

Remnant licensing and structural economy in VP ellipsis: Evidence from Czech

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ABSTRACT

Remnant licensing in verb phrase ellipsis (VPE) occurs via remnant movement out of the ellipsis site or base generation outside it. The paper examines a counterexample from two types of Czech auxiliaries: higher ones in T that must be deleted in spite of being generated outside the ellipsis site, and lower ones in *v*/Asp that can become remnants. We assume spell-out domains determine ellipsis size (Rouveret 2012, Bošković 2014), and remnant licensing is a function of the structural position of the functional material w.r.t the phase head licensing VPE (Aelbrecht & Harwood 2015). However, we propose a new structural economy condition that blocks syntactic merger of higher syntactic CP/TP structure when a *v*P phase corresponds to a proposition, which is conditional on *v* having a tense feature with anchoring properties. In such cases, higher functional material is banned from being a remnant because it is not built in syntax, and *v*P alone must enter a mutual entailment relationship with an ellipsis anaphor.

KEYWORDS · ellipsis · remnant licensing · structural economy

1 VP ELLIPSIS AND THE FUNCTIONAL HEIGHT GENERALIZATION

Current literature on VP ellipsis focuses, among other aspects, on the question of what functional material can and what functional material cannot be pronounced in the remnant of VP ellipsis. According to Akmajian & Wasow (1975), Sag (1976), Aelbrecht & Harwood (2015), among others, functional material base-generated outside of the ellipsis site cannot be deleted, while functional material generated within the ellipsis site must raise out of it to become a remnant. We demonstrate this generalization using the behavior of English auxiliaries.

Since the English non-finite auxiliary *have* is base-generated outside of the ellipsis site, it is obligatory in the ellipsis remnant, as seen in (1). The strikethrough font indicates the ellipsis site, the bold font the auxiliary of interest.

- (1) Betsy must **have** been being hassled by the police, and...
- a. *Peter must [~~have been being hassled by the police~~], too.
- b. Peter must **have** [~~been being hassled by the police~~], too.
- (Aelbrecht & Harwood 2015)

In contrast, the English auxiliaries *be* and *been* are base-generated within the ellipsis site. However, since they can undergo optional raising they may but do not have to be present in the remnant, as seen in (2).

- (2) Betsy must have **been** being hassled by the police, and...
- a. Peter must have [~~been being hassled by the police~~], too.
- b. Peter must have **been** [~~being hassled by the police~~], too.
- (Aelbrecht & Harwood 2015)

Finally, the English auxiliary *being* is also base-generated within the ellipsis site but, unlike its *be* and *been* counterparts, it cannot raise, and in turn it is not allowed in the ellipsis remnant, as seen in (3).

- (3) Betsy must have been **being** hassled by the police, and...
- a. Peter must have been [**being** hassled by the police], too.
- b. *Peter must have been **being** [hassled by the police], too.
- (Aelbrecht & Harwood 2015)

Strikingly, the Czech auxiliary system seems to provide a counterexample to the generalization that higher up auxiliaries are more likely to be remnants. The Czech auxiliary system consists of two syntactic classes of auxiliaries called low and high auxiliaries. All Czech auxiliaries are morphologically based on the root *být* 'be' but they differ in their base-generated position and movement properties (e.g., Veselovská 1995, Veselovská 2004, Gruet-Skrabalova 2012, Kučerová 2012). While there are slight positional differences among the existing accounts,¹ all accounts agree that **low** auxiliaries, i.e., auxiliaries realizing future tense and aspect, are base-generated within ν P and that **high** auxiliaries, corresponding to the past tense auxiliary and the conditional auxiliary, are base-generated outside of ν P. (Data supporting the structural height difference between low and high auxiliaries are discussed in the Appendix following the references.)

As previously reported in Dočekal (2007) and Gruet-Skrabalova (2012), these two syntactic classes of auxiliaries differ in their VP ellipsis remnant distribution. The low auxiliaries are base-generated within ν P but since they undergo optional raising (Veselovská 1995), they are optional in the ellipsis remnant, as seen in (4).²

- (4) Ty budeš jíst sýr a já (budu) taky.
 you will.2SG eat.INF cheese and I will.1SG too
 'You will eat cheese and so will I.'

This class of auxiliaries behaves like the English auxiliaries *be* and *been*, and is compatible with the existing generalization on the relationship between structural height and VP remnant availability since elements inside the ellipsis site can undergo evacuation movement. However, the other class – high auxiliaries – is rather different: even though these auxiliaries are base-generated outside of ν P, they are obligatorily absent in ellipsis remnants, as seen in (5).

- (5) Ty jsi jedl sýr a já (*jsem) taky.
 you AUX.2SG eaten cheese and I AUX.1SG too
 'You ate cheese and so did I.'

In this regard, Czech high auxiliaries are unlike any English auxiliary. Since they are base-generated above the ellipsis site we expect them to be overt, contrary to the facts. Czech high auxiliaries appear to be a counterexample to the generalization on the structural height and VP remnant availability.

We will argue that upon a closer look, the Czech auxiliary system does not contradict the generalization that higher XPs are more likely to be remnants. We will argue that auxiliaries generated in T are not overt because TP is not projected at all in such structures, and that this type of VPE is based on a conjunction of ν Ps.³ The pattern sheds further light on the mechanics of VPE. In particular, we will argue for a model of VPE based on

¹For example, Veselovská (1995, 2004) argues for high auxiliaries to be in Agr head, Gruet-Skrabalova (2012) locates them in C and Kučerová (2012) in T.

²As pointed out by an anonymous reviewer, in ellipsis contexts this raising might be associated with what is the domain of contrast: just the subject, or subject plus agreeing auxiliary. However, as we will see throughout this paper the difference in the domain of contrast does not in and of itself explain the overall profile of the data.

³As an anonymous reviewer points out, the lack of TP is not a trivial claim. §3 discusses the empirical motivation and why the lack of TP might be justified in elliptical context.

two assumptions. First, VPE arises via a phase-based derivation, as previously argued in Gengel (2007, 2009), Gallego (2009), Rouveret (2012), Bošković (2014), where a phase head is a necessary but not sufficient condition for the licensing ellipsis. Second, the size of the elided constituent is restricted by structural economy, as argued, for example, in Fox & Takahashi (2005), in conjunction with a mutual semantic/pragmatic entailment requirement à la Merchant (2001). Crucially, we will argue that another notion of structural economy is at play, namely, that the derivation of the ellipsis remnant is restricted by structural economy as well.

Before we proceed, two terminological clarifications are in place. First, we use the term VP Ellipsis (VPE) as a cover term for a family of elliptical structures targeting a *v*P-like maximal projection, which may include AspP and other projections. Second, we use the term *v* as a cover term for the upper most phase head in this domain, that is, the head that carries an E-feature (in the sense of Merchant 2001) and whose complement is part of the ellipsis site.

2 VP ELLIPSIS, YET NO T MATERIAL IN THE REMNANT

The fact that high auxiliaries in Czech are not part of the ellipsis remnant was previously observed by Dočekal (2007) and Gruet-Skrabalova (2012). In Gruet-Skrabalova's (2012) account, the relevant structure is analyzed as TP ellipsis. She argues that the T material is absent in the remnant because the corresponding node is part of the ellipsis site, not the remnant site. However, if ellipsis with high auxiliaries targets TP, then its syntactic properties should match syntactic properties of TP ellipsis (sluicing, or, possibly, stripping),⁴ not those of VPE, contrary to what is reported in literature and to what we have found.

As Dočekal (2007) already observes, ellipsis with high and low auxiliaries corresponds to constituent deletion, not to gapping. When VPE appears in an embedded context, ellipsis is systematically ambiguous between ellipsis within the embedded clause and ellipsis within the matrix clause. The ambiguity is systematically attested with both high, as in (6), and low, as in (7), auxiliaries.

- (6) Petr bude tvrdit, že (ty) jsi maloval obraz a já taky.
 Petr will claim that you AUX.2SG painted painting and I too
 'Petr will claim that you painted a painting and me too.'
 (i) Petr will claim that you painted a painting and I painted a painting too.
 (ii) Petr will claim that you painted a painting and I will claim that you painted a painting. (Dočekal 2007)
- (7) Petr bude tvrdit, že (ty) budeš malovat obraz a já (budu) taky.
 Petr will claim that you will.2SG paint painting and I will.1SG too
 'Petr will say that you will paint a painting and I will too.'
 (i) Petr will claim that you will paint a painting and that I will paint a painting too.
 (ii) Petr will claim that you will paint a painting and I will claim that you will paint a painting too. (Dočekal 2007)

The embedding facts are still compatible with VP-size and TP-size deletion. However, if these structures involve an elided TP, we expect to see syntactic behaviour parallel to sluicing. Namely, we expect that ellipsis should obviate islands (Ross 1967, Merchant 2001). Let us make sure that sluicing obviates islands in Czech. The example in (8) demonstrates that sluicing with a high auxiliary obviates islands (here, the Coordination Structure Constraint of Ross 1967). The example in (9) demonstrates the same fact for low auxiliaries.

- (8) Petr bude tvrdit, že ty a nějaká dívka jste malovali obraz, ale já
 Petr will claim that you and some girl AUX.2PL painted painting but I

⁴By sluicing we mean any kind of TP ellipsis, not only ellipsis with *wh*-remnants.

si nevpomínám kdo.
REFL not-recall who
'Petr will say that you and some girl will paint a painting but I don't recall who.'
[Petr will say that you and some girl will paint a painting but I don't recall who
~~Petr will claim that you and t painted a painting.~~]

- (9) Petr bude tvrdit, že ty a nějaká dívka budete malovat obraz, ale já
Petr will claim that you and some girl will.2PL paint painting but I
si nevpomínám kdo.
REFL not-recall who
'Petr will say that you and some girl will paint a painting but I don't recall who.'
[Petr will say that you and some girl will paint a painting but I don't recall who
~~Petr will claim that you and t will paint a painting.~~]

Crucially, the judgements get significantly degraded for the type of elided structures we concentrate on in this paper. The examples in (10), with a high auxiliary, and (11), with a low auxiliary, provide a control without an island. The example in (12) demonstrates that regular VP ellipsis with high auxiliaries does not obviate islands, and neither does regular VP ellipsis with low auxiliaries, as seen in (13).^{5,6}

- (10) Petr bude tvrdit, že nějaká dívka by malovala obraz, ale já si
Petr will claim that some girl would.3SG painted painting but I REFL
nevpomínám, jestli Zuzana.
not-recall whether Zuzana.
'Petr will claim that some girl would paint a painting but I do not recall if Zuzana.'
[Peter will claim that some girl would paint a painting but I do not recall whether
~~Peter will claim that Zuzana would paint a painting.~~]
- (11) Petr bude tvrdit, že nějaká dívka bude malovat obraz, ale já si
Petr will claim that some girl will.3SG paint painting but I REFL
nevpomínám, jestli Zuzana.
not-recall whether Zuzana.
'Petr will claim that some girl will paint a painting but I do not recall if Zuzana.'
[Peter will claim that some girl will paint a painting but I do not recall whether
~~Peter will claim that Zuzana will paint a painting.~~]
- (12) ??Petr tvrdil, že ty a nějaká dívka jste malovali obraz, ale já si
Petr claimed that you and some girl AUX.2PL painted painting but I REFL
nevpomínám, jestli Zuzana.
not-recall whether Zuzana.
'??Petr claimed that you and some girl painted a painting but I do not recall if
Zuzana.'
[Peter claimed that you and some girl painted a painting but I do not recall
~~whether Peter claimed that you and Zuzana painted a painting.~~]
- (13) ??Petr bude tvrdit, že ty a nějaká dívka budete malovat obraz, ale já
Petr will claim that you and some girl will.2PL paint painting but I
si nevpomínám, jestli Zuzana.
REFL not-recall whether Zuzana.

⁵Following a comment from one of our anonymous reviewers, we would like to point out that languages such as Hungarian allow non-*wh* remnant sluicing. van Craenenbroeck & Lipták (2013) show that in Hungarian non-*wh* sluices alleviate islands, whereas VPE does not. As we can see below, Czech does not have sluicing with non-*wh*-remnants since even without an auxiliary island alleviation is impossible.

⁶An anonymous reviewer inquired why the examples below are judged as marginal (??) instead of ungrammatical (*). We don't have a good answer to this question. One of the authors, a native speaker of Czech, suspects that the reported judgement is an acceptability illusion. The sentences are grammatical under the reading where the matrix VP gets deleted (no island violation). Although the sentences cannot have the island-violating meaning, the grammatical parse might have affected how speakers judged the sentences.

‘??Petr will claim that you and some girl will paint a painting but I do not recall if Zuzana.’

[Peter will claim that you and some girl painted a painting but I do not recall whether Peter will claim that you and Zuzana will paint a painting.]

The same argument extends to stripping, a TP deletion operation that also obviates islands. (14) and (15) are examples of stripping fragment/answer (to control for coordination) showing that island alleviation is possible, in this case an alleviation of a relative clause island.

- (14) A: Petr bude mluvit se studentem, který mluví německy.
 Peter will.3SG talk with student who speaks German
 Speaker A: ‘Peter will speak to a student who speaks German.’
 B: A taky francouzsky.
 and also French
 Speaker B: ‘And also French [Peter will talk to a student who speaks].’
- (15) A: Petr by mluvil se studentem, který mluví německy.
 Peter would.3SG talked with student who speaks German
 Speaker A: ‘Peter would speak to a student who speaks German.’
 B: A taky francouzsky.
 and also French
 Speaker B: ‘And also French [Peter would talk to a student who speaks].’

Since the Czech examples with both high and low auxiliaries are island sensitive, we can conclude that we are not dealing with TP ellipsis, contra Gruet-Skrabalova (2012). Instead, the syntactic distribution facts point to constituent deletion and to deletion of a structure smaller than TP.

Why then do we not see T elements in this type of ellipsis?

A possible explanation is that a principle such as MaxElide (Fox & Takahashi 2005) is responsible for the deletion of high auxiliaries. MaxElide forces the deletion of as much material as possible in the parallel domains. Crucially, MaxElide can be overridden by focus, which is the reason why external arguments do not get deleted in English VPE although the antecedent has a subject in SpecTP. In these cases, the meaning parallelism domain is extended to contain TP, as demonstrated in (16).

- (16) Ahmed will go to the store and Sandhya will too.

However, as we see in (17), contrasting the auxiliary in the antecedent with the remnant auxiliary in the anaphor by introducing focus or topic does not improve the example. Consequently, we can conclude that assigning contrasting focus on the auxiliaries does not improve ellipsis, which implies that something in addition to MaxElide is at play.

- (17) a. Ale ty budeš pracovat! Já (*jsem) taky.
 but you will.2SG work I AUX.1SG too
 ‘But you will work! I did too.’
 b. Ale ty budeš pracovat! Já s Marií (*bychom) taky.
 but you will.2SG work I with Marie would.1PL too
 ‘But you will work! Mary and I would too.’

There is another theoretical possibility. High auxiliaries are sometimes classified as clitics, with a reduced phonological status.⁷ Could high auxiliaries be banned from VP ellipsis remnants because of their reduced phonological status? First of all, not all high auxiliaries are phonologically reduced. Yet, they cannot be within the ellipsis remnant, as in (18). Furthermore, it is not clear why their phonological status should be relevant. If they are

⁷But see Kučerová (2012) for an argument why they are not clitics.

indeed reduced, they lean on phonologically preceding material, i.e., the pronounced part of the remnant, not on the elided part.

- (18) Ale ty budeš pracovat! Já s Marií (*bychom) taky.
 but you will.2.SG work I with Marie would.1PL too
 ‘But you will work! Mary and I would too.’

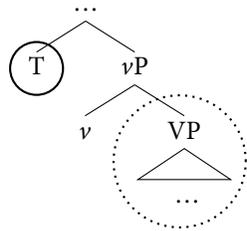
To sum up, the crucial examples of ellipsis in Czech where there is a contrast between high and low auxiliaries involves VPE and not TP ellipsis. The question is why.

3 SMALL CONJUNCTION HYPOTHESIS

As we have seen, Czech high auxiliaries, which we will assume are base-generated in T, following Kučerová (2012), are expected to be overt, contrary to the facts, (19). The problem is schematized in (20). If VP ellipsis targets the complement of *v*, only the VP sister of *v* should be deleted. The T head, and anything base-generated within it, should be part of ellipsis remnant. Note that we use a dotted circle throughout to indicate the part of the structure that is elided.

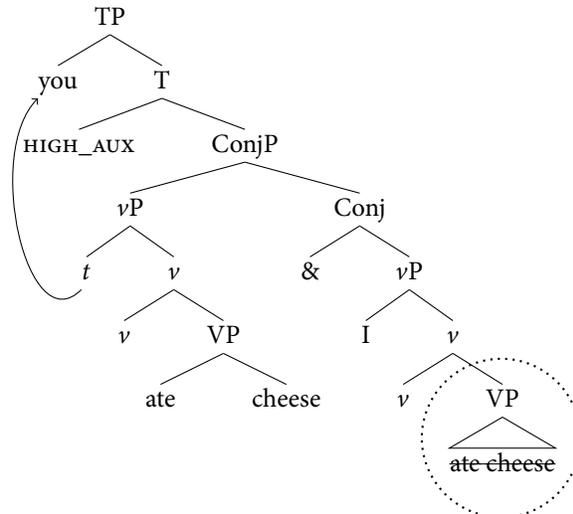
- (19) Ty jsi jedl sýr a já (*jsem) taky.
 you AUX.2SG eaten cheese and I AUX.1SG too
 ‘You ate cheese and so did I.’

- (20) VPE with a high auxiliary



We argue that the reason high auxiliaries, that is, T-generated auxiliaries, are not part of a VP ellipsis remnant is that, at least in Czech, TP does not project in an elliptical environment. Consequently, VPE is always based on a conjunction of *v*Ps. Since there is only one T node, namely, in the antecedent, no T material is overtly present in the ellipsis remnant. We call this hypothesis the *Small Conjunction Hypothesis*. The corresponding syntactic structure is given in (21).

- (21) Small Conjunction Hypothesis: high auxiliary

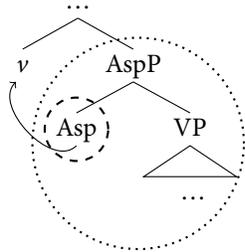


Let us demonstrate how the proposed structure accounts for low auxiliaries, that is, those base-generated within a *v*P, for concreteness in an Asp head. As seen in (22), low auxiliaries are optional in the ellipsis remnant.⁸

- (22) Ty budeš jíst sýr a já (budu) taky.
 you will.2SG eat.INF cheese and I will.1SG too
 ‘You will eat cheese and so will I.’

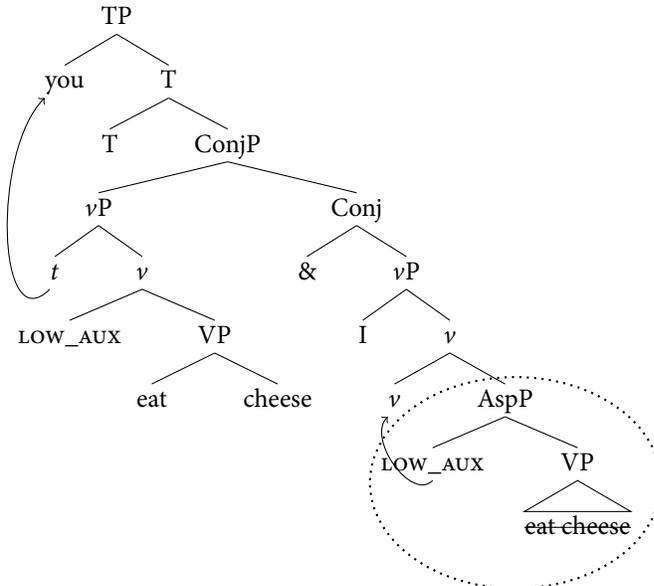
Since these auxiliaries optionally raise (Veselovská 1995), as in (23), they do not pose a problem for the original generalization about the structural height and ellipsis remnant. Equally, their syntactic distribution is accounted for by the Small Conjunction Hypothesis as well, as schematized in (24).

- (23) VPE with a low auxiliary



Even though low auxiliaries are base-generated within the complement of *v*, they are only elided when they remain in situ. They can also optionally raise and evacuate from the ellipsis site and become a remnant.

- (24) Small Conjunction Hypothesis: low auxiliary



⁸As our anonymous reviewers pointed out our analysis is incompatible with Gribanova’s (2013) approach to the verbal domain, specifically that Asp is the topmost head below T – a proposal that aimed to account for apparent verb stranding in Russian VPE. Instead, we adopt a theory where an (inner) Aspect category is projected between *v* and V, along the lines of Travis (2000), Diesing (1997), McDonald (2009) and where *v* is the *v*P phase head. Our motivation is that we side with Landau (2020), who argues against Gribanova’s (2013) approach to verb stranding. Landau (2020) highlights problems with associating verb movement to a topmost head of the verbal domain with the availability of verb stranding ellipsis. Although we do not discuss verb stranding in VPE in this paper, for our proposal to extend to verb stranding, specifically to English non V stranding VP ellipsis, where it is assumed that the whole *v*P phase is elided, we need to assume, along with Aelbrecht & Harwood (2015), Rouveret (2012), Fox & Pesetsky (2005), that the target of ellipsis can be the complement of a phase head or the whole phase.

Let us be more precise about the technical aspects of the proposed analysis. First, our analysis assumes that VPE is a phase-based derivation, following Gengel (2007, 2009), Gallego (2009), Rouveret (2012), Bošković (2014). That is, only the complement of a phase head, here ν , is subject to ellipsis. Second, we argue that VPE is restricted by structural economy which applies to the syntax building of the ellipsis site. The core insight here is that TP is not built because the parallelism ellipsis requirement is already satisfied at the ν P level. The proposal builds on Wurmbrand's (2017) proposal for stripping that argues that CP is not needed for ellipsis, as long as TP is a phase (FOC phrase between TP and CP). Our proposal takes this idea a step further. We argue that no TP is needed in the syntactic structure of the ellipsis site iff an economy condition on VPE is satisfied. The economy condition we propose is stated in (25).

- (25) *Delete what you can, merge what you must*
 A phase head containing an E-feature cannot be selected by additional functional projections of its clausal domain provided:
- (i) the phase forms a proposition that is in an entailment relationship with the antecedent clause for purposes of semantic licensing of parallelism necessary for ellipsis (Merchant 2001)
 - (ii) this proposition is semantically anchored (constitutes actualized eventuality; Asher & Lascarides 1998a, Hardt & Mikkelsen 2020)
 - (iii) the phase does not contain any unbound traces

The assumption that TP is not built is far from trivial, and it raises questions for c -selection and for the semantic requirement on parallelism which refers to propositions (typically TPs). The c -selection issue is amended by the ellipsis site (ν P) being a part of a conjoined ν P, that is headed by a common TP. The proposition concern requires a more careful justification. To do so, let us elaborate on the individual parts of the definition in (25). As for the entailment clause, (i), we assume that ν P can constitute a proposition in a technical sense (e.g., Bale 2007). For purposes of givenness, i.e., the core requirement for ellipsis licensing, a minimal structure building which yields a proposition is sufficient (Schwarzschild 1999). Crucially, we assume that the 'left periphery' structure information (speech acts etc.) of the ellipsis site is shared with the discourse structure of the anaphor proposition (Roberts 2012, among others), and does not have to be syntactically projected.

As for the clause on semantic anchoring, (ii), we follow Rouveret (2012), Aelbrecht (2010), Aelbrecht & Harwood (2015) in that ν may contain an interpretable tense feature that semantically anchors the proposition (technically, actualized eventuality; see Asher & Lascarides 1998b, Hardt & Mikkelsen 2020 for related proposals). Crucially, languages may differ in what features anchor propositions (Ritter & Wiltschko 2014). We follow Dočekal & Kučerová (2013) in that in Czech AspP yields actualization readings. We interpret this fact as indicating that AspP is the locus of semantic anchoring in Czech.

Item (iii) of our definition plays the same role as a similar condition in MaxElide (Fox & Takahashi 2005) where it blocks VP ellipsis as in (26) when there is a too large a remnant (excessive part in italics).

- (26) * John knows which professor we invited, but he is not allowed to reveal which one *lx. we did <ly. y invite x>*.

The Economy condition in (25) is ellipsis specific, just like MaxElide, and in that sense it does not suffer from lookahead since it is triggered via an E feature. However, like MaxElide, it does imply comparing parallel derivations.⁹

With our assumptions clarified, we can now turn to the question of how the proposal accounts for the Czech data. High auxiliaries are always missing in the ellipsis site because no TP in the ellipsis site has been projected. The projection of TP is blocked by

⁹We would like to thank two anonymous reviewers for pointing out the issue of lookahead to us.

structural economy, (25): since the entailment requirement is satisfied at the ν P level and since Asp is the relevant semantically anchoring head, no further structure building is required, hence it is blocked by structural economy. Our proposal also predicts that low auxiliaries behave like their English counterparts because they are either within VPE (base-generated in AspP, the sister of the phase head ν) or they raise out to the nearest phase head licensing VPE (ν). In the latter case, they are pronounced in the ellipsis remnant because only the complement of ν is elided.

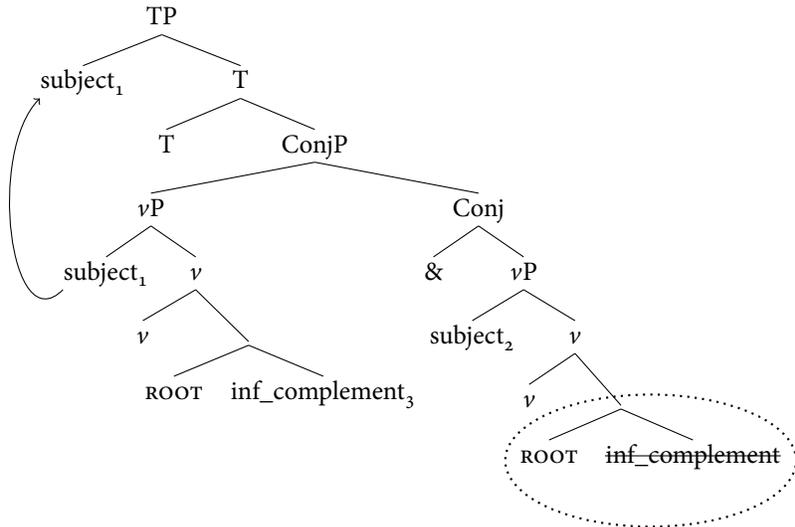
Other properties, discussed in the previous section, follow from this type of ellipsis being VPE, instead of stripping, sluicing or gapping.

4 PREDICTIONS: MODALS

The Small Conjunction Hypothesis predicts that any antecedent material above ν P, that is, the structure not required by our structural economy condition, should be banned from a VPE remnant. This means that the ban should apply not only to functional elements base generated in T but also to functional elements obligatorily moving above the ν P phase. Czech modals provide an environment to test this hypothesis.

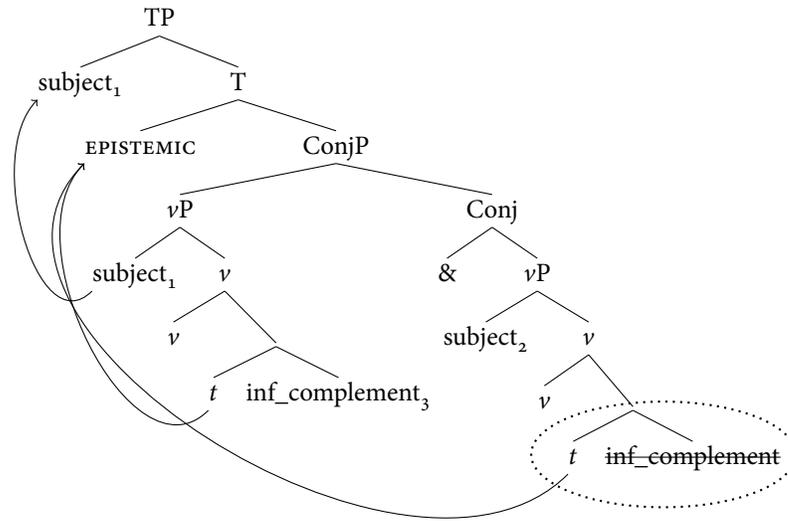
Following Butler (2003), Cormack & Smith (2002), we assume that epistemic and root modals differ in their structural height. Specifically, root modals are generated below TP. More precisely, following Hacquard (2006), we assume they are below AspP, that is, within the VP ellipsis site. In contrast, epistemic modals raise to T (or higher). The prediction is that root modals are expected to be elided because they remain within the ellipsis site, as in (27).

(27) Root modals



However, we expect epistemic modals to be elided as well. If the structural economy condition prevents syntactic structure to be built above ν P, epistemic modals can only move to the TP projection shared by both ν P conjuncts. That is, epistemic modals in a VPE environment must undergo an across-the-board movement to the joint TP projection, as schematized in (28). In turn, only one instantiation of an epistemic modal is predicted to be pronounced, namely, the modal in the antecedent clause.

(28) Epistemic modals

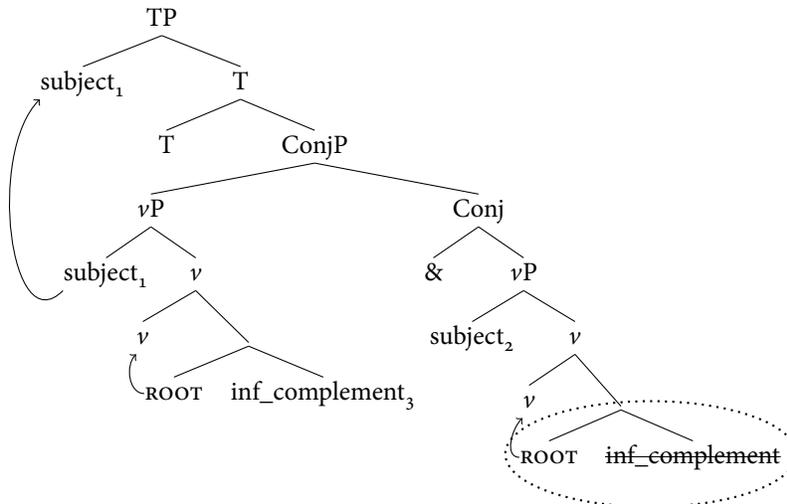


The prediction is borne out, as exemplified in (29). For the Czech speakers we consulted, an overt modal in the ellipsis remnant is strongly degraded irrespective of whether the modal has root or epistemic reading.

- (29) Většina profesorů může mít grant, a většina studentů (??může) taky.
 most professors may have grant and most students may too
 ‘Most professors may have a grant, and most students too.’

However, Veselovská (1995, 2004) argues that past tense functional material raises to *v*. Consequently, past tense modals are expected to raise from Asp to *v*. Since only the complement of *v* is elided, we predict past tense root modals, unlike their present tense counterparts, to be obligatory in ellipsis remnants. The corresponding structure for root modals is schematized in (30). In contrast, the epistemic modal still raises to T and gets elided. The prediction is that the past tense modal appears optional but the overt realization corresponds to the root reading, and the elided version to the epistemic reading. As demonstrated in (31), this prediction is borne out.

(30) Past Tense: VPE evacuation



- (31) Většina profesorů mohla mít grant, a většina studentů (mohla) taky.
 most professors may.PST have grant and most students may.PST too
 ‘Most professors might have had a grant, and most students too.’
 overt modal: root only
 no overt modal: epistemic only

The Small Conjunction Hypothesis makes another testable prediction. In the structures proposed, the subject of the anaphor *vP* undergoes A-movement to Spec,TP. However, this movement constitutes a Coordinate Structure Constraint violation (Ross 1967). As argued in Ruys (1992), Fox (2000), Lin (2001), violations of the Coordinate Structure Constraint are possible but the subject that undergoes movement must reconstruct.¹⁰ The prediction is that subjects must be interpreted low in VPE contexts. Modal environments support this prediction.

Recall that we assume, following Butler (2003), Cormack & Smith (2002), that epistemic and root modals differ in their structural height. Root modals are located below TP, while epistemic modals raise to T (or higher). The combination of the structural height difference of modals and the Small Conjunction Hypothesis makes the following predictions: We expect a quantificational subject to scope either above or below a root modal. But a quantificational subject must scope below an epistemic modal. Both predictions are borne out, as demonstrated in (32) and (33) for root modals, and in (34)¹¹ and (35) for epistemic modals.

- (32) *Root modality: ✓most > can/may*

Context: The faculty has 10 professors and 8 of them hold a contract that allows them to do research financed from external grants; i.e., they will comply with their contract even when part of their work time goes toward externally funded research. Doctoral students are allowed to submit grant applications only when they do not receive a state contribution. This year only 10% of students receive a state contribution. (Na fakultě je 10 profesorů a 8 z nich má ve smlouvě, že můžou dělat výzkum, který je financovaný z externích grantů. Tj. podmínky své pracovní smlouvy splní i tehdy, když část jejich pracovní doby půjde na výzkum externích grantů. Doktorští studenti se mohou hlásit o externí grant, jen pokud nedostávají státní příspěvek. Pouze 10% studentů tento rok dostává státní příspěvek.)
 (V souladu s jejich individuální smlouvou,) většina profesorů může
 in accord with their individual contract most professors may
 mít grant, a většina studentů (??může) taky.
 have grant and most students may too
 ‘(In accord with their individual contract,) most professors may have a grant, and most students too.’

- (33) *Root modality: ✓can/may > most*

Context: Doctoral scholarships are paid from a state contribution to the departmental budget. The state contribution becomes smaller when the department obtains its own financial contribution. Luckily, external grants do not count against the state contribution. (Stipendia pro doktorské studenty se platí ze státního příspěvku do katederního rozpočtu. Státní příspěvek je menší, pokud si katedra vydělá peníze. Naštěstí peníze z externích grantů pro profesory se proti studijním stipendiím nepočítají.)

¹⁰An anonymous reviewer has pointed out that reconstruction of the subject cannot be to the base-generated position. This is indeed the case since we assume that reconstruction is limited to those movements that violate CSC.

¹¹As pointed out by an anonymous reviewer a control for (34) sans ellipsis is impossible because of the Epistemic Containment Principle, where a quantifier cannot have scope over an epistemic modal (von Stechow & Iatridou 2003).

Většina profesorů může mít grant, a většina studentů (??může) taky
 most professors may have grant and most students may too
 (aniž by ohrozili státní příspěvek na studentská stipendia).
 without would endanger state contribution on student scholarships
 ‘Most professors may have grants, and most students too (without negatively
 affecting the state contribution toward student scholarships).’

(34) *Epistemic modality: ✓can/may > most*

Context: Colleagues from a nearby university discuss how it is possible that department X still pays doctoral scholarships even though the department didn't receive any state contribution this year. A colleague suggest as a possible explanation that... (Kolegové se sousední univerzity se baví o tom, jak je možné, že katedra X stále vyplácí doktorská stipendia, i když katedra letos nedostala žádný státní příspěvek. Jeden z kolegů navrhne jako možné vysvětlení, že...)
 (Vzhledem k tomu, že doktorská stipendia se můžou platit i regards to that that doctoral scholarships REFL may pay even z grantů,) většina profesorů může mít grant a většina studentů from grants most professors may have grant and most students (??může) taky.
 may too
 ‘(Since doctoral scholarships may be financed from grants), most professor may have a grant, and most students too.’

(35) *Epistemic modality: #most > can/may*

Context: All professors and students do excellent research and all of them submitted a very good grant application last year. Neither professors nor students are obliged to report their grant results to their department. The department only knows that only 30% of professors and 20% of students currently hold a grant. (Všichni profesori a doktorští studenti dělají špičkový výzkum a všichni loni podali opravdu výborné grantové přihlášky. Profesori ani studenti nehlásí externí granty své katedře. Katedra pouze ví, že jenom 30% profesorů 20% studentů má grant.)
 #(Podle toho, co katedra ví,) většina profesorů může mít according that what department knows most professors may have grant a většina studentů (??může) taky.
 grant and most students may too
 ‘(Based on what the department knows,) most professors may have a grant, and most students too.’

5 MORE ON THE ECONOMY CONDITION: EMBEDDED CONTEXTS

Second, if the economy condition for VPE applies at the level of semantic licensing, even embedding under C should not override it. The prediction is that when c-selection requires an (overt) C but the economy condition blocks the structure from being built, we expect ungrammaticality. This prediction is borne out with VPE based on a high auxiliary, as seen in (36).

- (36) Petr tvrdil, že jenom já jsem jedla sýr, a já jsem tvrdila, že...
 Petr claimed that only I AUX.1SG ate cheese and I AUX.1SG claimed that
- ty jsi jedl sýr taky.
 you AUX.2SG ate cheese too
 - *ty jsi taky
 you AUX.2SG too

- c. ??ty taky
 you too

‘Petr claimed that only I ate cheese, and I claimed that you did too (eat cheese).’

However, part (iii) of our economy condition opens up a window for C being acceptable in VPE. That is, structure building can be rescued by movement that would create an unbound variable – a trace. Since such a movement would activate part (iii) of our economy condition, higher structure would not be prevented from being built. A possible candidate for testing this prediction is VPE with a low auxiliary. As Veselovská (1995) argues, low auxiliaries optionally raise to T. In our previous examples, we only considered low auxiliaries raising to *v*. As we have seen, the economy condition blocked structure building above *v*P level. However, if a low auxiliary raises to T and if there is a c-selection requirement for C to be merged, clause (iii) of our economy condition allows for a structure where the relevant propositional/phase level is going to be CP. That is, we predict that optional raising to T, combined with a c-selection requirement on C, allows a low auxiliary to be part of a VP ellipsis remnant embedded under an overt C. This prediction is borne out, as seen in (37) and (38). We use the adverbial *taky* ‘also, too’ to control for the position of the low auxiliary. In (37), the low auxiliary raises to T, and in turn precedes the auxiliary. In this configuration, the auxiliary is obligatory under the complementizer. In (38), the auxiliary stays low, and in turn follows the auxiliary. In this configuration, the auxiliary gets deleted in the VPE environment.

- (37) Petr tvrdí, že jenom já budu jíst sýr, a já tvrdím, že...
 Petr claims that only I will.1SG eat cheese and I claim.1SG that
 a. ty budeš taky jíst sýr.
 you will.2SG also eat cheese.
 b. ty *(budeš) taky
 you will.2SG also
 ‘Petr claims that only I will eat cheese, and I claim that you will (eat cheese) too.’
- (38) Petr tvrdí, že jenom já budu jíst sýr, a já tvrdím, že...
 Petr claims that only I will.1SG eat cheese and I claim.1SG that
 a. ty taky budeš jíst sýr.
 you also will.2SG eat cheese.
 b. *ty taky budeš
 you also will.2SG
 c. ty taky
 you also
 ‘Petr claims that only I will eat cheese, and I claim that you will (eat cheese) too.’

The data suggests that in cases of embedding we can force the construction of CP structure via movement of the low auxiliary further than *v*P, all the way to T. The high auxiliary is not raised but base generated and as such appears to be insufficient cause to build elided structure.

6 CONCLUSIONS

This paper provides novel evidence that VPE does not have to be based on a syntactically fully built CP. Instead, a smaller structure can yield propositions that can enter entailment relationships for purposes of givenness licensing. The core argument is based on a distribution of auxiliaries in VPE in Czech.

In addition, the paper also sheds light on the nature of the cross-linguistic variation in what languages allow *v*P-based VPE and what languages require more functional material. We have identified two structural sources that lend themselves to cross-linguistic varia-

tion. First, languages differ in what functional head constitutes a phase (Rouveret 2012, Bošković 2014, Wurmbrand 2017, among many others). Since VPE is a phase-based derivation, the size of VPE should be aligned with phase-hood properties of a given language. Second, languages differ in what features instantiate actualized eventualities (Ritter & Wiltschko 2014, Pancheva & Zubizarreta 2018, among others). This dimension also offers itself as a source of a cross-linguistic variation.

The proposal, however, also raises questions that we must leave for further research. Specifically, the economy condition we propose raises non-trivial questions about the division of labour between syntax and semantics in the derivation of VPE. Further research is also required for the exact nature of interactions between our economy conditions and narrow-syntax requirements such as *c*-selection.

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ABBREVIATIONS

1	first person	NEG	negative
2	second person	PART	participle
3	third person	PL	plural
AUX	auxilliary	PST	past tense
CL	clitic	REFL	reflexive
COND	conditional	SG	singular
FUT	future	VPE	Verb Phrase Ellipsis
INF	infinitive		

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APPENDIX: LOW VERSUS HIGH AUXILIARIES

This section summarizes the evidence for the structural distinction between high and low auxiliaries. The discussion is based on data previously published in Kučerová (2012) and Kučerová (2014), and the conclusions parallel the conclusions reported in Toman (1999), Veselovská (2004), Veselovská & Karlík (2004).

The first type of evidence comes from sentential negation. Sentential negation in Czech is realized as a bound morpheme *ne-* prefixed to a verb. If we assume that the bound morpheme formation results either from movement of a verbal head to Neg, or by affix hopping of a bound morpheme onto a lower verbal head, we expect auxiliaries (and main verbs) base generated below NegP to be prefixed by negation. This option should not be available to functional material merged above NegP. This prediction is borne out, as can be seen in (39)–(42).¹²

- (39) *High: Past Tense aux jsem*
 a. *Já **ne-jsem** plakal.
 I NEG-AUX.PST.1.SG cried.PART
 b. Já **jsem** **ne**-plakal.
 I AUX.PST.1.SG NEG-cried.PART
 ‘I did not cry.’
- (40) *High: Conditional aux bych*
 a. *Já **ne-bych** plakal.
 I NEG-AUX.COND.1.SG cried.PART
 b. Já **bych** **ne**-plakal.
 I AUX.COND.1.SG NEG-cried.PART
 ‘I would not cry.’
- (41) *Low: Future auxiliary bude*¹³
 a. On **ne-bude** plakat.
 he NEG-AUX.FUT.3.SG cry.INF
 ‘He will not cry.’
 b. #On **bude** **ne**-plakat.
 he AUX.FUT.3.SG NEG-cri.INF
 ‘He will be not crying.’
- (42) *Low: Main verb*
 On **ne-pláče**.
 he NEG-cries
 ‘He does not cry.’

That is, low auxiliaries parallel main verbs. High auxiliaries differ.

Another piece of evidence comes from the relative position of the auxiliaries with respect to low (manner etc.) adverbs. As can be seen in (43) and (44), high auxiliaries must precede low adverbs, i.e., adverbs adjoined to vP (the quantificational adverb *často* ‘often’ used in this examples modifies an event).

¹²The examples contain overt pronominal subjects, to ensure they are parallel. The strings in (39-b) and (40-b) would be ungrammatical without the overt subject (or some other element) in the preverbal position.

¹³(41-b) is well formed only if *ne-* is interpreted as constituent negation. (There is no morphological difference between sentential and constituent negation in Czech.) The paraphrase would be ‘he will be in a process of non-crying.’ That this is a case of constituent negation is shown by the fact that negation can be doubled, an option unavailable to high verbs: *on ne-bude ne-plakat* ‘he will not be in a process of non-crying.’

- (43) *High: Past Tense auxiliary*
- a. ***Já často jsem** neplakala.
I often AUX.PAST.1.SG NEG-cried.PART
- b. ***Často jsem** neplakala.
often AUX.PAST.1.SG NEG-cried.PART
- c. **Já jsem** často neplakala.
I AUX.PAST.1.SG often NEG-cried.PART
- ‘I did not often cry.’
- (44) *High: Conditional auxiliary*
- a. ***Marie často by** neplakala.
Marie often AUX.COND.3.SG NEG-cried.PART
- b. ***Často by** neplakala.
often AUX.COND.3.SG NEG-cried.PART
- c. **Marie by** často neplakala.
Marie AUX.COND.3.SG often NEG-cried.PART
- ‘Marie would not often cry.’

In contrast, low auxiliaries (and finite main verbs) can either follow or precede low adverbs, (45)–(46), which suggests that their base-generated position is within *vP*. Moreover, this optionality provides evidence for optional raising of low auxiliaries to a higher functional position.

- (45) *Low: Main verb*
- a. Marie **často nepláče**.
Marie often NEG-cries
- b. Marie **nepláče často**.
Marie NEG-cries often
- ‘Marie does not often cry.’
- (46) *Low: Future auxiliary*
- a. Marie **často nebude** plakat.
Marie often NEG-AUX.FUT.3.SG cry.INF
- b. Marie **nebude** často plakat.
Marie NEG-AUX.FUT.3.SG often cry.INF
- ‘Marie will not often cry.’

The data play out differently with high adverbs. Speaker-oriented adverbs, i.e., adverbs above T, must precede high auxiliaries, as in (47). Interestingly, low adverbials (and main verbs) can precede or follow high adverbs, (48)–(49), suggesting that low auxiliaries may optionally raise up to C.

- (47) a. *High: Past Tense auxiliary*
Zřejmě jsem neplakala.
evidently AUX.PST.1.SG NEG-cried.PART
‘I evidently didn’t cry.’
- b. *High: Conditional auxiliary*
Zřejmě by neplakala.
evidently AUX.COND.3.SG NEG-cried.PART
‘She evidently wouldn’t cry.’

- (48) *Low: Main verb*
- a. **Zřejmě vidím** Marii.
evidently see.1.SG Marie.ACC
- b. **Vidím zřejmě** Marii.
see.1.SG evidently Marie.ACC
- ‘I evidently see Marie.’
- (49) *Low: Future auxiliary*
- a. **Zřejmě bude** plakat.
evidently AUX.FUT.3.SG cry.INF
- b. **Bude zřejmě** plakat.
AUX.FUT.3.SG evidently cry.INF
- ‘She/He will evidently cry.’

The positional evidence demonstrates that high auxiliaries are base-generated higher than low auxiliaries and main verbs, but does not directly determine T as the base-generation position. Evidence for high auxiliaries being instances of T comes from the fact that they only occur in finite forms, (50). In contrast, low verbs, including low generated auxiliaries, can lack a tense specification, (51).

- (50) *Non-finite forms of high verbs do not exist:*
- a. *Marie tvrdila **být** vyřešila ten problém do pěti.
Marie claimed be.INF solved.PART the problem by five
- b. *Marie tvrdila **byla** vyřešila ten problém do pěti.
Marie claimed been.PART solved.PART the problem by five
- ‘Marie claimed to have solved the problem by five.’
- (51) *Non-finite forms of low verbs exist*
- Marie chtěla **být** překvapena z dárku.
Marie wanted be.INF surprised.PART from present
- ‘Marie wanted to be suprised by the present.’

Finally, low auxiliaries may appear clause initially without violating some form of the EPP condition, (52), presumably because they move to T and in turn satisfy the EPP condition (see Kučerová 2012 for more details and for a particular formulation of EPP that captures the overall distribution).

- (52) *Low verbs V1 clauses:*
- a. **Mluvím** s Lucií.
talk.1.SG with Lucie
‘I talk to Lucie.’
- b. **Budu** mluvit s Lucií.
AUX.FUT.1.SG talk.INF with Lucie
‘I will talk to Lucie.’
- c. **Jsem** šťastný s Lucií.
be.PRES.1.SG happy with Lucie
‘It makes me happy to be with Lucie.’

High auxiliaries are excluded from the clause initial position, (53), in a violation of the EPP condition.

- (53) *High verbs V1 clauses:*
- a. ***Jsem** mluvil s Lucií.
AUX.PAST.1.SG talked.PART with Lucie
‘I talked to Lucie.’

- b. ***Bychom** mluví s Lucí.
 AUX.COND.1.PL talked.PART with Lucie
 ‘We would talk to Lucie.’

This positional restriction cannot be attributed to them being clitics because their structural behavior does not match that of second position clitics. For example, the verbs may appear sentence initially if another head adjoins to T, as in (54); sometimes they not only may be in the third or the fourth position but they may even be excluded from the second position, as in (55). Finally, despite being called clitics in the Slavistic literature, these elements may be fully phonologically independent: they may precede, follow or be surrounded by phonological breaks, as in (56). None of these properties is attested with true clitics.

- (54) *The verbs may be sentence-initial, reflexive clitics cannot:*
- a. ?Jsem se tam nudil.
 AUX.PAST.1.SG REFL there bored.PART
 ‘I was bored there.’
- b. ?Bych se tam nudil.
 AUX.COND.1.SG REFL there bored.PART
 ‘I would be bored there.’
- c. *Se ho bála.
 REFL him.CL afraid.PART
 intended: ‘She was afraid of him.’
- (55) *High auxiliaries may or must be in the third position, reflexive clitics must be always second:*
- a. Marie se ptala, komu (jsi) co (jsi)
 Marie REFL asked.PART whom.DAT AUX.PST.2.SG what.ACC AUX.PST.2.SG
 dal.
 given
 ‘Marie asked what you gave to whom.’
- b. Říkám ti, že včera (*jsem) JÁ jsem
 say.1.SG you.DAT that yesterday AUX.PST.1.SG I.NOM AUX.PST.1.SG
 pozval Marii, ne Petr.
 invited.PART Marie.ACC not Petr.NOM
 ‘I’m telling you that it was me yesterday who invited Marie. It wasn’t Petr.’
- c. Marie se ptala, komu se co (*se) líbilo.
 Marie REFL asked.PART whom.DAT REFL what.ACC REFL liked.PART
 ‘Marie asked who liked what.’
- (56) *High auxiliaries may appear between two phonological breaks, i.e., without any phonological support:*
- a. Ten muž, co si ho Marie bude brát, || by ||, řekla bych,
 the man what REFL him Marie will marry would said.1.SG would
 nebyl moc nadšený, kdyby o tom všichni věděli.
 not-been too excited if about it everybody knew
 ‘I suspect that man Mary is about to marry wouldn’t be too happy if every-
 one knew about it.’
- b. *Ten muž, co si ho Marie bude brát, || se ||, řekla bych,
 the man what REFL him Marie will marry REFL said.1.SG would
 bál.
 afraid
 ‘I suspect that man Mary is about to marry was afraid.’