

On VP ellipsis in Czech: Phases and the small conjunction hypothesis

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Abstract. We show that in order to account for the distribution of auxiliaries/modals in verbal-phrase (VP) ellipsis contexts in Czech, VP ellipsis needs to have the option to be licensed via low coordination of the antecedent and anaphora VPs. Evidence for such constructions comes from contrasts in the licensing of Czech VP ellipsis vis à vis epistemic and root modal readings of high and low auxiliaries. The contrast is best accounted for within a phase-based theory of ellipsis.

1 A ban on high functional material

As¹ observed by Dočekal (2007) and Gruet-Skrabalova (2012), VP ellipsis² in Czech comes with a striking restriction on overt realization of auxiliaries in analytical verbal forms. While Czech does not have any equivalent of English *do* in the anaphor clause, *be*-based auxiliaries may surface outside of the ellipsis site. Interestingly, as demonstrated in (1)–(2), not all auxiliaries present in the antecedent clause may be overtly realized in the anaphor. Dočekal (2007) and Gruet-Skrabalova (2012) argue that the split corresponds to the height of the base-generated position of the auxiliaries, namely, auxiliaries that must be deleted correspond to high auxiliaries of Veselovská (2004), while those that may remain overt correspond to low auxiliaries.³

¹We are grateful to Pavel Caha and Lucie Taraldsen Medová for their help with Czech judgements, to Mojmir Dočekal for warning us against pitfalls of working with quantifiers, and to Norvin Richards for bringing Czech ellipsis to our attention. The most heartfelt thank you goes to Petr Karlík for making Czech generative syntax what it is, for raising and mentoring a new generation of students, while keeping us all in a good spirit and with a sense of a community. This work would not be possible without funding by Canada's Social Sciences and Humanities Research Council's Insight Grant #435-2016-1034 "Grammatical vs semantic features: the semantics-morphology mapping, and its consequences for syntax" (PI Kučerová).

²We use the term VP ellipsis as a cover term for a verb phrase ellipsis. As we will see, the elided domain corresponds to vP or AspP.

³As observed in Borsley, Rivero & Stephens (1996), the pattern is matched by VP fronting in Czech. While the high auxiliary cannot be stranded in VP fronting, the low

- (1) *High auxiliaries must be deleted in VP-ellipsis*
- a. Ty jsi pracoval a já (*jsem) taky.
you AUX.2SG worked and I AUX.1SG too
'You worked and I did too.'
- b. Ty jsi pracoval ale já ne(*jsem).
you AUX.2SG worked but I not-AUX.1SG
'You worked but I did not.'
- (2) *Low auxiliaries do not have to be deleted in VP-ellipsis*
- a. Ty budeš pracovat a já (budu) taky.
you will.2SG work.INF and I will.1SG too
'You will work and I will too.'
- b. Ty budeš pracovat, ale já ne(budu).
you will work and I not-will
'You will work and I won't.'

According to these accounts, the low auxiliary is merged within the vP area (v or Asp) and high auxiliaries are merged in the TP/CP domain.⁴ While the correlation between auxiliary height and its availability as an ellipsis remnant holds, it raises a non-trivial question why functional material merged in the TP/CP domain, i.e., above VP (or vP), must be deleted in the anaphor. If we assume that VP ellipsis in structures such as that in (1)–(2) involves CP coordination, we should expect the high auxiliary to be always pronounced, and the low auxiliary to be pronounced only if its base-generated position is not included in the el-

auxiliary can. Borsley, Rivero & Stephens (1996) attribute the pattern to the distinction between lexical (low) and functional (high) auxiliaries. We thank to Norvin Richards for bringing the pattern to our attention.

⁴Veselovská (2004) uses high auxiliary agreement properties to argue that they are in Agr, above T; Gruet-Skrabalova (2012) locates them in lower C for reasons having to do with their apparent second position clitic status; and Kučerová (2012) locates the base generated position of the high ones as T, using a variety of syntactic, morphological and prosodic tests, and attributes the emergence of a clitic-like behavior to an EPP-like requirement of T. According to Kučerová, these functional elements cannot be clause-initial and, even though they often end up being second by virtue of being at T with an EPP-like property, they don't have to be second, as the following example illustrates. Here, the high auxiliary *byste* occupies a fourth position within the clause (fifth in the prosodic domain), and it also carries a primary word stress. Observe also that the high auxiliary is separated from an overt complementizer by a speaker-oriented particle, a polarity adverbial and an overt subject. None of these elements has clitic status but they are above T.

- (i) Ale [_{CP} že teda ani vy **byste** to nevěděli?]
but that thus not_even you.PL COND.2PL it not-knew
'But how come not even you didn't know about it?'

ipsis site and/or when it raises out of the vP for independent reasons.⁵ Note that verbal head movement to T in Czech is optional, that is, the low auxiliary may remain in its base-generated position (see, Veselovská 1995 and follow up work). In short, the distribution of auxiliaries in an ellipsis environment should play out either the other way around, or both types of auxiliary should escape ellipsis. The predicted elided structures are schematized in (3).

- (3) *Pronunciation predictions based on the height of auxiliaries:*
- a. High auxiliaries incorrectly predicted to be overt:
 ..._{[TP I [T HIGH_AUX [vP/vP [vP/vP worked] too]]]}
 - b. Low auxiliaries...:
 - (i) correctly predicted to be overt if low aux outside of the ellipsis site:
 ..._{[TP I [T [Asp LOW_AUX [vP/vP [vP/vP worked] too]]]]}
 - (ii) incorrectly predicted to be null if low aux inside of the ellipsis site:
 ..._{[TP I [T [vP LOW_AUX [vP worked] too]]]}

How can we account for the distribution of auxiliaries within the anaphor? Gruet-Skrabalova (2012) argues that only the pattern in (2), i.e., the version with a low auxiliary, is derived by VP ellipsis. The high auxiliary pattern, (1), involves deletion of a larger structure. She assumes that high auxiliaries are second position clitics and argues that because they are generated high, they cannot license VP ellipsis. Specifically, she argues that when the auxiliary is high, v cannot be endowed with an E feature, necessary for ellipsis licensing (following Merchant 2001). Putting aside whether the height of auxiliaries bears on properties of givenness required for ellipsis licensing, Gruet-Skrabalova's reasoning cannot be correct because both structures display properties of VP ellipsis, instead of TP ellipsis. As already pointed out by Dočekal (2007)⁶ and as demonstrated in (4)–(5), both types of structure yield systematic ambiguity in embedded clauses.⁷

⁵Gruet-Skrabalova (2017) argues, based on modal participles, that VP ellipsis in Czech corresponds to VoiceP. According to her account, the low auxiliary escapes the ellipsis site by moving to NegP. She does not explicitly comment on the exact location of the non-negated low auxiliary.

⁶Dočekal (2007) does not acknowledge the problem with high auxiliaries being obligatorily null.

⁷When the antecedent and the anaphor contrast in polarity, and there is no overt auxiliary, the polarity contrast is realized by a yes/no particle. According to Dočekal (2007) these structures are formed by TP-ellipsis (sluicing). We argue that sluicing occurs only with certain word orders (a particle before the subject), and with only the subject being in focus. Once we control for information structure and word order, regular VP ellipsis behavior emerges, as demonstrated in the embedded examples in

- (4) 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.
- (5) Petr bude tvrdit, že (ty) budeš malovat obraz a já
 Petr will claim that you will.2SG paint painting and I
 (budu) taky.
 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.

The embedding test shows that the structures do indeed correspond to a constituent deletion, instead of gapping, but the result is still compatible both with VP and TP ellipsis. In order to directly target the question of the size of the ellipsis, we need to consider island violations. In contrast to VP ellipsis, TP ellipsis (sluicing)⁸ obviates islands (Ross 1967; Merchant 2001). As the examples in (6) show, ellipsis does not obviate islands neither in the high auxiliary condition, nor the low auxiliary condition. These examples contrast with examples in (7) that demonstrate that TP ellipsis obviates islands in the high and low auxiliary conditions.

(i)–(ii). We leave the yes/no structures aside.

- (i) Petr bude tvrdit, že (ty) jsi maloval obraz, ale já ne.
 Petr will claim that you AUX.2SG painted a painting but I no
 ‘Petr will claim that you painted a painting but I didn’t.’
 (i) Petr will claim that you painted a painting but I didn’t paint a painting.
 (ii) Petr will claim that you painted a painting but I won’t claim that you painted a painting.
- (ii) Petr bude tvrdit, že (ty) budeš malovat obraz, ale já ne.
 Petr will claim that you will.2SG paint painting but I no
 ‘Petr will say that you will paint a painting but I won’t.’
 (i) Petr will claim that you will paint a painting but that I won’t paint a painting.
 (ii) Petr will claim that you will paint a painting but I won’t claim that you will paint a painting.

⁸We use the term sluicing to refer to any kind of TP ellipsis, and not only ellipsis with *wh*-remnants.

- (6) *Ellipsis with neither high nor low auxiliaries obviates islands*
- a. ??Petr bude tvrdit, že ty a nějaká dívka jste malovali
 Petr will claim that you and some girl AUX.2PL painted
 obraz, ale já si nevzpomínám, jestli Zuzana.
 painting but I REFL not-recall whether Zuzana.
 ‘??Petr will claim that you and some girl painted a painting
 but I do not recall if Susan.’ [Peter will claim that you and
 some girl painted a painting but I do not recall whether Peter
 will claim that you and Susan painted a painting.]
- b. ??Petr bude tvrdit, že ty a nějaká dívka budete malovat
 Petr will claim that you and some girl will.2PL paint
 obraz, ale já si nevzpomínám, jestli Zuzana.
 painting but I REFL not-recall whether Zuzana.
 ‘??Petr will claim that you and some girl will paint a painting
 but I do not recall if Susan.’ [Peter will claim that you and
 some girl painted a painting but I do not recall whether Peter
 will claim that you and Susan will paint a painting.]
- (7) *Sluicing obviates islands both with high and low auxiliaries*
- a. Petr bude tvrdit, že ty a nějaká dívka jste malovali
 Petr will claim that you and some girl aux.2PL painted
 obraz, ale já si nevzpomínám kdo.
 painting but I 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.]
- b. Petr bude tvrdit, že ty a nějaká dívka budete malovat
 Petr will claim that you and some girl will.2PL paint
 obraz, ale já si nevzpomínám kdo.
 painting but I 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.]

We are left with a puzzle. Irrespective of whether the auxiliary is base-generated high or low in the antecedent, the structure is VP ellipsis. Yet, material *outside* of VP cannot be overtly realized. The question is what process forces the structurally high material to be obligatorily absent, whereas non contrastive material inside VP can? As far as we can tell, there are three theoretical options. The absence of high auxiliaries results from (i) MaxElide (Fox & Takahashi 2005), (ii) a feature interaction between *v* and *T* that blocks partial ellipsis, or (iii) when VP is elided, TP

is not projected at all, i.e., this is a small coordination at the level of vP, as argued for, for example, for determiner sharing in English (McCawley 1993; Lin 2000).⁹

Let us start with MaxElide (Fox & Takahashi 2005) which requires that ellipsis targets the largest deletable constituent (modulo focus) within a parallelism domain. Fox & Takahashi's account (see also Hartman 2011) utilizes the idea that an elided constituent is licensed by the presence of a constituent called a parallelism domain when the parallel domain reflexively dominates the elided constituent. Specifically, a parallelism domain satisfies the parallelism condition if the parallel domain is semantically identical to antecedent constituent, modulo focus-marked constituents. A parallelism domain by definition is either the elided constituent itself, or a larger constituent. It has to be larger when the elided constituent contains a variable whose binder lies outside the elided constituent. In this rebinding configuration, the semantic condition forces the binder to be part of parallelism domain. In turn, MaxElide forces the deletion of the biggest deletable constituent reflexively dominated by the parallelism domain.

In our case the parallelism domain is no larger than TP and not smaller than vP. MaxElide cannot account for the contrast where vP ellipsis requires deletion of high auxiliaries but not of low ones. For each instance of ellipsis the parallelism domain needs to be either identical (TP), or overlap with TP for low auxiliaries, and vP for high auxiliaries. Since neither auxiliary is focused, the prediction is either both types of auxiliary have to be deleted, or TP ones can be spared, contrary to the facts. Furthermore, MaxElide is overridden by focus/contrast. Thus any focus/contrast of the auxiliary should suppress auxiliary deletion via MaxElide regardless what type of auxiliary it is. This is not the case. As the examples in (8) demonstrate, this prediction seems to be borne out for low auxiliaries in the anaphor. Low auxiliary, optional in ellipsis without contrastive tense, becomes obligatory when tense is contrastive.

- (8) a. Ty jsi pracoval a já *(budu) taky.
 you AUX.2SG worked a I will.1SG too
 'You worked and I will too.'
- b. Ty jsi pracoval, ale já ne*(budu).
 you AUX.2SG worked but I not-will.1SG
 'You worked and I won't.'

⁹We do not entertain the idea that the split follows from clitic properties of high auxiliaries. Putting aside that high auxiliaries are not structurally clitics in the same sense as, let say, reflexive clitics (Kučerová 2012), it is not clear how their clitic status would be relevant. Phonotactically, high auxiliaries create a foot with the preceding material, i.e., deleting follow up material should not affect their pronounceability.

However, when the anaphor clause contains a high auxiliary, the auxiliary must be elided even when the tense is contrastive, as seen in (9).¹⁰ The fact is especially striking for the conditional auxiliary *bychom*, in (9b). By definition, auxiliaries are not contrastive material. Yet, the low auxiliary in (8) seems to escape MaxElide when contrastive. One could reasonably argue that the low auxiliary *budu* is able to be prosodically contrastive because unlike its high counterpart for past tense (*jsem*, *jste...*) the low auxiliary carries a primary word stress. However, so does the conditional auxiliary *bychom* in (9b). Yet, even the stronger prosodic status of this high auxiliary does not spare it from obligatory deletion.

- (9) a. Ale ty budeš pracovat! Já (*jsem) taky.
 but you will.1.SG 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.1.SG work I with Marie WOULD.1PL too
 ‘But you will work! Mary and I would too.’

To summarize, MaxElide alone cannot account for the distinction between low and high auxiliaries.

What about a feature interaction between *v* and T? In both cases, the relevant auxiliary is inflected and it contributes to semantic interpretation (tense, aspect). As already demonstrated in Veselovská (1995), movement of low auxiliaries to T is optional but since there is an agree interaction between the modal and T, even in the absence of overt movement the functional head is tied by agree to T.¹¹ Since high auxiliaries are base-generated in T, they only have a c-selection relation with the lower part of the clause. That is, if there is a feature interaction that might force a large ellipsis site, it should occur with low auxiliaries, not the high ones.

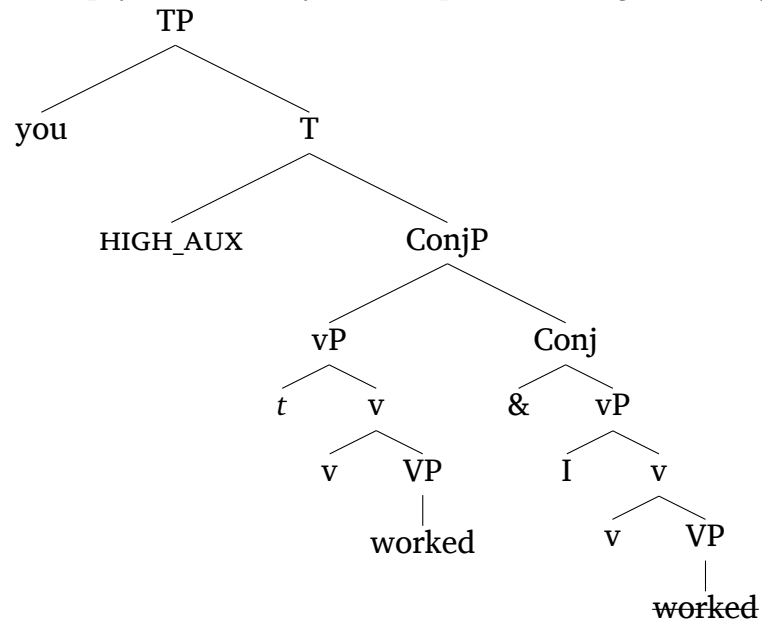
We are left with the third option, i.e., small conjunction. Under this proposal, VP ellipsis applies within a *vP* conjunct.¹²

¹⁰These examples slightly depart of the form of the previous examples because the contrast between future and past tense or conditional otherwise feels unnatural.

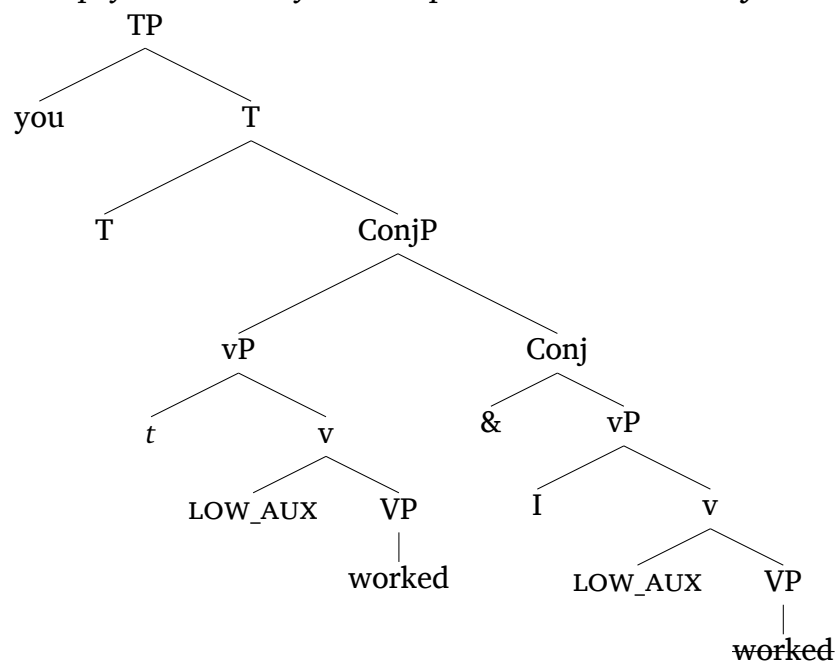
¹¹Veselovská (1995) makes an explicit distinction between T and Agr. We abstract away from this finer distinction here because both Agr and T represent high functional material and ultimately it is irrelevant whether the critical agree relation is with T or a functional head immediately dominating T. As for optionality of head movement, Kučerová (2007) attributes head movement to scrambling interactions. Since the structures that interest us share their core information structure properties, the optional head-movement dimension is not likely to be a critical structural factor.

¹²We use the label *vP* loosely here. It covers the finer functional projections called elsewhere Asp and Voice. As we will see, *vP* is the first phase for us. Finer distinctions play a role in determining the exact size of the first phase but ultimately are not critical for the question we investigate here.

- (10) a.
- A simplified structure for VP ellipsis with a high auxiliary:*



- b.
- A simplified structure for VP ellipsis with a low auxiliary:*



Are the structures, exemplified in (10), a plausible representation for a VP ellipsis? The potential issue is the lack of tense-marking high auxiliary in the anaphor in (10a). Let us consider both the syntactic and the semantic parallelism requirement. Since higher syntactic structure is shared, the syntactic part of the parallelism condition is trivially satisfied.

What about the semantic part of the condition? Merchant (2001) ar-

gues that the ellipsis site must be given in the sense of Schwarzschild (1999).¹³ According to Schwarzschild (1999), givenness is strictly evaluated at the level of semantic proposition. Crucially, a semantic proposition does not have to include tense. Instead, semantic propositions of the sort required for computing entailment and presuppositional relations are already computed at the vP level (see, for example, Bale 2007 for an extensive discussion). That is, a semantic proposition necessary for an evaluation of givenness, and in turn, for ellipsis licensing does not require TP and other higher functional projections to be syntactically projected. Thus, vP in and of itself can correspond to a semantic proposition and can be given with respect to an antecedent clause.

To summarize, the small conjunction structure in (10) can in principle satisfy both the syntactic and the semantic part of the parallelism requirement on ellipsis. We will call this structure the small conjunction hypothesis.

Yet, the structure raises a couple of questions. First, is there any evidence that the higher structure is not projected in the anaphor? Specifically, the small conjunction hypothesis requires the subject to be interpreted low. That is, we expect to see an effect of reconstruction in the antecedent. Similarly, head movement with semantic consequences (as in modals) should be blocked. The second question is why the projection of TP is blocked? Even if TP is not necessary, why is it not optional?

Next section explores VP ellipsis with finite modals. Modality will provide a testing environment where we can directly address the question of scope and semantically motivated head movement. As we will see, the emerging pattern does not comply with the height generalization that underscores the required absence of high functional material explored in this section. The last section of the paper will reconcile the two empirical generalizations and will propose an account in VP ellipsis as a phase-driven derivation.

2 Modality

Modal constructions offer themselves as a useful test for the presence of syntactically projected but morphologically unrealized TP.¹⁴ Modals in

¹³Antecedent-anaphor must mutually entail. Merchant (2001) introduces an additional syntactic property formalized in terms of a E feature. Our understanding is that the extension within Merchant (2001)'s proposal is already accounted for in the original Schwarzschild's proposal but ultimately the differences between these two accounts are not critical for present purposes.

¹⁴To our knowledge, Gruet-Skrabalova (2017) is the only work to date that investigates VP ellipsis with modals. The paper, however, focuses on the complements of modals, and the structure of the argument does not extend to our research question.

languages like Czech or English are systematically ambiguous between root and epistemic modal readings. Butler (2003) argues that although epistemic and root modals share the same morphological realization, their syntactic behavior differs. According to his diagnostics (see also, Cormack & Smith 2002), epistemic modals are above TP and root modals are below TP (or even below AspP, see, for example, Hacquard 2006). The structural distinction between epistemic and root modals thus mimics the structural height distinction between high and low auxiliaries.¹⁵ This variation, in turn, allows us to apply different flavors of modality to target the height of functional elements within ellipsis.

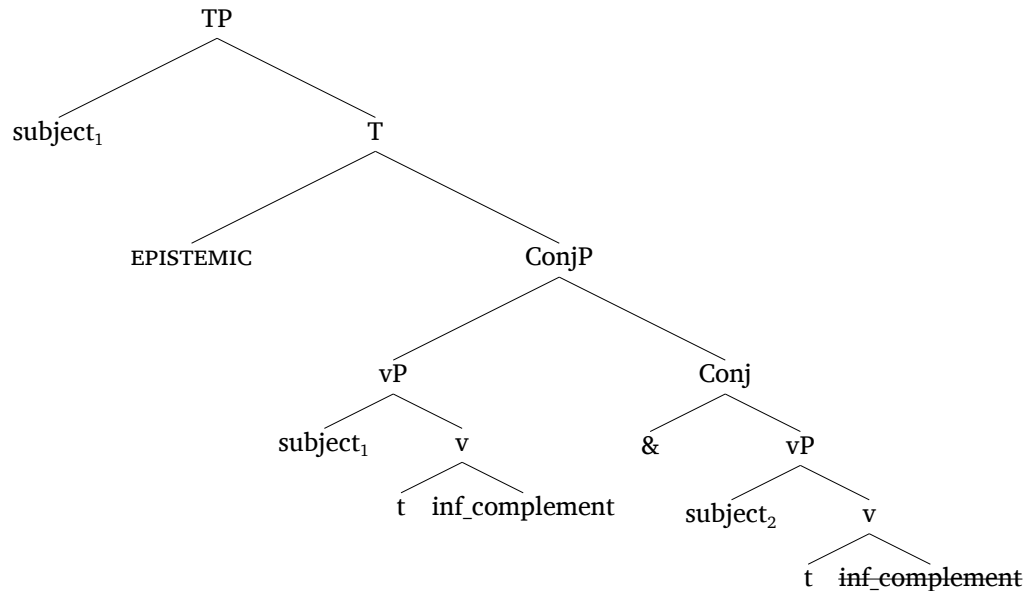
Another useful property of modal constructions is that they introduce a scope taking structural element, which in turn allows to test for the scope of subjects, in addition to testing for the height of the overt ‘auxiliary’ element.

Our goal is establish whether the structure sketched in (10), i.e., a small conjunction structure, is an accurate representation of VP ellipsis in Czech. We will go through the predictions of this hypothesis in detail because they are somewhat involved. We will start with epistemic modals. If epistemic modals raise to T, there are two theoretical options. The first one, exemplified in (11), is that the modal originates in both conjuncts and it ATB-moves outside of both conjuncts. Since this movement does not violate the coordination-structure constraint of Ross (1967), the modal is interpreted as epistemic, i.e., outside of the small conjunction. As for the subject, according to the small conjunction hypothesis, the subject of the antecedent may raise to Spec,TP, i.e., outside of the small conjunction, but then it must reconstruct. The reason is the subject of the anaphor is within the small conjunction, and if the subject in the antecedent didn’t reconstruct, then the two conjuncts would not be semantically parallel and movement would violate the coordination structure constraint.¹⁶ The structure in (11) thus predicts that epistemic modality should be available with VP ellipsis and that the subject would have to be interpreted below the epistemic modal. As for the pronunciation of the modal, the modal should be pronounced in the antecedent but unavailable in the anaphor.

¹⁵The difference being that high auxiliaries are base-generated in T in Czech, instead of moving to the TP zone as epistemic modals do.

¹⁶As observed in Ruys (1992), the CSC can be violated if the conjunct undergoes reconstruction. See also Fox (2000) and Lin (2001) for a related argument.

- (11) *A simplified structure for VP ellipsis with an epistemic modal (ATB-movement):*



If ATB-movement of the modal is excluded for independent reasons, then the structure predicts that the modal must be interpreted low, i.e., as a root modal. When the modal raises from the antecedent conjunct without reconstructing, then movement would violate the coordination structure constraint.¹⁷ Thus, if ATB-movement of the modal were impossible, VP ellipsis should only yield root interpretations. In contrast, if an epistemic interpretation obtains with VP ellipsis, epistemic modals should mirror the behavior of high auxiliaries and the subject should be interpreted low.

We turn to the structure of root modals now. The exact structural position of root modals, i.e., the base-generated position of both varieties is not easy to pinpoint. Hacquard (2006) provides a detailed argument that, at least in French, root modals are base-generated below aspect. The low auxiliary in Czech is in a complementary distribution with perfective aspectual morphology, which suggests that the base-generated position is either in Asp, or the modal obligatorily raises to Asp. Either way, the distribution of root modals should mimic that of low modals.¹⁸

¹⁷Note that head movement of modals must take place in syntax because it has semantic consequences. See, for instance, Lechner (2007) for an extensive argument, but this assumption is already embedded in Butler (2003).

¹⁸A clarification is in place here. The low auxiliary translates to English as *will*, that is, as a modal (assuming that future tense is modality). However, this functional element does not match the syntactic distribution of modals in Czech. Czech modals are full fledged raising verbs with a fully expanded verbal functional projection. The low auxiliary c-selects for vP and lacks a verbal root.

As for the scope properties of the subject, we follow Wurmbrand (1999), and argue that modal verbs are raising verbs. This means that the subject position in the anaphor is already a raised position and the subject can reconstruct below the root modal. That is, we expect the root modal to be optional (as low auxiliaries are) and the subject to be interpreted either above, or below the modal. We further predict that if the modal is pronounced in the anaphor, then it must be deontic, never epistemic.

Let us now turn to the facts: von Stechow & Iatridou (2003) argue that epistemic modals force semantic reconstruction of their subjects. That is, while root modals allow for subjects to be interpreted either high or low, epistemic modals only allow for narrow scope of subjects. Thus, scope properties of subjects in non-elided clauses are expected to match those the small conjunction hypothesis predicts under VP ellipsis. But before we investigate the ellipsis facts, let us first make sure that Czech modals indeed obey the Epistemic Containment Principle of von Stechow & Iatridou in non-ellipsis contexts.¹⁹ As we can see in (12)–(15), a quantificational subject can indeed scope either above, or below a root modal, but it must scope below an epistemic modal.

(12) *Root modality: \checkmark most > can/may*

- a. Context: The faculty has 10 professors and 8 of them holds 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. (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 půjdou na výzkum externích grantů.)
- b. (V souladu s jejich individuální smlouvou,) většina in accord with their individual contract most profesorů může mít grant. professors may have grant
'(In accord with their individual contract,) most professors may have a grant.'

(13) *Root modality: \checkmark can/may > most*

- a. Context: Doctoral scholarships are paid from a state contribution to the departmental budget. The state contribution becomes smaller when the department obtains its own fin-

¹⁹The reported data are from three native Czech speakers. In addition to judgements of one of the authors (IK), Pavel Caha and Lucie Medová generously contributed their judgements both for non-ellipsis and ellipsis examples with modals. They were presented with scenarios in the same form as the Czech version given in examples below.

ancial 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.)

- b. Většina profesorů může mít grant (aniž by most professors may have grant without would ohrozili státní příspěvek na studentská stipendia). endangered state contribution on student scholarships ‘Most professors may have grants (without negatively affecting the state contribution toward student scholarships).’

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

- a. 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 řešení, že...)
- b. (Vzhledem k tomu, že doktorská stipendia se můžou regards to that that doctoral scholarships refl may platit i z grantů) většina profesorů může mít pay even from grants most professor may have grant.
grant
'(Since doctoral scholarships may be financed from grants), most professor may have a grant.'

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

- a. Context: Most professors do excellent research and all of them submitted a very good grant application last year. Professors are not obliged to report their grant results to their department. The department only knows that only 30% of professors currently hold a grant. (Všichni profesori dělají špičkový výzkum a všichni loni podali opravdu výborné grantové přihlášky. Profesori nehlásí externí granty své katedře. Katedra pouze ví, že jenom 30% profesorů má grant.)
- b. #(Podle toho, co katedra ví,) většina profesorů according that what department knows most professors

může mít grant.
 may have grant
 ‘(Based on what the department knows,) most professors
 may have a grant.’

With this baseline in place we can now turn to clauses with VP ellipsis. To make examples as parallel as possible to structures with high and low auxiliaries, we use simple present tense and imperfective aspect, in order to minimize any additional functional structural building, and to isolate head movement of the modal.²⁰ The following examples were judged by the same set of speakers as the baseline examples above. The contexts were only minimally modified to accommodate conjunction but to keep all other relevant properties constant. To make sure that no additional effects of focus arise, both conjuncts are positive, and there is no contrast beyond the subject. The elided examples come in two variants: in the (b) examples both the modal and the complement are deleted (high-auxiliary condition) but in the (c) examples only the complement is deleted; the modal is overt (low-auxiliary condition).

- (16) *Root modality: ✓most > can/may; no overt modal in the anaphor*
- a. Context: The faculty has 10 professors and 8 of them holds 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 půjdou na výzkum externích grantů. Doktorští studenti se mohou hlásit o externí grant, jen pokud nedostávají státní příspěvek. Jen 10% studentů tento rok dostává státní příspěvek.)
 - b. (V souladu s jejich individuální smlouvou,) většina in accord with their individual contract most profesorů může mít grant, a většina studentů taky. professors may have grant and most students too
 ‘(In accord with their individual contract,) most professors may have a grant, and most students too.’

²⁰Czech modals can also appear in participial constructions, including constructions that are distinctly bi-clausal beyond their raising properties. Thus, for example, past tense of modals employs a syntactic structure that cannot be directly compared with high and low auxiliary constructions we investigate here.

- c. ??(V souladu s jejich individuální smlouvou,) Většina in accord with their individual contract most profesorů může mít grant, a většina studentů může professors may have grant and most students may taky.
too
'(In accord with their individual contract,) most professors may have a grant, and most students too.'
- (17) *Root modality: ✓ can/may > most; no overt modal in the anaphor*
- a. 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 of professors and doctoral students 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 a pro doktorské studenty se proti studijním stipendiím nepočítají.)
- b. Většina profesorů může mít grant, a většina studentů most professors may have grant and most students taky (aniž by ohrozili státní příspěvek na too without would endangered state contribution on studentská stipendia).
student scholarships
'Most professors may have grants, and most students too (without negatively affecting the state contribution toward student scholarships).'
- c. ??Většina profesorů může mít grant, a většina studentů most professors may have grant and most students může taky (aniž by ohrozili státní příspěvek na may too without would endangered state contribution on studentská stipendia).
student scholarships
'Most professors may have grants, and most students too (without negatively affecting the state contribution toward student scholarships).'
- (18) *Epistemic modality: ✓ can/may > most; no overt modal in the anaphor*
- a. 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 řešení, že...)

- b. (Vzhledem k tomu, že doktorská stipendia se můžou regards to that that doctoral scholarships refl may platit i z grantů) většina profesorů může mít grant pay even from grants most professor may have grant a většina studentů taky.
and most students too
'(Since doctoral scholarships may be financed from grants), most professor may have a grant, and most students too.'
- c. ??(Vzhledem k tomu, že doktorská stipendia se můžou regards to that that doctoral scholarships refl may platit i z grantů) většina profesorů může mít grant pay even from grants most professor may have grant a většina může studentů taky.
and most students may too
'(Since doctoral scholarships may be financed from grants), most professor may have a grant, and most students too.'

(19) *Epistemic modality: # most > can/may; no overt modal in the anaphor*

- a. 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.)
- b. #(Podle toho, co katedra ví,) většina profesorů according that what department knows most professors může mít grant a většina studentů taky.
may have grant and most students too
'(Based on what the department knows,) most professors may have a grant, and most students too.'
- c. ??(Podle toho, co katedra ví,) většina profesorů according that what department knows most professors může mít grant a většina studentů může taky.
may have grant and most students may too

‘(Based on what the department knows,) most professors may have a grant, and most students too.’

The pattern we see in (16)–(19) is entirely puzzling. The scope properties of subjects behave as predicted by the small conjunction hypothesis, but the distribution of modals does not. As we highlight above, the small conjunction hypothesis strongly favours an overt realization of modals. That is, root modals should mimic the distribution of low auxiliaries, and epistemic modals should either be banned, or mimic the distribution of high auxiliaries. Instead, both types of modals must be deleted, i.e., they behave like high auxiliaries.

The pattern remains equally puzzling if we step back from the small conjunction hypothesis, and return instead to the original descriptive generalization, i.e., the generalization that functional elements base-generated high in the structure must be deleted, while functional elements introduced in Voice/Asp/v may remain overt. Modals are generated low, yet, they must be deleted.

One could argue that perhaps modals must be deleted because of their non-contrastive properties or prosodic properties. This cannot be right either because modals carry primary word stress and they can be focused. If low auxiliaries may remain overt, there is no contrastive or prosodic reason for modals to be deleted.

To summarize, VP ellipsis of finite modals forms a strikingly different pattern from that with high and low auxiliaries. Whatever the adequate structural account is, it cannot solely be based on hierarchical distinction between high and low auxiliaries. Another structural factor must be at play.

3 Economy restricted derivation by phase

That different types of auxiliaries can be differently affected by VP ellipsis based on their exact structural position with respect to the ellipsis site is not specific to Czech. Instead, it has been proposed for example, for English, in Harwood (2015) and Aelbrecht & Harwood (2015). The data discussed in this paper brings an additional puzzle to the pattern observed for English: the ban on high functional material in non-modal finite clauses suggests that VP ellipsis requires a small conjunction (vP). In fact, the available evidence strongly suggests that not only the higher structural material (TP) may but it must be missing. In contrast, in modal finite clauses (at least of the present tense sort we investigate here) VP ellipsis seems impossible, instead TP ellipsis – and the corresponding syntactic structure – is required.

We argue that the profile of VP ellipsis in Czech supports existing theories of VP ellipsis that argue that VP ellipsis is a result of a phase-based derivation (Gengel 2007; 2009; Gallego 2009; Rouveret 2012; Bošković 2014), namely, the ellipsis site always corresponds to a complement of a phase head. Specifically, we argue that the profile of finite auxiliaries differs from modals because modals are raising verbs (Wurmbrand 1999), i.e., unaccusative verbs. Since *vP* of unaccusative verbs is a weak phase (Legate 2003), it cannot form a spell-out domain, and in turn, it cannot be a valid ellipsis site because it cannot carry an E feature, a syntactic feature that licenses ellipsis (Merchant 2001). Instead, the smallest phase in which ellipsis can apply is CP. Consequently, TP must be built and ellipsis applies to this constituent instead. That is, the necessity of the deletion of the high modal follows from the smallest phase that is structurally available. In contrast, the smallest phase in modal constructions is larger and since it includes both the root and epistemic modal level, we see no difference in the behavior of modals and their subjects in elided and non-elided sentences.

A possible objection to this proposal is that the size of the ellipsis site differs among languages even when they employ VP ellipsis (see, for example, Gruet-Skrabalova 2017 for a comparative study that includes Czech). We assume, following Den Dikken (2007) and Bošković (2014) that the size of phases is not structurally fixed. Instead, phases can be extended, for example, by head movement. When a phase is extended, then the size of ellipsis is larger as well.

That ellipsis applies at the phase level accounts for the contrast between low and high auxiliaries versus modals. Yet, it cannot be a complete account. If derivation by phase was the only derivational factor, *vP* conjunction should be optional, not obligatory. We argue that the structure of the ellipsis clause is restricted by structural economy: the ellipsis clause is only built to the minimal level such that (i) the structure is a phase, and (ii) the structure technically forms a proposition (even if it lacks tense) so it can enter an entailment relationship with the antecedent clause for purposes of semantic licensing of parallelism.

The question that arises is then why in some languages the higher functional material is present with VP ellipsis, as in English.

We do not have a complete answer to this question but a suggestive answer comes from work that ties the size of ellipsis site to a feature valuation requirements of phase-internal versus phase-external material (Rouveret 2012) and specifically to the presence of an interpretable tense feature on a phase head (Aelbrecht 2010; Aelbrecht & Harwood 2015). While we have theoretical concerns about the notion of interpretable features within narrow syntax derivation (see, for example, Kučerová 2019), variety of evidence seems to point to cross-linguistic differences in what

syntactic features participate in ‘anchoring’ of syntactic structures at the syntax-semantics interface. Ritter & Wiltschko (2014) argue that while some languages, such as English, use tense on T as an anchoring feature, other languages employ other syntactic features. Czech appears to be a language that uses person for anchoring at the vP level, not tense (for a discussion of person anchoring and the corresponding syntactic properties, see Zubizarreta & Pancheva 2017 and Pancheva & Zubizarreta 2018). Consequently, English might not be able to employ vP conjunction structure because it might not be able to form a semantically licensed proposition at this level, but Czech, given its lack of anchoring tense feature, might be able to. A proper execution of this idea must, however, await another occasion.

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