Reduced Relatives and Extended Phases:
a phase-based analysis of the inflectional restrictions on English reduced relative clauses

Abstract

This article aims to provide an analysis for a curious fact about reduced relative clauses in Standard English: while full relative clauses permit all forms of inflection, reduced relative clauses are restricted to passive and progressive inflections. This puzzle is explained by claiming that, while full relative clauses are comprised of both phases of the clausal spine, reduced relative clauses are comprised solely of the clause-internal phase. Following Harwood's (2013, 2015) claim that the clause-internal phase in English in fact extends as far as the progressive aspectual layer, this fully accounts for the inflectional restrictions on reduced relative clauses in Standard English.

Keywords

Reduced relative clauses, phase theory, aspect, auxiliary verbs.

1. Introduction[*]

The aim of this article is to provide an analysis of the aspectual restrictions on reduced relative clauses in Standard English (SE). While full relative clauses permit all inflectional forms, that is, tense, modality, perfect aspect, progressive aspect, and passive voice, reduced relatives only exhibit progressive and passive morphology; tense, modality, and perfect aspect, are excluded from these clauses. To explain these aspectual restrictions I claim that while full relative clauses are comprised of both phases of the clausal spine, reduced relative clauses are comprised solely of the clause-internal phase.

Harwood (2013, 2015) has argued that *there*-existentials, VP ellipsis, and VP fronting, all privilege the progressive aspectual layer in SE when such projections are present in the derivation.[1] Given that these phenomena have been claimed in the literature to provide reasonable diagnostics for the clause-internal phase, Harwood (2013, 2015) concludes that the clause-internal phase in SE must in fact correspond to the progressive aspectual layer, rather than vP as standardly assumed. I show that reduced relative clauses target the same unit of structure as *there*-existentials, VP ellipsis, and VP fronting, which implies that reduced relatives are comprised of the clause-internal phase. Since progressive aspect and passive voice are internal to the clause-internal phase under Harwood's (2013, 2015) proposal, while tense, modality, and perfect aspect, are external to it, a principled explanation is provided for the inflectional restrictions on reduced relative clauses.

The remainder of this article is structured as follows: section 2 discusses the basic data and outlines the main issue. Section 3 discusses and discounts the previous analyses that have so far been proposed to account for the problem. Section 4 provides the preliminaries to the

[*] Acknowledgements

[1] When I write privilege I mean that these phenomena either in some way uniquely target the progressive aspectual layer, or edge effects are observed on the periphery of the progressive layer.

analysis, and the analysis itself is found in section 5. Finally, section 6 discusses a number of further issues that the analysis gives rise to, and section 7 concludes.[2]

2. Data

A full relative clause (FRC) is a subordinate clause, embedded inside an NP, which is introduced by a relative pronoun (or complementiser), and which modifies its NP antecedent (cf. (1)a). A reduced relative clause (RRC) is a relative clause whose relative pronoun and finite auxiliary have been omitted, leaving only the lexical verb and its internal arguments (cf. (1)b).

(1) a. the badger [$_{FRC}$ who is eating mash potato]

b. the badger [$_{RRC}$ eating mash potato]

FRCs in SE permit all forms of inflection: tense, modality/infinitives, perfect aspect, progressive aspect, and passive voice, are all attested (cf. (2)). In addition to allowing finite auxiliaries (as illustrated in (1)a and (2)), FRCs exhibit the entire auxiliary paradigm of English (cf. (3)).

(2) a. the womble who **stole** my shoes[3] [Tense]

b. the womble who will **steel** my underpants [Modality]

c. the womble who has **stolen** my socks [Perfect]

d. the womble who is **steeling** my bike [Progressive]

e. the womble who was **arrested** yesterday [Passive]

(3) a. the womble who might **have** stolen my car

[2] I would like to stress that the aim of this paper is not to provide a complete analysis of reduced relative clauses that tries to explain every syntactic property associated with these constructions, rather to provide an account for one of their most puzzling features: the inflectional restrictions. Other issues, such as their islandhood, or the fact that they do not allow object gaps, while briefly touched upon, will not be the focus of this paper.

[3] Wombles are characters from the popular children's TV program, The Wombles, shown in the UK in the 1970s and 1980s. They are fictional, pointy-nosed, furry creatures (a bit like large mice) that live in burrows, where they aim to help the environment by collecting and recycling rubbish in creative ways. They also feature heavily in my example sentences.

b. the womble who will **be** defending himself in court

c. the womble who has **been** pleading his innocence

d. the womble who is **being** sentenced to death

e. the wombles who **might have been being** watched by Bill Oddy

RRCs, on the other hand, behave quite differently. Burzio (1986), Embick (1997), Bhatt (1999), Iatridou et al. (2001), and Cecchetto & Donati (2011) have all noted that only progressive and passive inflections are permitted in RRCs (cf. (4)).[4] Moreover, the only auxiliary verb allowed in RRCs is *being* (cf. (5)).[5]

(4) a. * the womble **stole** my shoes [Tense]

b. * the womble **steel** my underpants [Modality]

c. * the womble **stolen** my socks [Perfect]

d. the womble **steeling** my bike [Progressive]

e. the womble **arrested** yesterday [Passive]

(5) a. * the womble **have** stolen my car

b. * the womble **be** defending himself in court

c. * the womble **been** pleading his innocence

d. the womble **being** sentenced to death

[4] Cecchetto & Donati (2011) claim perfect participial unaccusative RRCs to be marginally acceptable when compared against transitive and unergative verbs:

(i) ?* the guy arrived yesterday
(ii) * the guy opened the window
(iii) * the guy phoned yesterday

However, perfect unaccusative RRCs are marginal improvements on their transitive and unergative counterparts at best. The resulting sentence is still considered unacceptable by native speakers. The (British English) informants that I used for this research actually even failed to notice the contrast entirely.

[5] Throughout this article I will generally use *italics* to refer to the surface, inflected forms of lexical items, and SMALL CAPS to illustrate their abstract, uninflected root forms.

To summarise: English FRCs permit all forms of inflection and the entire auxiliary paradigm. RRCs, however, only allow progressive and passive inflections, and *being* is the only auxiliary permitted. These restrictions on RRCs I will generally term inflectional restrictions. The aim of this article is to provide an account for this puzzle.[6]

In the following section I first discuss the previous analyses that have been proposed to account for this problem.

3. Previous Analyses

There are, to date, essentially two main analyses to explain the inflectional restrictions on RRCs: the *WHIZ*-deletion analysis, and what I term the participial phrase analysis. I discuss each in turn.

3.1. *WHIZ-deletion*

Chomsky (1957), Smith (1961) and Ross (1967) originally claimed that RRCs were simply derived by deleting the relative pronoun and finite auxiliary of an FRC. That is, one would first construct an FRC, and then elide its relative pronoun and the finite form of BE. The inflection that BE would select, i.e. progressive or passive morphology, would still be present in the RRC, but without the overt finite auxiliary. This essentially explains the presence of progressive and passive inflections in RRCs:[7]

(6) a. the womble [$_{\text{RelCl}}$ (~~who is~~) stealing my car]

b. the womble [$_{\text{RelCl}}$ (~~who was~~) arrested yesterday]

[6] Throughout this article I will also broadly refer to modality, perfect aspect, progressive aspect, and passive voice, as aspect, even though technically only perfect aspect and progressive aspect are genuine aspectual forms. This is for ease of presentation.

[7] I use strikethrough throughout this article to indicate deletion.

However, there is a fundamental flaw with this analysis: if *WHIZ*-deletion was deletion of the relative pronoun and the finite auxiliary, why can't modals or finite HAVE be similarly deleted, thus stranding infinitival and perfect aspectual inflections within the RRC? So far *WHIZ*-deletion has no means of ruling out deletion of these elements, therefore incorrectly predicting the presence of infinitival and perfect morphology in RRCs:

(7) a. * the womble [$_{\text{RelCl}}$ (~~who will~~) steal my car]

b. * the womble [$_{\text{RelCl}}$ (~~who has~~) stolen my socks]

So while the *WHIZ*-deletion analysis can explain the presence of progressive and passive morphology (and also the absence of tense given that T is always deleted under RRC formation) within RRCs, it has no means of ruling out perfect and infinitival morphology.

Iatridou et al. (2001), however, in an attempt to rescue the *WHIZ*-deletion analysis, have claimed that HAVE carries the semantic interpretation of perfect aspect, rather than the perfect *-en/-ed* morphology. For this reason HAVE cannot be deleted under RRC formation, as the perfect morphology alone would not be sufficient to recover the aspectual meaning. BE, however, is semantically vacuous: the interpretation of progressive aspect and passive voice is encoded on the inflections themselves. Therefore BE can be easily deleted under RRC formation without detriment to the recovery of the aspectual interpretation.[8] This difference between HAVE and BE explains why progressive and passive morphology are permitted in RRCs, and perfect morphology is not.[9]

[8] See Rouveret (2012) for a similar claim regarding VP ellipsis and VP fronting. See also Lasnik (1995b) and Potsdam (1997) for further discussion on auxiliary deletion and recoverability.

[9] While Iatridou et al. (2001) do not discuss the absence of infinitival morphology in RRCs, their reasoning can easily be extended to explain these facts: modals select infinitival morphology, but modals, like HAVE, carry the relevant semantic interpretation instead of the inflectional form they select. Therefore, modals cannot be deleted under RRC formation, as the infinitival morphology alone would not be enough to recover the relevant interpretation.

Contrary to Iatridou et al.'s (2001) claim, however, Schmerling (1973), Thrasher (1977), Akmajian et al. (1980), Rizzi (1994), Haegeman (1997), Fitzpatrick (2006) and Shepherd (2011) have shown that finite HAVE can undergo deletion in other environments just as easily as finite BE.

First, finite HAVE can be elided under subject + finite auxiliary deletion in certain declarative sentences (cf. (8)). Note that deletion of finite HAVE in such environments becomes more prevalent when tag questions are added (cf. (9).[10] Second of all, as pointed out in Haegeman (1997), finite HAVE can be deleted under auxiliary + subject omission in yes/no questions (cf. (10)). Finally, finite HAVE can be deleted in wh-questions (cf. (11)). Unlike other instances of finite auxiliary deletion, however, the subject remains overt in these constructions.[11]

(8) a. Forgotten what I was supposed to do. (Haegeman 1997:32)

b. Gone drinking.

(9) a. Been busy today, haven't we?

b. Not really considered all the options, has he?

c. Been having fun, have you? (Shepherd 2011:52)

(10) a. Ever been on a plane before?

b. Ever seen a grown man naked?

(11) a. Where you been? (Harwood 2015:544)

b. What you done?

[10] It could of course be argued that HAVE is easily deleted in the sentences in (9) because of the presence of HAVE in the tag questions, which facilitates the recovery of the aspectual interpretation. This argument, however, is only applicable to the derivations in (9). A second iteration of HAVE is entirely absent from all other instances of finite HAVE deletion, as depicted in (8), (10) and (11), and so cannot aid recovery of the aspectual interpretation.

[11] In the case of pronominal attributive use of the perfect participial, it is also possible to retain the perfect interpretation, once again in the absence of the perfect auxiliary:

(i) the recently arrived letter

This provides further evidence to suggest that the perfect aspectual interpretation is entirely recoverable following omission of the perfect auxiliary, contrary to Iatridou et al. (2001).

These facts show that finite perfect HAVE can be deleted in numerous different contexts without affecting the acceptability of the sentence, contrary to Iatridou et al.'s (2001) claim: the perfect morphology alone seems to be enough to recover the necessary aspectual interpretation.[12] Therefore, the absence of perfect morphology in RRCs cannot be due to a restriction on deletion of perfect HAVE.[13]

It seems then that, while it can in principle explain the presence of progressive and passive morphology in RRCs, the *WHIZ*-deletion account cannot adequately exclude perfect or infinitival morphology from RRCs. For this reason I reject the *WHIZ*-deletion analysis.[14]

3.2. *Participial Phrase*

Kayne (1994) claims RRCs are formed from an empty C° which immediately selects a progressive aspectual phrase or a passive voice phrase. In English this null C° is unable to select tense, modal or perfect aspectual projections. In Kayne's exact analysis he names the projections

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[12] Thrasher (1977) and Shepherd (2011) claim it is also possible to delete modals in similar environments:
(i) (Would) your wife be offended if I smoke? (Thrasher 1977:18)
(ii) Q: What do you think he might do?
A: Be on time for once. (Shepherd 2011:66)
Deletion of the modal appears to be somewhat more restricted, and judgments vary as to the acceptability of such sentences, though the data generally still implies that BE is not the only finite auxiliary that can be deleted, and therefore that the ban on perfect and infinitival morphology in RRCs is not due to restrictions on deletion of the modal or finite HAVE.

[13] One might raise the objection that the aforementioned phenomena are all main clause phenomena. That is, the data in (8)-(11) show us nothing about the possibility of finite HAVE being deleted in embedded contexts such as RRCs, and therefore cannot be used as an argument against *WHIZ*-deletion. However, I beg to differ. Note that finite BE can also be deleted in similar environments:
(i) Coming home.
(ii) Having fun, are you? (Shepherd 2011:49)
(iii) Going to lunch? (Schmerling 1973:580)
(iv) What you doing? (Haegeman 1997:265)
This shows that in main clause contexts, both finite HAVE and BE can be omitted without any effect to the aspectual interpretation. That is, in both instances, the aspectual morphology on the lexical verb alone is enough to recover the aspectual interpretation. Why then, would there be a difference in embedded clauses such as RRCs? That is, why should progressive aspect be recoverable in RRC contexts in the absence of BE, but not perfect aspect in the absence of HAVE, despite the fact that both are recoverable in main clauses? To me this would seem like a strange state of affairs. It seems far more likely that the recoverability of the aspectual interpretation in the absence of the relevant auxiliary should not differ between main and embedded clauses. Therefore, the fact that the phenomena in (8)-(11) are typically main clause phenomena I do not consider problematic for my argument.

Note also that the auxiliary deletion in wh-questions is not actually a main clause phenomenon. This can also occur in embedded contexts:
(v) I wonder where you been.
(vi) I can't believe what you done.

[14] See also Huddleston (1971), Berman (1973), Hudson (1973), Williams (1975), and Burzio (1981, 1986), for further argumentation against *WHIZ*-deletion.

which C° selects participial phrases, but I take this to essentially mean progressive aspect or passive voice (cf. (12)a)

Bhatt's (1999) proposal is similar to Kayne's, except for him there is no CP present in the system:[15] RRCs are comprised of a participial phrase (i.e. progressive aspect or passive voice) which is directly selected by the noun it modifies (cf. (12)b):

(12) a. $[_{NP}\ N\ [_{CP(RRC)}\ C°\ [_{ParticipialP}\cdots$

b. $[_{NP}\ N\ [_{ParticipialP(RRC)}\cdots$

By claiming that C°, or the head noun of the RRC in Bhatt's (1999) case, is unable to select tense, modality, or perfect aspect, but that it can select progressive aspect or passive voice, Kayne (1994) and Bhatt (1999) are able to provide a fairly simple and elegant solution to the inflectional restrictions on English RRCs. The advantage of this analysis over *WHIZ*-deletion is that it offers a more satisfactory explanation for the exclusion of perfect aspect and modality from RRCs, since it does not succumb to the empirical shortcomings that I have shown to be problematic for *WHIZ*-deletion.

However, the fundamental problem with Kayne's (1994) and Bhatt's (1999) analysis to date is that it is a pure stipulation. That is, at present, there is no principled explanation as to why progressive aspect or passive voice should be selected within an RRC, but not perfect aspect, modality, or tense. For this reason, the participial phrase analysis must be set aside also. The analysis that I present later is very much in the spirit of this approach, except I offer a more principled explanation as to why progressive aspect and passive voice should be selected in RRCs to the exclusion of perfect aspect, tense, and modality.

In the following section I go through a number of preliminaries to my analysis.

[15] This is motivated by the fact that RRCs can lack covert modality, which is associated with the CP layer. See Bhatt (1999) for details.

4. Preliminaries

In this section I discuss two preliminaries which are required for the analyses in section 5. I first discuss the issue of whether RRCs do indeed exhibit genuine aspectual morphology, before outlining what I take the structure of the English aspectual hierarchy to be.

4.1. *Do RRCs exhibit genuine aspectual morphology?*

The first matter to discuss is whether RRCs exhibit genuine aspectual morphology, or whether the inflections that we see on the lexical verb are in fact nominal/gerundive or adjectival affixes. Auxiliary verbs are usually indicative of aspectual morphology, but since these are largely absent from RRCs (cf. (5)), it is difficult to ascertain whether the morphology they exhibit is aspectual.

Consider first passive inflections, which are morphologically similar to adjectival inflections:

(13) a. The womble was **convicted** yesterday. [Passive]

b. The **convicted** womble was sentenced to life in prison. [Adjectival]

Given their morphological similarity, one must wonder whether the passive inflections we see in RRCs are in fact adjectival. Likewise, progressive inflections are morphologically similar to nominalising affixes, such as those found in gerunds:

(14) a. The womble was **stealing** my socks. [Progressive]

b. **Stealing** socks is a common habit of wombles. [Nominal]

So once again, when the verb of an RRC takes the *-ing* affix, does this reflect the genuine presence of progressive aspect, or is this in fact an indication that the verb has been

nominalised? I claim that the inflections we see in English RRCs are genuinely aspectual. I first show this to be true for passive inflections, before moving on to progressive morphology.

The first indication that RRCs contain genuine passive morphology is the fact that passive RRCs permit *being* (cf. (15)a), which is indicative of passive morphology, as illustrated by the fact that *being* also occurs in standard passive constructions (cf. (15)b):

(15) a. the womble **being** sentenced to death. [RRC]

b. The womble was **being** sentenced to death. [Simple passive]

Though this does not tell us anything about passive RRCs without *being*. It is possible to show that these too exhibit genuine passive morphology, however, by the fact that their behaviour patterns with that of passive RRCs containing *being*. For instance, passive RRCs without *being* permit agentive *by*-phrases (cf. (16)a), just like those passive RRCs containing *being* ((16)b), which, as (16)c shows, is indicative of passive voice:

(16) a. the womble sentenced to death **by the judge** [RRC]

b. the womble being sentenced to death **by the judge** [RRC]

b. The womble was sentenced to death **by the judge**. [Simple passive]

Furthermore, passive RRCs without *being*, just like those with *being*, allow passive idiomatic constructions. An idiomatic construction is an expression whose meaning is not derivable from any of the individual lexical items that comprise it. Consider, for instance, the following idiom, and then consider the meanings of the individual lexical items that comprise it.

(17) kick the bucket = die

(18) a. kick = strike or propel forcibly with the foot.

b. the = definite article.

c. bucket = a roughly cylindrical open container with a handle, usually made of metal, used to carry liquids or other materials.

The expression in (17) means 'to die' even though none of the individual lexical items that make up this expression carry this interpretation. Note that if any of the lexical items upon which the idiom is dependent are changed, the figurative interpretation is altogether lost (# indicates loss of the idiomatic meaning):

(19) a. # kick the **tub**.

b. # kick **a** bucket.

c. # **hit** the bucket.

It can therefore be said that the idiomatic expression is dependent upon these syntactic items. With this in mind, there are certain idiomatic expressions in English which appear to be dependent on passive voice (cf. Harwood & Temmerman 2015). Take for instance, the idiom listed in (20)a. If this expression is produced in its active counterpart, the idiomatic interpretation is no longer accessible (cf. (20)b):

(20) a. be hoisted by his own petard = to be defeated by one's own plot intended for another.

b. # His own petard hoisted him.

It is, moreover, possible to show that this idiom is genuinely dependent on passive voice, and not merely the copula auxiliary selecting it, by the fact that the idiomatic interpretation is retained when the idiom is selected by the passive auxiliary GET instead of BE:

(21) He got hoisted by his own petard.

Given this reliance on the passive, this idiomatic expression seems to offer a reliable diagnostic as to the presence of passive voice. When applied to passive RRCs, both with and without *being*, we see that the idiomatic interpretation of such expressions remains intact:

(22) a. the man hoisted by his own petard

b. the man being hoisted by his own petard

Therefore it seems safe to say that the passive morphology exhibited by RRCs is indeed a realisation of passive voice.

Idiomatic constructions can also be used as a means of proving the presence of progressive aspect in RRCs, since there are certain idiomatic expressions in English which appear to be dependent on progressive aspect (cf. Aelbrecht & Harwood 2015; Harwood 2013, 2015; Harwood & Temmerman 2015; Svenonius 2005). If progressive aspect is removed from the idiom in (23)a, the figurative meaning becomes inaccessible, and only the (rather strange) literal interpretation is available:

(23) a. be dying to = be keen to do something.

b. # The wombles all died to see the new Star Wars film.

It is possible to show that this idiom is genuinely dependent on progressive aspect, and not merely the copula auxiliary or the *-ing* inflection, by the fact that the idiomatic interpretation is retained when the idiom is selected by an aspectual verb rather than auxiliary BE, and lost when the expression is uttered as a gerund:

(24) a. We really have to take the wombles to see the new Star Wars film, because they keep dying to see it.

b. # Dying to see the new Star Wars film does not necessarily make one a hardcore fan.

Given this reliance on the progressive, this idiomatic expression seems to offer a reliable diagnostic as to the presence of progressive aspect. When applied to RRCs, we see that the idiomatic interpretation of this expression remains intact:

(25) The person dying to see the new Star Wars film the least is probably George Lucas.

This I take as proof that the *-ing* inflections we see present in RRCs are genuine instances of progressive morphology.[16]

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[16] A common argument that is often raised against the claim that RRCs contain genuine progressive morphology is that the fact progressive RRCs permit stative verbs. As is well known, stative verbs are incompatible with progressive aspect (cf. (i)). Stative verbs, however, can occur in gerunds with the nominalising *-ing* inflection (cf. (ii)).

(i) a. * Luke is **loving** his sister.
b. * Dexter is **knowing** all the answers.
c. * I am **believing** in Santa Claus.

(ii) a. **Loving** your own sister is not a crime... actually it is.
b. **Knowing** the answer to every question does not make one a bookworm.
c. **Believing** in Santa Claus at the age of 55 does not make me a moron.

If RRCs contain genuine progressive morphology, one would expect stative verbs to be illicit within such constructions. As it turns out, however, stative verbs are perfectly acceptable within RRCs, suggesting the *-ing* inflection is actually a nominalising affix:

(iii) a. The man **loving** his own sister is none other than Luke Skywalker.
b. The kid **knowing** all the answers is actually Dexter, the boy-genius.
c. The grown woman still **believing** in Santa Claus is definitely a moron.

However, stative verbs do not actually present a reliable diagnostic as to the presence or absence of progressive aspect, since, as Pesetsky (1995) and Roberts (p.c.) note, these verbs appear to be changing in modern English so as to allow progressive inflections in certain contexts:

(iv) a. I'm **lovin'** it. [McDonalds advertising slogan, 2003-]
b. Luke is **loving** Leia more and more these days.
c. I'm really not **believing** what I'm hearing.
d. Karen is finally **understanding** this proof.
e. Donald is **finding** your accusations ludicrous.
f. I think Bill is really **liking** this performance.

Having shown that RRCs contain genuine aspectual morphology, I next outline what I take the structure of the English auxiliary/aspectual hierarchy to be, as this will be important for the analysis that follows.

4.2. *The auxiliary/aspectual hierarchy*

Akmajian & Wasow (1975), Tenny (1987) and Cinque (1999) (among others) have noted that English exhibits a functional hierarchy of the following sort:

(26) Tense > Modality > Perfect Aspect > Progressive Aspect > Voice > Verb

This is quite clearly illustrated in the sentence in (27), in which T is occupied by the raised modal *must*, which precedes the perfect auxiliary *have*, which precedes the progressive auxiliary *been*, which precedes the passive auxiliary *being*, which precedes the lexical verb *paid*:[17]

(27) Betsy must have been being paid to keep quiet.[18]

With such a detailed aspectual array, the question arises as to how this hierarchy is best represented in the syntax. Following Kayne (1993), Iatridou et al. (2001), Bošković (2014) and Harwood (2014), I assume the hierarchical structure in (28), in which I adopt a paired layering model. Each of the aspectual layers (modal, perfect aspect, progressive aspect, and voice) is divided into two projections. The higher phrase is a vP shell (with the exception of the modal

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g. Harry is clearly **fearing** an outbreak of the flu.

((iv)d-g from Pesetsky 1995:30)

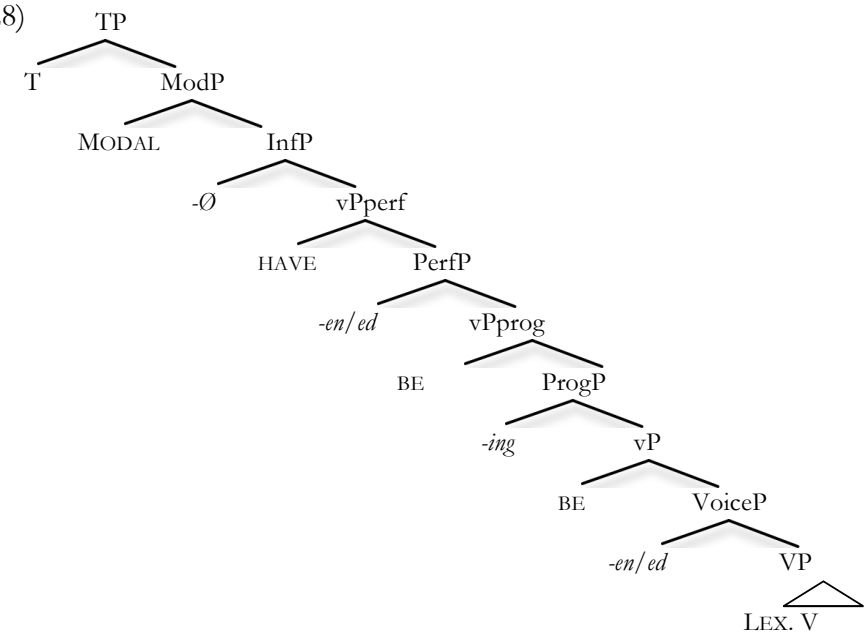
Therefore, stative verbs cannot be utilised to reliably show either way whether RRCs exhibit genuine progressive morphology or not.

[17] There is a degree of debate as to whether modals are merged below, above, or in T. I will simply assume, for ease of exposition, that modals, like all other auxiliary verbs, are merged below T and raise to this position, though nothing crucially hinges on this assumption.

[18] Examples such as that in (27) might be considered to be quite heavily loaded for many native speakers. Regardless, the sentence simply serves to exemplify the hierarchy detailed in (26).

layer, in which the higher projection is the modal phrase itself) in which the relevant auxiliary verb is merged, and the lower projection is the inflectional head.

(28)



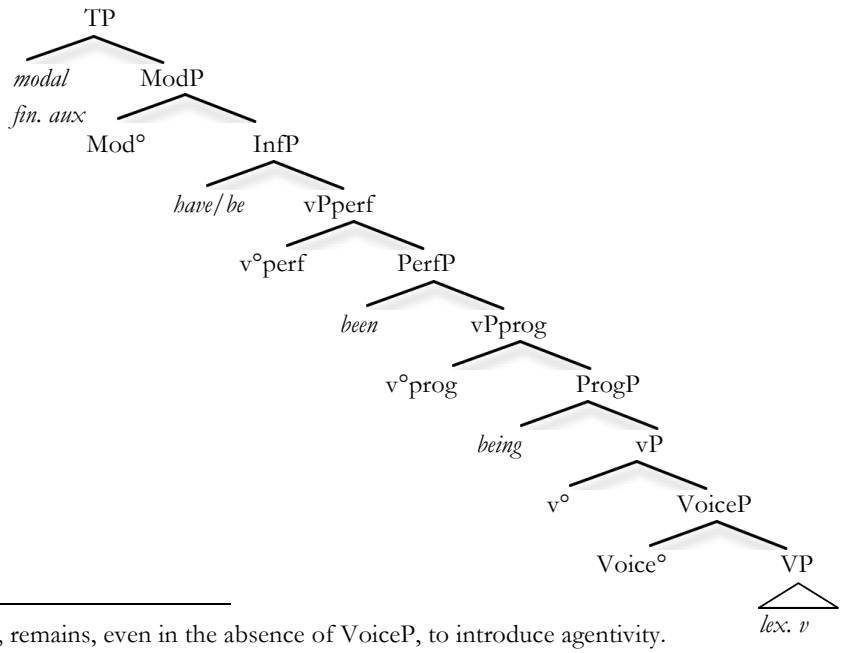
Concretely, TP, headed by the finite affix, selects ModP, headed by the modal verb. This in turn selects InfP, which is headed by the non-finite *-Ø* inflection that is associated with modality. Together ModP and InfP form the modal layer. This selects vPperf, which is headed by HAVE, which selects PerfP, the locus of the perfect *-en/-ed* inflection. These two projections comprise the perfect aspectual layer. vPprog is then selected, headed by progressive BE, which selects ProgP, headed by the progressive *-ing* inflection. Together these make up the progressive aspectual layer. ProgP then selects vP, which is headed by passive BE, which selects VoiceP, on the head of which we find the passive *-en/-ed* affix. Together these two form the Voice layer. Finally, VoiceP selects VP, which is headed by the lexical verb.[19]

[19] The vP in which passive BE is merged I also take to be the locus of agentivity in active contexts, and in the spec of which the agentive subject is merged. Though nothing hinges on this assumption. If one would rather generate the agentive vP below VoiceP, this would make no difference for the analysis. I also assume copula BE to be merged in this same vP, though once again, if a different merge position were preferred, it would make no difference for the analysis.

I assume, following the likes of Bošković (2014) and Harwood (2013, 2015) (among others), that What You See Is What You Get (WYSIWYG). That is, if a particular aspectual form is absent from the sentence, then its associated projections are absent from the underlying derivation. In other words, if modality, perfect aspect, progressive aspect, or passive voice, are absent from the utterance, then the modal, perfect aspect, progressive aspect, and voice layers, respectively, are absent from the underlying derivation.[20]

Following Harwood (2014), I assume all auxiliary verbs, whether finite or non-finite, raise for reasons of inflection to the relevant inflectional head. So when realised as *being*, the passive auxiliary would raise to Prog°, when realised as *been* it would raise to Perf°, when realised as *be* it would raise to Inf°, and when finite it would raise to T°.[21] Perfect HAVE would occupy Inf° when realised as non-finite *have*, and T° when finite. Finally, modals always raise to T°. Regarding the lexical verb, I assume, following Pollock (1989), that the lexical verb does not raise in English, but rather receives inflections in its base position (exactly how auxiliaries raise for inflection and how the lexical verb receives inflections in situ I will detail later in this section). The following diagram represents the spell-out positions of the various verbs:

(29)

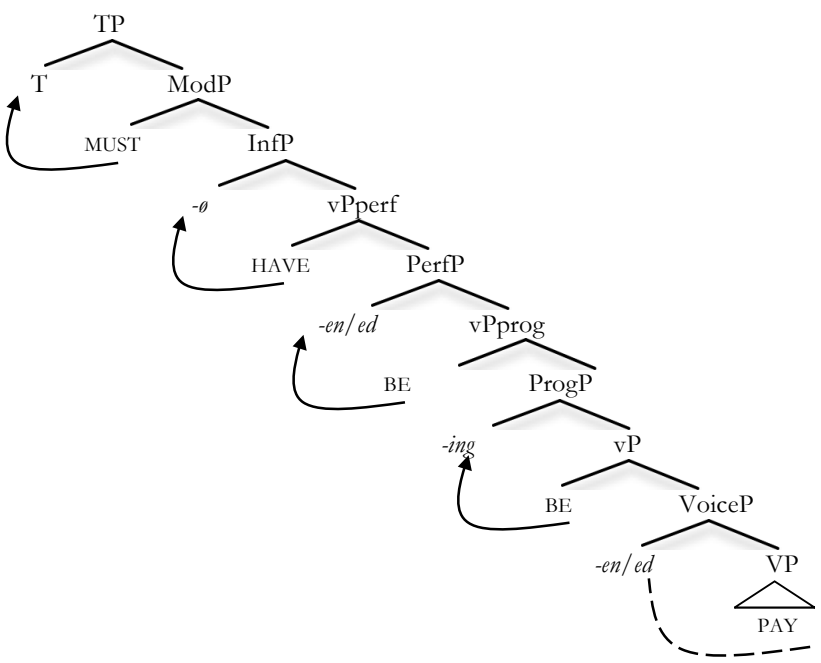


[20] vP, however, remains, even in the absence of VoiceP, to introduce agentivity.

[21] Progressive BE would undergo similar raising to the relevant inflectional heads to be realised as *been*, *be*, or finite *be*, but for obvious reasons it cannot be realised as *being*.

To use the sentence in (27) as an example, its derivation would proceed as follows:[22]

(30)



I now address the issue of how auxiliary head movement is actually motivated. Until now I have given the impression that auxiliaries raise as part of a morphological requirement that they host an inflectional affix, but I do not actually assume this to be the case. I assume auxiliary raising is featurally rather than morphologically motivated. That is, morphological inflections are not actually merged in their respective inflectional heads, and auxiliaries do not raise to host these inflections. Rather, auxiliaries enter the derivation bare and undergo raising to higher inflectional heads in order to undergo abstract feature checking with these heads. The

[22] This makes clear the need for a paired layering model as it avoids a head movement violation which would otherwise arise if auxiliaries and inflections were generated in the same position. Consider, for instance, if there was no vPprog, only a ProgP in which both progressive BE and the progressive *-ing* inflection were merged. For the passive auxiliary to be realised as *being* it would have to raise into Prog° in order to receive the *-ing* inflection. However, this position would already be occupied by progressive BE (or at least a trace thereof, given that progressive BE would also raise out to receive inflections of its own), giving rise to a head movement violation. By merging auxiliaries and the inflections which they select in separate projections, this circumvents this violation. The alternative would be to somehow lower all non-finite inflections onto auxiliaries in their base positions, and only require raising in the case of finite auxiliaries, allowing one to completely do away with the vP shells that I utilize here. This is essentially the approach taken by proponents of the affix hopping/merger under adjacency (Chomsky 1957; Marantz 1988; Halle & Marantz 1993; Bobaljik 1994; Embick & Noyer 2001), selection theory (Baker 1991; Bruening 2010), and reverse agree (Adger 2003; Bjorkman 2011; Wurmbrand 2012) models. See Harwood (2014) for a detailed critical analysis of these lowering approaches, and for a defence of the kind of model I adopt here.

specifications of these features is what determines the inflectional form that the verb then takes when it is spelled out.

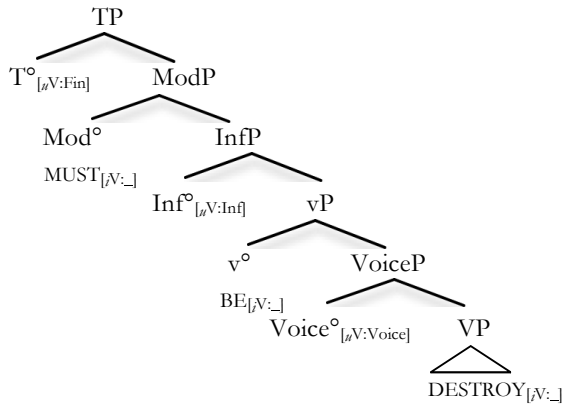
More concretely, I assume every inflectional head (T°, Inf°, Perf°, Prog°, and Voice°) to be merged bearing an uninterpretable but valued V feature [*u*V:val] (cf. Pesetsky & Torrego 2007, and Bošković 2011, for justification of this type of featural array). The value of this feature corresponds to the value of the inflectional head. So the finite [*u*V] on T° would be valued as [*u*V:Fin], as [*u*V:Inf] on Inf°, as [*u*V:Perf] on Perf°, as [*u*V:Prog] on Prog°, and as [*u*V:Voice] on Voice°. This [*u*V] feature must be satisfied by a verb. Conversely, every verb is merged with an interpretable but unvalued V feature [*i*V:unval] which must be valued by an inflectional head. In accordance with the principles of standard Agree (Chomsky 2000, 2001), the [*u*V] feature on the inflectional head probes down into its c-command domain and locates the nearest available [*i*V] feature, which it checks itself against, and values the verb's [*i*V] feature in the process. In the case of auxiliary and modal verbs, I assume the unvalued V feature to be strong, meaning it must Agree locally with the inflectional head, therefore causing the auxiliaries and modal verbs to raise to the relevant inflectional head. Lexical verbs, however, I assume to carry weak [*i*V] features, meaning no such raising is required.[23] The lexical verb can undergo feature checking with the higher inflectional head via Agree without having to undergo movement.

Let us use an example to better illustrate this process. Consider the sentence in (31)a, which has the underlying structure in (31)b (recall I assume WYSIWYG):

[23] Traditionally, feature strength is ascribed to the Probe of an Agree relation, rather than the Goal. See, however, Harwood (2013) and Aelbrecht & Harwood (2015) for approaches in which feature strength is ascribed to the Goal instead. If feature strength were ascribed to the Probe in this system, one would have to stipulate that the V feature on an inflectional head is strong on the occasion that it selects an auxiliary verb, and weak on the occasion that it selects a lexical verb. By ascribing feature strength to the goal instead, such an issue is circumvented.

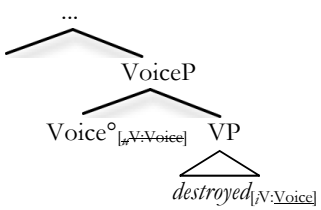
(31) a. The wombles must be destroyed.

b.



Starting from the bottom, the lexical verb is merged bearing a weak, interpretable, but unvalued V feature of the form [*i*V:_]. Voice° above it is merged with a corresponding uninterpretable V feature that is valued for passive voice: [*u*V:Voice]. With its need to be checked by a verb, Voice° probes inside its c-command domain and locates the lexical verb's [*i*V] feature. Because the verb's feature is weak, however, the verb does not need to undergo checking/valuation locally in the head of Voice°. This can instead by achieved by pure Agree. Voice's [*u*V] feature is subsequently checked, and V's [*i*V] feature is valued for Voice. The lexical verb is then spelled out as *destroyed* in accordance with the value of its V feature:

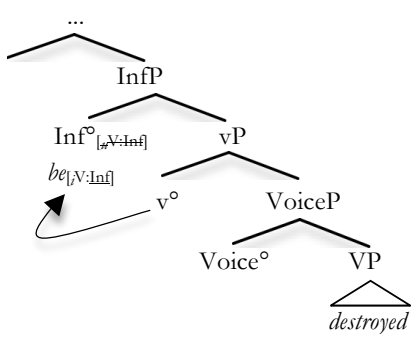
(32)



Next up, BE is merged in v° with an unvalued [*i*V] feature, and Inf° is merged above it bearing a corresponding [*u*V] feature that is valued as infinitival. Inf° probes inside its c-command domain and locates BE's [*i*V] feature. Unlike lexical verbs however, the [*i*V] features on auxiliaries and modals are strong. This means that BE's [*i*V] feature must undergo agreement locally, on the Inf head itself. BE, along with its [*i*V] feature, therefore raises to Inf°, where Inf's [*u*V] feature is

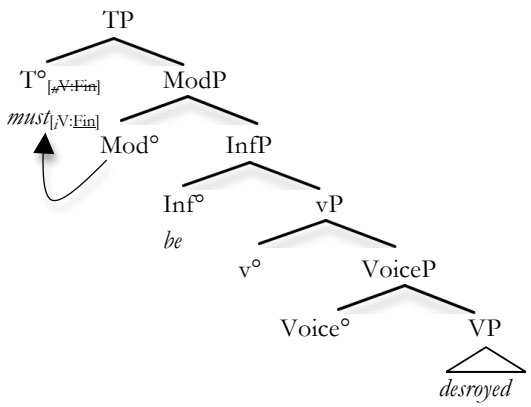
checked, and BE's [*i*V] feature is valued as infinitival. BE is then spelled out as *be* in accordance with its new feature value:

(33)



Finally, ModP, headed by the modal MUST, is merged above InfP, carrying an unvalued [*i*V] feature. Above this, T° is merged, bearing an uninterpretable V feature that is valued for tense: [*u*V:Fin]. Since the modal's unvalued [*i*V] feature is strong, it must be local to T's [*u*V] feature in order to enter into an Agree relation with it. The modal therefore raises to T°, where it checks T's [*u*V] feature, has its own feature valued for tense, and is subsequently spelled out as *must*:

(34)



This almost concludes the main background assumptions that I adopt for the remainder of this paper. However, there is one last point that needs to be made, namely the reason for auxiliary verbs in syntax.

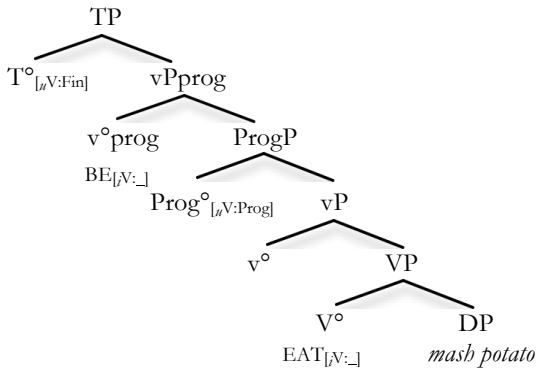
The inflectional system that has so far been adopted actually implies that auxiliary verbs exist as a means of satisfying a syntactic requirement that all inflectional heads enter into an Agree relation with a verb. Given that every inflectional head is merged with an uninterpretable V feature, this implies that every inflectional head requires a verb somewhere in its c-command domain with which it can agree in order to be featurally satisfied. The intended goal is the lexical verb. But what if the lexical verb has already undergone Agree with a lower inflectional head? In that case, the verb would no longer be available for further agreement operations since the lexical verb's unvalued [*i*V] feature has become fully satiated through its previous Agree relation, and therefore has no further need to undergo Agree with other syntactic heads. The higher inflectional head would therefore not have an adequate goal to check its [*u*V] feature against, meaning the derivation is in danger of crashing. To rescue the derivation, an auxiliary verb, bearing the necessary [*i*V] feature, would be merged in a vP shell before the higher inflectional head in order to satisfy the higher inflectional head's featural requirement, thereby rescuing the derivation.[24]

To give a concrete example: take the sentence in (35)a, which has the underlying structure in (35)b:

[24] I do not mean to imply that auxiliary verbs are inserted as a last-resort rescue strategy in the middle of an already established tree. Rather, a vP shell, headed by an auxiliary, would need to be already merged into the derivation before the relevant inflectional head with which it agrees is merged in order for the derivation to be successful. This of course, raises the issue of lookahead – an auxiliary is merged into a vP shell in order to satisfy an inflectional head that is yet to be merged. To deal with this issue, I claim that there are essentially two competing derivations available to the system – one is to not merge the vP shell. But in that case the higher inflection would have no available [*i*V] feature with which to Agree, causing the derivation to crash. For this reason this derivation would be ruled out and the alternative derivation – that in which the vP shell is merged – is chosen, since this is the only derivation which is fully featurally satisfied and can be appropriately interpreted at the interface.

(35) a. The badger was eating mash potato.

b.



In this derivation we have two inflectional heads: T° and Prog°, both of which carry uninterpretable V features which must be satisfied by a verb, typically the lexical verb. However, only one of these inflectional heads can undergo agreement with the verb, namely that which is merged first in the derivation and so naturally probes first, i.e. Prog°. Once Prog's [*u*V] feature has been checked, and the verb has been valued for progressive aspect, the verb becomes fully featurally satisfied and so is no longer available for further permutations of Agree. T's [*u*V] feature is therefore unable to enter into an Agree relation with the lexical verb. This is why BE in v°prog is merged, because its [*i*V] feature is able to satisfy T's featural requirement, thus rescuing the derivation. Without the vPprog shell, and the progressive auxiliary, T° would not have a verb in its c-command domain with which it can enter into an Agree relation. Therefore T's [*u*V] feature would go unchecked and the derivation would crash.

This idea is very much in the spirit of the proposal that auxiliaries exist in natural language as a default means for providing higher inflectional affixes, that would otherwise fail to attach to the lexical verb, with a verbal host. See Dik (1983, 1987), Schütze (2003) and Bjorkman (2011), for a morphological application of this proposal, and Dechaine (1993, 1995) and Cowper (2010) for a syntactic application similar to my own. While the observation I have made here might seem tangential, it will be of importance in section 5.3.

This concludes the preliminaries to the analysis. To summarise this section, I have proposed the following:

- English RRCs contain genuine progressive and passive morphology.
- The English auxiliary/aspectual hierarchy is comprised as follows:
    - CP>TP>ModP>InfP>vPperf>PerfP>vPprog>ProgP>vP>VoiceP>VP
- I assume WYSIWYG.
- All auxiliary verbs raise to the higher inflectional head, lexical verbs remain in situ.
- Auxiliary verb raising is featurally motivated.
- Auxiliary verbs are inserted to satisfy a syntactic requirement that all inflectional heads enter into an Agree relation with a verb.[25]

5. Analysis

In this section I detail my analysis of the aspectual restrictions on RRCs in SE. I claim that the RRC in English is comprised of the clause-internal phase. The analysis itself is split into three sections. In section 5.1 I first show, by summarising some of the arguments made in Harwood (2013, 2015), that the clause-internal phase in English corresponds to the progressive aspectual layer. In section 5.2 I show that RRCs privilege the same constituent as the English clause-internal phase and therefore conclude that RRCs are made up of this phase. In section 5.3 I tidy up a few loose ends that my analysis gives rise to. Finally, in section 5.4, I summarise the analysis.

5.1. The size of the clause-internal phase

Chomsky (2000, 2001) claims that the clausal phase corresponds to CP, and that the clause-internal phase (CIP) corresponds to vP. Harwood (2013, 2015), Wurmbrand (2013, 2014), Ramchand & Svenonius (2014), and Aelbrecht & Harwood (2015), have claimed however, that the CIP in English in fact extends as far as the progressive aspectual layer, in particular vPprog, when such projections are present, rather than vP. Perfect aspect and modality, meanwhile, together with TP and CP, always remain external to the CIP in English. In this section I outline

[25] See Harwood (2014) for a detailed discussion of this kind of approach to the auxiliary/inflectional system.

the basic arguments put forward in Harwood (2013, 2015) to support this claim. In section 5.1.1 I discuss *there*-existentials, in section 5.1.2 VP ellipsis, and in section 5.1.3 VP fronting.

5.1.1. *There-existentials*

A *there*-existential is a sentence in which the canonical subject position is occupied by the expletive *there*, and the **logical subject** occupies a lower position, usually left adjacent to the lexical verb:

(36) *There* was **a womble** rummaging in my bins.

The standard analysis for such a sentence is that *there* is inserted into Spec-TP, satisfying the EPP on T°. With the EPP satisfied, the logical subject has no motivation to raise out of its base position of Spec-vP, so it remains there, adjacent to the lexical verb.

However, if all logical subjects in existentials were stranded in their base positions, then one would expect derived subjects of passive existentials to remain in their base position as the complement of V°, where they would be spelled out right adjacent to the lexical verb. This is not borne out empirically however: **derived subjects** of passive existentials must also surface left adjacent to the lexical verb:

(37) a. *There* were **several wombles** arrested for trespassing.

b. * *There* were arrested **several wombles** for trespassing.

The derived subject therefore appears to have risen from its post-verbal position to an intermediate, pre-verbal position. To explain this, Chomsky (2000, 2001) claims the derived subject has risen to the CIP edge of Spec-vP in order to escape spell-out of the CIP and remain available for further syntactic operations (cf. Step 1 of (38)). However, when the CP phase is

constructed, *there* is inserted into Spec-TP, stranding the derived subject on the CIP edge (cf. Step 2 of (38)), where it surfaces pre-verbally:[26]

(38) Step 1: $[_{vP}$ **several wombles$_i$** $[_{VoiceP}$ $[_{VP}$ arrested t_i]]

Step 2: $[_{CP}$ $[_{TP}$ *There* were $[_{vP}$ **several wombles$_i$** $[_{VoiceP}$ $[_{VP}$ arrested t_i]]

In this light, subjects appear to demarcate the edge of the CIP in *there*-existentials.

Consider now the distribution of the **derived subject** in *there*-existentials with regards to auxiliary verbs:

(39) a. There were **many wombles** being arrested for anti-social behaviour.

b. * There were being **many wombles** arrested for anti-social behaviour.

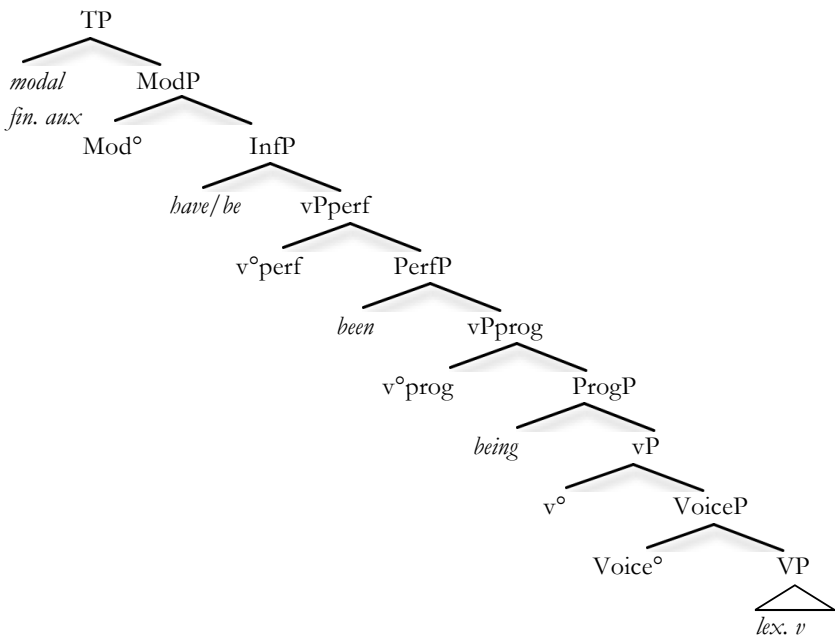
c. * There have **many wombles** been arrested for anti-social behaviour.

d. There have been **many wombles** arrested for anti-social behaviour.

Crucially, the derived subject must precede *being* but follow *been*. Consider once again the distribution of auxiliary verbs that we posited in section 4.2:

[26] Chomsky (2000, 2001) assumes the CIP in passive and unaccusative constructions to be weak, though Legate (2003) has shown the CIP to always be strong, even in passive and unaccusative contexts.

(40)



In order for the derived subject of passive existentials to surface between *being* and *been*, it must be sat on the edge of the progressive aspectual layer, namely Spec-vPprog:

(41) $[_{TP}$ *There mod/fin. aux* $[_{ModP}$ $[_{InfP}$ *have/be* $[_{vPperf}$ $[_{PerfP}$ *been* $[_{vPprog}$ SUBJ $[_{ProgP}$ *being* $[_{vP}$ ...

If the logical subject occupies the CIP edge in *there*-existentials as Chomsky (2000, 2001) claims, then this implies that vPprog must constitute the CIP when present in the derivation.[27,28]

[27] It has been argued by Jenkins (1975), Williams (1984), McNally (1997) and Law (1999) that the material following the logical subject in existential constructions in fact constitutes an RRC. If this were the case, the observations made in (39) would show us nothing about the distribution of the logical subject in a matrix clause, therefore telling us nothing about the identity of the CIP. While an RRC-analysis is indeed available to *there*-existentials, Milsark (1974), Barwise & Cooper (1981), Keenan (1987), Lasnik (1995a), Lumsden (1998), Chomsky (2001), Huddleston & Pullum (2002), Caponigro & Schütze (2003), Rezac (2006), Deal (2009), and Harwood (2013) have shown, with numerous diagnostics, that these constructions can be equally derived from a matrix clause. Therefore the distribution of the logical subject observed in these sentences remains valid for the point being made. See also Author (in preparation) for a detailed discussion of this topic.

[28] There are obviously complications to the basic data, such as the fact that derived subjects in unaccusative existentials are actually spelled out in post-verbal position, except when the lexical verb is inflected for progressive aspect.

(i) There arrived a train.
(ii) There is a train arriving.

The aim here, however, is just to give a basic impression of the data and relevant analyses, not to go into great detail on each of the relevant phenomena. See however Caponigro & Schütze (2003), Harwood (2013) and Sobin (2014) for relevant discussion.

5.1.2. *VP ellipsis*

VP ellipsis (VPE) involves deletion of the lexical verb and its internal arguments when there is a salient antecedent which renders the deleted item redundant if it were to be pronounced:

(42) Badger loves mash potato, and Bodger does [~~love mash potato~~], too.

VPE has often been argued to involve deletion of vP (Johnson 2001, 2004; Merchant 2001, 2008, 2013; Aelbrecht 2010), which obviously includes the lexical verb and its objects. As a means of explaining why VPE should specifically target this constituent, it has been claimed that VPE targets the CIP (Holmberg 2001; Gengel 2007; van Craenenbroeck 2010; Gallego 2010; Rouveret 2012; Bošković 2014; Harwood 2013, 2015; Aelbrecht & Harwood 2015).[29]

With this in mind, consider the behaviour of auxiliary verbs under VPE. Akmajian & Wasow (1975), Sag (1976) and Akmajian et al. (1979) all noted that *being* is obligatorily elided under VPE, while other auxiliaries can be stranded by the ellipsis:[30]

(43) a. Badger was being force-fed mash potato, and Bodger was **~~being~~** ~~force fed mash potato~~, too.

b. * Badger was being force-fed mash potato, and Bodger was **being** ~~force fed mash potato~~, too.

c. Badger has been force-fed mash potato, and Bodger has **been** ~~force-fed mash potato~~, too.

[29] There is much debate as to whether VPE privileges the phasal complement (Gengel 2007; van Craenenbroeck 2010; Gallego 2010; Rouveret 2012) or the entire phase (Holmberg 2001; Bošković 2014; Harwood 2013, 2015; Aelbrecht & Harwood 2015). Once again, the aim here is just to give a general impression of the data and claims, so I do not dwell on this issue here. I will simply assume, for the sake of simplicity, that VPE privileges the entire CIP. See Bošković (2014) and Harwood (2013, 2015) for discussion, and more generally also Fox & Pesetsky (2003, 2005) and Richards (2011).

[30] A complication to the pattern is the fact that *been* can be optionally elided:

(i) Badger has been force-fed mash potato, and Bodger has **~~been~~** ~~force-fed mash potato~~, too.

See Sailor (2012), Bošković (2014), Harwood (2013, 2015) and Aelbrecht & Harwood (2015) for discussion.

Consider once again the distribution of auxiliary verbs:

(44) $[_{TP}$ *mod/fin. aux*$[_{ModP}$ $[_{InfP}$ *have/be* $[_{vPperf}$ $[_{PerfP}$ *been* $[_{vPprog}$ $[_{ProgP}$ *being* $[_{vP}$ $[_{VoiceP}$ $[_{VP}$ *lex. verb*...

In order for *being* to be elided under VPE but for *been* to escape the ellipsis, VPE must target the progressive aspectual layer. If VPE targets the CIP as is claimed, then this once again implies that the progressive layer, specifically vPprog, constitutes the CIP in English rather than vP.

5.1.3. *VP fronting*

VP fronting (VPF) involves preposing of the lexical verb and its internal arguments to the front of the clause. The fronted constituent is typically taken to be VP or vP (see, for instance, Akmajian & Wasow 1975; Akmajian et al. 1979; Zagona 1982; Roberts 1990, 1998; Johnson 2001):

(45) If Badger says he loves mash potato, then $[_{vP}$ love mash potato] he does t_{vP}.

Consider now the behaviour of auxiliary verbs under VPF. Similar to VPE and *there*-existentials, *being* is obligatorily preposed under VPF, while all other auxiliaries are stranded by the moved constituent (cf. Akmajian & Wasow 1975; Akmajian et al. 1979; Roberts 1998; Johnson 2001):

(46) If Badger says the wombles were being eaten alive, then...

a. [**being** eaten alive]$_i$ they were t_i.

b. * [eaten alive]$_i$ they were **being** t_i.

(47) If Badger says the wombles have been eaten alive, then...

a. * [**been** eaten alive]$_i$ they have t_i.

b. [eaten alive]$_i$ they have **been** t_i.

In order for *being* to be obligatorily fronted under VPF, but for *been* to be stranded, VPF, similar to *there*-existentials and VPE, must target the progressive aspectual layer.

Tying this to phase theory, Holmberg (2001), Chomsky (2005), Fowlie (2010), Koopman (2010), Roberts (2010), and Aelbrecht & Den Dikken (2013) have claimed that the only phrases that can undergo movement are phases. If this is correct, then the VPF data once again suggests that the progressive aspectual layer constitutes the CIP in English rather than vP.[31]

To summarise, Harwood (2013, 2015) has argued that *there*-existentials, VPE, and VPF, all appear to privilege the progressive aspectual layer in English to the exclusion of higher inflectional forms such as perfect aspect and modality. Given that these phenomena have been argued in the literature to privilege the CIP, the evidence suggests that the CIP in English in fact extends as far as the progressive aspectual layer, rather than vP, when such projections are present in the derivation.[32]

(48) [$_{TP}$ *mod/fin. aux*[$_{ModP}$ [$_{InfP}$ *have/be* [$_{vPperf}$ [$_{PerfP}$ *been*([$_{vPprog}$ [$_{ProgP}$ *being* [$_{vP}$ [$_{VoiceP}$ [$_{VP}$ *lex. verb*...

Given that I assume WYSIWYG, however, this would imply that the progressive aspectual layer is not always present in the derivation, and so cannot always act as the CIP. The dynamic phase approach (Wurmbrand 2012a,b, 2013; Bošković 2013, 2014; Harwood 2013, 2015; Aelbrecht &

[31] The claim that only phases can move might seem like something of an overgeneralisation, though it is not without motivation, given that the most commonly moved constituents, such as CP, vP, DP, and PP, have all been taken to be phases, and those constituents which are often considered not to be phases, i.e. phasal complements such as TP, cannot undergo movement:

(i) *[His mother likes Mary]$_i$ everyone believes that t_i. (Bošković 2014:(11))

So there may be some weight to this claim. And given that phases are predicted to exhibit both semantic, phonological, and to a certain extent, syntactic, independence, then in some respects this claim should be expected. Regardless, even if one would rather not assume that the only constituents which can raise are phases, Harwood (2013, 2015) at least shows (as outlined above) that VPF privileges the same unit of structure as VPE and *there*-existentials, suggesting that VPF, at least, targets the CIP.

[32] Further evidence in favour of this claim comes from voice and aspectual mismatches (Wurmbrand 2012), idiomatic constructions (Harwood 2013, 2015, Harwood & Temmerman 2015), lexical selectional restrictions (Harwood 2013), British English *do*, and temporal modification (Ramchand & Svenonius 2013).

Harwood 2015), which this paper adopts, however, does not claim phases to be rigid and absolute. Rather, the identity of the phase boundary can vary depending on what material is present in the derivation. Concretely, it is claimed that the highest projection within a given domain projects the phase boundary, irrespective of what that projection is. Wurmbrand (2012a,b, 2013), Harwood (2013, 2015), Ramchand & Svenonius (2013) and Aelbrecht & Harwood (2015) claim progressive aspect constitutes part of the vP/predicational/event domain (each author defines it differently, though in every case they discuss the same structural unit), and projects the phase of this domain when it is present in the derivation, since it serves as the highest projection. In the absence of the progressive aspectual layer, however, vP acts as the highest projection and so projects the CIP boundary in that instance (see Bošković (2013, 2014), Wurmbrand (2012a), or Harwood (2013, 2015) for more details):

(49) $[_{TP}$ *mod/fin. aux* $[_{ModP}$ $[_{InfP}$ *have/be* $[_{vPperf}$ $[_{PerfP}$ *been* $([_{vP}$ $[_{VoiceP}$ $[_{VP}$ *verb...*

This concludes the summary of the data and arguments in favour of the progressive layer constituting the CIP in English. In the next section I show how this claim can be used to provide a better understanding of the inflections restrictions on RRCs.

5.2. The syntactic composition of RRCs

Recall the main facts about RRCs which this article attempts to account for:

- Only progressive and passive inflections are permitted in RRCs. Perfect aspect, modality, and tense, are prohibited.
- *Being* is the only auxiliary permitted in RRCs. All other auxiliaries are prohibited.

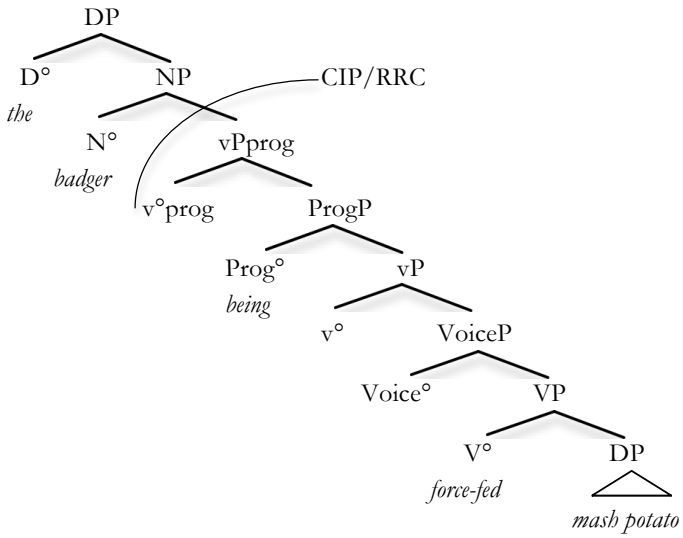
Focusing on the second bullet point, RRCs appear to privilege the same unit of structure as *there*-existentials, VPE, and VPF, since in these constructions, *being* is also uniquely targeted:[33]

- Under VPE, *being* is obligatorily elided, while all other auxiliaries escape ellipsis.
- Under VPF, *being* is obligatorily fronted, while all other auxiliaries are stranded.
- In *there*-existentials, the logical subject must precede *being*, but follow all other auxiliaries.

If *there*-existentials, VPE, and VPF, all privilege the CIP as Harwood (2013, 2015) argues, and RRCs appear to privilege the same unit of structure, then it seems reasonable to claim that RRCs are comprised solely of the CIP. As an example, an RRC such as that in (50)a, would have the structure in (50)b:[34,35,36]

(50) a. the badger being force-fed mash potato

b.



[33] An alternative analysis for the unique behaviour of *being* is proposed by Bošković (2004, 2014), Thoms (2011) and Sailor (2012), in the spirit of Akmajian & Wasow (1975), Iwakura (1977), Akmajian et al. (1979) and Lobeck (1987). Under this analysis, *being* is the only auxiliary that does not raise. It is instead inflected in its base position of v°, similar to the lexical verb. The advantage to this analysis is that VPE, VPF, and *there*-existentials, need only privilege vP in order for *being* to be targeted, which is more in accordance with traditional analyses. One need therefore not make claims that the progressive aspectual layer be included within the CIP, and the original vP phase boundary can be maintained. See Harwood (2013, 2014, 2015) and Aelbrecht & Harwood (2015) however for extensive arguments against this approach. Also see footnote 38 in this article for an additional argument against this analysis.

[34] At present there is no consensus in the literature as to whether relative clauses are complements or adjuncts to the noun they modify (see, for instance, Cecchetto & Donati 2011 for discussion). For ease of exposition I will assume RRCs are complements, though this is not crucial to the analysis.

[35] Recall that the CIP boundary can vary (since I assume WYSIWYG). In the absence of progressive aspect, the RRC would be structured as follows:

(i) [DP *the* [NP *badger* [vP [VoiceP [VP *force-fed* [DP *mash potato*]]]]]]

[36] One might wonder what function vPprog serves in the schematic of the RRC in (50)b, since it seems not to introduce the progressive auxiliary, which is typically the function of a vP shell. For ease of exposition I leave this matter aside here, and discuss it in section 5.3: *tidying up a rather crucial loose end.*

This provides an automatic explanation for why RRCs only exhibit passive and progressive morphology, but not perfect aspect, modality, or tense: only the projections for passive voice and progressive aspect, which themselves make passive and progressive inflections possible, are merged inside the CIP. Since RRCs are comprised solely of the CIP, they are naturally limited to these projections and their associated inflections. Perfect aspect, modality, and tense, on the other hand, are all merged external to the CIP, within the CP phase, and therefore cannot form part of the RRC.[37,38]

Turning now to FRCs, let us first recall the basic facts:

- FRCs permit all inflectional forms.
- FRCs exhibit the entire auxiliary paradigm.

Given these properties, and also given the fact that FRCs exhibit overt relative pronouns/complementisers, which are standardly taken to be merged in CP, it seems reasonable to assume that, like matrix clauses and unlike RRCs, FRCs are comprised of both phases of the clausal spine:

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[37] This analysis also explains why relative pronouns and complementisers are absent from RRCs: these elements are merged in CP, which is obviously external to the CIP.

[38] The proposed analysis also offers further motivation for abandoning the *being*-in-situ analysis (see footnote 33). Recall that under this approach, *being* is the only auxiliary which does not raise for inflections. Instead it remains in its base position of v°, receiving inflections in-situ. According to this analysis, the unique behaviour of *being* in VPE, VPF, and *there*-existential contexts, is attributable to vP, rather than vPprog, being privileged by the aforementioned phenomena. Since *being* remains within the vP domain, it would naturally be targeted by these phenomena:

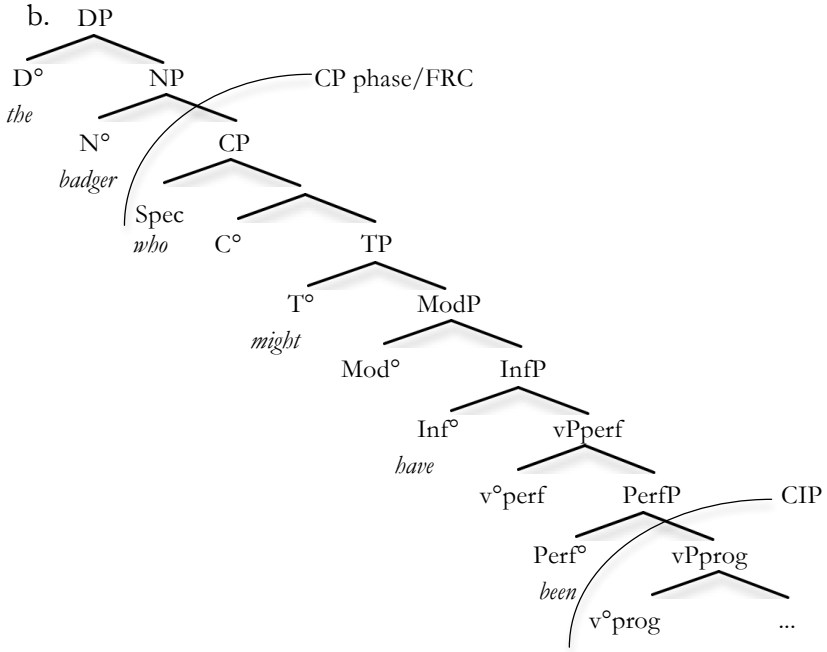
(i) [$_{TP}$ *mod/fin. aux*[$_{ModP}$ [$_{InfP}$ *have/be* [$_{vPperf}$ [$_{PerfP}$ *been* [$_{vPprog}$ [$_{ProgP}$ **[PHASE/**$_{vP}$ *being* [$_{VoiceP}$ [$_{VP}$ *verb*...

This would imply that nothing special needs to be said about progressive aspect: the progressive projections would be situated external to the CIP, and constitute part of the CP phase along with all other forms of aspect. The unique behaviour of *being* is simply attributed to a particular property about *being* (it doesn't raise for inflection) rather than to a special property of progressive aspect.

However, the RRC data suggests such an analysis might not be on the right track. Recall that it is not only *being* which is uniquely privileged by RRCs, but progressive (as well as passive) inflections in general. This is easily captured under the analysis proposed in this paper: both *being* and progressive inflections in general are privileged by RRCs because the progressive projections are included within the CIP/RRC. The *being*-in-situ approach, however, is less capable at explaining these facts. Since vP always constitutes the CIP under this approach, we would expect the RRC to only build as far as vP. This would explain why *being* should be licit in RRCs, since this auxiliary remains in v°. However, we would have no explanation for why progressive aspect should be privileged by the RRC, since the progressive projections are external to the CIP under this analysis. In order to account for the presence of progressive aspect in RRCs, proponents of the *being*-in-situ analysis would have to stipulate that RRCs exceptionally build as far as the progressive aspectual layer, but without any principled explanation for this.

(51) a. the badger who might have been being force-fed mash potato

b.



Given that the two phases of the clausal spine together produce the entire inflectional hierarchy of English, this explains why FRCs have no inflectional restrictions, and why the entire auxiliary hierarchy is made available.

This essentially comprises the main crux of the analysis: FRCs are comprised of both phases of the clausal spine, and hence exhibit no inflectional restrictions, whereas RRCs are only comprised of the first phase, which is limited to progressive and passive inflections.[39]

In the following sub-section, I tidy up a loose end that the analysis gives rise to.

5.3. Tidying up a rather crucial loose end

A problem that the analysis currently faces is how other instance of BE should be treated. Consider, first of all, the base positions of all auxiliary verbs with respect to the CIP boundary:

(52) $[_{CP}\ [_{TP}\ [_{ModP}$ MODAL $[_{InfP}\ [_{vPperf}$ HAVE $[_{PerfP}$ ($[_{vPprog}$ BE $[_{ProgP}\ [_{vP}$ BE $[_{VoiceP}\ [_{VP}$ VERB...

[39] This analysis of RRCs could be considered as conforming with the truncation analysis of adverbial clauses (cf. Haegeman 2003, 2006a,b).

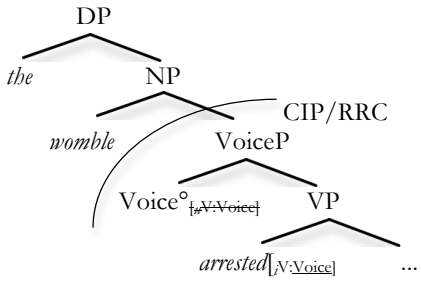
Note that while perfect HAVE and modal verbs are all generated external to the CIP, all instances of BE, whether progressive or passive in origin, are first merged internal to the CIP. Given that RRCs are comprised of the CIP, this means that all instances of BE should be merged within the RRC. The question is, what happens to these instances of BE under RRC formation? As was established in section 5.1, the only auxiliary which actually surfaces internal to the CIP, is *being*. All other forms of BE raise out of the CIP. So it is not surprising that we do not see other forms of BE within the RRC, but under RRC formation, where would these auxiliaries raise to, as there are no obvious landing sites beyond the RRC? And how would these forms of BE manifest themselves in English? This is the loose end that this section aims to tie up.

The answer to the problem is relatively simple: other than passive *being*, no other auxiliary verbs are merged within an RRC simply because they are not needed by the inflectional system. Recall, from section 4.2 that I follow Dik (1983, 1987), Dechaine (1993, 1995), Schütze (2003), Cowper (2010) and Bjorkman (2011) in assuming that auxiliaries exist in natural language as a rescue strategy to satisfy higher inflectional heads that have failed to enter into a relation with the lexical verb. Under my specific assumptions, I claimed every inflectional head is merged with a [*u*V] feature which must be satisfied by a verbal element, preferably the lexical verb. If the lexical verb has already entered into an Agree relation with a lower inflectional head, however, it would no longer be able to enter into an Agree relation with any higher inflectional heads. Auxiliary verbs are therefore inserted to satisfy the featural requirements of these higher inflectional heads. This implies that once there are no more inflectional heads, there is no further need for auxiliary verbs to be inserted. In what follows I apply this logic to RRC formation to show how this is able to solve the problem at hand. While there are differences in the precise implementation, my proposal is very much in the spirit of Bjorkman (2011), who first linked the basic concept of auxiliary insertion as a rescue strategy to that of RRC formation.

Consider first the passive RRC in (53)a. In the underlying derivation of this RRC, Voice° is the only inflectional head that is present (recall I assume WYSIWYG). It therefore enters into

an Agree relation with the lexical verb, valuing the lexical verb's [*i*V] feature for Voice and having its own [*u*V] feature checked in the process. Crucially, there are no inflectional heads above VoiceP (progressive aspect is absent from the sentence in (53)a), meaning there are no further [*u*V] features that require checking. There is therefore no need (in fact it would be highly inefficient) for the syntax to merge a vP shell, headed by passive BE, above VoiceP. Therefore, the RRC actually stops at VoiceP rather than vP, and projects the CIP from there: [40,41]

(53) a. The womble arrested yesterday...

b. 

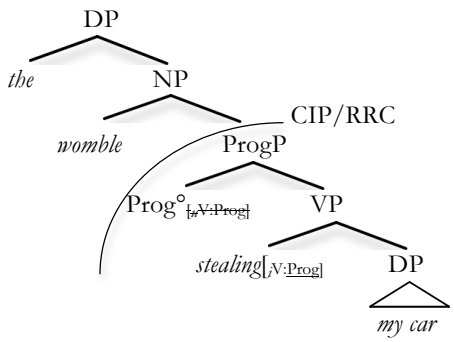
The same basically applies with a purely progressive RRC such as in (54)a. Here, Prog° is the only inflectional head present. It therefore enters into an Agree relationship with the lexical verb. Most importantly, because there are no inflectional heads above Prog°, there are no further [*u*V] features which require checking. It would therefore be superfluous for the system to merge BE in vPprog, above ProgP. Therefore the RRC stops building at ProgP and projects the phase boundary from there:

[40] Similar to the discussion in footnote 24, this raises the problem of lookahead – how does the system know not to merge the vP shell? The answer is simple – the system can in principle merge the vP shell, but in doing so it would be generating an unvalued [*i*V] feature which has no means of getting valued, thus causing the derivation to crash. For this reason, such a derivation would be ruled out and that in which the vP shell is not merged is preferred. The same logic applies to the derivations in (54) and (55).

[41] Within the dynamic phase approach, which in this paper I follow, it is entirely possible for VoiceP to project the phase rather than vP or vPprog. Once again, see Bošković (2013, 2014), Wurmbrand (2013, 2014), or Harwood (2013, 2015) for details.

(54) a. the womble stealing my car

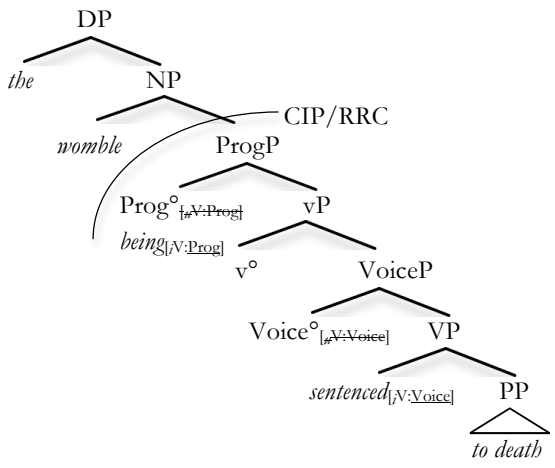
b.



Progressive passive RRCs, such as that in (55), is where things get a little more interesting.

(55) a. the womble being sentenced to death

b.



In this case, both progressive and passive inflectional heads are present, Prog° and Voice°. Voice°, being the lowest of the two inflectional heads, Agrees with the lexical verb in V°. The verb's [*i*V] feature is therefore valued for Voice, and the [*u*V] feature in Voice° gets checked. Prog°, however, still bears a [*u*V] feature which requires checking, but it is no longer able to Agree with the lexical verb. A vP shell, headed by BE, is therefore merged before Prog°, in order to satisfy ProgP's featural requirements. BE, bearing an unvalued [*i*V] feature, raises into Prog°, where it is valued for progressive aspect and checks Prog's own [*u*V] feature in the process. Being valued for progressive aspect, BE is then spelled out in this position as *being*. Finally,

because there are no inflectional heads beyond ProgP, there is no need for the vPprog shell, headed by BE, to be built. Therefore the RRC stops building at ProgP and projects the phase boundary from there.

This therefore solves the issue of how auxiliary verbs other than *being* should be treated under RRC formation. In the final section, I summarise my analysis.

5.4. Analysis summary

To summarise the analysis: in section 5.1 I gave a brief summary of the data put forward in Harwood (2013, 2015) to argue that the CIP in English corresponds to the progressive aspectual layer rather than vP when such projections are present in the derivation. The relevant data concerned *there*-existentials, VPE, and VPF. In section 5.2 I pointed out that RRCs in English appear to target the same structural unit as those phenomena which privilege the CIP, and concluded therefore that RRCs are comprised solely of the CIP. Given that the CIP includes the progressive and voice layers, but excludes the perfect, modal and tense layers, this explains why RRCs are restricted to progressive and passive morphology. I additionally argued that FRCs are comprised of both phases of the clausal spine, given that they exhibit no inflectional restrictions. Finally, in section 5.3 I tidied up an important loose end, namely what happens to other instances of BE under RRC formation, since these are predicted to be merged internal to the RRC, but never surface inside them. I accounted for this by utilising an approach in which auxiliaries are analysed as a rescue strategy to satisfy the features of inflectional heads which would otherwise fail to enter into an Agree relation with the lexical verb. Because there are no inflectional heads merged beyond Prog in RRC formation, there is no need to merge instances of BE beyond that of passive BE, which is itself only merged to satisfy Prog's featural requirements when Voice has already Agreed with the lexical verb.

In the final section, I discuss a number of further issues which the analysis presented gives rise to.

6. Further Issues

In this section I deal with three further issues. In section 6.1 I discuss infinitival RRCs. In section 6.2 I address the issue of why relative clauses should be constrained by phase boundaries, and finally, section 6.3 discusses the cross-linguistic implications of this paper and the reason for the phasal divide between perfect and progressive aspect in English.[42]

6.1. Infinitival RRCs

A type of RRC which I have so far refrained from mentioning is that of infinitival RRCs (IRRCs) (examples from Bhatt 1999:9):

(56) a. the man [to fix the sink]

b. the book [to be read for tomorrow's class]

c. the first man [to walk on the moon]

Interestingly, these constructions permit perfect and infinitival morphology, unlike the traditional RRCs that this paper has largely been concerned with. Finite morphology, however, is still prohibited:

(57) a. the first man [to **have walked** on the moon]

b. the first man [to **walk** on the moon]

c. * the first man [to **walked** on the moon]

[42] I will not focus here on whether RRCs are complements or adjuncts to the head noun, nor how the head noun relates to the RRC, (though see footnotes 34 and 43, and section 6.2, for some brief remarks). These are longstanding problems which apply to relative clauses in general, not just RRCs, and are not specific to my own analysis. For these reasons, and given that I have nothing to add to this particular debate here, I do not discuss these matters further.

A broader range of auxiliary verbs are also permitted. Only modals and finite auxiliaries are excluded:

(58) a. the first womble [to **have been** elected president]

b. the first badger [to **be being** paid for eating mash potato]

c. * the first womble [to **must** tie his own shoelaces]

d. * the first womble [to **was** elected president]

According to Kjellmer (1975) and Bhatt (1999), IRRCs are to be analysed as structurally identical to traditional RRCs. If this were the case, then IRRCs present direct counter evidence to my analysis, since they permit a broader range of inflectional possibilities, suggesting that RRCs are not confined to the CIP.

However, I claim that IRRCs should be analysed as being distinct from traditional RRCs. In other words, it is a separate phenomenon which requires its own unique analysis. While I will not present such an analysis in this section, I will show that IRRCs behave apart from traditional RRCs, and so warrant their own unique proposal.

First of all, an important distinction between RRCs and FRCs is that RRCs only involve subject gaps (whether the subject be agentive or derived, cf. (59)). RRCs with object gaps are not permitted (cf. (60)). FRCs, on the other hand, permit both subject (cf. (61)) and object gaps (cf. (62)):[43]

(59) a. The womble$_i$ [$_{RRC}$ t$_i$ stealing the crown jewels]...

[43] The trace positions in the examples in (59)-(62) suggest I adopt a head raising analysis for relative clauses. That is, the head noun originates within the relative clause and raises out via head movement (cf. Vergnaud 1974; Kayne 1994; Bhatt 1999; Bianchi 1999; Cecchetto & Donati 2011). For ease of exposition I will assume this to be the case, since it is one of the most established proposals for relative clause formation. Nothing hinges on this assumption however. Other proposals, such as the matching analysis (Chomsky 1965; Kayne 1975; Cinque 1978; Sauerland 2003; Hulsey & Sauerland 2006) or the head external approach (Chomsky 1981; Browning 1987; Burzio 1986; Bhatt 1999) should also be compatible under the account I offer.

b. The womble$_i$ [$_{RRC}$ t_i sent to prison]...

(60) a. * The jewels$_i$ [$_{RRC}$ the womble stealing t_i]...

b. * The prison [$_{RRC}$ the womble sent to t_i]...

(61) a. The womble$_i$ [$_{RRC}$ who t_i was stealing the crown jewels]...

b. The womble$_i$ [$_{RRC}$ who t_i was sent to prison]...

(62) a. The jewels$_i$ [$_{RRC}$ that the womble was stealing t_i]...

b. The prison [$_{RRC}$ that the womble was sent to t_i]...

With respect to this property, IRRCs actually appear to behave more like FRCs, given that they too permit both object and subject gaps:

(63) a. the ideal jewels$_i$ [to steal t_i]

b. the best prison$_i$ [to be sent to t_i]

However, IRRCs do not behave perfectly like FRCs either, since in object gap FRCs, the subject is overt (cf. (64)), while in object gap IRRCs, it is covert (cf. (65)):[44]

(64) a. the jewels$_i$ [that **the womble** stole t_i]

b. * the jewels$_i$ [that ø stole t_i]

(65) a. * the jewels$_i$ [to **the womble** steal t_i]

b. the jewels$_i$ [to ø steal t_i]

[44] Bhatt (1999), on the basis of covert modality, actually claims that there is a structural distinction between subject and object gap IRRCs. Subject gap IRRCs, he claims, exhibit a truncated structure similar to traditional RRCs, while object gap IRRCs actually extend as far as CP. Under this analysis it is unsurprising that object gap IRRCs exist, given that they would be syntactically similar to FRCs. If correct, Bhatt's analysis of subject and objects gap IRRCs potentially renders my first argument moot. This does not discount the other three arguments, however, nor does it explain why the subject remains covert in object gap IRRCs, unlike in object gap FRCs (cf. (64) and (65)), showing there to still be an important distinction between these phenomena. I therefore maintain that IRRCs should be considered as a phenomenon separate from both FRCs and RRCs.

Second of all, IRRCs often require the head noun to be modified in many contexts, whereas no such requirement exists for traditional RRCs:

(66) a. The **first** man to be arrested yesterday was my father.

b. * The man to be arrested yesterday was my father.

c. The man arrested yesterday was my father.

Third, while IRRCs can be located within predicational small clauses (cf. (67)), traditional RRCs seem to be banned from such syntactic contexts (cf. (68)):

(67) a. I consider him the first womble to be elected prime minister.

b. I consider him the first womble to be running for office.

(68) a. * I consider him the first womble elected prime minister.

b. * I consider him the first womble running for office.

The final reason why IRRCs should be treated as distinct is that it is clear that these constructions are not simply a strategy employed by traditional RRCs as a means of expressing perfect and infinitival morphology. That is, IRRCs have their own version of a simple progressive or passive relative clause. This is illustrated by the fact that IRRCs permit progressive and passive morphology, as traditional RRCs do, but while retaining the syntactic form of an IRRC. In other words, IRRCs do not revert to traditional RRCs when (only) progressive or passive morphology are expressed:

(69) a. the first womble [to **be elected** president]

b. the first womble [to **be running** for president]

These four arguments, when taken together, show that IRRCs should be considered as a separate kind of relative clause, contrary to Bhatt (1999), which is distinct from both traditional RRCs and FRCs.[45]

6.2. Why should relative clauses be constrained by phase boundaries?

Throughout this article, I have argued that RRCs are comprised of the CIP, and FRCs of both phases of the clausal spine. This begs the question however, of why relative clauses should be constrained by phase boundaries.[46] That is, why can't relative clauses form a constituent that is not a phase? There are two possible answers to this issue, depending on how one assumes relative clauses are derived.

The first possible answer relates to cyclicity. It is standardly assumed that A'-movement always proceeds via the edge of each successive phase until it is featurally satisfied. That is, A'-movement cannot take place without a phase edge (cf. Uriagereka 1999; Chomsky 2000, 2001). Given that FRCs are often assumed to involve A'-movement of a relative operator/relative

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[45] The structural unit which I assume IRRCs are comprised of is a defective infinitival/TP layer:

(i) a. the first badger [to have been being paid for eating mash potato]...

b. [$_{DP}$ *the* [$_{NP}$ *badger* [$_{TP}$ *to* [$_{InfP}$ *have* [$_{vPperf}$ [$_{PerfP}$ *been* [$_{vPprog}$ [$_{ProgP}$ *being* [$_{vP}$ [$_{VoiceP}$ [$_{VP}$ *paid*...

This raises an additional issue. In this paper I have claimed that traditional RRCs are comprised solely of the CIP, while FRCs are comprised of both phases of the clausal spine. So how do IRRCs fit into this picture? If one wishes to claim that all relative clauses are restricted in size to phase boundaries, then one might claim, as per Branigan (2005), López (2009) and van Craenenbroeck & van Koppen (2012), that TP is a phase. Alternatively, one might claim that IRRCs are the exception – that for some reason, these constructions are not confined to phase boundaries. Given the differences in syntactic behaviour between RRCs and IRRCs outlined above, this might seem like a reasonable analysis to pursue. Another option would be to dispense with the notion of relative clauses being constrained by phase boundaries, and instead define these domains through other means, such as Grohmann's (2003) prolific domains.

[46] An additional issue for the analysis, but for which I have no real answer, are the restrictions which copula RRCs exhibit. Under the approach to phase theory that I adopt (and also under standard phase theoretic approaches), predicational nouns, adjectives, and prepositions, of copula constructions, are all generated inside the CIP. If RRCs are restricted to the CIP, one would expect predicational nouns, adjectives, and prepositions, to all be permitted in RRCs. However, this prediction is not entirely borne out: only prepositional predicates are permitted in RRCs, even though all three predicates are permitted in FRCs:

(i) The womble [in the rather fetching underwear]...
(ii) The womble [who is in the rather fetching underwear]...
(iii) * The womble [a few sandwiches short of a picnic]...
(iv) The womble [who is a few sandwiches short of a picnic]...
(v) * The womble [really annoying]...
(vi) The womble [who is really annoying]...

For reasons beyond my understanding, however, RRCs with nominal and adjectival predicates are permitted if progressive aspect is present:

(vii) The womble [being a few sandwiches short of a picnic]...
(viii) The womble [being really annoying]...

pronoun (cf., for instance, Kayne 1994; Sauerland 1998; Bhatt 1999; Safir 1999), it would make sense for the FRC to be phase-derived since this would provide the necessary phase edges that make such A'-movement possible. If one, moreover, assumes that relative clauses are derived via a similar form of A'-movement, albeit involving a covert relative operator or an instance of PRO (cf., for instance, Kayne 1994; Heim & Kratzer 1997),[47] then the need for RRCs to be comprised of the CIP also becomes clear: to provide a position for such A'-movement.

A second possibility relates to spell-out. Uriagereka (1999) claims that all adjuncts, and any projections which occupy specifier positions, cannot be spelled out as part of the clausal spine to which they are attached, and so must form their own spell-out domain, i.e. their own phase.[48] If one assumes that a relative clause occupies either the adjunct or specifier position of the nominal phrase (cf. De Vries 2002, or Cecchetto & Donati 2011, for discussion), then, according to Uriagereka (1999), it must be spelled out separately to the head noun as a distinct phase. So long as both FRCs and RRCs occupy either the adjunct or specifier position, this argument would apply equally to either construction.

6.3. Cross-linguistic implications

One final issue to be discussed are the cross-linguistic implications of my proposal. A potential problem for the analysis I offer is that RRCs in many other languages do not exhibit the same inflectional restrictions as in SE. Iatridou et al. (2001), Burzio (1986), and Cecchetto & Donati (2011), for instance, have noted that both Italian and Bulgarian RRCs permit perfect aspectual inflections:

[47] See Bhatt (1999), however, for arguments against RRCs being derived via A'-movement.
[48] Uriagereka (1999) does not actually use the term phase, but rather notions such as cycles, command units, spell out domains, derivational cascades etc. Given that this is a model of multiple spell out which largely informed current phase theoretic assumptions, however, I consider it safe to use the term phases to refer to Uriagerka's (1999) spell-out domains.

(70) Il treno [arrivato entro le 3] è ripartito subito.[49]
the train arrived by 3 left again immediately.
'The train which had arrived by 3 left again immediately.'

(Iatridou et al. 2001:183)

(71) Zapoznah se sus [žena-ta napisala knigata].
met refl with woman-the written book-the
'I met the woman who has written the book.'

(Iatridou et al. 2001:181)

If progressive aspect universally constitutes the CIP, and perfect aspect is always external to that phase, then the data above are problematic for my claim that RRCs are built from the CIP.[50]

Related to this is the question of why the CIP boundary should even sit between progressive and perfect aspect in the first place. In this paper I have tried to offer a more principled explanation for why RRCs are restricted to progressive and passive morphology, namely by claiming that these constructions are comprised solely of the CIP, which Harwood (2013, 2015) argues extends as far as the progressive aspectual layer. However, arguably I have only shifted this problem to another domain. That is, rather than asking why English RRCs should be restricted only to progressive and passive morphology, we can instead ask the question of why the CIP should be comprised of these inflectional projections, but not perfect aspect or modality?

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[49] An additional complication for the Italian data is that RRCs are restricted to passive and unaccusative verbs. Transitive and unergative RRCs are prohibited.

(i) il ragazzo amato de Maria
the guy loved by Mary
(ii) il ragazzo arrivato ieri
the guy arrived yesterday
(iii) * il ragazzo aperto la finestra
the guy opened the window
(iv) * il ragazzo telefonato ieri
the guy phoned yesterday (Cecchetto & Donati 2011:21)

[50] A further cross-linguistic issue to consider, though one which is not specific to my own analysis, is why RRCs are actually quite rare cross-linguistically. Unfortunately I have nothing to say on this matter at present and leave it for further research.

To answer this issue, Harwood (2013, 2015) has tentatively suggested that the reason why progressive aspect and passive voice form part of the CIP in English, but not perfect aspect, is that progressive aspect and passive voice form part of the predicational layer, whereas perfect aspect does not. Syntactic evidence for such a claim is the fact that progressive aspect and passive voice can be selected by a form of BE, whereas perfect aspect can only be selected by HAVE. Given that BE can select DP, AdjP and PP predicates in copula constructions, one might conclude that Voice and progressive aspect form part of the predicate as well, but not perfect aspect.[51]

Bearing this in mind, note that both Italian and Bulgarian sometimes realise perfect aspect with the copular auxiliary BE instead HAVE:[52]

(72) Giovanni è arrivato.
Giovanni is arrived.
'Giovanni has arrived.'
(Burzio 1986:53)

(73) Marija e obiknala Ivan.
Maria is love-perf.paert Ivan.
'Maria has fallen in love with Ivan.'
(Adapted from Iatridou et al. 2001:(35))

If a language is able to realise perfect aspect using a form of BE, this might suggest perfect aspect in that language forms part of the predicational layer, and therefore the CIP. Thus the fact that

[51] RRCs themselves might actually act as further evidence in favour of this claim. As has been established in this paper, RRCs are restricted to progressive and passive morphology. Bearing this in mind, it is often assumed that RRCs form <e,t> type predicates which act as direct predicates to the noun (Bhatt 1999). If RRCs are therefore pure predicates, then this might act as further evidence for progressive aspect and passive voice being part of the predicational layer. This argument is, however, admittedly somewhat circular. Additionally, if IRRCs are also taken to act as direct predicates to the noun, and they permit perfect aspect and infinitival morphology (as was shown in section 6.1), this might constitute counter-evidence to the claim that progressive aspect and passive voice form part of the predicational layer to the exclusion of higher aspectual forms.

[52] For Italian, at least, this is often in the context of unaccusative verbs (cf. Burzio 1986).

perfect aspect in both Italian and Bulgarian is sometimes selected by BE rather than HAVE, suggests that perfect aspect is indeed contained within the CIP in these languages. Therefore the presence of perfect aspect in RRCs in these languages is unsurprising.

This implies that the size of the CIP does not universally correspond to the progressive layer, and is instead a point of cross-linguistic variation, as suggested by Harwood (2013, 2015) and Harwood & Temmerman (2015): for some languages the CIP might correspond to the original vP, for others, like English, it extends as far as progressive aspect, and in languages such as Italian and Bulgarian it extends as far as the perfect aspectual layer.

Of course, it would be ideal if we could independently establish that the CIP in Bulgarian and Italian extends as far as the perfect layer, using similar diagnostics to those in English, i.e., VPE, VPF, and *there*-existentials. Unfortunately this is not a straightforward task since Bulgarian lacks VPE and VPF in the context of perfect aspect and does not exhibit *there*-existentials of a type which parallels that of the English construction. Italian lacks VPE and any clear cases of VPF, though it does exhibit *there*-existentials. But these constructions are far more complex then their English counterpart since there are many additional interfering factors such as pro-drop, the fact that they exhibit fewer aspectual restrictions, and the fact that indefinite as well as definite subjects are permitted. For reasons of space, and given that an in depth discussion of such constructions would take us too far afield, I leave exploration of this phenomenon for future research.

It is difficult, therefore, to draw any clear conclusions on the size of the CIP in both Bulgarian and Italian using the same diagnostics as in English. It might be wiser to try to establish the identity of the CIP boundary for each language using language-dependent diagnostics. Again, I leave this for future research.

This concludes discussion of the further issues.

7. Conclusion

This paper began with the observation that while English FRCs exhibit all types of inflectional morphology, and the entire spectrum of auxiliary verbs, RRCs only permit progressive and passive morphology and the auxiliary *being*. Over the course of the paper I have tried to offer a more principled explanation for these restrictions when compared to prior analyses, by claiming that RRCs are restricted to the CIP. Using evidence from *there*-existentials, VPE, and VPF, Harwood (2013, 2015) has claimed that the CIP in English does not actually correspond to vP, rather it extends as far the progressive aspectual layer. By showing that RRCs appear to privilege the same unit of structure as *there*-existentials, VPE, and VPF, I have concluded that RRCs similarly privilege the CIP. This explains the inflectional restrictions on RRCs: *being* is the only auxiliary to surface internal to the CIP, and progressive and passive morphology are the only inflectional forms to be merged within the CIP. Since FRCs exhibit no inflectional restrictions, I concluded that these constructions are built of both phases of the clausal spine.

Even if one would rather not analyse RRCs in phase-theoretic terms, I have at least shown that the progressive aspectual layer, and those projections below it, is systematically privileged in SE across various different phenomena, and that RRCs constitute one such phenomenon. This I consider to be this paper's main contribution to the literature on relative clauses: until now researchers have had to stipulate that RRCs privilege the progressive layer. By showing that progressive aspect is systematically targeted in English, we are able to remove this stipulation (though of course, further research is required in order to understand the exact nature of this structural unit). In this light, the analysis I propose is to an extent compatible with a number of previous approaches to RRC formation (such as those offered by Kayne (1994) and Bhatt (1999)) so long as one is prepared to accept that SE exhibits a structural/phasal divide between perfect and progressive aspect.

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