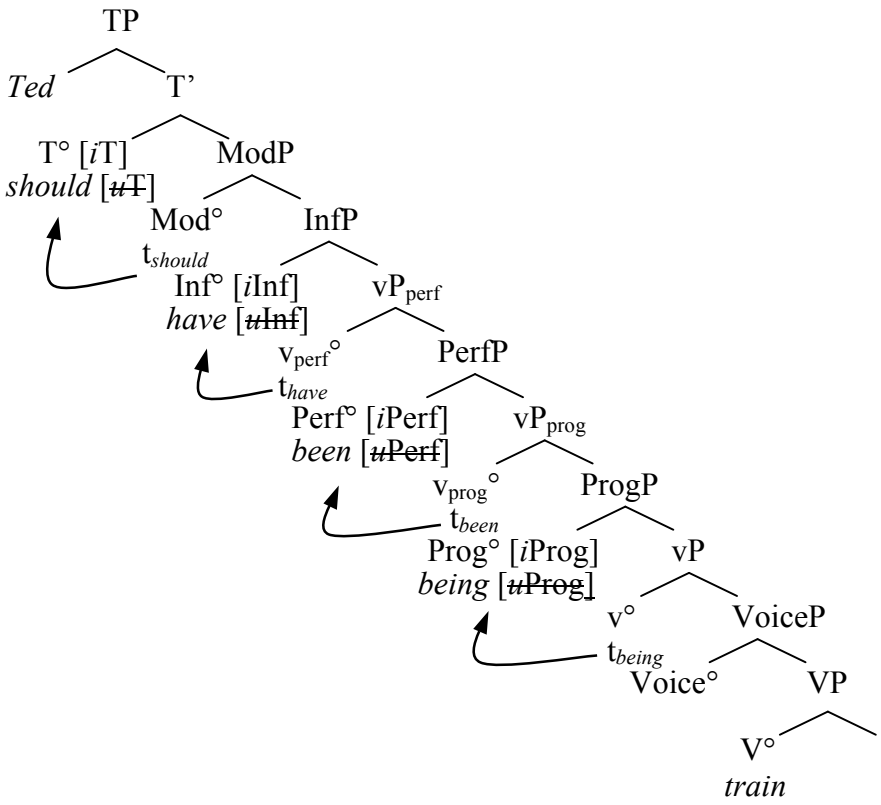
[11] It is because of auxiliary raising that we adopt a structure with split aspectual layers in which auxiliaries are merged into their own vP shells. If auxiliaries were merged directly into the heads of their aspectual projections, a locality violation would arise (Rizzi 1990). That is, auxiliaries, in their quest to have their inflectional features checked, would inadvertently raise into higher aspectual heads, which are, however, already filled by either a higher auxiliary, or, at the very least, a trace of that auxiliary, causing a locality violation. In order to prevent this, we merge auxiliaries into their own vP shells, leaving the head of the aspectual projection itself free for another auxiliary to raise into. Of course, if auxiliary raising can be reconciled with a structure without split layers, this would be preferred.

[12] A potential issue for this approach is the reduplication of information: the auxiliary enters the derivation inflected, but still bears an uninterpretable feature which requires checking in order to license this form. This is a problem for any account that uses uninterpretable features, and we have no alternative for this. A possible solution is Late Insertion, where the auxiliaries enter the derivation as a bundle of abstract features, and the lexical items are inserted after syntax, as in Roberts (1998).

[13] We take this raising and checking of auxiliaries to take place in a manner consistent with Bošković's (2007) theory of foot-driven movement. Under this approach, raising is triggered by an uninterpretable feature on the moving item, whilst maintaining the requirement of c-command on Agree. We refer the interested reader to Bošković's paper for an understanding of exactly how this can occur under current Minimalist assumptions, and to Harwood (to appear b) for the specific application of this idea to verbal head-movement.

A number of authors (Adger 2003; Bjorkman 2011; Wurmbrand to appear a) alternatively argue that the checking of the auxiliaries' inflectional features takes place via Reverse Agree (see Aelbrecht 2010; Baker 2008; Haegeman & Lohndal 2010; Merchant 2011; Wurmbrand

(8)



For completeness' sake we outline how the lexical verb behaves in this system. We assume, following Lasnik (1995b) and Baker (2003), that lexical verbs, unlike auxiliaries, enter the derivation uninflected and, consequently, without any kind of inflectional features. The lexical verb therefore stays in situ and receives its inflections via linearisation at PF.[14]

Finally, we take the overt raising of auxiliaries for reasons of feature checking to be a matter for PF rather than LF. This is assumed in Chomsky (1993), Chomsky (1995) and especially also Lasnik (1995b), who takes the features responsible for verbal inflection to "not [be] legitimate PF objects",

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2011; Zeijlstra 2008, 2010 for discussion and application of this mechanism in other domains), with auxiliaries and their uninterpretable features remaining in their base positions. This predicts, however, that auxiliary distribution should be determined by auxiliary type, i.e., whether the auxiliary is progressive, passive etc. in origin, and not by morphological form. However, due to the distributional differences exhibited between *be/been* on the one hand, and *being* on the other, as observed in VPE phenomena as well as VP fronting phenomena (see section 5), we take auxiliary distribution to in fact be determined by morphological form and not by auxiliary type. This is correctly predicted by the auxiliary raising analyses as per Chomsky (1993) and Lasnik (1995b). For reasons of space we cannot go into all of the arguments in favour of non-finite auxiliary raising (and contra Reverse Agree approaches), but see Roberts (1998) and Harwood (to appear b).

[14] There are many ways in which one can implement the difference between auxiliaries and main verbs, and this is only one of them. Nothing hinges on the claim that lexical verbs receive their inflections through linearisation.

which would cause a crash at PF in the case of non-raising and hence, non-checking, "even though LF requirements would be satisfied" (Lasnik 1995b: 256). This implies that the movement and checking of auxiliaries should be construed as licensing of the auxiliary's form for PF reasons: if the feature is not checked overtly (in the syntax), it causes a crash at PF, though no such violation occurs at LF (see Lasnik 1995b).[15]

With these structures and implementations in mind, we proceed to section 3, which presents the first part of our approach: our view on the VP ellipsis site. We argue that the ellipsis site is as large as vP_{prog} (though no larger) when that projection is present, and in the absence of vP_{prog} the ellipsis site corresponds to the highest projection below this, namely vP. In order to explain the contrast between *be/been*, *being* and *have* in (6), we propose in section 4 that the forms *be* and *been* optionally raise from their base positions contained within the ellipsis site to positions outside of it, and that they thus optionally escape ellipsis, whereas the auxiliary *being* never raises high enough to escape. *Have*, on the other hand, is base-generated outside of the ellipsis site and so never has the opportunity to be elided.

Our analysis is extended to other related phenomena, namely VP fronting, tag questions, pseudo-clefting and predicate inversion in section 5.

3. *The analysis, part I: a well-defined ellipsis site*

Standardly, as the label suggests, VPE has been assumed to involve non-pronunciation of the verb phrase. Over the course of the last ten to twenty years, however, there has been some debate as to how big this missing verb phrase is exactly. Many accounts of VPE have claimed that the ellipsis site is either VP, vP or VoiceP (Lasnik 1995a; Johnson 2001, 2004; Merchant 2001, 2008a,b, 2013; Gengel 2007a; Aelbrecht 2010). We argue, contrary to more standard assumptions, that VPE targets a constituent which is larger than just VP, VoiceP or vP. According to us, when the progressive aspectual layer is projected, VPE elides as much as vP_{prog}, containing progressive BE, though nothing larger. This implies that the ellipsis site also contains ProgP, with the progressive inflectional feature. In the absence of the progressive aspectual layer, however, VPE targets vP, as standardly assumed.[16]

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[15] Although the term 'uninterpretable' immediately conjures up a link with LF, we use it, for lack of a better one, for features that need checking in order to avoid a PF crash. It is of course possible that the uninterpretable inflectional features on the auxiliaries we propose must be checked at LF too, but this would inevitably take place in the covert (LF branch) part of the syntactic component. However, whether the uninterpretable features on auxiliaries are a concern for LF or not is relatively immaterial. The crucial point is that (overt) movement of the auxiliary is a concern for PF, not LF. See also Zeijlstra (2011) for a discussion on the nature of features.

[16] We come back to the question of what determines the size of the ellipsis site in section 6.

In this section we provide evidence for our claim that the progressive layer is included in the ellipsis site. This evidence comes from empirical data concerning ellipsis of auxiliaries: only auxiliaries which are merged inside the ellipsis site can ever be elided. We have seen that some auxiliaries are always elided under VPE, some never, and some only optionally. Several accounts have already been proposed to account for this pattern (see Akmajian & Wasow 1975; Akmajian, Steele & Wasow 1979; Sag 1976, or more recently Bošković to appear a; Sailor 2012; Thoms 2012), but, irrespective of the analysis one chooses, the consensus about auxiliary deletion is that an auxiliary can only be elided if it is at some point in the derivation included in the ellipsis site. We show that auxiliaries generated within and below vP_{prog} can be elided by VPE, whilst those generated above it cannot be. Consequently, this implies that the ellipsis site is as large as vP_{prog}. We first illustrate that all the different types of BE (copular, passive and progressive) can be elided, and then show that HAVE can never be deleted, even though this has been contested in the literature.

3.1 Instances of BE *can be elided*

The auxiliary BE can occur in several morphological forms (*been*, *be*, *being* or finite forms), but these forms can also have different origins: BE can be copular, passive or progressive. The first two instances are in complementary distribution and, as we indicated in section 2.1, we take them to be base-generated in the little *v* head. Progressive BE can cooccur with passive or copular BE and is thus base-generated in a position higher than *v*, namely v_{prog}.

In order to determine which projections are included in the VP ellipsis site, we need to test which auxiliaries can be deleted. If an auxiliary can be elided, its base position (at least) is part of the ellipsis site. We show that all instances of BE – copular, passive and progressive – can be elided, so VPE must (at least) target vP_{prog}. First, we illustrate that copular BE can be elided, whether it occurs as *be*, *been* or *being*, see (9). The first two forms are deleted optionally, and *being* is elided obligatorily. Second, passive BE can be deleted too, see (10).

(9) a. Ted has been in the garden, and Robin has (been), too.
b. Ted will be in the garden, and Robin will (be), too.
c. Ted was being noisy, and Robin was (*being), too.

(10) a. Ted has been arrested, and Barney has (been), too.
b. Ted will be arrested, and Barney will (be), too.
c. Ted was being arrested at that time, and Barney was (*being), too.

Progressive BE poses more of a problem. It seems like it can be elided when it occurs as *be* or *been* (progressive BE never occurs as *being*):

(11) a. Ted has been questioning our motives, but Robin hasn't (been).
b. Ted will be questioning our motives, but Robin won't (be).

However, one could argue that the presence of progressive BE in the antecedent does not necessarily imply the presence of the progressive in the ellipsis site. In other words, when the progressive auxiliary is elided, the sentences in (11) could allow for a mismatch reading where the ellipsis clause does not actually contain progressive aspect, but is instead interpreted as in (12):

(12) a. …but Robin hasn't [~~questioned our motives~~].
b. …but Robin won't [~~question our motives~~].

Sailor (2012) has even claimed that in such cases, an interpretation with the progressive is ungrammatical. From his claim it would follow that progressive BE is never elided. Because these interpretation-based arguments are hard to convincingly draw conclusions from, however, it is necessary to find contexts showing whether the progressive auxiliary can genuinely be elided by VPE. Two such contexts are existential constructions and idiomatic expressions. Using these contexts we show that progressive BE can be optionally elided.

We look at existential constructions first. English existentials display certain aspectual restrictions (Milsark 1974; Aissen 1975; Deal 2009; Harwood 2011): unaccusative verbs can occur in existentials with all kinds of aspect ((13)), but unergative verbs are only allowed with the progressive, cf. (14).[17]

(13) a. There arrived a crocodile in the mail. [unaccusative]
b. There has arrived a crocodile in the mail.
c. There will be a crocodile arriving in the mail.

(14) a. * There danced a crocodile in the garden. [unergative]
b. * There has danced a crocodile in the garden.
c. There was a crocodile dancing in the garden.

[17] Transitive and ditransitive existentials are subject to the same aspectual restrictions. See Deal (2009) and Harwood (2011) for an explanation of this restriction.

This means that when ellipsis is applied to an unergative existential, we can be certain as to the presence of progressive aspect in the ellipsis site.[18] It turns out that all our informants unanimously accept deletion of progressive BE in this context:

(15) a. He says there will be a clown dancing at his birthday party, even though we all know that there won't (be).
b. He said there had been a clown dancing at his party, even though we all knew that there hadn't (been).

In other words, (14) indicates that an existential with an unergative verb cannot occur without the progressive. This implies that the hearer cannot

[18] It has been argued in the literature (Williams 1984; McNally 1992; Moro 1997; Law 1999) that all the material following the associate in progressive existentials is actually contained inside a reduced relative clause (RRC) and is not part of the main clause (cf. (i)).

(i) [$_{TP}$ There was [$_{DP}$ a crocodile [$_{RRC}$ (who was) dancing in the garden]]]

If this is correct, we cannot use existentials to make any claims about VPE in main clauses: the supposed optional ellipsis of progressive BE that we have uncovered would simply be optional ellipsis of copular BE.

However, although an RRC structure for existentials is possible, transitive and unergative existentials may also behave as full-clausal constructions, and moreover, so can the cases involving ellipsis. This is evidenced by the fact that these progressive existentials exhibit properties which RRCs do not. For instance, Deal (2009) has observed that whilst reduced relatives must precede full relatives, no such restriction occurs in existentials:

(ii) a. The teacher scolded [the student [laughing in the hall] [who was wearing a cap]].
b. * The teacher scolded [the student [who was wearing a cap] [laughing in the hall]].
c. There is a man <laughing in the hall> [who's wearing a cap] <laughing in the hall>.

Therefore existentials have an underlying structure available to them that does not involve an RRC, but a mono-clausal structure. Transferring this observation to progressive existentials involving VPE, the same pattern holds:

(iii) John said there had been a man who was wearing a cap laughing in the hall, but in fact there hadn't (been) [~~a man who was wearing a cap laughing in the hall~~].

Other differences between progressive existentials and RRCs involve idioms (Chomsky 2001) and eventive copular constructions (Milsark 1974, Caponigro & Schutze 2003 and Rezac 2006), indicating that progressive existentials can not only be formed from RRCs, but also have an underlying full-clausal structure available to them. In the contexts presented in these works as well, VPE can be applied, suggesting that our observations regarding ellipsis of the progressive auxiliary in existentials are genuine. That is, (15) is a genuine case of main clause VPE with the progressive auxiliary being optionally included within the ellipsis site.

interpret (15) without the progressive and therefore that progressive BE is genuinely included in the ellipsis site, just like passive and copular BE.

A second context that can show whether progressive BE can genuinely be elided involves idiomatic expressions. There are certain idioms which depend upon progressive aspect: only the sentence in (16)a with the progressive aspect has the idiomatic reading.

(16) a. Bob is pushing up daisies. = Bob is dead.
b. # Bob pushed up daisies. ≠ Bob died/was dead.
c. # Bob will push up daisies. ≠ Bob will die/will be dead.
d. # Bob has pushed up daisies. ≠ Bob has died/has been dead.

If VPE is applied to such an idiom and the idiomatic interpretation is retained even without the overt presence of the progressive auxiliary, this implies that progressive aspect and, crucially, the progressive auxiliary, are present in the derivation. All our informants still interpreted (17) as an idiom, which means they accept ellipsis of the progressive auxiliary:

(17) a. Lola told us that Bob has been pushing up daisies for a while now, and indeed he has (been).
b. Lola told us that Bob might be pushing up daisies by now, and indeed he might (be).

Irrespective of how one accounts for the optional ellipsis of *be/been*, whether it be optional auxiliary raising (see section 4.2), or optional extension of the ellipsis site (Akmajian, Steele & Wasow 1979; Bošković to appear a), the consensus is that for an auxiliary to be elided, it must be included in the ellipsis site at some point in the derivation. Thus, for the progressive auxiliary to be optionally elided in (15) and (17), the ellipsis site must be as large as vP_{prog}.

3.2 HAVE *cannot be elided*

Akmajian and Wasow (1975) and Sag (1976) noted that the non-finite perfect auxiliary *have* is never elided. However, there has been some debate about this claim in the literature, and it is only fair that we explore this issue properly before building our analysis.

Although many authors agree with the original pattern concerning *have* (see Zagona 1988; Lobeck 1987; Johnson 2001; Bošković to appear a; Sailor 2009, 2012; Wurmbrand 2012), some linguists argue that this is not true, and that perfect *have* can indeed be elided (Akmajian, Steele & Wasow 1979; Lasnik 1995b; Thoms 2011, 2012). This is evidenced by the following sentence in which *have* appears to have been elided:

(18) John might have called, and Bill might, too. (Wurmbrand 2012:10)

However, Johnson (2001) and Wurmbrand (2012) contest the claim that *have* can be elided, and argue that what causes the acceptability of this sentence is the fact that there is a mismatch reading available which lacks perfect aspect altogether. According to them, the ellipsis site is not [~~*have called*~~], but [~~*call*~~], which in the right context will be interpreted appropriately by the hearer. Wurmbrand (2012) rules out this interfering mismatch interpretation by using conflicting time specifications which force a perfect aspectual interpretation in the second conjunct. In these instances, her informants judged ellipsis of *have* to be unacceptable (Wurmbrand 2012:10, example (36)b'):

(19) * John might have called yesterday, and Bill might, two days ago.

This therefore constitutes some evidence towards the claim that the perfect auxiliary cannot be elided. In what follows, we look at further contexts which can show us whether the perfect auxiliary can genuinely be elided or not, namely fixed expressions, identity requirements and *before*-clauses. We conclude from these that *have* cannot be elided, conforming with the original findings, although we do not exclude idiolectal or dialectal variation.

First, we discuss fixed expressions. There are expressions that are dependent upon perfect aspect, such as in (20). Without the perfect aspect, these sentences are unacceptable.

(20) a. Ted has been to Rome.
b. * Ted is to Rome.
c. * Ted will be to Rome.
d. * Ted is being to Rome.

If VPE is applied to these cases, no mismatch interpretation without the perfect aspect is available. Thus, this expression provides us with a test context to determine whether *have* can be elided or not. As it turns out, 80% of our (British English) informants reject (21) when perfect *have* is included in the ellipsis.[19] This suggests that *have* cannot be deleted under VPE.

[19] We tested these sentences with 20 British English speakers, from all over Britain. Even though 80% of these speakers reject deletion of *have*, it is true that some speakers still accepted it. At the moment we have no means of explaining these contradicting results, and suspect it is due to some dialectal or idiolectal variation. We note that, from the people we tested, the few speakers who did accept deletion of *have* did not come from the same geographical area. Moreover, the next context we use to test *have* deletion gives us clearer results: none of our informants accepted deletion of *have* in that context, not even the speakers who were fine with the deletion in the fixed expressions.

(21) This time next year Ted will have been to Rome, and Barney will *(have), as well.

Another context, involving identity requirements, provides even clearer results regarding ellipsis of *have*. It has been noted that auxiliaries in English can only be elided when they have a formally identical antecedent (Warner 1986; Lasnik 1995b; Johnson 2001). This is illustrated in (22) for *be* and *been*: if the antecedent contains the auxiliary in a different morphological form, the normally optional ellipsis of *be* and *been* becomes impossible. If the antecedent contains the same form, on the other hand, ellipsis is fine.

(22) a. Sue has **been** eaten by cannibals, and now Rob might *(**be**).
b. Sue will **be** eaten by cannibals, and Rob will (**be**), too.
c. Sue **was** eaten by cannibals after Rob had *(**been**).
d. Sue has **been** eaten by cannibals, and Rob has (**been**), too.

This implies that in the following sentence, the ellipsis site and its correlate in the antecedent clause must display morphologically equivalent instances of BE for VPE to be licensed:

(23) Bob might have been fired, and Morag might have (**been**) ~~fired~~, too.

Thus, the elided passive auxiliary depends on perfect aspect in order to be realised as *been* and fulfil the identity requirement. If perfect aspect were absent from the second conjunct, the elided auxiliary would be realised as *be*, which is non-identical to its antecedent. It would not be recoverable, and therefore would lead to illicitness. In short, this gives us another context that depends on perfect aspect. No aspectual mismatch interpretation is available to mask potential ellipsis of *have*. As it turns out, all our informants rejected deletion of *have* in this context.[20]

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[20] Note that the ellipsis site can be interpreted in one of two ways: the hearer can interpret the ellipsis site as containing *have* (see (i)), or they can accommodate with a mismatch interpretation without *have* (as in (ii)):

(i) * Ted might have been fired, and Barney might [~~**have** been fired~~], too.
(ii) * Ted might have been fired, and Barney might [~~**be** fired~~], too.

Both options lead to ungrammaticality: option 2 is illicit because of the identity requirement on *be* (i.e., there is no *be* present in the antecedent, so *be* cannot be elided), and option 1 is unacceptable because deletion of *have* is disallowed under VPE. Either way, the data demonstrates that *have* cannot be included in the ellipsis site.

(24) * Ted might have been fired, and Barney might, too.

A final context, taken from Sailor (2012), involves temporal clauses that are sensitive to aspect, such as *before*-clauses. As Sailor observes, these result in ungrammaticality if *have* is included in the ellipsis site, and without *have* the sentence does not get a sensible reading:

(25) Mary could have studied harder for the exam. Before finally taking it yesterday…
a. …she really should have.
b. * …she really should. (Sailor 2012, his (36))

Summing up, although there might be some dialectal/idiolectal variation regarding deletion of perfect *have*, we are fairly confident in claiming that *have* generally cannot be elided.

We have shown in section 3.1 that all instances of BE, on the other hand, can be elided, whether it is copular, passive or progressive. Recall that for any auxiliary to be able to undergo ellipsis, it has to have been included in the ellipsis site at one point in the derivation, irrespective of the exact analysis one chooses. Therefore, in order for the progressive auxiliary to be elidable, VP ellipsis in English must target as much as vP_{prog}, and not only vP or VP. Since perfect *have* generally cannot be elided, the perfect aspectual layer must be excluded from the ellipsis site.

Since we assume a WYSIWYG approach to the synyactic structure, however, it is implied that VPE cannot uniformly target vP_{prog}. In the absence of progressive aspect, we assume that VPE targets vP. Next, we show how the claims made so far capture the deletion paradigm.

4. The analysis, part II: the auxiliary paradigm

The pattern our proposal tries to capture is summarised in (6), repeated as (26): the finite auxiliary and non-finite *have* always escape ellipsis, *be* and *been* are optionally deleted and both *being* and the lexical verb are always elided.

(26)

	modal/finite aux	have	be	been	being	lexical verb
elided	*	*	✓	✓	✓	✓
remaining	✓	✓	✓	✓	*	*

Table 1: Deletion of verbal elements in VP ellipsis

Recall furthermore that we take the ellipsis site to be vP_{prog}, and that auxiliaries raise to check their inflectional PF features against the relevant aspectual head.

In the following sub-sections we explain how this deletion paradigm can be captured with the claims and assumptions made so far. We first tackle the easiest patterns: the auxiliaries that are always overt or always elided, namely *have* and *being* (and the finite auxiliary and the lexical verb), respectively. Section 4.2 turns to the optionally deleted auxiliaries *be* and *been.*

4.1 Being and *have*

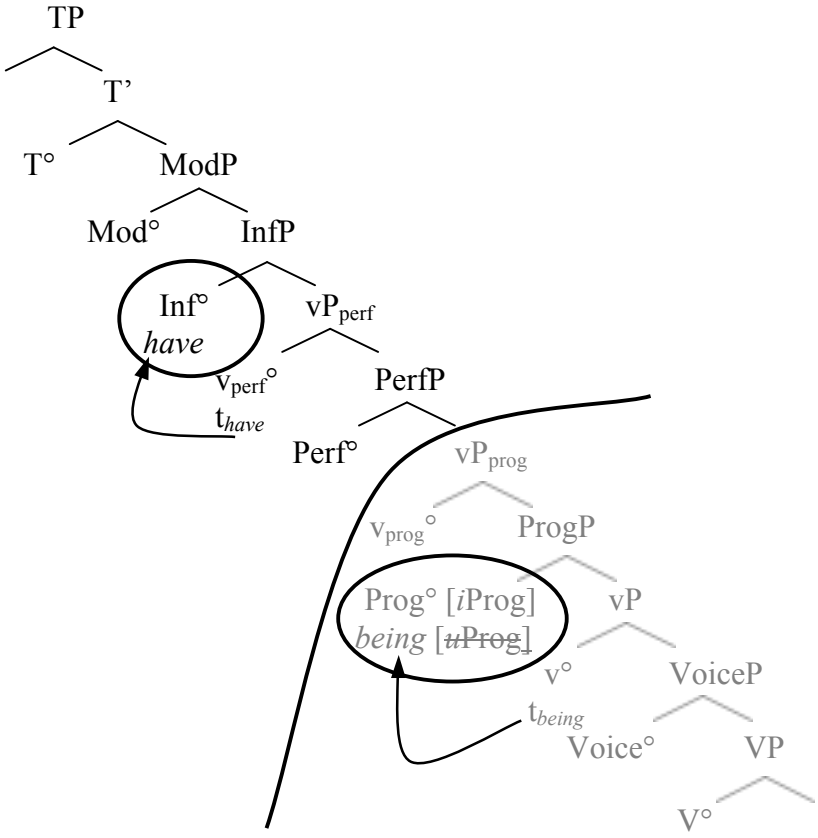
The first piece of data our analysis wishes to capture is the obligatory deletion of *being*:

(27) a. Ted was being eaten by a gorilla and Robin was (*being) too.
b. Ted is being difficult and Robin is (*being) too.

Under our view on verbal inflections, *being* raises from v° to Prog° to check its inflectional feature, as in (28). This landing site of *being* is still included in the vP_{prog} ellipsis site, meaning *being* never escapes ellipsis.

The illicit ellipsis of non-finite perfect *have* can be explained as the opposite of this: both the landing site and – crucially – the base position of *have* are outside of the vP_{prog} ellipsis site and therefore *have* obligatorily escapes ellipsis.

(28)



The lexical verb in English never raises for inflection if we follow Emonds (1978), Pollock (1989), Kayne (1993), Chomsky (1993, 1995), Lasnik (1995b) and Baker (2003), so it never moves out of the ellipsis site and is always elided. It should also be clear by now why modals and the finite perfect auxiliary HAVE are never elided: both the base position and the landing site are outside of the ellipsis site. Finite BE, however, raises a number of questions. We return to finite BE in section 7, where we deal with some other remaining issues too.

4.2 Be/been

We have seen earlier that *being* is obligatorily elided, while *have* never is. *Be* and *been*, on the other hand, are optionally elided. The relevant data are repeated in (29).

(29) a. Ted has been eating a sandwich and Robin has (been) [~~eating a sandwich~~], too.
b. Ted will be eating a sandwich and Robin will (be) [~~eating a …~~], too.

Our approach, in a nutshell, is that optional ellipsis of *be/been* results from optional raising of these auxiliaries out of the ellipsis site. In the case of raising, the auxiliaries move out of the ellipsis site, surviving ellipsis, and have their inflectional features checked against the relevant aspectual heads. In the case of non-raising, the auxiliaries remain in the ellipsis site and ellipsis deletes the auxiliaries, along with their unchecked inflectional features. In other words, there are two derivational paths available, raising and non-raising, both of which result in a grammatical sentence, and so give rise to optionality.

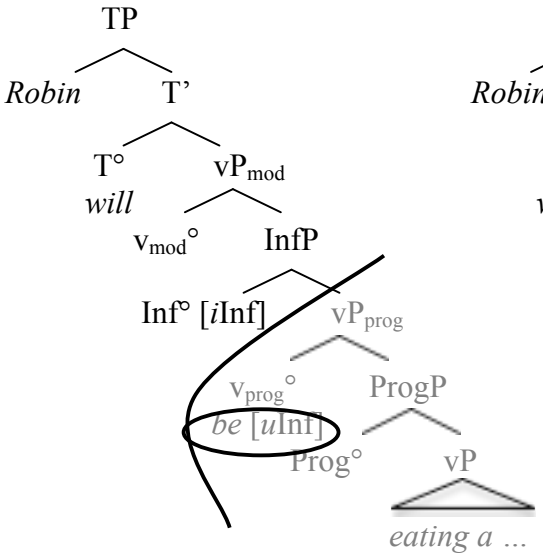
To be more specific, recall that for us, the ellipsis site is vP_{prog}. To surface as *be* or *been*, the progressive auxiliary – or passive or copular – should raise to the respective inflectional heads Inf° or Perf° in order to check its inflectional feature. This causes it to raise out of the ellipsis site, surviving ellipsis.

However, this raising does not have to occur under ellipsis. When *be* and *been* are elided, it is because they have failed to raise out of the ellipsis site. This implies that the unraised auxiliaries have not had a chance to check their inflectional features on Inf° or Perf°. Still bearing unchecked features, our derivation would be in danger of crashing at PF. However, ellipsis, being a PF-deletion operation, saves the derivation from crashing: if we delete the material in the ellipsis site at PF, the auxiliary, including its offending unchecked feature, is deleted too. Consequently, it is no longer a problem for

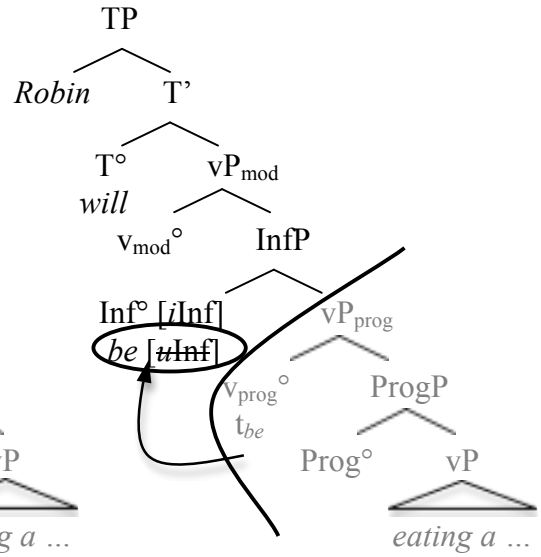
PF, and the derivation is rescued. The structures in (30)b and (30)c illustrate what happens in the sentence in (30)a with optional deletion of *be*.

(30) a. Ted will be eating a sandwich and Robin will (be), too.

b. Deletion of *be*



c. Non-deletion of *be*



This proposal generally sits in line with a number of rescue by PF-deletion analyses of various other phenomena (Ross 1969; Lasnik 1999, 2001; Merchant 2001; Müller 2011).[21]

Recapitulating, we propose that the ellipsis site is maximally vP_{prog}, which includes the base position of all instances of BE (progressive, passive and copular). *Being* never raises beyond Prog°, so is always contained within the ellipsis site, explaining why this form is always elided under VPE. HAVE and modals on the other hand, are always merged outside of the ellipsis site, and can never be elided. *Be* and *been* are merged within the vP_{prog} ellipsis site, but raise out of it to check their uninterpretable inflectional features. This captures their optional deletion: if they raise out of the ellipsis site to check their features, they survive ellipsis, and if they remain in the ellipsis site, they

[21] An alternative analysis from the one we propose would be one inspired by Lasnik's (2001) approach to pseudo-gapping: the uninterpretable feature could also be checked by feature movement only, leaving the auxiliary behind. In non-elliptical sentences, feature movement is not an option, as this turns the auxiliary into a deficient PF object, and causes the derivation to crash. Ellipsis, on the other hand, avoids such a violation by removing the auxiliary. Therefore, no crash occurs at PF.

An important difference between our proposal and Lasnik's approach is that for us, both options of raising and non-raising of the auxiliary are equally possible in ellipsis contexts, which results in the optionality. For Lasnik, the feature movement that becomes possible under ellipsis turns out to be the only option, because feature movement is less costly for the derivation than actual verb movement. Hence, our approach towards auxiliaries is incompatible with Lasnik's view on Pseudogapping.

are deleted along with their uninterpretable features, preventing a derivational crash at PF.[22]

This implies, however, that the option of not raising is only possible for auxiliaries under ellipsis. We predict that raising is obligatory in all other contexts since no ellipsis occurs to delete the unchecked PF features on the auxiliary otherwise. As we show in section 5, this prediction is borne out, where we extend our analysis to VP fronting and other related phenomena. Before we show how exactly these other contexts are captured, we present some alternative accounts from the literature for the auxiliary ellipsis paradigm, and outline some of their problems.

4.3 Previous accounts for the auxiliary deletion pattern

The majority of the ellipsis literature avoids the behaviour of non-finite auxiliaries under English VPE, particularly regarding the optional deletion of *be* and *been*. However, some proposals have been made, especially more recently. In what follows, we review these accounts. We first discuss Baker, Johnson & Roberts (1989), and present its advantages and drawbacks, and then move on to Bošković (*to appear* a), Thoms (2012) and Sailor (2012).

4.3.1 Baker, Johnson & Roberts (1989)

Baker, Johnson & Roberts (1989), following Sag (1976) and Lobeck (1987), claimed that the obligatory ellipsis of *being* under VPE actually reflects a general property of ellipsis in that it cannot apply when governed by a V+*ing* form. Evidence for this comes from the fact that VPE is not permitted following a gerund either:

(31) a. * I remember Mary having eaten an apple, and Gary having, too.
b. * I remember Mary having been angry about it, and Gary having, too.

(Baker, Johnson & Roberts 1989:(81))

In the case of *being*, if VPE cannot apply following any form of -*ing*, then it has no choice but to include the *being* form within the ellipsis site in order for VPE to be licit. This easily explains the obligatorily ellipsis of *being*. However, there are a number of problems facing this analysis. First of all, Abney (1987), Malouf (1998) and Hudson (2003) have all noted that gerunds cannot be elided, even though common nouns in the same environment can be:

[22] This approach might obviously be hard to reconcile with analyses such as Tancredi (1992), Gardent (2000) and Hardt (2005), for instance, which unify ellipsis and deaccenting.

(32) a. * John's passing the exam was surprising, and Bill's was even more so.
b. John's success in the exam was surprising, and Bill's was even more so.

This contrasts with *being* which obviously can be elided. If gerunds therefore cannot be elided, despite appearing in a context in which ellipsis is licensed (as evidenced by the NP ellipsis in (32)b), whereas *being* can be elided, this suggests that the connection between the two in terms of ellipsis is untenable. That is, if it is simply the case that ellipsis cannot apply following an *–ing* form, why is it that the syntax treats *being* and gerunds entirely differently when it comes to ellipsis: the ellipsis site is somehow expanded to include *being* when this auxiliary is present, whereas the ellipsis is not stretched to included the gerund. In fact, gerunds actually witness a possible reduction of the ellipsis site so that it is not immediately governed by the *–ing* form:

(33) Which bother's you more, John's having been arrested for drug dealing, or Bill's having been?

This contrast in behaviour between *being* and gerunds under ellipsis we consider to be problematic for Baker, Johnson & Roberts' (1989) approach.

The second problem is that the *–ing* form found in gerunds is not the same as progressive *–ing*, as demonstrated by the fact that progressive *–ing* and gerunds are not in complementary distribution:[23]

(34) a. John's repeatedly having been running for office was starting to annoy us.
b. Play resumed just after four o'clock, the pitch having been sweating under the covers in the meantime.

Therefore it might be spurious to claim that ellipsis cannot apply after *–ing* forms if, whilst morphologically identical, the two *–ing* forms exhibit completely different syntactic functions. For these reasons we believe the generalisation linking the obligatory ellipsis of *being* under VPE and the inability for VPE to apply immediately following a gerundive *–ing* form to be sceptical.

Furthermore, it is also worth mentioning that Sag's (1976), Lobeck's (1987) and Baker, Johnson and Roberts' (1989) analysis misses the fact that *being* is not only uniquely privileged by VPE, but also by fronting phenomena, as will be illustrated in section 5. By attributing the ellipsis of *being* to a peculiar fact about ellipsis itself, one is unable to explain why *being* behaves

[23] Thanks to Jeroen van Craenenbroeck (p.c.) for the following examples.

apart in phenomena other than ellipsis. Finally, note that, as it stands, Baker, Johnson and Roberts' (1989) approach has no means of capturing the optional deletion of *be* and *been*.

4.3.2 Bošković (to appear a*)*

Our proposal is not the only option to capture the optional deletion of *be* and *been*. One possible solution, instead of having a fixed ellipsis site and optional raising out of it, is to say that the size of the ellipsis site can fluctuate, in the sense that the ellipsis site normally does not contain *be* or *been*, but can be optionally extended to included them (or vice versa).[24] Bošković's (*to appear* a) account uses this tactic, as does the original proposal by Akmajian, Steele & Wasow (1979).

Bošković (*to appear* a) makes a number of assumptions as to the structure of the middle field which are highly similar to our own. He essentially assumes the same functional hierarchy that we established in (7), and the same analysis with regards to auxiliary raising (though he motivates this through a morphological requirement rather than through feature checking). He also takes a WYSIWYG approach to the syntactic structure.

Bošković assumes a degree of optionality with respect to what VPE can target. That is, he claims VPE can target the highest projection in the extended domain of the lexical verb, or the projection just below it. In the absence of any aspectual projections, he takes VPE to target either vP or VP (there is no VoiceP intervening between vP and VP in his system). Following Lasnik (1999), Bošković claims that the lexical verb does not raise out of its base position of V° in ellipsis contexts. Therefore the lexical verb is obligatorily elided under VPE, as is illustrated in (35).

(35) a. $[_{TP}\ [_{vP}\ \sout{[_{VP}\ \textit{lex V}]}]]$
b. $[_{TP}\ \sout{[_{vP}\ [_{VP}\ \textit{lex V}]]}]$

In the presence of progressive aspect, which Bošković assumes constitutes part of the extended projection of the lexical verb, Bošković claims VPE targets either ProgP, or vP below it. Note that the vP_{prog} shell above ProgP is not targeted by VPE under his view. This is the first problem with his account: vP shells also form part of the extended projection under Bošković's assumptions, and in the absence of any higher aspectual material, vP_{prog} would constitute the highest projection in the extended domain of the lexical

[24] Of course, the 'fixedness' of our ellipsis site is not as rigid as it seems: as we have claimed, our ellipsis site differs depending on which projections are present in the structure. But this variation does not occur in the derivation of a single sentence in order to capture the optionality of *be*/*been* deletion.

verb. So it is a mystery why he assumes nevertheless that the vP_{prog} shell should not be targeted by VPE.[25]

In order to account for the obligatory ellipsis of *being*, Bošković claims, following Akmajian & Wasow (1975), Akmajian, Steele & Wasow (1979), Iwakura (1977), Lobeck (1987), Bošković (2004) and Thoms (2011), that *being* is the only auxiliary that does not raise for inflectional purposes and instead has its inflection lowered onto it in its v° base position. The reason for this is clear: if *being* raises to Prog° for inflectional purposes, it is predicted to only be optionally elided. In order for *being* to remain consistently in the ellipsis site, Bošković is forced to claim that *being* does not raise from its base position.

(36) a. [TP [vPprog [ProgP ~~[vP *being* [VP *lex V*~~]]]]]
b. [TP [vPprog ~~[ProgP~~ [vP ~~*being* [VP *lex V*~~]]]]]

However, this is a stipulation since there is no principled reason as to why *being* should be the only auxiliary not to raise. Furthermore, Harwood (to appear b) has explicitly shown, using the distribution of *being* in relation to adverbs, that *being* uniformly raises out of the vP domain for inflection.

In the presence of perfect aspect, which Bošković also assumes to constitute part of the extended projection of the lexical verb, VPE may target either PerfP, or the complement of PerfP (vP_{prog} or vP, depending on whether the progressive aspectual layer is present or not). Again, the vP_{perf} shell above PerfP is curiously not targeted by VPE despite being the highest projection in the extended domain. The optional deletion of *been* now falls out of this analysis: *been* raises for inflectional purposes to Perf°, which is optionally targeted by ellipsis.

(37) a. [TP [vPperf [PerfP *been* [~~vPprog~~ ~~t_{been}~~ [~~ProgP~~ [~~vP~~ ~~*being* [VP *lex V*~~]]]]]]
b. [TP [vPperf ~~[PerfP~~ ~~*been* [vPprog~~ ~~t_{been}~~ [~~ProgP~~ [~~vP~~ ~~*being* [VP *lex V*~~]]]]]]

[25] Bošković takes a phasal approach to ellipsis as per Holmberg (2001) and Gengel (2007b) in which the ellipsis site is either the complement of the phase head or the entire phase itself. He furthermore proposes a dynamic approach to phases in which the highest phrase in the extended projection of the verb is the clause internal phase. This explains how aspectual projections are able to be targeted by VPE under a system in which ellipsis is constrained by phases. However, the issue of VPE targeting an AspectP, but not the vP shell above it, remains. By allowing an AspectP to act as a phase and not the vP shell above it, we are separating aspects and their associated auxiliaries by a phasal boundary. As was stated earlier, auxiliaries are always closely tied to their aspectual forms: whenever vP_{prog} is present, so is ProgP, or whenever vP_{perf} is present, so is PerfP. It seems strange then that the auxiliary should be separated from its aspect by a phase boundary, as Bošković implies.

The analysis raises problems, however, with respect to the optional ellipsis of *be* under similar mechanisms. Unfortunately, Bošković does not specifically discuss the optional ellipsis of *be*, but by extending the analysis he has made so far we can observe which data can and cannot be accounted for. In the presence of the modal layer, Bošković allows for ellipsis to target either the complement of InfP, or InfP itself. This instantly explains the optional ellipsis of *be*: if we decide to elide the complement of InfP, *be* – surfacing in Inf° – survives ellipsis. If on the other hand, we elide InfP itself, *be* is contained within the ellipsis site and so is elided.

This claim, however, gives rise to a number of issues. First, what if non-finite *have* has risen to occupy Inf° rather than *be*? Should we not still expect ellipsis to target either the complement of Inf°, or InfP itself? In that case *have* is predicted to be optionally included in the ellipsis site, contrary to fact: Bošković (*to appear* a) assumes, as we do, that infinitival *have* is never elided. Moreover, if in the presence of InfP the complement of Inf° must always be elided under VPE, we should expect everything below the infinitival auxiliary to be obligatorily elided under ellipsis. Consider, however, (38), with non-finite *have* in Inf°, and *been* in Perf°, in the complement of Inf°. Here one incorrectly expects *been* to be obligatorily elided.

(38) John could have been defeated, and Peter could have (been) ~~defeated~~ too.

Bošković's analysis is reminiscent of an early generative approach by Akmajian, Steele & Wasow (1979). For them the optional ellipsis of *be/been* is accounted for via optional extension of the ellipsis site to include the aspectual projections. Many of the arguments against Bošković's account can therefore be extended to Akmajian, Steele & Wasow's (1979), also.

4.3.3 Thoms (2012)

Thoms (2012) takes a different approach to the ellipsis of *being* and the optional deletion of *be* and *been*: He argues that all auxiliaries check their inflectional features in their base positions via Reverse Agree (as per Bjorkman 2011), and that ellipsis is licensed by subsequent movement of the finite auxiliary to T°. Under Thoms' analysis, everything in the complement of T° is uniformly targeted by VPE in English. The only way that additional material, such as negation and non-finite auxiliaries, can survive is by cliticising to T°, thereby raising out of the ellipsis site. He claims that *have*, *be* and *been* optionally survive ellipsis by this optional cliticisation to T°. Since

being is a prosodically heavy item, it cannot so easily cliticise to T°, which explains why it is obligatorily elided.[26]

The fundamental problem with this approach is that, whilst there is plenty of evidence to suggest that non-finite *have* can cliticise to T°, the evidence regarding cliticisation of non-finite *be* seems to point the other way. In Johnson (1988) and Kayne (1997), it is shown that non-finite *have* can cliticise to the modal in T° and subsequently undergo subject auxiliary inversion, whilst, crucially, *be* cannot:

(39) a. Shouldn't**ve** Pam remembered her name?
b. * Shouldn't **be** Pam remembering her name?

This suggests that optional cliticisation to T° cannot be used to explain optional ellipsis of *be* and *been*. Furthermore, this optional raising of *be* and *been* cannot capture the obligatory raising of these auxiliaries under VP fronting, an issue which we discuss in section 5 below.

4.3.4 Sailor (2012)

Like Thoms (2012), Sailor (2012) also assumes uniform lowering of affixes onto the auxiliaries through a Reverse Agree model, as in Bjorkman (2011). Sailor claims, however, that ellipsis targets the projection headed by the passive auxiliary, which is equivalent to vP in the hierarchy we assume. In order to explain the obligatory ellipsis of *being*, Sailor proposes that *being* does not raise out of vP. He motivates this by claiming that the projection immediately above vP, ProgP, is headed by the progressive auxiliary in such instances.[27] This prevents *being* from raising out of the ellipsis site as there is no available position for the auxiliary to raise to. In the case of passive *be* and *been*, Sailor assumes that ProgP still projects onto the clausal spine, but that its head is spelt out as null. Therefore Prog° presents a potential position for the passive auxiliaries *be* and *been* to raise to. This raising out of the ellipsis site Sailor claims to be optional, accounting for the optional deletion of *be* and *been*.

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[26] Thoms (2012) discusses some data where *being* actually survives VPE. We present Thoms' view on this issue as well as our own in section 7.1.

Furthermore, Thoms (and Bošković) can capture the dialectal variation that seems to occur with respect to *have*: as indicated above in section 3.2 there is some discussion about whether or not *have* can be deleted, and some speakers or certain dialects seem to allow for it. Our informants, however, did not accept this deletion, and with our analysis we capture the original pattern.

[27] Under the Reverse Agree analyses of the auxiliary system, auxiliaries are merged directly into the head of their associated aspectual projections, as no raising takes place. Therefore there is no need to posit vP shells.

The problems with Sailor's analysis are twofold: first, this optional raising of *be* and *been* to Prog° is unmotivated. These auxiliaries have already checked their inflectional features in their base position of v° through Reverse Agree. Second, Sailor has no means of capturing the optional ellipsis of progressive *be* and *been*. His ellipsis site is vP, which means that ProgP, which according to Sailor is headed by the progressive auxiliary, is outside of the ellipsis site. Therefore there is no way in which the progressive auxiliary can undergo ellipsis. Sailor (2012) responds to this by claiming that ellipsis of the progressive auxiliary is impossible, but as the data in section 3.1 has shown, this claim is untenable.

As said before, our account captures the auxiliary pattern, but also makes the interesting prediction that optional raising of *be* and *been* out of vP_{prog} is only made possible because of ellipsis, and that contexts without deletion would force the auxiliaries to raise and check their features. This is exactly what happens in VP fronting (VPF) cases, as section 5 shows, but none of the approaches presented above can account for this contrast between VPE and VPF.

5. Extending the analysis

5.1 VP fronting

A phenomenon that has been related to VPE in the literature is VP fronting (see Zagona 1982; Roberts 1990, 1998; Johnson 2001; Kim 2003; Aelbrecht & Haegeman 2012; Funakoshi 2012; Aelbrecht 2012a). It has been amply noted that VPE and VP fronting (VPF) exhibit parallel syntactic behaviour (Zagona 1982; Johnson 2001). They occur in the same environments: "both an elided VP and the trace left by a fronted VP must be governed by an Aux" (Johnson 2001: 444). Neither occurs without a modal, temporal auxiliary or *do*-support, as the contrasts in (40) show (examples adapted from Aelbrecht 2012a).[28]

(40) a. * I never thought I'd see Jess become a cook, but I saw [~~Jess become a cook~~].
b. * I never thought I'd see Jess become a cook, but [Jess become a cook] I saw *t*.
c. I never thought I'd see Jess become a cook, but I **did** [~~see Jess become a cook~~].
d. I never thought I'd see Jess become a cook, but [see Jess become a cook] I **did** *t*.

[28] Or infinitival *to*, see Johnson (2001), Aelbrecht (2012), Aelbrecht & Haegeman (2012) for examples. As was indicated in footnote 7, we stay away from infinitival clauses in the present paper.

A second similarity between VPE and VPF is that both generally target the same chunk of the verb phrase. For instance, perfect *have* cannot be elided under VPE, and as (41)a,b, adapted from Johnson (2001:(19)), show, it cannot be fronted either. Moreover, Akmajian & Wasow (1975) note that, just as VPE always deletes *being*, VPF cannot leave it behind, cf. (41)c,d.

(41) a. * Julia hadn't eaten fish, but Peter claimed that [**have** eaten fish] she should *t*.
b. Julia hadn't eaten fish, but Peter claimed that [eaten fish] she should **have** *t*.
c. Will thought he was being seduced and [**being** seduced] he was.
d. * Will thought he was being seduced and [seduced] he was **being**.

Given these facts, we hypothesise that VPF, like VPE, targets as much as vP_{prog} when the progressive layer is present.

With this in mind, it is remarkable that VPF never includes *be* or *been* in the fronted verbal structure, not even optionally, as observed by Akamajian, Steele & Wasow (1979) and Roberts (1998). These auxiliaries are obligatorily stranded by the fronted constituent, see (42).

(42) a. * If he says he will be working all night, then [**be** working all night] he will.
b. If he says he will be working all night, then [working all night] he will **be**.
c. * If he says he has been working late, then [**been** working late] he has.
d. If he says he has been working late, then [working late] he has **been**.

If VPE and VPF target the same chunk of the verb phrase, it is curious that VPE optionally includes *be* and *been* in this chunk, but VPF never does. This contrast can be easily captured under our analysis: optional deletion of *be* and *been* under VPE is due to the fact that the uninterpretable inflectional features on the auxiliaries are deleted at PF by ellipsis when the auxiliary does not raise out of the ellipsis site. Under VPF, however, the auxiliaries have to raise because there is no repair by ellipsis here. If they do not raise, their [*u*F] features remain unchecked in the (moved) higher copy of the verb phrase, causing a crash at PF, see (43).

(43) a. No raising of *be* out of vP_{prog}:

* If he says he will be working all night, then...
[$_{vP(prog)}$ **be**$_{[u\text{Inf}]}$ working all night] [$_{TP}$ he [will [$_{InfP}$ Inf°$_{[i\text{Inf}]}$ t$_{vP(prog)}$]]].

b. Raising of *be* out of vP$_{prog}$:
If he says he will be working all night, then...
Step 1: Raising out of vP$_{prog}$
[$_{TP}$ he [will [$_{InfP}$ Inf°$_{[i\text{Inf}]}$+*be*$_{[\sout{u\text{Inf}}]}$ [$_{vP(prog)}$ t$_{be}$ working all night]]]].

Step 2: Fronting of vP$_{prog}$ (not including *be*)
[$_{vP(prog)}$ t$_{be}$ working all night] [$_{TP}$ he [will [$_{InfP}$ Inf°$_{[i\text{Inf}]}$+*be*$_{[\sout{u\text{Inf}}]}$ t$_{vP(prog)}$]]].

We consider this to be the most significant advantage of our approach over prior analyses. None of the alternative approaches reviewed in section 4.3 are able to explain the contrast between VPE and VPF straightforwardly. Bošković recognises in a footnote that there is a connection between VPE and fronting, though explicitly stays away from the issue. If we wish to maintain this link, however, in that the site targeted by VPE is the same site targeted by fronting, then *be* and *been*, which according to Bošković can be elided by optionally extending the ellipsis site to include them, are incorrectly predicted to be optionally fronted.

For Thoms (2012) and Sailor (2012), optional raising of auxiliaries out of the ellipsis site occurs independently of the ellipsis operation. Therefore auxiliaries should optionally raise in all contexts. This implies once again that *be* and *been* should optionally raise out the fronting site in VPF contexts, wrongly predicting optional fronting of these auxiliaries.

A potential issue for our analysis, however, is the auxiliary doubling data cited in Thoms & Walkden (2013):

(44) a. [B**een** examined by the committee]$_i$ he certainly has **been** t$_i$.
b. [B**e** punished for someone else's mistake]$_i$ he probably will **be** t$_i$.
(adapted from Thoms & Walkden 2013:(37))

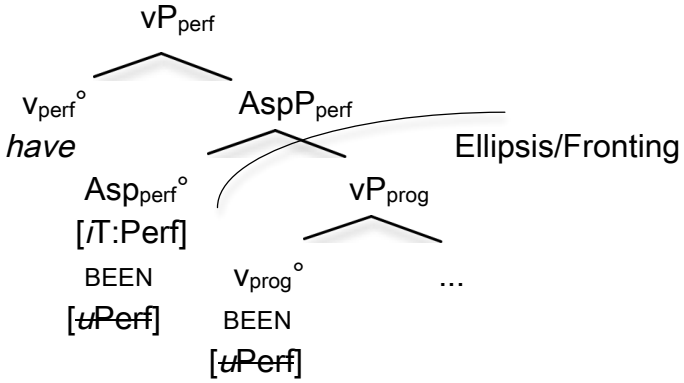
These data involve VPF. However, unlike the data above, in which the auxiliaries *be* and *been* were obligatorily stranded by the fronted constituent, the same auxiliaries have actually been included within the fronted constituent. Thus, these facts might appear problematic for our analysis.

Most interesting of all, however, is the fact that these auxiliaries are reduplicated in the non-preposed constituent. That is, when the auxiliaries *be* and *been* are fronted, a second copy of these auxiliaries is left stranded. And this is exactly why this is actually only an apparent issue for us: we analyse

the fronting of *be* and *been* as being possible due to the presence of the stranded duplicate auxiliary.

That is, we claim that the auxiliaries *be* and *been* are generated within the fronted constituent and raise out of it to check their inflectional features in Inf° and Perf° respectively. In accordance with the copy theory of movement, once the auxiliary has satisfied its inflectional feature in Inf° or Perf°, all lower copies within the movement chain will then be featurally satisfied as a result. This implies that a copy of the auxiliary in vP_{prog} would essentially be licensed.

(45)



Standardly it is the highest copy of a movement chain that is realised, but VPF appears to offer a context in which both higher and lower copies can be spelled out. The result is that the higher copy appears in the stranded position that is typical of *be* and *been*, whilst the copy that is still in vP_{prog} is preposed with the rest of the fronted constituent, yielding the derivations in (44).[29,30]

In short, the analysis that we proposed for the optional deletion of *be* and *been* under VPE can be successfully extended to capture the non-

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[29] Of course, why auxiliary doubling should only be permitted in these contexts in Standard English is a matter for further research, and is something which probably warrants an entire article of its own.

[30] Thoms and Walkden (2013) provide an example that is problematic for our analysis, however: apparently, B**E** can occur in fronted constituent without doubling (as well as with doubling) when preceded by certain adverbs:

(i) a. [Willingly **been** examined by the committee] he certainly has.
b. ? [Stupidly **be** punished for someone else's mistakes], he probably will.

At the moment, it is not clear to us why the adverb has such an effect on the placement of the auxiliary. At present we do not know how to deal with this case, and can merely point out that this is a rare exception, occurring in very particular contexts. That is, the auxiliary can only occur in the fronted constituent when preceded by a narrow set of adverbs, namely subject-oriented adverbs. If the auxiliary is instead preceded by a proximitive adverb such as *soon*, for instance, a similar effect is not obtained:

(ii) * [Soon be tried for his crimes] he certainly will.

Moreover, Thoms and Walkden (2013) also note that the sentences in (i) improve when the auxiliary is doubled, as in (44).

optional stranding of the same auxiliaries under VPF, and even explains why the auxiliaries can be fronted in the context of auxiliary doubling.

Note that the analysis we have presented leads to an interesting prediction: under other phenomena making use of VPE, we expect the auxiliaries *be* and *been* to also be optionally elided, whereas in other phenomena involving movement of the VP, we expect the same auxiliaries to be obligatorily stranded. This is in fact confirmed by (American English) tag questions, which can be argued to involve VPE, and by both specificational pseudo-clefts and predicate inversion, which are claimed to involve movement of the verbal predicate.

5.2 Extending the data range

Let us first look at tag questions. Akmajian & Wasow (1975), Bošković (2004) and Sailor (2009) have noted that in American English, the lexical verb and the passive/copular auxiliary *being* are always absent from tag questions, whilst non-finite *have* is always present (if the sentence being tagged contains perfect aspect, naturally), parallel to VPE: [31]

(46) a. Ted was being eaten by a gorilla, wasn't he (*being) (*eaten) ~~by a gorilla~~?
b. Ted should have become a hot air balloon pilot, shouldn't he *(have)?

This has led Sailor (2009) to analyse tag questions as involving VPE. Interestingly, Sailor also notes that, just as with VPE, *be* and *been* occur optionally in tags:

(47) a. Ted has been eating dolphin sandwiches, hasn't he (been)?
b. Ted will be eating dolphin sandwiches, won't he (be)?

This optional ellipsis of *be* and *been* conforms with our predictions.

Another context in which the verb phrase is fronted is specificational pseudo-clefting, as claimed by Blom & Daalder (1977), Declerck (1988), Den Dikken (1995), Heggie (1988), Heycock (1994), Higgins (1979), Moro (1997) and Verheugd (1990) (cited in Den Dikken 2006). Sailor (2012) notes that, parallel to VPF, *being* is included in the moved phrase:

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[31] Interestingly, British English speakers (and reportedly certain dialects of American English as well) behave differently. Their tag questions only contain the finite auxiliary. Unlike in American English, no non-finite auxiliaries remain, not even perfect *have* (Sailor 2009). British speakers judge the tags in (46)b and (47) only grammatical if *have, be* or *been* are absent. This is a remarkable contrast for which we will not try to provide an answer in this paper.

(48) Ted should be being praised. – No, *<being> criticised is what he should be <*being>. (Sailor 2012:8)

Crucially, Sailor (2012) notes that *be* and *been* are obligatorily stranded in such constructions, again conforming with our predictions that auxiliaries only have the option of not raising in ellipsis contexts, in which their unchecked PF features can be deleted via ellipsis:

(49) a. Ted should be praised. – No, <*be> criticised is what he should *<be>.
b. Ted should have been praised. – No, <*been> criticised is what he should have *<been>. (Sailor 2012:8)

A third context that has been argued to involve displacement of the predicate (i.e., the verb phrase in this case) is predicate inversion, see Hooper & Thompson (1973), Emonds (1976), Heycock & Kroch (1999) and Haegeman (2008). This phenomenon too patterns like VPF: *being* is obligatorily fronted with the inversed predicate, see (50).

(50) a. [Also **being** loud and obnovious today] is my old friend Bugs Bunny.
b. * [Also loud and obnoxious today] is **being** my old friend Bugs Bunny.

As predicted by our analysis of these fronting contexts, *be* and *been* can never be included in the fronted constituent, see (51): these auxiliaries obligatorily raise out of vP_{prog} in order to check their inflectional features. If they do not, there is no ellipsis operation to rescue the derivation from a crash at PF, so the resulting sentence is unacceptable.

(51) a. [Also with us in the studio today] will **be** my old friend Bugs Bunny.
b. * [Also **be** with us in the studio today] will my old friend Bugs Bunny.
c. [Also with us in the studio today] has **been** my old friend Bugs Bunny.
d. * [Also **been** with us in the studio today] has my old friend Bugs Bunny.

In sum, we have provided an analysis that accounts not only for the VP ellipsis paradigm of auxiliary verbs, but also for other cases with VPE, such as tag questions, and for auxiliary behaviour in phenomena involving movement

of the verbal layer, such as VPF, specificational pseudo-clefts and predicate inversion.

In the next section we formalise how the ellipsis site is determined. We claim that the maximal ellipsis site is vP_{prog}, but if the clause does not express progressive aspect, vP_{prog} and the ProgP selected by it are absent from the structure. This would make the ellipsis site smaller: VPE elides vP in that case. In other words, we do not assume a variable ellipsis site to account for the optionality of *be/been* deletion (unlike other proposals, such as Akmajian, Steele & Wasow 1979 and Bošković *to appear* a), but because we only take those aspectual projections which are expressed to be present in the syntax, the actual projection targeted by VPE does vary depending on what is present in the structure, that is, either vP or vP_{prog}. This makes it difficult to pin down exactly what the ellipsis site for VPE is, in a generalising statement. Whilst the principle aim of this paper is simply to capture the auxiliary ellipsis paradigm of English, the next section presents a tentative formalised solution for how the ellipsis site is determined.

6. Phasal ellipsis

In section 3 we claimed that vP_{prog} is the maximal ellipsis site: when the clause contains progressive aspect, VPE targets vP_{prog} (see (52)a). When there is no progressive aspect in the clause, vP_{prog} and ProgP are absent, and VPE targets vP, as in (52)b. This implies that the projection that is elided differs depending on what is present in the clause, making it harder to formalise how the ellipsis site is targeted.

(52) a. [$_{TP}$ *Ted should* [$_{vPmod}$ t_{should} [$_{InfP}$ *have* [$_{vPperf}$ t_{have} [$_{PerfP}$ *been* [$_{vPprog}$ t_{been} [$_{ProgP}$ *being* [$_{vP}$ t_{being} [$_{VoiceP}$ *–ed* [$_{VP}$ *train*]]]]]]]]]].

b. [$_{TP}$ *Ted should* [$_{vPmod}$ t_{should} [$_{InfP}$ *have* [$_{vPperf}$ t_{have} [$_{PerfP}$ *been* [$_{vP}$ t_{been} [$_{VoiceP}$ *–ed* [$_{VP}$ *train*]]]]]]]].

The unsolved question of how the ellipsis site is determined is common to almost all approaches to VPE: although it might be empirically demonstrable which constituent is included in the VP ellipsis site, it remains a mystery *why* a specific projection is targeted. Our solution is that VPE always targets the clause-internal phase.

6.1 The progressive phase

The vP domain is traditionally assumed in the generative literature to form a discrete unit of structure (see for instance Chomsky 2000; Bowers 2002) separate from the temporal domain which is typically comprised of tense and aspect. Harwood (2013, to appear a), Ramchand & Svenonius (2013) and Wurmbrand (2012), however, have argued that the verbal domain in English

is actually somewhat larger than vP and in fact extends as far as progressive aspect when the progressive projections are present; although perfect aspect remains external to this domain.

Ramchand & Svenonius (2013) define this lower domain as the event zone, whilst Harwood (2013, to appear a) defines it as corresponding to the predicational domain of the clause, similar to Bowers (2002). In what follows we will follow Harwood's (2013, to appear a) assumptions, which are supported by a number of intriguing facts regarding progressive aspect in English.

Firstly, progressive aspect is sensitive to lexical restrictions. Not all lexical verbs can occur with progressive aspect, while all verbs do allow perfect aspect. This suggests that the former is much more closely tied with the lexical verb than the latter.

(53) a. I {*am knowing/am learning} French.
[stative: *prog/dynamic: prog]
b. I have known/loved/sung that song for years.
[stative: perf/dynamic: perf]

Another indication involves its morphological form in many languages: progressive formation (on the verb following the progressive phrase) seems to have more nominal properties than other verbal inflections. In English the *–ing* suffix makes clear the link with gerunds, which can be seen as nominalisations (to different degrees, see Chomsky 1970), as in (54)a. Also in other languages the progressive inflection has nominal properties, such as in Gungbe (see (54)b) (Aboh 2005), Dutch and German: in Dutch (see (54)c) for instance, it comes with a definite article. Thus, it seems that in languages that express the progressive, its form is quite different from how verbal inflections normally behave in these languages, and seems to have some nominal properties.

(54) a. Ted(‘s) growing (of) a beard was the worst idea ever.
b. Kòjó tò àmì ló zân.
Kojo IMPERF oil DET NOMINALISER
‘Kojo is using the oil.’ (Aboh 2005:140)
c. De krokodil was aan het dansen.
the crocodile was on the dance.INF
‘The crocodile was dancing.’

A third possible indication that progressive (and passive too) is part of the predicate, is that it uses BE as its auxiliary in English (and Dutch and other languages). This is identical to copular BE, which occurs with AP, NP

and PP predicates. It is thus possible that progressive BE is simply another instance of a copular appearing alongside a verbal predicate, suggesting once again the predicational nature of the progressive. The perfect auxiliary in English on the other hand, is HAVE, which is rather distinct from the copular auxiliary, suggesting that perfect aspect, unlike progressive, is not a part of the predicate.

Harwood (2013, to appear a) specifically argues that this lower domain of structure corresponds to the clause-internal phase (Chomsky 2000, 2001) on the basis of evidence from existential constructions, idioms and various facts associated with VPE and VPF. Along with other purveyors of the dynamic phase approach (Bobaljik & Wurmbrand 2005; Wurmbrand to appear a,b; Bošković (*to appear* a,b), Harwood's (2013, to appear a) claim implies that the size of the clause-internal phase is not rigid as Chomsky (2000) originally proposed, and instead can vary in size depending upon the syntactic context. That is, in the presence of progressive aspect, vP_{prog} is the clause-internal phase, and in its absence, vP is the phase.[32]

(55) a. [$_{TP}$ *Ted should* [$_{vPmod}$ t_{should} [$_{InfP}$ *have* [$_{vPperf}$ t_{have} [$_{PerfP}$ *been* [$_{vPprog}$ t_{been} [$_{ProgP}$ *being* [$_{vP}$ t_{being} [$_{VoiceP}$ *–ed* [$_{VP}$ *train*]]]]]]]]]].

b. [$_{TP}$ *Ted should* [$_{vPmod}$ t_{should} [$_{InfP}$ *have* [$_{vPperf}$ t_{have} [$_{PerfP}$ *been* [$_{vP}$ t_{been} [$_{VoiceP}$ *–ed* [$_{VP}$ *train*]]]]]]]].

This claim obviously parallels our own claims regarding the structural domain that VPE targets in English. Indeed, it has been claimed by Holmberg (1999, 2001), Fox & Pesetsky (2003), Gengel (2007b, 2008), Rouveret (2006, 2011, 2012), van Craenenbroeck (2010), Gallego (2010), Aelbrecht (2012b), Sailor (2012), Wurmbrand (2012), Harwood (2013, to appear a) and Bošković (*to appear* a) that ellipsis is constrained by phases, and specifically that VPE targets the clause-internal phase. Therefore, following Harwood's (2013, to appear a) claim that vP_{prog} acts as the phase when present, and the above-mentioned authors' claim that VPE targets the clause-internal phase, we argue that VPE in English targets as much as the progressive aspectual layer because this layer corresponds to that of a phase.[33] In the absence of

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[32] See Harwood (2013a, to appear) for a formalisation of this variable phase boundary in terms of sub-numerations.

[33] Note that with VPE, it is not always a lexical verb that is elided. Not every clause has a VP as its lexical core: many clauses have a predicative adjective, NP or PP as their lexical centre, but still allow for VPE in English:

(i) The door was {green/closed}, but the window wasn't [~~green/closed~~].

(ii) Marshall could have been a pilot and Lily could have been [~~a pilot~~] too.

(iii) The chickens were in the garden, and the crocodile was [~~in the garden~~] too.

Therefore VPE should rather be thought of as predicate ellipsis in that it targets the predicational layer of the clause. If VPE indeed targets the predicational layer, that

progressive aspect, vP acts as the phase, and so vP is targeted in such instances.[34]

6.2 Spell-out and licensing

Of course, given this claim, there are two issues which require further discussion. The first issue is exactly which part of the phase does VPE target: the spell-out domain or the entire phase? Traditionally it has been claimed that VPE targets the complement of the phase head, i.e. spell-out domain (Gengel 2007b, 2008; Rouveret 2006, 2011, 2012; van Craenenbroeck 2010; Gallego 2010; Sailor 2012; Wurmbrand 2012). However, Harwood (2013, to appear a) and Bošković (*to appear* a) have shown, using arguments from existential constructions, argument ellipsis and certain extraction facts, that this might not necessarily be the case and that ellipsis might in fact apply to entire phases. Indeed, Fox & Pesetsky (2003, 2005), Svenonius (2004, 2005), Fowlie (2010), Richards (2011) and Aelbrecht (2012b) have all argued that spell-out domains should be dispensed with and replaced by full phasal spell-

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progressive aspect is included within this layer in English, and that this layer defines the initial phase, then this further implies that VPE targets the clause-internal phase.

[34] Harwood (2013) cites evidence from various other languages, however, to show that the size of the clause-internal phase is not universally consistent. Whilst languages such as Taiwanese, Irish and European Portuguese appear to pattern like English in including as much as progressive aspect within the clause-internal phase, Brazilian Portuguese, Belfast English, Icelandic, Dutch and Welsh appear to behave contrary to this by including the perfect aspectual layer within the first phase. Indeed, this might be expected given that languages such as Welsh select perfect aspect using the copular auxiliary BE rather than HAVE, potentially indicating that perfect aspect is contained within the predicational layer in these languages.

This would lead one to expect that VPE, if licensed in such languages, would be able to target as much as the perfect layer. Rouveret (2012) shows that this is potentially the case for Welsh: the particle realising perfect aspect can be ellided under VPE, suggesting that as much as perfect aspect is included in the ellipsis site (examples from Rouveret 2012 (44)):

(i) Mai Siôn wedi bod yn gweithio am awr rwan…
is Siôn Perf be Prog work around hour now
a. …a mae Mair hefyd.
and is Mair too.
b. * …a mae Mair wedi bod hefyd.
and is Mair Perf be too.
'Siôn has been working for an hour now and Mair has been too.'

Of course, these are not perfect examples since (i)b strands the progressive auxiliary as well, so we do not know whether the perfect particle is obligatorily or optionally elided: the ungrammaticality of (i)b could stem from the presence of the progressive auxiliary as well. Further investigation would be required.

Other languages to investigate in this respect are Serbo-Croatian, which has VPE and uses the same auxiliary for perfect sentences as for progressive, copular or passive ones. Even certain dialects of English, such as Hiberno-English, Shetland English and Newfoundland English use BE as the perfect auxiliary. This is an avenue for further research.

out. Given this, Holmberg (1999, 2001), Fox & Pesetsky (2003), Aelbrecht (2012b), Harwood (2013, to appear a) and Bošković (*to appear* a) have all claimed that ellipsis in fact targets entire phases. We follow this claim: when progressive aspect is present, VPE targets the entire vP_{prog} clause-internal phase rather than the ProgP phasal complement; and in the absence of progressive aspect, VPE targets the vP phase rather than the VoiceP phasal complement.[35]

To summarise, we follow Harwood (2013, to appear a) in assuming that vP_{prog} in fact constitutes the clause-internal phase when present in the derivation, and vP otherwise. We furthermore assume, following Holmberg (1999, 2001), Fox & Pesetsky (2003), Aelbrecht (2012b), Harwood (2013, to appear a) and Bošković (*to appear* a), that VPE targets the clause-internal phase. This explains why VPE targets as much as vP_{prog} when this projection is present.[36]

7. Further issues

In this section we present some problematic issues that arise for our analysis and speculate about potential solutions to them. We first deal with instances in which *being* can apparently be stranded. Following this we discuss finite BE and voice mismatches.

7.1 Being *revisited*

The data presented in section 1 shows that *being* is, generally speaking, obligatorily elided under VPE. There is, however, a complication to this pattern. As observed by Quirk et al (1975: 875) and Thoms (2012), the

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[35] However, claiming that VPE targets the entire clause-internal phase gives rise to a number of additional issues. The first such issue is that if ellipsis targets entire phases, and therefore that entire phases are spelled out, how can items raise out of the phase if there is no escape hatch for movement? We do not ellaborate an answer for this here, but instead refer the reader to Fox & Pesetsky (2003, 2005) or Richards (2011) for two potential solutions to this problem. The second issue is how one would account for TP ellipsis, which is not traditionally a phase, in the following example from sluicing:

(i) Robin ate something horrible, but I don't know [$_{CP}$ what [$_{TP}$ ~~Robin ate~~]].

The answer to this problem is relatively simple: Branigan (2005) and Van Craenenbroeck & Van Koppen (2012) have argued that FinP in fact is a phase.

[36] An issue that was pointed out to us is that, as it stands, our analysis fails to account for Bresnan's (1976) generalisation stating that the VP ellipsis site needs to be adjacent to a head. Data supporting this view are given in (i).

(i) Don't worry about John – he'll have merely been delayed a while, and…
  a. …Pete'll have merely been, too.
  b. * …Pete'll have merely, too.

At present it is unclear to us how these facts can be reconciled with the analysis we propose. This is an issue for further research,

deletion of *being* is not as categorical as it at first sight seems. Sometimes *being* can remain pronounced:

(56) a. Remember, always be respectful and courteous, even if the officer isn't **being**.[37]
b. Otherwise you may have some integrity problems because the key that apparently should be enforced actually isn't **being**.

Does that mean that *being* is in fact optionally elided, just like *be* and *been*? We take this not to be the case: whereas ellipsis of *be* and *been* is really optional when they have an identical antecedent, (as in (57)a,b; see Lasnik 1995), *being* is obligatorily elided when it has an identical antecedent (cf. (57)c), and is only stranded by ellipsis when its antecedent is non-identical, as in (56) above and (57)d below:

(57) a. Ted should **be** home, and Barney should (**be**), too.
b. Ted has **been** fired, and Barney has (**been**), too.
c. Ted was **being** punished this morning, and now Barney is (*__being__).
d. Ted was punished this morning, and now Barney is **being**.

In other words, *being* survives ellipsis if it is not recoverable from the antecedent, parallel to *be* and *been*, as shown in (22). If it is recoverable however, it is obligatorily deleted, unlike *be* and *been*.[38] To the extent that the stranding of *being* in (57) is acceptable, there are two potential ways to capture this fact which we will very briefly sketch out here.[39]

One solution is to claim that when *being* cannot be recovered, it raises beyond Prog° to a landing site that is external to the ellipsis site, as a last resort rescue operation. This would cause *being* to escape ellipsis and so it would not be subject to the recoverability condition (see Merchant 2001

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[37] We thank a colleague for providing the examples. The first sentence can be found on http://www.uer.ca/forum_showthread_archive.asp?fid=13&threadid=79988&currpage=2, and the second one on http://consultingblogs.emc.com/jacekn ieszporek/archive/2010/07/02/sql-server-and-unique-constrain-with-multiple-null-value-columns-part-ii.aspx.

[38] An apparent counterexample to our generalisation that *being* can only survive ellipsis when it is absent from the antecedent is the following:

(i) If Ted wasn't being difficult, then who WAS (being)?

Being occurs in the antecedent and still it can survive VPE. However, this seems to be restricted to this specific construction with '*if…then*'. At this point we do not know how to analyse this data.

[39] Judgements regarding the stranding of *being* in environments in which the auxiliary otherwise cannot be recovered are rather unstable. Whilst some speakers accept it, others find such sentences degraded, and certain other speakers outright reject such sentences.

among many others). However, an issue with this solution is what position *being* raises to in such instances? One potential position is the head of a low focus projection to the specifier of which arguments raise in psuedo-gapping constructions (see Lasnik 1995a, 1999; Gengel 2007a, 2008, among many others). This, however, is a speculative answer which would require further investigation.

A second solution is to claim that when *being* cannot be recovered, there is a temporary relaxation of the requirement that ellipsis targets the entire phase, and instead ellipsis privileges a smaller unit of structure so that *being* survives ellipsis. The problem with this proposal is that there are no particularly obvious means of formalising this claim.

Regardless, an issue which faces both analyses is why *being* is able to survive ellipsis when it cannot be recovered, but that the lexical verb can never survive ellipsis, whether it satisfies the recoverability condition or not.

Of the alternative analyses reviewed in section 4.3, the only one which deals with the apparent stranding of *being* is that of Thoms (2012). We briefly discuss his approach. As mentioned in section 4.3.3, Thoms (2012) takes movement of the finite auxiliary to T° to be the licensor for VPE, and non-finite auxiliaries survive VPE by optionally cliticising to T°. *Being* normally does not move, and therefore does not survive ellipsis, but in these rather rare occasions when it does remain pronounced, Thoms claims that *being* cliticises to T° too. In this case the finite auxiliary bears extra stress to host the prosodically heavy *being* as a clitic.

However, there are some problems with this proposal. First of all, apart from it being quite an ad hoc stipulation to assume that *being* cliticises to T° (without any actual prosodic difference) Thoms' (2012) proposal depends on the fact that the finite auxiliary in particular bears extra stress so as to host *being*. Although we do not want to deny that prosody is at stake here, the finite auxiliary is not the only item that can bear such stress. In the sentence in (57)d, for instance, the finite auxiliary *is* preceding *being* is not contrasted; the subject is.

Secondly, both floating quantifiers (FQs) and associates from existential constructions can intervene between *being* and T°, as in (58). This casts doubt on the claim that *being* has cliticised to T°, unless one wants to assume that FQs and associates could also cliticise to T°. Given the particular emphasis on the associate, however, this seems unlikely.

(58) a. Ted said they would all be arrested, and they ARE all **being**.
b. Ted says there will be more men arrested tomorrow than there are <WOMEN> **being** now.

Thirdly, Thoms' (2012) approach has nothing to say about the fact that survival of *being* appears to be subject to recoverability conditions, as we have argued.

7.2 Finite BE

A second issue involves finite BE, which we have already briefly mentioned in section 4.1. Our approach to optional *be/been* deletion was that *be* and *been* have the option of not raising to check their inflectional features, because ellipsis would elide the unchecked features and prevent the PF violation anyway. That means, however, that finite BE would have that option as well, which predicts that finite BE could optionally be elided. This is not the case, as VPE can never elide the finite auxiliary.

It has been claimed, however, that T° must be filled, either by *to* or by a finite auxiliary, in order for VPE to be licensed (Zagona 1982, 1988; Lobeck 1995; Johnson 2001; Gengel 2007; Aelbrecht 2010). This independently rules out ellipsis of finite *be*, since this auxiliary would be required to raise to T°, outside of the ellipsis site, to actually license the ellipsis.

7.3 Voice mismatches

One final issue for our proposal involves voice mismatches under VPE. Merchant (2008a, 2013) notes that voice mismatches between antecedent and ellipsis clause are possible under ellipsis: the antecedent clause may be active, whilst the ellipsis clause bares passive voice, and vice versa.

(59) a. The janitor must remove the trash whenever it is apparent that it should be [~~removed~~]. (Act-Pass)
b. The system can be used by anyone who wants to [~~use it~~]. (Pass-Act)

Merchant accounts for this mismatch by claiming that VoiceP, encoding the passive or active status of the clause, is contained outside of the ellipsis site and is therefore not subject to the recoverability requirement of ellipsis. That is, because VoiceP survives ellipsis, it does not need to be identical in form to the VoiceP contained in the antecedent. The problem for our analysis is that VoiceP is always contained within the ellipsis site, whether that be vP or vP_{prog}. This implies that VoiceP should be subject to the identity condition, so we expect voice mismatches between the antecedent and the ellipsis clause to be illicit, contrary to those judgments reported above.

However, the judgments on voice mismatches are more complex. Kehler (2002) and Merchant (2013) note that voice mismatches in VPE in English are a rarity that are only possible in very specific discourse contexts that strongly favour the mismatch reading and exclude the non-mismatch

reading. Indeed, contrary to what the data in (59) suggest, mismatches in VPE are, for the most part, actually unacceptable:

(60) a. * John will penalise someone unfairly, but Mary won't be [~~penalised unfairly~~].

(From Thoms & Walkden 2013:(35))

In other words, if voice mismatches are in fact mostly unacceptable in VPE, it seems more plausible that Voice is actually contained inside the ellipsis site and so is generally not recoverable. The only exception to this is that narrow set of discourse contexts which are adequately set up to prime the mismatch reading, therefore momentarily allowing for a relaxation of the strict identity requirement (Thoms & Walkden 2013). In other words, we claim that VoiceP is contained inside the ellipsis site, but that it can be recovered with a great deal of effort so long as enough clues are given by the discourse context as to the value of Voice.

Note furthermore that voice mismatches are illicit with progressive aspect, but not with higher aspectual forms, such as perfect aspect, see (61).[40] This observation highlights the peculiar and somewhat unique behaviour of progressive aspect that we have only just begun to touch on in this paper.

(61) a. The system can't be used by just anyone, even though Mary has [~~used the system~~] already twice.

b. * The system can't be used by just anyone, even though Mary has been [~~using the system~~] all year.

8. Conclusion

In conclusion, this paper accounts for the fact that under VPE, modals, finite auxiliaries and perfect *have* can never be elided, *being* is standardly always elided, and *be* and *been* are optionally elided. This was achieved by claiming that ellipsis targets as much as vP_{prog} (though less if progressive aspect is absent from the underlying derivation). We also assumed that auxiliaries uniformly raise in English to check uninterpretable (PF) inflectional features, and explained the relevant ellipsis data as follows: *being*'s base position and landing site are both contained within the ellipsis site; *have* is basegenerated outside of the ellipsis site; and *be* and *been*'s base positions are inside the ellipsis site, but they raise out. Their optional deletion comes down to optional raising: they either raise out of the ellipsis site to check their features and survive ellipsis, or they remain inside the ellipsis site and have their features

[40] Thanks to Jason Merchant (p.c) and Wurmbrand (2012) for pointing out this observation.

deleted at PF by ellipsis. This option is not available to *be* and *been* under fronting phenomena however, since no ellipsis occurs to delete their unchecked features.

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