

RESEARCH

Adverbial clauses: Internally rich, externally null

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This paper suggests a novel syntactic treatment of adverbial clauses. The point of departure is the observation – in German and Slavic languages – that there exists an asymmetry in the complexity of subordinating elements in complement and adverbial clauses: While the former feature simplex complementizers, i.e. heads, the latter to a large extent feature complex prepositional phrases in addition to the adverbial CP. Sense can be made of this observation if adverbial clauses exhibit a structure {PP, CP} in the specifier-less framework of Chomsky (2013). The labeling algorithm suggested in that work delivers no result, i.e. structure remains exocentric in line with the spirit of suggestions regarding adjuncts more generally (Hornstein & Nunes 2008). The underlying reason for the asymmetry is thus that C-elements must be simplex to ensure that the selected complement clause is properly endowed with a syntactic category. There is no corresponding need for this in (unselected) adverbial clauses, and hence no derivational problem for Merging PP with CP which suppresses the application of the labeling algorithm.

Keywords: adverbial clauses; labeling; asymmetry; complementizer; German; Slavic; Polish

1 Introduction

The motivation for this paper is the simple (and not new) observation that complementizers and subjunctors show a tendency to differ structurally. More precisely, *complementizers* (items that introduce complement clauses) are simplex throughout, whereas *subjunctors* (items that introduce adverbial clauses) involve one or more elements of categories other than C(omp) and/or combine such elements with “true” complementizers. In short, subjunctors tend to be more complex than complementizers.

To the best of our knowledge, no theoretical attempts have been made so far to explain this state of affairs, which we dub the *complementizer-subjunctor asymmetry* (CSA). Our aim is to show that this asymmetry is no accident, and to provide a structural account to explain it, building on data from German as well as from Slavic languages, especially Polish. By doing so, we intend to offer a fresh perspective on the syntax of complement and adverbial clauses and, tentatively, on (the theory of) clause types and adjuncts more generally.

An ingredient of our account of the CSA¹ is recent developments in the theory of labeling and extensions thereof. More specifically, we claim that complementizers are simplex

¹ An anonymous reviewer points out that a similar asymmetry like the CSA exists within the nominal domain: Accordingly, nominal arguments feature “simplex” cases (e.g. nominative, accusative), while adjunct nominals feature “complex” ones (e.g. genitive, PPs). S/he adds that sentential arguments exhibit nominal behavior and adumbrates the possibility that “the asymmetries observed in this paper and elsewhere in the literature between adjunct and argument subordinate clauses are due to the asymmetries shown by nominal expressions, i.e. due to the embedding of the respective clauses as/in nominal expression (with)in adjunct and argument positions.” We believe that this option, while attractive, faces certain empirical problems. For example, suppose the argument can be sustained that subordinate argument clauses are nominal in

and hence are immediately detectable by the labeling algorithm in Chomsky (2013). Since complement clauses enter into selectional relations, they require labeling. Subjunctors, by contrast, are complex – i.e. phrasal – and hence suppress the unambiguous detection of a label, which at least in principle is an option, as Blümel (2017) has argued for verb-second/V2 phenomena (and, possibly, root clauses more generally); since subjunctors introduce adverbial clauses not required by selectional needs, their unlabeled status is of no harm for the ongoing derivation. In this sense, our analysis converges in spirit with independent suggestions regarding adjuncts in the literature (Hornstein & Nunes 2008).

This article is structured as follows: In Section 2, we present data that document the CSA in the languages investigated. Section 3 concerns previous accounts on the syntax of adjunct clauses and complex subjunctors. In Section 4, we present our own proposal: After having introduced the necessary theoretical background in Section 4.1, we offer an analysis of the syntax of adjunct clause with complex subjunctors in Section 4.2. Section 4.3 deals with apparently problematic cases of simplex adverbial subjunctors. Finally, Section 5 concludes the paper.

2 The complementizer-subjunctor asymmetry

In what follows, we present data from Slavic languages (especially Polish) as well as from German. Our goal is to introduce and illustrate the CSA. Also, we aim to characterize the types of complexity that can be observed with complex subjunctors in the languages investigated. For reasons of space, the following remarks will mostly be confined to finite adverbial clauses, although we will touch on how our analysis might carry over to non-finite ones in the end.

2.1 Slavic

Cross-linguistically, the set of complementizers—items introducing complement clauses—is very restricted. Slavic languages do not constitute an exception to this general pattern as they usually have only two complementizers:² one for interrogative contexts which we dub [+Q] and another one for non-interrogative contexts, [–Q]³ complement clauses; cf. Table 1.^{4,5}

nature and, for instance, feature a nominal or DP-shell as often suggested. How would we then explain the cross-linguistic possibility of successive-cyclic A-movement out of object subordinate clauses, but not, for instance, out of relatives? The latter impossibility relates to the complex NP-constraint, but no comparable movement restriction applies to argument clauses. An analytical assimilation of CPs as nominal structures involves the risk that we lose empirical generalizations distinguishing the syntactic transparency of these types of clauses. Of course, there are ways to avoid this conclusion, but the most parsimonious approach to argument clauses seems to us to treat those instances which are transparent for A-extraction as CPs, i.e. structures without nominal shell.

² A reviewer objects that most Slavic languages have more than two complementizers. S/he mentions Czech *aby* besides *že* ‘that’ and *jestli* besides *zda* ‘if.’ These are, however, no synonyms: First, *aby* is (at least diachronically) the syntactic combination of the conjunction *a* ‘and’ and the irrealis auxiliary *by*, which can explain why it is reserved for non-factive complement clauses. Second, *jestli* has the basic function of introducing conditional clauses; its use instead of *zda* in embedded interrogative clauses is colloquial, hence stylistically marked. The same holds true for Polish *із*, which is a more ‘bookish’ variant of *że* ‘that.’

³ Many Slavic [+Q] complementizers comprise the question particle *li*. Synchronically, it is fair to claim that the respective complementizers are inseparable units stored in the lexicon and Merged in C. See Rudin (1986: 43–53) for a survey of the Bulgarian complementizers *če* and *dali* supporting this view.

⁴ We use the following language abbreviations for tables: Blr – Belarusian, Bul – Bulgarian, Cze – Czech, Pol – Polish, BCMS – Bosnian-Croatian-Montenegrin-Serbian, Rus – Russian.

⁵ One might object that Table 1 should also list BCMS *kako*, Belarusian/Czech/Polish *jak*, Bulgarian/Russian *kak* ‘how.’ Their status is contentious, though, and they do not readily fit one of the features [+Q] or [–Q], respectively. According to Zimmermann (1990), German *wie* ‘how’ has the potential to fulfill two different functions, namely that of a complementizer and an adverbial subjunctor, with the former involving a beholder-perspective directed towards the course of the situation expressed. In this paper, we stay agnostic regarding the semantics and precise category of the relevant items. What seems to be certain, however, is that they are Merged, or end up, in the CP.

Polish, for instance, has the complementizers *że* ‘that’ and *czy* ‘if,’ illustrated in (1a) and (1b), respectively.

- (1) *Polish* (Nagórko 1997: 213)
- a. Skarżył się, **że** jest chory.
complained REFL that is ill
‘He complained of being ill.’
- b. Wątpię, **czy** zauważył nieobecność córki.
doubt if noticed absence of.daughter
‘I doubt if he noticed his daughter’s absence.’

On the other hand, all Slavic languages have a multitude of subjunctors to introduce diverse types of adverbial clauses. This is illustrated in Tables 2 and 3. A number of comments are in order:

The majority of adverbial subjunctors in Tables 2 and 3 are composed of a preposition, a demonstrative and a complementizer. Thus, for instance, Belarusian *paslja taho jak* ‘after’ in Table 2 comprises the preposition *paslja* ‘after,’ which governs the genitive case on the demonstrative pronoun *taho* ‘this.GEN,’ as well as the C-element *jak* ‘how.’ Essentially the same component parts can be found in Polish *dlatego że* ‘because’ in Table 3: preposition *dla* ‘for,’ demonstrative *tego* ‘this.GEN,’ and complementizer *że* ‘that.’

But there are examples in the tables that lack one or another of the components mentioned: Thus, for instance, Belarusian *tamu što* ‘because’ in Table 2 lacks a preposition, while Bulgarian *văpreki če* ‘despite’ in the same Table lacks a demonstrative. On the other hand, Polish *podczas gdy* ‘while’ features the (abstract) noun *czas* ‘time’ in place of a demonstrative pronoun.

However, we argue that these are only apparent exceptions:

First, examples like Belarusian *tamu što* ‘because’ are instances of so-called semantic cases where a(n oblique) case-marker “does more than just indicate the surface grammatical function of the DP. The DPs in question are not arguments of the main verbal predicate, so semantic case must connect them with the verb [...]” (McFadden 2004: 54).

Table 1: Complementizers in a subset of Slavic languages.

	Blr	Bul	Cze	Pol	BCMS	Rus	
-Q	što	če	že	że	da	čto	‘that’
+Q	kali	dali	zda	czy	dali	-li	‘if’

Table 2: Subjunctors in a subset of Slavic languages (1/2).

Blr	Bul	Cze
paslja taho jak after this.GEN how ‘after’	v-mesto da in-place SUBJ ‘instead (of)’	po-té co after-this.LOC what ‘after’
perad tym jak before this.INS how ‘before’	bez da without SUBJ ‘without’	před-tím než before-this.INS than ‘before’
dlja taho kab for this.GEN so.that ‘in order to’	vă-preki če on-contrary that ‘despite’	přes-to-že through-this.ACC-that ‘despite’
tamu što this.DAT that ‘because’	za-što-to for-what-PRT ‘because’	pro-to-že for-this.ACC-that ‘because’

Table 3: Subjunctors in a subset of Slavic languages (2/2).

Pol	BCMS	Rus
po tym jak after this.LOC how 'after'	na-kon što on-end that 'after'	posle togo kak after this.GEN how 'after'
pod-czas gdy under-time.ACC when 'while'	time što this.INS what 'through, by'	s tex por kak since that time.GEN.PL how 'since'
mimo że spite that 'despite'	prem-da contrary-that 'despite'	v-vidu togo što in-sight.LOC this.GEN that 'considering that'
dla-tego że for-this.GEN that 'because'	za-to što for-this.ACC what 'because'	po-tomu što through-this.DAT that 'because'

In the current example, it is the dative which seems to connect, not a DP, but the CP introduced by *što* 'that' with the matrix clause, at the same time establishing a causal relation between the two. One can both account for the presence of this relation and maintain a uniform analysis for adverbial subjunctors by the assumption that semantic cases are not merely case-marked DPs, but PPs with a null head (cf., a.o., Bresnan & Grimshaw 1978; Emonds 1985; 1987; Nikanne 1993; McFadden 2004; Zimmermann 2013). Under this view, Belarusian *tamu što* is structurally parallel to e.g. Russian *potomu što* 'because' from Table 3 with the only exception that *tamu što* contains a null preposition which is responsible for both the causal relation and the dative case on the demonstrative, whereas the preposition is overt in *potomu što*; cf. (2):

- (2) a. *Russian*
 po_p $tomu_D$ $što_C$
 through this.DAT that
- b. *Belarusian*
 \emptyset_p $tamu_D$ $što_C$
 this.DAT that

Second, the existence of examples like Bulgarian *văpreki če* 'despite' where there is no overt demonstrative is not quite surprising, given that the "missing" element can easily be reconstructed. Still, the specific criteria allowing for the demonstrative to be absent/null need further scrutiny. Possible factors that come in mind are (i) properties of the preposition at hand and (ii) the case governed by that preposition. Additionally, the system/extent of case inflections of the relevant language might play a role – note that Bulgarian and BCMS have a reduced set of case markers as compared to other Slavic languages, and it is these two languages that exhibit the relevant examples in Tables 2 and 3.

Finally, examples with a noun in place of a demonstrative pronoun are well attested in many languages. In these cases, an abstract noun specifies the semantic domain to be modified by the embedded clause. For instance, *czas* 'time' in Polish *pod-czas gdy* 'while' defines that the relevant domain is the temporal one.

After this brief discussion of the data presented in Tables 2 and 3, we would like to go into more detail, using Polish data as particular examples. The subjunctors in (3)–(5), for instance, are combinations of a preposition or prepositional phrase with either the complementizer *że* 'that' or the temporal subjunctive *gdy* 'when' (see Section 4.3 concerning the latter). The meaning of these complex subjunctors derives straightforwardly from

their individual component parts, which is why it is fair to speak of syntactic complexity as well as of semantic transparency.

- (3) *Polish* (Nagórko 1997: 217)
 Żywy organizm reaguje na bodźce, **dla-tego że** ma określone potrzeby.
 living organism reacts on stimuli, for-this.GEN that has specific needs
 ‘A living organism reacts to stimuli since it has specific needs.’
- (4) *Polish* (Bartnicka et al. 2004: 561)
Mimo że pora była późna, wybraliśmy się z wizytą.
 despite that time was late were.off REFL with visit
 ‘Although it was late, we were off for a visit.’
- (5) *Polish* (Bartnicka et al. 2004: 555)
 Padał ulewny deszcz, **pod-czas gdy** my siedzieliśmy w kawiarni.
 fell pouring rain under-time.ACC when we sat in café
 ‘It was pouring while we were sitting in the cafe.’

Like (3) and (4), (6) and (7) contain the complementizer *że* ‘that.’ This time, however, it follows on non-prepositional material, more precisely on the comparative relator *jako* ‘as’ and the adverb *chyba* ‘probably,’ respectively. Irrespective of this difference, (6) and (7) pattern with (3) and (4) in that the subjunctors are syntactically complex. On the other hand, they are semantically opaque: Their meaning cannot be calculated from the meaning of their component parts in a compositional way:

- (6) *Polish* (Skibicki 2007: 270)
 Rozmawiał z nim, **jako że** znał go lepiej.
 talked with him as that knew him better
 ‘He talked to him as he knew him better.’
- (7) *Polish* (Skibicki 2007: 272)
 Pomogę wam, **chyba że** = by-m zachorował.
 help to.you probably that = SUBJ-1SG was.ill
 ‘I will help you unless I am ill.’

Furthermore, there are instances where the complexity of a subjunctor is more intricate, but nonetheless recognizable due to the fact that the relevant items exhibit internal morphological structuring; cf. (8)–(10):

- (8) *Polish* (Bąk 1999: 186)
 Wszyscy wybraliśmy się na spacer, **po-nie-wa-ż** była piękna pogoda.
 all were.off REFL on walk on-it.ACC-PRT-PRT was beautiful weather
 ‘All of us were off for a walk since it was beautiful (weather).’
- (9) *Polish* (Skibicki 2007: 270)
 Staliśmy pod dachem, **albo-wiem** padało.
 stood under roof or-know.1SG it.rained
 ‘We stood under the roof because it was raining.’
- (10) *Polish* (Bartnicka et al. 2004: 555)
 Nie pójdziesz na spacer, **do-póki** nie odrobisz lekcji.
 NEG go on walk to-until NEG do homework
 ‘You won’t go off for a walk until you (will have) do(ne) your home-work.’

We argue that examples like these are morphologically complex.⁶ Like most morphologically complex subjunctors, the above examples are semantically opaque.

Finally, some Polish adverbial subjunctors seem to be simplex; cf. (11) and (12):⁷

- (11) *Polish* (Bał 1999: 185)
 Nie poszedłem na spacer, **bo** padał deszcz.
 NEG went on walk because fell rain
 ‘I didn’t go for a walk because it was raining.’

- (12) *Polish* (Skibicki 2007: 269)
Gdy / **Kiedy** / **Skoro** zobaczył psa, uciekł.
 when when as.soon.as saw dog escaped
 ‘When/As soon as he saw the dog, he escaped.’

To summarize, while Slavic complementizers are simplex throughout,⁸ the vast majority of adverbial clauses is introduced by complex subjunctors, hence items that (i) involve more than a single syntactic object or (ii) display internal morphological structuring.

Adverbial subjunctors that are, or at least seem to be, simplex will be dealt with in more detail in Section 4.2.

2.2 German

This section extends observations from the previous one to German in support of the CSA. Documentation on subjunctors to verb-final clauses is quite extensive, cf. Fabricius-Hansen (2007) for a detailed descriptive survey and functional classification. We cannot do full justice to the rich repertoire of these elements but will here merely point to what we consider representative cases, highlighting properties relevant to the current analysis.

As in Polish, there are two lexicalized complementizers for finite German complement clauses: one for [–Q] and another one for [+Q] complement clauses, *dass*⁹ ‘that’ and *ob* ‘if’, respectively:

⁶ Some remarks on the segmentation applied are in order: The subjunctor *ponieważ* in (8) comprises the preposition *po* ‘on,’ the accusative personal pronoun form (*n*)*je* and two particles, *-va* and *-z(e)* (cf. Vasmer 1955: 404). The subjunctor *albowiem* in (9) traces back to **a li bo věmī* ‘and PRT since (I) know.’ The modern spelling gives rise to the segmentation and glossing employed in (9), relating it to the modern conjunction *albo* ‘or.’ *Dopóki* in (10) combines the preposition *do* ‘to’ with the subjunctor *póki* ‘until,’ which itself traces back to the preposition *po* plus an old ACC pronoun **ky* ‘who(m)’ (cf. Vasmer 1955: 388). For ease of exposition, the segmentation and glosses in (9) and (10) ignore some of these diachronic insights.

⁷ A reviewer notes that, from a diachronic perspective, both *gdy* and *kiedy* comprise the WH-element **k(u)* and the enclitic particle **-dy*. However, native speakers will hardly recognize this kind of morphological complexity today (see also footnote 9 on German *dass* ‘that’). Compare (12) to the examples in (8)–(10): Native speakers will easily recognize the complexity of the subjunctors in (8)–(10), but not of the ones in (12).

⁸ We should like to add that syntactic incorporation does not, in our view, turn simplex into complex complementizers. The latter view might arise from the impression that complex complementizers exist; frequently mentioned examples are Polish *żeby* or Russian *čtoby* (so) that.’ By standard assumptions, these complementizers result from syntactic head movement of the irrealis marker *by* to C, where they form a phonological unit with the relevant simplex complementizer. For us, Polish *żeby* and Russian *čtoby* are no distinct complementizers, but syntactic combinations of a simplex complementizer with *by*. More generally, this means that the labels “simplex” and “complex” refer to the constitution of linguistic items *before* syntactic movement.

⁹ Leu (2015) argues that German *dass* and counterparts in e.g. Afrikaans, Dutch and Frisian are bimorphemic, comprising a *d*-morpheme and the residue functioning as a free morpheme in e.g. Scandinavian languages (e.g. *at* in Danish and Norwegian, *az* in Yiddish or *att* in Swedish). He makes the intriguing suggestion that embedded V2 is in complementary distribution with not V2 per se, but with the initial morpheme *d-*, as it occurs with the latter group of languages and is absent in the former.

The argument raises questions regarding acquisition (leaving aside empirical problems related to Frisian): A child growing up in a German-speaking community has no evidence for a structural decomposition, i.e. for the independent existence of either *d-* or *ass*. Since Leu suggests that it is *d-* and V2 which are

(13) *German*

- a. Er beschwerte sich, **dass** es kalt wurde.
he complained REFL that it cold became
'He complained that it became cold.'
- b. Er fragte sich, **ob** es kalt wurde.
he asked REFL if it cold became
'He wondered if it became cold.'

In the context of indirect WH-questions, standard German is commonly taken to have a third complementizer, the [+Q] null-C. In doubly-filled Comp variants of German, like Bavarian, this complementizer is *dass*-C or null-C, a variation that is subject to complex conditions beyond the scope of the current paper (cf. Bayer 1984; Bayer & Brandner 2008).

(14) *German/Bavarian German*

- Er fragte sich, **an welchem Tag** C = {∅/dass} es kalt wurde.
he asked REFL on which day ∅/that it cold became
'He wondered on which day it became cold.'

We follow virtually all work on the issue and assume that the null-complementizer is syntactically simplex, i.e. an instance of C.

As in Slavic, there is a plethora of German subjunctors to introduce adverbial clauses of different types. Both the internal structure and the lexical or derived meanings of the subjunctors are complex in many ways, so that a clear-cut classification proves difficult. However, these complexities do not undermine the purpose of this section: an illustration of the CSA. As a preliminary stab, we would like to submit a threefold descriptive classification, summarized in Table 4.

The first class comprises simplex prepositional elements plus the obligatory occurrence of *dass*, shown in (15)–(17).

Table 4: A subset of German complementizers introducing finite adjunct clauses.

P-C	P-D	P/C-Adv/N/PRT
als dass than that 'rather ... than'	während (dessen) during that.GEN 'while'	ob-wohl/-gleich if-PRT 'despite'
auf dass on that 'so that'	ehe-/in-/seit-/nachdem {before/in/after}that.DAT 'before,' 'since,' 'after'	zu-mal to-time 'and ... at that'
bis auf dass until on that 'except that'	trotzdem depite-that.DAT 'and yet'	als wie as how 'than' (comparative)
nicht/kaum dass not/hardly that 'not that,' 'hardly'	wo-bei where-by 'whereas'	so-bald so-soon 'as soon as'

in complementary distribution, the evidence would have to be indirect, presumably. However, he is not explicit about the issue. Alternatively, UG would have to be the reason for the structural analysis. In this paper, we adopt the standard view that *dass* is syntactically the simplex head C.

- (15) *German*
 Er schneidet sich die Haare selbst, **auf** *(**dass**) er Geld spare.
 he cuts REFL the hair self on that he money save
 ‘He cuts his hair by himself so as to save money.’
- (16) *German*
 Eher schneidet er sich die Haare selbst, **als** *(**dass**) er zum Frisör geht.
 rather cuts he REFL the hair self as that he to-the barber goes
 ‘He rather cuts his hair by himself than go to the barber.’
- (17) *German*
Bis auf *(**dass**) die Zimmer etwas hellhörig sind, können wir das
 until on that the rooms somewhat clairaudient are can we the
 Hotel bestens empfehlen.
 hotel best recommend
 ‘We can totally recommend the hotel, except that the rooms are somewhat
 clairaudient.’

The second class comprises what we take to be an anaphoric or cataphoric demonstrative pronoun in addition to the prepositional element. We take such demonstratives to be part of a DP in the containing PP. (20) shows that in case this demonstrative precedes the preposition, it is an R-pronoun familiar from such PPs, cf. Noonan (2017). A subset of these elements can feature the complementizer *dass* in addition to the subjunctive, subject to dialectal and sociolectal variation.

- (18) *German*
Nach-dem (**dass**) sie die Fenster geöffnet hatte, wurde es kalt.
 after-that that she the windows opened had became it cold
 ‘It became cold after she had opened the windows.’
- (19) *German*
Während-dessen (**dass**) sie die Fenster geöffnet hatte, wurde es kalt.
 while-that.GEN that she the windows opened had became it cold
 ‘It became cold while she had opened the windows.’
- (20) *German*
Da-mit es nicht kalt wurde, hatte sie die Fenster geschlossen gelassen.
 there-with it not cold became had she the windows closed left
 ‘She had left the windows closed so that it wouldn’t become cold.’

Notice that some of the above cases can be modified by degree or adverbial elements, e.g. *gleich/sofort nachdem* ‘right after,’ clearly indicating the phrasal (i.e. PP) nature of these units.

The third class, finally, involves either C- or P-elements like *ob* ‘if’,¹⁰ *als* ‘as’/‘than’ or *zu* ‘to,’ accompanied by a nominal or adverbial element or a sentence particle.¹¹

¹⁰ *Ob* figures also as a (archaic) preposition followed by a genitive or dative DP, as in *ob dieser Situation* ‘in the face of/because of this situation.’ Here we leave in abeyance the precise categorical nature of *ob* in subjunctive function.

¹¹ Eberhardt (2017) shows that the element *mal* in *zumal* roots back to the nominal *Mal* ‘time’ (as in “four times”).

Orthographically, these elements are one word and we indicate their contained material in the gloss for perspicuity.

- (21) *German*
Ob-wohl sie die Fenster geschlossen hatte, war es noch kalt.
 C-PRT she the windows closed had was it still cold
 ‘It was still cold despite the fact that she had closed the windows.’
- (22) *German*
 Wir sollten ihn nicht mit Fragen belästigen, **zu-mal** wir ihn kaum kennen.
 we should him not with questions harass to-time we him barely know
 ‘We shouldn’t harass him with questions, the more so as we barely know him.’
- (23) *German*
So-bald ich das Geld bekommen habe, bezahle ich die Miete.
 as-soon I the money gotten have pay I the rent
 ‘I will pay the rent as soon as I will receive the money.’

As concerns the distinction between morphological and syntactic complexity, the examples show that – much like their Slavic counterparts – the German complementizers are simplex, while subjunctors are either morphologically (e.g. *obwohl* ‘despite,’ *zumal* ‘the more so as’) or syntactically (e.g. *bis auf* ‘except that,’ *als dass* ‘rather than’) complex.

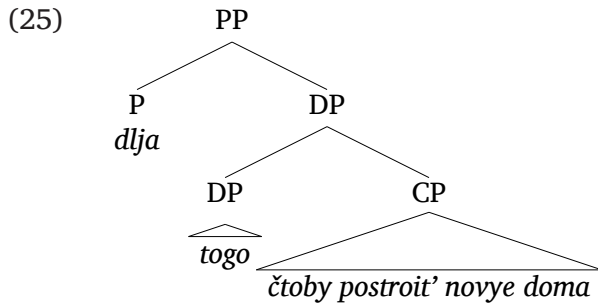
This concludes the survey on complementizers and subjunctors in Polish (and Slavic more generally) and German. An important question arises: What is the underlying reason for the observed asymmetry between clause types functioning as arguments to embedding verbs on the one hand, and adverbial clauses on the other? Given that the CSA is a strong cross-linguistic tendency, we believe that an account is needed which addresses the following two questions which are, even though related, logically independent: Why are complementizers syntactically and morphologically simplex throughout? Why do subjunctors exhibit a strong tendency for syntactic and morphological complexity? In the following section, we briefly subject to scrutiny previous approaches to the syntax of adverbial clauses in Slavic and German and show that they fall short of even addressing these questions, let alone provide clues of an answer to them.

3 Previous takes on the syntax of adverbial clauses

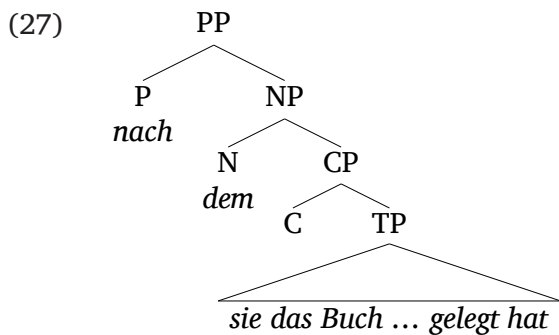
All syntactic analyses of adverbial clauses we are aware of emphasize their prepositional nature and our own approach is not an exception. Traditionally, adjunct clauses in Slavic, German and beyond were analyzed as prepositions which select (an NP/DP containing) a finite clause (cf. Faraci 1974; Jackendoff 1977; Manzini 1983; Wunderlich 1984; Emonds 1985; McCawley 1988; Larson 1990; Růžička 1990; Zimmermann 1993; 2009). The following specific analyses of the examples (24) and (26) are from Junghanns (1994) for Slavic and Müller (1995: 86ff) for German:¹²

- (24) dlja togo čtoby postroit’ novye doma
 for this that/in order to build-INF new houses
 ‘to build new houses’

¹² Notice that Junghanns hones in on infinitival adverbial clauses (final clauses), unlike ourselves. However, nothing hinges on this difference, as the relevant difference concerns the IP-domain only, not the complementizer system. More crucially, his analysis differs from the one of Müller (1995) in that CP is not a complement of N/D, but adjoined to DP.



(26) nachdem sie das Buch auf den Tisch gelegt hat
 after she the book on the table put has
 ‘after she put the book on the table’



The particular examples above comprise a demonstrative element, and the analyses account for this by embedding a/n NP/DP within the PP. The analysis by Junghanns (1994) in (25) comes closest to our own approach. He assumes that the preposition selects the DP headed by the demonstrative. The CP, in turn, adjoins to the DP, thus there is no selectional relationship between D and the CP. Instead, the demonstrative functions as a cataphoric pronoun to the CP, an idea we adopt for our own approach. On the other hand, in (27) the CP is selected by the demonstrative, which is represented as a nominal. Müller motivates the presence of the nominal shell partly by the fact that subjunctors of adverbial clauses can feature demonstrative elements and partly by theory-internal considerations: Adverbial clauses are strong islands for movement and hence he postulates two barriers – PP and NP.

Whilst the approach captures an intuition which is correct, in our view, and does justice to the obvious point that these units are prepositional and have a relational semantics, it leaves open questions: How do we treat the extra material that often accompanies the bare prepositions? Within \bar{X} -theory and its early Minimalist descendant (Bare Phrase Structure; cf. Chomsky 1995a), there are few choices but to say that some of these elements are complements of the preposition:¹³

(28) [_{PP} P = *dlja* [_{DP} D = *togo*]]

(29) [_{PP} P = *nach* [_{DP} D = *dem*]]

Adjunction to the DP as in (25), raises questions: Why is the CP obligatory? Junghanns (1994: 161, fn. 147) makes the following sensible remark to motivate his adjunction approach, which can likewise be an argument against the complementation approach in

¹³ The DP-hypothesis for Slavic is just for exposition. Here we remain agnostic about whether or not Slavic languages have a DP or not.

(27), provided a uniform analysis across languages is desirable, which we assume is the case:

The cataphoric pronoun as a nominal aid of embedding must be distinguished from the demonstrative pronoun $t(ot, -a, -o, -e)$, which takes DP-complements. Just as a personal pronoun, a cataphoric pronoun ought to be represented as an intransitive D-element, so that CP-supplements count as neither a complement nor as a restrictive attribute, but as an adjunct of the DP.¹⁴

Arguably, the CP in (25) functions as a propositional explication of the cataphoric D-head. One could argue that in the absence of such an explication, the resulting meaning is radically incomplete, hence the obligatoriness of the CP. Syntactically, the prepositional needs are satisfied by the pronoun. In this sense, merging the DP completes c-selectional requirements of the preposition, while the CP must fill the semantic void this DP gives rise to.¹⁵ While we consider this a reasonable approach, current syntactic theorizing opens further analytical options with similar empirical coverage and at the same time promises to shed light on the CSA, as we will show below.

A complementation analysis like (27) with an NP-shell raises more issues: Why does the N-head (or D-head) *select* the CP? We adopt the view that *dem* is a demonstrative element that cataphorically relates to the CP as in Junghann's conception.¹⁶ Thus the presence of what we take to be a lexically cataphoric demonstrative enforces the presence of the CP.

Correlates usually relate "horizontally" rather than "vertically," and a selectional relation appears redundant when a cataphoric relation alone suffices. We would like to stress that an approach which does without a nominal projection would give rise to other problems: e.g. Biskup (2017: chapter 6.3.4) argues at length that complex prepositions in Slavic and their complements feature nominal structure, some of which is in fact covert.

¹⁴ "Das kataphorische Pronomen als nominale Einbettungsstütze ist zu unterscheiden vom Demonstrativpronomen $t(ot, -a, -o, -e)$, das DP-Ergänzungen nimmt. Wie ein Personalpronomen sollte das kataphorische Pronomen ein Vertreter intransitiver D-Einheiten sein, so daß CP-Ergänzung weder als Komplement noch als restriktives Attribut, aber als Adjunkt an die DP to gelten kann."

¹⁵ Such a chain or split of formal and semantic dependencies is not entirely unheard of, but reminiscent of obligatory (restrictive) relative clauses in German in the presence of a complex definite determiner *der-/die-/dasjenige* 'the one' (cf. Alexiadou et al. 2000: 4; Roehrs 2006: 213–215; Sternefeld 2008: 378 ff.):

- (i) *derjenige Mann *(der das Pulver erfunden hat)*
 the-one man who the powder invented has
 'the man who invented the powder'

Moreover, Axel-Tober (2017) and Meyer (2017) argue that complement clauses in German and Slavic languages, respectively, have developed from relative clauses, which fits the above observation that the CP functions as a propositional explication. With respect to Russian, a reviewer remarks that the CP is obligatory only if the proposition is not already known from the context. Given our assumptions, in such a case the CP is syntactically present but left unarticulated, so as not to repeat the proposition. In other words, the CP functions as a propositional explication of the DP irrespective of whether it is overt or silent.

¹⁶ An anonymous reviewer suggests that the element after *nach* is plainly a definite determiner and thus that the semantics is transparent in that *nach* "takes a definite temporal interval as its argument; "dem" is the definite determiner and the CP provides the property characterizing the temporal interval." We are grateful for the suggestion but feel that the argument is suggestive but not compelling: There are alternatives to the view that the semantic argument for the denotation of the article or demonstrative has to be syntactically (part of) a sister to D. We would like to draw on an analogy from relative clauses to make the point: Looking at intricate facts from extraposition of restrictive relative clauses in German, Kiss (2005) suggests to treat them as base generated in their surface position c-commanding the antecedent, i.e. in effect structurally remote from their associated NP/DP. He observes that restrictive relatives can occur in right-peripheral positions, for which there is no extraposition rule, say, in the right edge of certain postpositional PPs. He gives an elaborate semantics for the treatment of such discontinuities. As this paper is about the syntax of adverbial clauses, we cannot give a detailed analogous semantic explication here. The question whether the element after the preposition is an article or a demonstrative thus has to be left open (As the reviewer rightly points out, facts from article contraction are not decisive either.).

With respect to the additional material, the prepositions have their full case assigning potential. And most true bare prepositions do not select CPs:

- (30) nach*(dem) sie das Buch auf den Tisch legt ...
 after(that.DAT) she the book on the table put
 ‘after she puts the book on the table ...’
- (31) *(da)mit sie das Buch auf den Tisch legt ...
 (R-pron)-with ...
 ‘in order to ...’
- (32) *(be)vor sie das Buch auf den Tisch legt ...
 (be)fore ...
 ‘before ...’
- (33) zu*(mal) sie das Buch auf den Tisch legt
 to(time) ...
 ‘and she puts the book on the table at that’/‘in addition to that she puts the book on the table ...’

All of these observations suggest that the complexity of subjunctors in adverbial clauses should be taken seriously: There is a full prepositional phrase plus a DP. This latter DP entertains a correlating relationship to the adverbial CP, enforcing its presence. To anticipate our proposal which shares some properties of analysis (25) above, what we would like to say is that the PP stands in a paratactic relation to the adverbial CP – they are structurally on a par. Before delving into the syntactic implementation of these properties, let us lay out the theoretical assumptions the analysis is based on.

4 Analysis

4.1 Theoretical background

This section provides theoretical background on the analysis that we subsequently develop. Though it might appear circumlocutory and not immediately relevant to the phenomenon at hand, we ask the reader to bear with us: The exposition is crucial for the account that we give.

There is a recent and ongoing effort to formulate grammatical properties in terms of the interaction of (a) the free application of the set-forming operation Merge, (b) properties of the Conceptual-Intentional and the Sensorimotor systems and (c) Third Factor principles, i.e. efficient computation (cf. Chomsky 2013). The framework within which this effort takes place imposes stringent conditions and standards on the postulation of grammatical operations. Next to common scientific standards of parsimony, part of the motivation for this Spartan handling of technical grammatical means comes from considerations regarding the evolution of the Language Faculty:

“not only asking what mechanisms suffice to determine I-language from data available, but why these mechanisms should exist, and whether they are real or just dispensable descriptive technology. The task of accounting for the evolution of language would also be correspondingly eased, for the same reasons that hold for inquiry into evolution generally: the less attributed to genetic information (in our case, the topic of UG) for determining the development of an organism, the more feasible the study of its evolution.” (Chomsky 2004: 4)

There is a containment relation between the different explanatory goals of generative grammar. A theory which goes “beyond explanatory adequacy” in aiming at a plausible scenario for the evolution of the Language Faculty must derive properties of a theory that meets the goal of explanatory adequacy, i.e. a theory that describes UG. One such property is the \bar{X} -module (cf. Chomsky 1970; Jackendoff 1977; Chomsky 1986). Even in its early Minimalist incarnation (cf. Chomsky 1995a), it comprises numerous properties which we consider “dispensable descriptive technology” at least in principle; showing that equal descriptive coverage can be obtained when pursuing a more parsimonious analytical alternative is, of course, a different matter. According to recent efforts (cf. Collins 2002; Seely 2006; Chomsky 2013; 2015), the \bar{X} -theoretic notion of endocentricity derives from and dissolves into two more fundamental principles:

(34) A “label” is needed for interpretation at the interfaces.

(35) Labeling Algorithm, LA: Detect the structurally closest element of a given set.

The former is one hypothesis regarding the question why sets formed by Merge need to have a syntactic category in the first place; as the principle is stated, it doubtlessly needs sharpening and operationalizing. The latter is one hypothesis regarding the question how the grammar detects the label and what the most principled conception of the mechanism is, if one does not resort to notions like projection, feature percolation or the like. A leading idea is that an overarching principle of efficient computation, *Minimal Search*, guides the way in which a label is detected. More specifically, for a given structure $\{X, YP\} = \alpha$, the LA picks the simplex element as a label, i.e. the lexical item X. The reason for preferring X over YP within α is that YP is itself a set and the detection of the head within YP requires deeper search – which *Minimal Search* precludes. The following scheme illustrates the procedure:

(36) $\{X, YP\} \rightarrow \{X, YP\}$

That is, upon applying the LA to α , $\alpha = XP$. Notice that in the representation on the right in (36), the label is not structurally represented. It must be assumed that the effect of applying LA at the phase level stores the information of treating this (structurally invariably unlabeled) set as XP.

There are two more logical combinations Merge can create: $\{Y, X\}$ and $\{YP, XP\}$, and we will for the time being consider the latter configuration only.¹⁷ Chomsky (2013) suggests two strategies to repair the labeling problem of $\{XP, YP\}$ -structures: symmetry-breaking movement (based on ideas by Moro 2000) and sharing of a prominent feature. In the first case, the leading idea is that only the head of a movement chain is visible to syntactic operations,¹⁸ while lower chain members, defined as “occurrences” within a given syntactic context, are invisible. Consequently, LA fails to see a lower occurrence and its sister wins through. In (37) XP is the ensuing label after evacuation of $\{XP, YP\}$ by YP.

(37) $\{XP, YP\} \rightarrow YP \dots \{XP, \langle YP \rangle\}$

¹⁷ Cf. Chomsky (2013), following work by Alec Marantz, for the idea that the former always comprises a category-neutral root and a categorizer (little v , n , etc.). As a consequence, LA picks the item with grammatical features – the categorizer – and ignores the root which by assumption bears no grammatical features.

¹⁸ Cf. Chomsky (2000: 115). See already Chomsky (1995b: 304) for the conclusion applying to movement of traces, derived from independent arguments.

In the second case, there is an underlying assumption that the heads of the two terms must share a prominent feature and agreement must hold between them (for reasons pending clarification; cf. Chomsky 2013: 45). LA scans both these terms, finds one interpretable and one uninterpretable feature on the heads of both, and forms a complex label from them.

- (38) $\{XP, YP\} \rightarrow \text{Label}(\{XP, YP\}) = \langle F, F \rangle$, where X and Y bear F and AGREE with respect to F

We leave it to future research to decide on the question if the procedure of searching within two phrases in parallel is a viable option and compliant with *Minimal Search*. Chomsky (2013) appears to assume so and only structures involving AGREE between the heads yield a convergent output for the Conceptual Intentional systems.

By now these strategies have been employed in analyzing diverse phenomena, e.g. copular clauses with a contained small clause, successive-cyclic \bar{A} - and A-movement, EPP-raising in English, split topics in German, coordination, etc. (cf., a. o., Blümel 2012; Chomsky 2013; 2015; Seely et al. 2014; Ott 2011). Notice that the adoption of this framework opens a host of questions, and a myriad of phenomena formerly captured under the rubric “specifier” needs to be rethought and recast, an enterprise that is obviously beyond the scope of this paper. Here we would like to make one modest proposal within the approach regarding adverbial clauses in Slavic and German.

Blümel (2017) proposes a third strategy. He proposes that under narrow conditions, sets formed by Merge can remain **unlabeled**.¹⁹ Thereby the general validity of (34) is called into question. He argues that V2-languages feature a structure $\{XP, CP_{v_2}\}$ in which the “prefield” is defined as the category in the sister-position of CP_{v_2} . In the absence of the notion specifier, units formerly analyzed as contained in a V2-CP must receive a different treatment. He argues that in the labeling-analysis, placing an XP in the prefield fulfills the following interface condition:

- (39) Root declarative clauses must not be labeled.

What is the rationale behind (39)? There is a tight connection between root clauses and speech acts, so the latter have to be part of the picture. One way to think of (39) is to say that root clauses are typed in different ways, say, by their featural content in addition to a particular prosody. There might be conventionalized rules that connect the clause type with a given speech act. Pragmatically then, speakers make use of particular structural formats to convey certain meanings (proposition, question, etc.). Every such meaning is syntactically typed in a particular way. Root declaratives, on the other hand, might be an elsewhere case, i.e. the unmarked option speakers resort to when making assertions. These do not require any particular marking and, in fact, must not have any particular marking if (39) is true. That is, (39) is a strategy to **unmark** the clause – and this unmarked clause type is conventionally associated with assertions.

Now syntactically, placing an XP in the prefield emerges as one strategy to meet (39). The principle (34) needs refining in that a label is needed for interpretation, the ongoing derivation and more specifically: selection. This qualification was hinted at in Chomsky (2008: 141):²⁰

¹⁹ Cf. also Obata (2016) for an analysis of WH-scope marking in German.

²⁰ An anonymous reviewer queries about this passage, asking: “how are categories selected if labeling does not happen until the phase level? [...] How do [non-phase] heads select? Is the process somehow delayed? But isn't it then too late for selection?” An assumption we are making is that not only movement is free, but also base-generation, i.e. external Merge. If so, there are no syntactic constraints on the Merger of, say,

“Each S[yntactic]O[bject] generated enters into further computations. Some information about the SO is relevant to these computations. In the best case, a single designated element should contain all the relevant information: the label. [...] **the label selects and is selected in E[xternal] M[erge ...]**.” (our supplements and emphasis)²¹

Since V2-clauses are root phenomena, the derivation terminates, which renders labels superfluous, Blümel (2017) suggests. If root declaratives must not be labeled, prefield occupation is but a means to ensure this, given (35).²² Core properties of V2 follow, such as obligatory XP in the prefield (40),²³ XP’s heterogeneity (41) and the expletive prefield-*es* ‘it’ (42).

- (40) *Hat der Jens der Maria ein Buch geschenkt.
has the Jens the Mary a book given
[NB: Declarative interpretation/assertion]
- (41) a. [_{DP} Maria] hat t_{DP} den Mann gestern gesehen.
Mary has the man yesterday seen
‘Mary has seen the man yesterday.’
b. [_{AdvP} Gestern] hat Maria den Mann t_{AdvP} gesehen.
yesterday has Mary the man seen
c. [_{VP} Den Mann gesehen] hat Maria gestern t_{VP}.
the man seen has Mary yesterday
d. [_{CP[+fin]} Dass die Sonne scheint] hat Maria t_{CP} gesagt.
that the sun shines has Mary said
‘That the sun shines, Mary said.’
e. [_{CP[-fin]} Die Scheibe einzuschlagen] hat Maria t_{CP} beschlossen.
the window to-crush has Mary decided
‘Mary decided to crush the window.’
f. [_{PP} Über den Wolken] muss die Freiheit t_{PP} wohl grenzenlos sein.
above the clouds must the freedom PRT limitless be
‘Freedom must be limitless above the clouds.’

a verb with an argument DP. That is, external Merge is not feature-driven and Merge is not driven in any way by selectional needs of a head. How do selection restrictions come about, then? We would like to resort to the view expressed in Chomsky (2007: 111): “theta-theoretic properties depend in part on configuration and the semantic properties SEM(H) of the head (label). In the best case, they depend on nothing else (the Hale-Keyser version of theta theory). Assuming so, there are no s-selectional features or thetagrids distinct from SEM(H) [. ... T]theta-theoretic failures at the interface do not cause the derivation to crash; such structures yield “deviant” interpretations of a great many kinds.” There seems to us to be little benefit in postulating syntactic constraints on selectional configurations: These structures **are** interpretable, just in a deviant way. The passage above might be understood in the way that theta-theoretic configurations are interpreted only at the phase-level, i.e. at the point a predicative unit is transferred to the interfaces.

²¹ As Chomsky (2013: fn. 30) points out, labeling cannot be a prerequisite of computation under the assumptions of the labeling theory: Merge must be able to apply to unlabeled syntactic objects. Hence that condition must be dropped.

²² This is a simplification: The account must be slightly modified to accommodate subject-initial V2-clauses. Arguably, the condition (39) must be altered to include $\langle \phi, \phi \rangle$ as a possible label of root declaratives, next to exocentric ones. There are ways to achieve this: If C retains its ϕ -set in $\{SU, CP_{V2}\}$ and inherits it to its proxy in non-subject-initial V2 (cf. Legate 2011), all cases are included. Moreover, this way Germanic V2 would be assimilated to English root declaratives, which are arguably labeled $\langle \phi, \phi \rangle$ (formerly TP) if null-C gets dephased and disappears as in Chomsky (2015).

²³ Verb-first declarative clauses are acceptable in narratives and jokes (see details in Önnarfors 1997). This pragmatic restriction is indicative that German verb-first declaratives meet an interface condition different from/more complex than (39), hence are something more than “simple assertions.” It follows that, as far as (39) is concerned, the judgment of (40) as ungrammatical is justified.

- g. [_{AP} Schön] ist Maria t_{AP}.
 beautiful is Mary
 ‘Beautiful, that’s what Mary is.’

- (42) Es sind hier heute drei Leute aufgetaucht.
 it were here today three people up-dive
 ‘Three people showed up here today.’

Following Reis (1997) who endorses an adjunction view of embedded V2 in German, Blümel (2017) proposes that phenomena like (43), which, roughly put, are licensed in the presence of so-called bridge verbs, involve the introduction of the subordinate V2-clause by Pair Merge (Chomsky 2004) to yield a structure $\langle \alpha, TP \rangle$:

- (43) Fritz sagte, [_{α} es gäbe heute keinen Kuchen].
 Fritz said it gives today no case
 ‘Fritz said, there wouldn’t be any cake today.’

Crucially, unlabeled syntactic objects are restricted to specific contexts: root contexts, of which adjunction – here conceived as Pair Merge – can be a subcase.²⁴ In addition, contexts could qualify which exempt syntactic objects from being interpreted for some independent reason, i.e. objects which do not violate Full Interpretation (cf. Obata 2016 for this reasoning).

With this much in mind, consider the question posed at the outset of this paper: Why do adverbial clauses exhibit a strong tendency to feature complex subjunctors, in contrast to complement clauses? That is, what is the deeper reason of the CSA? In light of the labeling theory just presented, we would like to conjecture the following generalizations:^{25,26}

- (44) Adverbial clauses can be unlabeled configurations {PP, CP}

- (45) Complement clauses are always labeled.

One deeper reason behind the CSA is that the PP-part of the complex subjunctor effectively clogs the application of LA **because it can**, and no derivational or interface principles prevents it. The same is not true for complement clauses, which must receive a label as they enter into selectional relations. This way, we recast the analysis of adverbial clauses while providing an explanatory rationale behind CSA (cf. Hornstein & Nunes 2008 for an approach to adjuncts more generally, which is similar in spirit).²⁷

²⁴ But see the qualification below.

²⁵ Primarily based on historical data from German, Axel-Tober (2002) also argues that adverbial clauses are attached to PPs.

²⁶ Concerning (45), one might object that there are adverbial clauses filling the argument slot of preference predicates and factive verbs, as these occur not only with *dass* (‘that’)-, but also *wenn* (‘if’)-clauses. However, many authors, among them Fabricius-Hansen (1980); Hinterwimmer (2010); Kaiaty (2010); Thompson (2012); Schwabe (2013), argue that the *wenn*-clauses in question relate to a covert pronominal argument of the matrix verb and are hence adverbial clauses. An opposing semantic analysis has recently been put forward by Onea (2015). For the time being, we follow the standard view just mentioned, but would like to suggest the following analytical option: As proposed by Onea (2015), German *wenn* ‘if’ can be regarded a complementizer alongside *dass* ‘that’ and *ob* ‘whether.’ As such, it gives rise to CPs that can be selected by the relevant matrix predicates. On the other hand, *wenn*-CPs can also Merge with PPs, giving rise to unlabeled adverbial clauses. While this idea needs further scrutiny, it hints at a way to approach the fuzzy distinction between complement and adverbial clauses.

²⁷ Making use of a specific division of labor between Merge (the notion “concatenate” by) and labeling, these authors actually claim that adjuncts are structurally simpler than complements (and specifiers) – seemingly at odds with or even the opposite of what we say here. However, the difference is one of implementation

4.2 Complex subjunctors

So far we have shown that there are reasons to believe that the syntax of natural languages employs more exocentric structures than hitherto assumed.²⁸ We believe that a case can be made that adverbial clauses have this property and that the hypothesis can shed light on the CSA. Taking the transparent complexity of the subjunctors at face value, we propose that a subset of subjunctors are **phrasal**, full-fledged XPs (mostly PPs), not merely heads,

- (46) *German*
- a. [_{PP} *anstatt*] ‘instead’ (only non-finite)
 - b. [_{PP} *trotzdem*] ‘despite’
 - c. [_{PP} *seitdem*] ‘since’
 - d. [_{PP} *nachdem*] ‘after’
 - e. [_{PP} *damit*] ‘so that’

- (47) *Polish*
- a. [_{PP} *podczas gdy*] ‘while’
 - b. [_{PP} *dlatego że*] ‘because’
 - c. [_{PP} *po tym jak*] ‘after’
 - d. [_{PP} *przeto*] ‘therefore’
 - e. [_{PP} *zanim*] ‘before’

Each of these complex subjunctors comprises a prepositional element plus additional elements. The following list exemplifies the variation in the complexity:

- A nominal element *statt* ‘stead’ in (46a) ≈ *czas* ‘time’ in (47a);
- A demonstrative *dem* in (46b), (46c) and (46d) ≈ *tego/tym/to* in (47b), (47c) and (47d);
- An R-pronoun *da-* in (44e) ≈ *-nim* in (47e).

Add-ons to the prepositional element either directly or indirectly have a correlating function. Particularly, they correlate with the proposition that they co-occur with. It should be noted that, in German, adverbial subjunctors show three patterns of co-occurrence restrictions with complementizers:

- C = *dass* is optional, i.e. *dass* and null-C are in free variation with some XPs; cf. (48) (cf. Müller 1995):

- (48) a. Obwohl (dass) sie das Buch auf den Tisch legt ...
 although that she the book on the table puts
 ‘Although she puts the book on the table ...’
- b. Nachdem (dass) sie das Buch auf den Tisch legt ...
 after that she the book on the table puts
 ‘After she puts the book on the table ...’

and crucially hinges on particulars of definition of Merge, labeling and the like. Their and our approach converge with respect to the substantial theoretical point that adjuncts lack a label.

Furthermore, the issue depends on a definition of complexity/simplicity: for Hornstein & Nunes (2008), all merely concatenated structures are simpler than those that in addition have been labeled. In our system, syntactic operations do not “add up.” A comparison between their approaches and ours thus proves difficult.

²⁸ To be fair, exocentric structures were commonplace until the advent of the generalization of \bar{X} -theory to functional projections in Chomsky (1986): Any sentence, whose structure could be described by rules like $S \rightarrow NP, VP$ was exocentric.

- C = *dass* is obligatory with some XPs; cf. (49):

- (49) a. Ohne *(*dass*) sie das Buch auf den Tisch legt ...
without that she the book on the table puts
'Without her putting the book on the table ...'
- b. ... als *(*dass*) sie das Buch auf den Tisch legt.
as that she the book on the table puts
'...rather than her putting the book on the table.'
- c. ... anstatt *(*dass*) sie das Buch auf den Tisch legt.
instead that she the book on the table puts
'...instead of her putting the book on the table.' (comparative)

- C = *dass* is impossible with some XPs; cf. (50):

- (50) a. ...(deswegen) weil (?**dass*) sie das Buch auf den Tisch legt.
because.of.this because that she the book on the table puts
'...because she puts the book on the table.'
- b. ...(in dem Moment) da (?**dass*) sie das Buch auf den Tisch legt.
in the moment as that she the book On the table puts
'...in the moment when she puts the book on the table.'
- c. ...(zu der Zeit) als (?**dass*) sie das Buch auf den Tisch legt.
at the time as that she the book on the table puts
'...at the time when she puts the book on the table.' (temporal)

Note that clauses introduced by the subjunctors in (48) can only be finite; cf. (51).

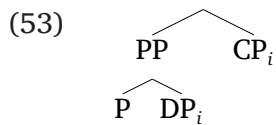
- (51) a. *Obwohl (*dass*) das Buch auf den Tisch (zu) legen ...
although that the book on the table to put.INF
- b. *Nachdem (*dass*) das Buch auf den Tisch (zu) legen ...
after that the book on the table to put.INF

On the other hand, clauses introduced by the subjunctors in (49) become necessarily non-finite in the absence of *dass*; cf. (52).

- (52) a. Ohne (**dass*) das Buch auf den Tisch zu legen ...
without that the book on the table to put.INF
'Without putting the book on the table ...'
- b. ... als (**dass*) das Buch auf den Tisch zu legen.
as that the book on the table to put.INF
'...rather than putting the book on the table.' (comparative)
- c. ... anstatt (**dass*) das Buch auf den Tisch zu legen.
instead that the book in the table to put.INF
'...instead of putting the book on the table.' (comparative)

This difference with respect to the availability of non-/finiteness is indicative that the presence of *dass* is required in case a subjunctor allows for both finite and non-finite clauses/TPs, hence is a means of desambiguation; cf. (49) vs. (52). If there is no choice anyway, *dass* is optional but standardly omitted; cf. (48). To explain the ungrammaticality of *dass* in cases like (50), we will propose to analyze them as (hidden) relative clauses with *weil*, *da* and *als* located in C; see Section 4.3.1.

For subjunctors as in (46) and (47), the structure of adjunct clauses is something like (53) and (54) (compare with this the traditional analyses (25) and (27)):



(54) $\{PP, CP\} = \alpha$

More specifically, in most cases the PP embeds a demonstrative DP (e.g. German *dem* ‘this.DAT,’ Polish *tego* ‘this GEN’) or a nominal (e.g. German *statt* ‘stead,’ Polish *czas* ‘time’). This DP or nominal entertains a relationship to the CP that we might implement in terms of either coindexation (in case of cataphors in D) or semantic restriction (in case of abstract NPs/DPs). The demonstrative or the nominal itself is a (semantic) placeholder which needs to be explicated, and it is the CP which fulfills the function of explicating it.

It should be added that some items seem to be **lexically** cataphoric, i.e. they cannot freely function as either an anaphor or cataphor but must obligatorily precede the “antecedent.” While this is not the case in German and Polish (where the *d*- and *t*-pronoun, respectively, can be both cataphoric and anaphoric), Russian exhibits a systematic distinction between the strictly cataphoric pronoun *tot* (as in *po-tomu čto* ‘because’) and the strictly anaphoric pronoun *étot* (as in *po-étomu* ‘because of this’).

Returning to (53), the PP and the CP are hierarchically on a par. While traditional analyses highlight the prepositional nature of adverbial clauses, our analysis does not attribute a privileged or dominant status to either term in $\{PP, CP\}$, thus expresses both the prepositional and the sentential character of these clause types. Due to \bar{X} -theoretic constraints, previous analyses were forced to structurally subordinate the CP. But the intuition that the sentential component partakes in the nature of the whole adverbial clause has long been around. As Müller (1995: 85) points out:

“Actually, there is diachronic evidence that all finite adjunct clauses involve a ‘doubly-headed’ structure in German. Lenerz (1984: 110 ff.) has pointed out that in Old High German, adjunct clauses were clearly decomposable into a preposition (-like element), belonging to the matrix clause, and an embedded genuine *daß*-clause, the two elements merging only later in the development of German. Further evidence for splitting the left periphery of adjunct clauses into a CP with a semantically empty complementizer as its head, and a higher XP the head of which contains the relevant semantic information (temporal, consecutive, causal, etc.) can be gained from French or Russian. ...”

In the current context, the notion of a double head of adjunct clauses can be reinterpreted in a way current theorizing allows (if arguably not intended and/or envisaged in this way by Lenerz/Müller).

Notice that (53) raises a labeling problem, given the LA: Neither P nor C labels α . The problem is resolved neither by XP-movement nor by sharing of a prominent feature. We claim that the labeling problem remains unresolved, i.e. α is exocentric, cf. also Hornstein & Nunes (2008) on adjuncts more generally. Absence of a label is arguably the null hypothesis for unselected clause types like adjunct clauses (or root clauses; cf. Emonds 2004; 2012):

- (55) **Adjunct Exocentricity**²⁹
Adjunct clauses can remain unlabeled.

Notice that in languages like German, there is a potential corollary of (55): Can uncategorized syntactic objects occupy the German prefield?

- (56) [_{α} Bevor Fritz den Kühlschrank aufmacht], schmiert er Marmelade aufs Brot.
before Fritz the fridge opens spreads he Jam on-the bread

There are two possible responses to this observation. One holds that (56) is what it looks like: an adverbial clause in the prefield, occupying SPEC-CP (in traditional parlance). In that case, there appear to be syntactic objects which simultaneously remain unlabeled throughout and which are introduced into the derivation by Set Merge. This might not be a problem after all insofar as prefield occupation is special in that it does not represent an intermediate step of the derivation but in fact its termination. If it is true that elements require a label which are introduced in intermediate stages and which partake in selectional relations, the element to halt the derivation might not be contingent on the syntactic category. That is, we have an exception which however, might be a principled one.³⁰ Adopting the approach to V2 by Blümel (2017), we can say that such structures involve $\{\alpha, CP_{V2}\} = \beta$, where both α and β are unlabeled. An anonymous reviewer asks why it is not CP_{V2} which wins through in this structure, because, impressionistically, *Minimal Search* detects it before the unlabeled sister α . Arguably, the notion *Minimal Search* needs to be sharpened. Here we would like to contend that the labeling procedure stops immediately at the point of failure, i.e. there is no “comparison” between α and CP_{V2} in the search procedure: β is inspected, no label is found, search ends.

The second approach to (56) treats it as an instance of left-dislocation. In that case, (56) is analytically on a par with (57) modulo the overtiness of the proform *da* ‘there.’

- (57) [_{α} Bevor Fritz den Kühlschrank aufmacht], da schmiert er Marmelade
before Fritz the fridge opens there spreads he jam
aufs Brot.
on-the bread
‘Before opening the fridge, Fritz spreads jam on the bread.’

For now we leave open the issue of the precise analytical details.

Merger of PP – a complex complementizer – is but **one** strategy to suppress labeling of an adjunct.

4.3 Simplex subjunctors

All languages investigated exhibit a number of (apparently) simplex adverbial subjunctors. Table 5 lists some examples.³¹

²⁹ Intended are clauses that are base-generated as adjunct. Extraposed complement clauses like the following might be right-adjoined (cf. Biring & Hartmann 1995) and still bear a label. *Fritz hat t₁ gesagt [_{CP} dass es regnet]_i* (‘Fritz said that it rains.’)

³⁰ The “prefield”-es is an equally likely candidate: It does not participate in agreement relations and hence it might lack any of the ϕ -features and, in fact, a syntactic category altogether. Its existence is that of a mere placeholder to execute the suppression of LA in $\{es, CP_{V2}\}$.

³¹ Syntactic differences suggest that German exhibits two distinct though homonymous items *weil*: While *weil*₁ ‘since’ occurs in clauses with the finite verb in final position (“V-last”), *weil*₂ ‘because’ introduces clauses with the finite verb in second position (V2), cf. Steinbach & Antomo (2010). And whereas *weil*₂-clauses are restricted to the postposition relative to the matrix clause (rendering them largely synonymous with clauses introduced by *denn* ‘because’), clauses introduced by *weil*₁ may occur either before or after the matrix. See more details in Section 4.3.2.

- (60) *German* (Holy Bible, 2 Samuel 13:2)
 Und es war dem Amnon wehe um seiner Schwester Tamar willen, **bis dass**
 and it was the Amnon sorry for his sister Tamar sake until that
 er sich krank fühlte.
 he REFL sick felt
- (61) *German* (DeReKo, St. Galler Tagblatt, 10.11.2007, p. 55)
 Aber auch er war zufrieden und hätte gewünscht, das Slammen hätte sich
 but also he was content and had wished the slamming had REFL
 hingezogen, **bis dass** der Morgens tern aufgeht.
 continued until that the morning star Rises
 ‘But he, too, was content and wished the slam had continued until the morning
 star rises.’

As concerns Polish, the same complex analysis seems appropriate for, e.g. *dopóki* ‘until’ as illustrated in (10) above, at least when taking into account its morphological structure, as it consists of the preposition *do* ‘to’ and *póki*.³² Presumably, *dopóki* enters syntax as an entire chunk of syntactic structure, namely a PP-CP complex which then selects a suitable TP; cf. (62).³³

- (62) *Polish*
 [_{PP} *do* [_{DP} *póki*]] [_{CP} \emptyset ...]

This analysis extends to more items in Table 5 under the assumption that relational (including deictic) and manner adverbs are underlyingly null-headed PPs³⁴ comprising elements that answer for the relational and manner semantics, respectively; see, a. o., Wunderlich (1996: 16); Reyle et al. (2007: 580); Alexeyenko (2015: 93–100). If this is correct, we are faced with PP-CP complexes in all those “simplex” cases of subjunctors that involve so-called adverbs like German *ehe*³⁵ ‘before’ or Polish *skoro*³⁶ ‘as soon as’; cf. (63) and (64).

- (63) *German*
 [_{PP} *ehe*] [_{CP} \emptyset ...]

- (64) *Polish*
 [_{PP} *skoro*] [_{CP} \emptyset ...]

Finally, there is a number of items in Table 5 identical to WH-elements, for instance German *wenn* ‘if’ or Polish *kiedy/gdy*³⁷ ‘when.’ The German item which introduces conditional

³² Diachronically, the element *póki* is itself complex: it is made up of the preposition *po* and a former accusative pronoun **ky* (cf. Vasmer 1955: 388). Today, *póki* occurs as a shorter, synonymous variant of *dopóki*. Since the diachronic complexity of *póki* is certainly “invisible” to modern speakers, this shorter variant is arguably best captured under the same analysis as the longer form, but with a zero preposition.

³³ Presumably, the former accusative pronoun **ky* was the head of a DP and functioned as a correlate. As it “melded” into one word form with (*do*)*po*-, one might as well assume a fused category P/D for the whole word form from a synchronic point of view.

³⁴ Note that the analysis would be the same under the assumption of, e.g. an AdvP instead of a PP.

³⁵ Diachronically, *ehe* roots back to the comparative form of an obsolete adjective/adverb with the meaning ‘early.’

³⁶ Polish *skoro* is related to, i. a., Russian *skoro* ‘soon, fast,’ -o being a morphological default (adverb) marker. From a diachronic perspective, -o is a nominal case marker, which supports the proposed analysis that there is a noun element. We are grateful to an anonymous reviewer for this remark.

³⁷ Though differing slightly in distribution today, *kiedy* and *gdý* have the same diachronic origin and are mere phonological variants of each other (Czech and Russian, for instance, have only one corresponding form, namely *kdy* and *kogda*, respectively).

clauses can avail itself, among others, of a temporal reading (cf., a. o., Volodina 2006) and exhibits asymmetries with the less ambiguous variant *falls* ‘if/in case.’ Taking the analogy to WH-elements seriously, it does not seem too bold a claim to analyze the relevant forms as WH-items located to the left of C, the latter head being present but obligatorily null. Concerning their category, it should be noted that their non-WH-counterparts – German *dann* and Polish *wtedy* ‘then,’ respectively – are deictic pronominal adverbs. As discussed before, such adverbs can be analyzed as PPs. We conclude, therefore, that the relevant WH-items are PPs, too. Given this, the examples in question turn out to be structurally identical to the ones discussed before as they are PP-CP complexes; cf. (65) and (66).

(65) *German*
 [_{PP} *wenn*] [_{CP} ∅ ...]

(66) *Polish*
 [_{PP} *gdy/kiedy*] [_{CP} ∅ ...]

One analytical option that we see for superficially simplex subjunctors like German *weil*₁ ‘because,’ *da* ‘since’ and (temporal) *als* ‘when’³⁸ is the following: The syntax of these adverbial clauses could be assimilated to the one of (restrictive) relative clauses in that a silent operator occupies the sister position of CP as sketched below, while the relevant subjunctors are C-heads. Arguably, there is no AGREE-relationship between the C-heads and these operators, hence the containing unit remains unlabeled, unlike in relative clauses; cf. (67).

(67) *German*
 [OP] [_{CP} {*weil*₁/*da*/*als*} (**dass*) ...]

Some of these examples may function as unambiguous relative clauses when a suitable head noun in the matrix clause is available such as *der Grund* ... ‘the reason’ or *der Zeitpunkt* ... ‘the point in time.’ This usage is however strictly optional. Whenever a head noun is absent, the operator must relate to the proposition (in the case of *weil* and *da*) or the time variable (in the case of *als*) of the main clause.

In this section we have argued that the analysis of Polish and German adverbial clauses features a structure PP-CP, i.e. a complex subjunctor, despite appearances. It is the presence of this complex structure which leads to a labeling failure. A final remark: It appears plausible to assume that these adverbial clauses are introduced by Pair Merge, analogous to the analysis of embedded V2-clauses in German alluded to above. That is, the unlabeled adverbial clause α is Pair Merged to the TP-level to yield $\langle \alpha, TP \rangle$. We assume that the operation is in principle available to syntactic objects (sets formed by Merge), be they labeled or not – which is in fact quite consistent with the assumptions in Chomsky (2013), and a necessary ingredient of the system.

4.3.2 Parataxis

It is an intriguing fact to note that some apparently simplex subjunctors add a restriction to the adverbial clauses they introduce which is absent with other subjunctors: The relevant clauses occur only in postposition relative to the matrix clause. Putting them before the matrix renders the respective sentence ungrammatical. In Table 5, this applies to Polish *bo* ‘because’ (cf. Wróbel 2001: 299) and to German *denn/weil*₂ ‘because’; cf. (68) and (69), respectively. Note that causal clauses featuring German *weil*₁ (with the finite verb in

³⁸ There is a comparative variant, which we set aside here; it obligatorily co-occurs with the C-head *dass*.

final position, so-called “V-last”) may be used either before or after the matrix clause as shown in (70).

- (68) a. Nie poszedłem na spacer, **bo padał deszcz.**
 NEG went on walk because fell rain
 ‘I didn’t go for a walk because it was raining.’
 b. ***Bo padał deszcz,** nie poszedłem na spacer.
 because fell rain NEG went on walk
- (69) a. Er kam nicht, **denn/weil₂ er war krank.**
 he came NEG because he was sick
 ‘He didn’t come because he was sick.’
 b. ***Denn/Weil₂ er war krank,** kam er nicht.
 because he was sick came he NEG
- (70) a. Er kam nicht, **weil₁ er krank war.**
 he came NEG since he sick was
 ‘He didn’t come since he was sick.’
 b. **Weil₁ er krank war,** kam er nicht.
 since he sick was came he NEG

Regarding *weil₂*-clauses as in (69a), Steinbach & Antomo (2010: 12–13), following Gärtner (2001), argue for a paratactic projection π P, the head of which is *weil₂*. The π -head coordinates two main clause CPs (both V2).³⁹ This structure implies that the causal CP (CP₁) has to occur in postposition relative to (what seems to be) the matrix CP (CP₂); cf. (71). Thus, much like *denn*, *weil₂* is a paratactic relator located between two co-ordinated CPs.

- (71) *German*
 CP₂ [_{π P} *denn/weil₂* CP₁]

The π P analysis captures Polish *bo*-clauses, too. It excludes German *denn*, *weil₂*, and Polish *bo* from the list of “problematic” items. This concludes our discussion of subjunctors that appear to defy an analysis in terms of a PP-CP-structure.

5 Conclusions

This article has argued for a syntactic treatment of adverbial clauses as structures of the format {PP, CP}, which have no prominent element and which crucially do not resort to any of the labeling strategies of XP-YP-structures in Chomsky (2013). As a consequence, the application of the labeling algorithm fails and delivers no label for adverbial clauses. The account given for the complementizer-subjunctors asymmetry is thus that complementizer clauses invariably feature simplex complementizers because selectional requirements leave no other choice but a labeled format {C, TP} = CP. Adverbial clauses, by contrast, do not enter into selectional relations and are thus in principle exempt from being labeled. Set Merge of a PP to a CP effectively yields an unlabeled structure, while there is for the most part a cataphoric relation between a demonstrative (-like) element in the DP and the adverbial-clause CP. We suggested that the entire {PP, CP}-complex enters the derivation by Pair Merge.

³⁹ In a similar vein, Wöllstein (2008) suggests a Kon[nexion]P.

Abbreviations

NOM = nominative, ACC = accusative, DAT = dative, GEN = genitive, INS = instrumental, LOC = locative, SG = singular, PL = plural, 1 = first person, 2 = second person, 3 = third person, SUBJ = subjunctive, INF = infinitive, NEG = negation, PRT = sentence/modal particle, REFL = reflexive

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Competing Interests

The authors have no competing interests to declare.

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