Bloom, Barthe. 2024. Integration, resumption, and juxtaposition: The relation between Early New High German preposed adverbial clauses and their host. *Glossa: a journal of general linguistics* 9(1). pp. 1–42. DOI: https://doi.org/10.16995/glossa.16353

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Integration, resumption, and juxtaposition: The relation between Early New High German preposed adverbial clauses and their host

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In Early New High German, preposed adverbial clauses could be juxtaposed, resumed, or fully integrated into their host sentence. This is thought to be representative of a continuum and a diachronic development of clause-integration. The current study evaluates this diachronic continuum by testing predictions that follow from it by statistically evaluating the distinctiveness between the patterns, focusing on the adverbials' function within the host sentence and their role in the narrative structure. It is thereby the first study on this issue to systematically analyze data from a larger corpus of narrative texts.

The results find first support that what has been called adverbial resumption is not a unified phenomenon. Instead patterns with *da* 'then' and patterns with *so* 'so' should be distinguished: The former is associated with narrative summaries and tends to combine with sentences introduced by *da* or *als*, expressing temporal simultaneity and sequence; the latter occurs predominantly with V1-clauses and with clauses introduced by the conjunctions *ob, so* and *wann*, is used to introduce alternative events, and is not associated with the rapid temporal progression of the story.

The results indicate a high degree of functional and contextual similarity between integration and *da*-resumption, which supports a diachronic development of *da*-resumed adverbial clauses into integrated ones. This is not the case for *so*-resumption. Finally, juxtaposition turns out to be highly similar to the pattern with *so* and has not developed its own niche.

The results support a competition scenario between integrated adverbial clauses and those resumed by *da* but not with patterns with *so*. As such, the study paints a more detailed picture of the continuum of clausal integration.

1 Introduction

In Early New High German, preposed adverbial clauses (henceforth: *PACs*)[1] could be realized in a variety of positions in relation to the sentence to which it semantically contributes, which I will here call the *host sentence*, or *host* for short. This is illustrated in (1–3).

(1) **Juxtaposition**
Da der swartz ritter das gewar wart ***er*** *greiff yne mit dem helm*
then.CONJ the black knight that noticed was **he**.SBJ grabbed.3.SG him with the helmet
'And when the black knight noticed that, [**he** grabbed] him by the helmet.' (P, 45rb)[2]

(2) **Resumption**
vnd da alle ding bereyt waren ***da*** *gieng sie zů dem Peter*
and then.CONJ all things prepared were **then** went.3.SG she.SBJ to the Peter
'And when all things were prepared, [**then** went she] to Peter.' (Mag, 670)

(3) **Integration**
vnd als er geessen het růfft er Lüpoldo
and when he eaten had called.3.SG he.SBJ Lüpoldo
'And when he had eaten [called he] Lüpoldo.' (F, 58)

In (1), the PAC stands to the left of a declarative clause in which the subject *er* 'he' precedes the finite verb, viz. the subject occupies the prefield and the PAC is simply placed syntagmatically adjacent to its host. In (2), the PAC similarly precedes the host, but the prefield is filled not by an argument of the finite verb but by an element that has been considered to be an adverbial resumptive (Meklenborg 2020; Catasso 2021a; b), viz. a place-holder or pronoun that takes up an adjunctive constituent of the previous discourse (Haegeman et al. 2023). While the PAC is syntagmatically adjacent to its host, it is itself referenced within it. In contrast to (1–2), the PAC in (3) is directly adjacent to the finite verb of the host. With the verb in declarative clauses typically occurring as the second constituent, it is common in Early New High German, as it is in Present-Day German, that the subject follows the finite verb whenever another element occurs preverbally, i.e., in the so-called *prefield* of the sentence. This is the case in (3). As such, the PAC is structurally a part of the host sentence.

These patterns represent different degrees of integration, reaching from simple juxtaposition (1) via resumption (2) to full integration (3) (Lehmann 1988; Fabricius-Hansen 1992). This

[1] Note that this abbreviation should not be confused with the same abbreviation used in generative literature referring to peripheral adverbial clauses (e.g., Haegeman 2012; Frey 2020).

[2] Brackets are used to signal the representation of the original word order. The subject, the person and number of the finite verb and, if present, the non-finite verb of the host are reflected in the glosses.

continuum is thought to be reflective of the diachronic development of the position of adverbial clauses (König & van der Auwera 1988; Axel 2004; Lötscher 2006), visualized in **Figure 1**.

Juxtaposition > Resumption > Integration

Figure 1: Continuum of clausal integration.

While some empirical support has been provided (Axel 2004), there are still open issues concerning the applicability of this in the history of German PACs. Importantly, it has been claimed that the element *so* in Early New High German could also function as an adverbial resumptive (Meklenborg 2020; Catasso 2021a), as illustrated in (4).

(4) *ob sie noch kein man haitt **so** wil ich einen man mitt bringen*
if she not.yet no man has **SO** want.1.SG I.SBJ a man with bring.INF
'If she does not have a man yet, [**so** want I] bring a man with me.' (P, 119va–119v)

The status of *so* as a resumptive has however been questioned (Axel-Tober 2023; Bloom fthc.a), and it is thus uncertain whether or not this pattern should be considered as part of the continuum. It should be noted that throughout the paper, I will refer to the patterns in (2) and (4) as *da*-resumption and *so*-resumption respectively. This terminological choice is merely for consistency sake and is not intended to promote a particular view. If this *so* is indeed categorized as a resumptive (see Axel-Tober 2023 and Bloom fthc.a for a different view that will be discussed in Section 4), it raises the question which of the resumptive patterns is part of this continuum. If both are involved, it must be investigated whether they were out-competed by integration at the same rate and in the same contexts, or whether this should be treated as two distinct competition scenarios.

This study takes a constructional perspective to the matter at hand in which the linguistic inventory forms a dynamic network, in which associations between constructions are important. The consideration of such connections *between* linguistic patterns has as advantage that the effect one pattern has on the other can be formulated and evaluated. For example, in this paper it allows us to evaluate the question whether the negative correlation between the frequencies of multiple patterns over time in fact instantiates a scenario of competition potentially resulting in substitution and whether *so*-resumption should be considered independently from the other major resumption pattern, i.e., *da*-resumption.

This study specifically tests two predictions that follow from the diachronic hypothesis of clausal integration: If integration took over from resumption, it is expected that at the time the integration takes over (i.e., in Early New High German (Axel 2004)), resumption and integration were conceived of as functionally 'the same' – so similar that they were perceived as instances

of the same construction (see e.g., Zehentner 2019). Moreover, juxtaposition – which remains a possible pattern to this day though strongly functionally restricted (e.g., Pittner 1999; 2013) – must have already developed its own niche, as it must have already been ousted by resumption at this stage in most contexts.

These two predictions are statistically evaluated by testing the differences and overlap between the patterns (i.e., their lateral relations of similarity and contrast) by means of random forests and partial dependence plots. For this purpose, the PACs' function within the host sentence – estimated by the conjunction that introduces it – and the narrative context in which it is used, specifically, the narrative speed with which it is associated (Bloom fthc.b) are considered.

First, the results indicate that what has been called adverbial resumption is not a homogeneous phenomenon but confirms that two constructions should be distinguished: patterns with *da* (2) 'then' and patterns with *so* 'so' (4). While the *da*-resumption is strongly associated with narrative summaries and tends to combine with sentences introduced by *da* or *als*, expressing temporal simultaneity and sequence; patterns with *so* are predominantly found with V1-clauses (so-called *non-canonical* adverbial clauses) and with clauses introduced by the conjunction *ob*. These are typically contexts in which alternative events are introduced. The sentences with *so* are not associated with the rapid temporal progression of the story but with descriptive pauses and scenes that advance the story more slowly. The dichotomy is in line with previous research.

Second, integrated PACs are functionally and contextually highly similar to those that are resumed by *da* in Early New High German, but they are clearly distinctive from those followed by *so*. These results support a development along the continuum from *da*-resumption to integration. These results are in line with the expectation one may have from a Present-Day German perspective, as *da*-resumption is no longer productive while *so*-resumption with conditional/ concessive and concessive conditionals survived, albeit with register constraints.

Thirdly, the results indicate that juxtaposition has not fully developed its own niche at this point in time and is very similar to the pattern with *so*. This nuances the scenario of a simple continuum from juxtaposition to integration via resumption and is compatible with Lötscher (2006)'s account that resumption might not have completed grammaticalization before integration starts to take off, although it may not apply to resumption in general.

In sum, these results support for a development from resumption to integration restricted to patterns that were initially formulated with *da* in the prefield of the host. The spread of integration in the Early New High German period is functionally and contextually constrained and primarily takes off in temporal contexts that progress the story rapidly.

In Section 2, I will discuss the notion of constructional competition. Section 3 presents the previous research on the diachronic continuum of clause-integration in German and Section 4 addresses adverbial resumption in German. Section 5 introduces the methodology used in the

present study. The question whether resumption should be treated as a unified phenomenon is evaluated in Section 6. Section 7 considers whether the data support a development from resumption to integration, and Section 8 examines juxtaposition and whether it has developed its own niche in Early New High German. The conclusion is presented in Section 9.

2 Constructional competition

As mentioned, the study takes a usage-based, constructionist approach (e.g., Goldberg 2006; Diessel 2019). In this approach, constructions are seen as the basic building blocks of language that come in different degrees of schematicity and abstraction. The knowledge of constructions is represented by the language network, viz. the *constructicon* (Jurafsky 1991: 8). This constructicon is best seen as a nested network in which constructions are not only defined by various types of associations (symbolic, sequential, and taxonomic – e.g., inheritance relations) but are also associated with each other (Diessel 2019; 2023). The links between constructions, which go by various names (e.g., lateral relations, horizontal relations, constructional relations, sister links, etc.), can be viewed in terms of similarity and contrast (Diessel 2019: 200, 248); they are in essence analogical relations (Bloom 2021: 41–47). They are connections grounded in the recognition of structural similarity and contrast (Holyoak 2012).

The strand of Construction Grammar that focuses the diachronic perspective (e.g., Traugott & Trousdale 2013; Traugott 2018; Torrent 2015; Noël 2016; De Smet et al. 2018; Zehentner 2019; Petré 2019; Sommerer & Hofmann 2021) views linguistic change as the reconfiguration of the constructicon. Thereby, the relations between constructions (among other factors) restrict what type of linguistic change is likely. For example, independent constructions that are similar in many ways are likely to converge, as for example evident in cases of constructional contamination (Pijpops & Van de Velde 2016), or the development of VO word order in English subject relative clauses (Bloom 2022).

Of course, there is a wide range of possible ways in which the network can reconfigure, but important here is the possibility of two (or more) constructions to be in competition (e.g., Zehentner 2019; Sommerer & Hofmann 2021). This may lead to the substitution of one construction by another or the remaining co-existence of them, typically when they each develop their own niches, i.e., differentiation (Fonteyn & Maekelberghe 2018; Zehentner & Traugott 2020; Traugott 2020, but see also De Smet et al. 2018).

Possible competition scenarios are also restricted by their position in the constructicon and their connections to each other and other constructions, i.e., by lateral relations. For example, unconnected constructions are extremely unlikely to compete with each other. Consider the development of *wherein* in the period 1880–1980, which drops in frequency in American English. At the same time, the use of *file* increases (see **Figure 2**). This is significant with a Kendall's tau correlation test (alternative = less: $z = -3.2$, $p < 0.001$, $tau = -0.75$).

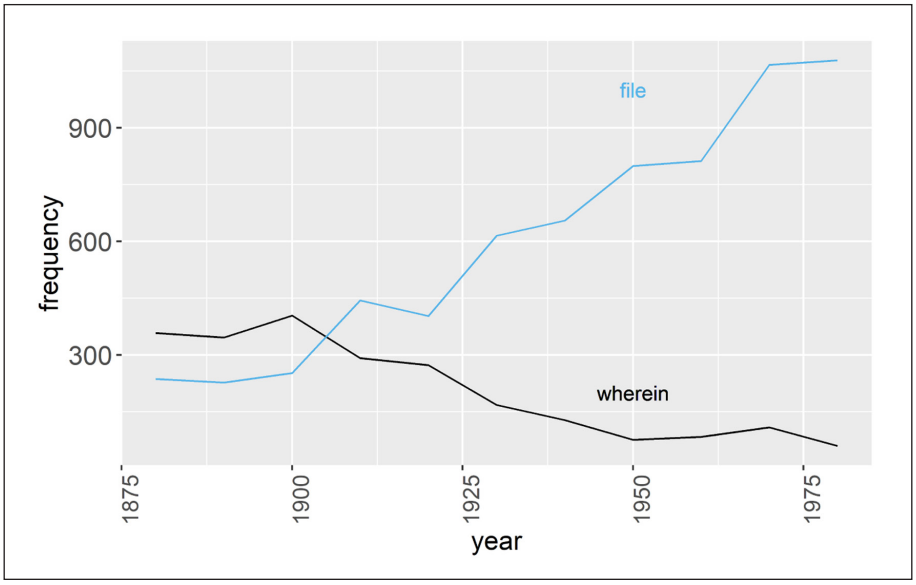

Figure 2: Spurious correlation between *file* and *wherein* in the COHA (Davies 2010).

Despite the significance, this is, of course, a spurious correlation that is not indicative of an actual competition scenario: *File* and *wherein* are not conceived of as part of the same envelope of variation. This is precisely because of a lack of lateral relations between the two: They are different in meaning, in form completely dissimilar, do not systematically share syntagmatic relations, nor occur in the same slots of the same constructions.

Moreover, lateral relations impose restrictions on particular competition scenarios. For example, for one construction to substitute another, they need to be conceived of as "the same" – so similar that they are perceived as instances of the same construction – in particular contexts at a certain point in the history, i.e., are functionally equivalent. This is not to say that no contrast may exists, but that functional differences are irrelevant or not activated in the given context. Contrast is inextricably linked to similarity (Diessel 2023: 57–60). If there is no contrast between constructions, i.e., in case of complete 'sameness', one would not speak of two separate constructions but simply of one. This is line with the principle of 'no synonymy', which captures the idea that if two linguistic patterns differ in (syntactic) form, the two must vary in semantic and/or pragmatic meaning (Goldberg 1995: 67, but cf. Uhrig 2015). The importance of an earlier existing lateral relation of contrast may itself become weakened. Constructions may become more similar, either by attraction (De Smet et al. 2018) (i.e., mutual analogical transfer) and/or by pressures that suppress the contrast between the constructions, supported by the wider constructional network and cognitive factors such as ease of processing, and social motivations (Croft 2000: 73–74, Rosenbach 2008: 32, Hilpert 2018: 150). This may lead to the selection of a pattern that originally was dispreferred in a particular context.

A possible counter to the idea that substitution requires such similarity is one of the examples in D'hoedt & Cuyckens (2017) and De Smet et al. (2018), namely the development of secondary predicate constructions (SPC) with *consider*, as illustrated in (5).

(5) a. There was a time when lesbians **considered** her **as a woman with internalized sexism of outstanding proportion**.
b. Hollywood directors and producers **considered** him **difficult to work with**.
(De Smet et al. 2018: 212)

The sequence *consider as* drops from 96.4% in 1710–1780 to 70.4% in 1780–1850 to 24.9% in 1850–1920 and is replaced by *consider ø*. In the first time period, *consider as* had a strong preference for NP-SPCs and *consider ø* starts out with a preference for non-NP SPCs. Despite clear contextual preferences, *consider ø* replaces *consider as* even with NP-predicates (De Smet et al. 2018). This seems like a proper counter example, one in which there is substitution despite well-represented contrast. However, simultaneous to the substitution process, the two patterns with *consider* become more similar regarding the type of SPC they can take. This is in light of the more abstract [V + *as*-SPC] and [V + ø-SPC] remarkable, because their preference for the type of SPC remains stable. Over time, thus, the contrast between the two constructions becomes less pronounced, independent from their parent constructions.

As such, it does not negate the idea that lateral relations of similarity are required between constructions: Lateral relations of similarity and contrast are two sides of the same coin. Competition scenarios in which contrast is 'facing upwards' are less likely to result in substitution as they involve either attraction or suppression of contrast which then causes the flipping of the coin.

In relation to the integration-continuum, it is here assumed that juxtaposition, resumption and integration are related to each other. Most crucial to the assumption is that the constructions share a similar function of connecting a proposition that provides adjunctive information to the host, i.e., an adverbial clause, in such a way that the adverbial clause has a projective force (Diessel 2019). Simultaneously, their forms are largely similar with the exception of the potentially intervening elements between the PAC and the finite verb of the host. The degree to which similarity versus contrast is central will be evaluated statistically, and by doing so, the study will evaluate the predictions that follow from the integration-continuum, which is explained in more detail in Section 6.

3 A diachronic continuum of clause-integration

König & van der Auwera (1988: 107) state that it is "generally assumed that [juxtaposition, resumption, and integration] are linked as stages in a historical development." For German specifically, e.g., Horacek (1957: 428–429) claims that the classification of the clause

connections juxtaposition, resumption, and integration is historically justified: "Auch als der Vordersatz bereits den Charakter des Nebensatzes hat, muß sein Satzgliedwert noch lange durch Aufnahmewörter verdeutlicht worden." (Horacek 1957: 429).[3] The evidence for this lies primarily in the observation that integration was the exception in older stages of German but highly frequent in New High German, whereas juxtaposition is rare in later stages of German (Hammarström 1923: 49–55).

The timing of the integration of PACs in the history of German, which is crucial for the window of time investigated in this paper, has been pinpointed by Axel (2004: 40) more precisely. Based on roughly 2700 sentences, she reports on the frequencies of three patterns:

i. Non-integration: PAC XP V_{fin}
ii. Resumption: PAC resumptive V_{fin}
iii. Integration: PAC V_{fin}

She shows that resumption was prevalent in the period 1450–1500 and that its use decreases between 1550–1600, while integration simultaneously increases drastically (Axel 2004: 40), see **Figure 3**. This is taken as an indication of the increasing syntactic integration of preposed adverbial clauses in the sentence, which has thus been argued to not have happened before the 16th century. Juxtaposition is highly infrequent and seems to have been near ousted by the Early New High German period. If the generalizations made by Axel (2004) and the negative correlation is reflective of one competition scenario, it follows that integration and resumption must have been conceived of as highly similar at the time resumption takes over. At the same time, juxtaposition must have developed its own niche at this point. A potential niche comes from a modern perspective, as juxtaposition in Present-Day German is thought to be restricted to adverbial clauses that are counterfactual, express (ir)relevance conditions, or modify speech acts (e.g., König & van der Auwera 1988; Pittner 1999; 2013; D'Avis 2004; Volodina 2006). The adverbial clause in each of these functions has its own illocutionary force. This idea is worked out by Frey (e.g., 2020; 2023), who argues that Present-Day German has non-integrated adverbial clauses, which differ from central and peripheral adverbial clauses in that they may not be embedded and thus cannot occur in the prefield.[4] This difference between the types lies in their semantics, Frey (2020; 2023) argues: Whereas central adverbial clauses denote propositions, peripheral ones denote judgments, and non-integrated clauses speech acts. Note that this differentiation must be kept separate from, but is connected to Sweetser (1990)'s division between clauses applying to

[3] 'For a long time after the preposed clause has a status of subordinate clause, its sentential value must be clarified by resumptives.' (translation my own).

[4] The different types are reflected with collocational differences: Whereas non-integrated clauses may occur so-called 'strong root phenomena', e.g., tag-questions and interjections, peripheral clauses may occur with only weak root phenomena only (e.g., modal particles), and central adverbial clauses with neither.

the content, epistemic and speech act domain. Non-integrated clauses can be used in all three domains, peripheral ones cannot be used as speech acts, and central ones are restricted to the content domain (Frey 2020).

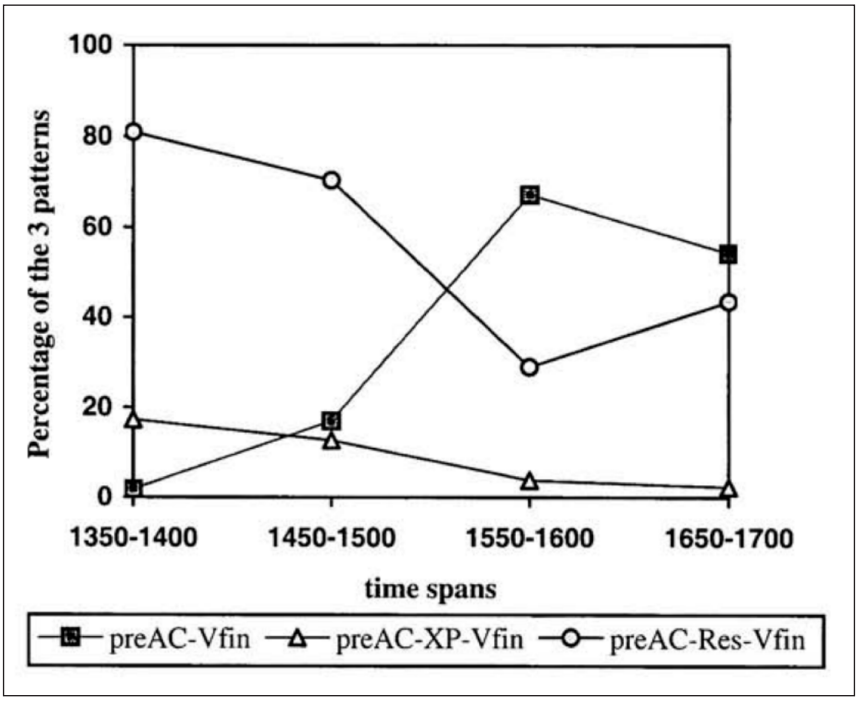

Figure 3: Development of PACs in the history of German as reported in Axel (2004).

Returning to the diachronic scenario, Axel-Tober (2023) discusses the competition between integration and resumption in a generative syntactic framework. She places the underlying change before the drastic frequency shift and argues that the integration of PACs in the history of German originate from an underlying correlative relative structure that was the norm until 1400. In this structure, the adverbial clause is base-generated external to the host and, typically, the prefield was occupied by a correlative adverb.[5] The base-generated position of the adverbial clause was reanalyzed from clause-external to clause-internal, leading to a category change for the originally correlative adverb to a resumptive. The possibility for adverbial clauses to be base-generated externally became highly restricted, she argues, which leads to a loss of resumption in the centuries that follow. To be explicit, her account indicates that the niche of juxtaposition is established before 1450, as a high base-generation of the adverbial clause has become restricted to clauses with illocutionary force. The competition between resumption and integration takes place between 1450 and 1550 – which aligns with the time period covered in the current study.

[5] The resulting surface structure (PAC *d*-adverb V_{fin}) is superficially extremely similar (if not identical) to left dislocation.

A slightly different take, resulting in different predictions, comes from Lötscher (2006). He considers juxtaposition, resumption, and integration as representing a continuum from non-integration (*Asyndese*) to integration (*Syndese*) and argues that both integration and non-integration have their advantages: Non-integrated and resumptive PACs are easier to process, while integrated ones increase coherence. In older German, the prefield was not available for adverbial clauses, due to less tolerance for sentence complexity (Lötscher 2006: 356). At this stage, the difference between juxtaposition and resumption was less pronounced, as the semantic contribution of the resumptive was quite strong and resumption had not been fully grammaticalized at this stage, according to Lötscher (2006: 366). In modern German, there is more acceptance for syntactic complexity in combination with a stronger appreciation of grammatical coherence, due to increasing *Verschriftlichung* and the standardization of the language (Lötscher 2006). The extra-linguistic pressures favor the selection of integration, restricting non-integration to contexts in which the pressure for grammatical coherence is weaker (i.e., when it does not reflect the pragmatic clause-connection). What follows from this account is that resumption and integration were functionally interchangeable in Early New High German and since juxtaposition was still in the process of grammaticalizing into resumption in Middle High German, no particular niche is to be expected for juxtaposition and functional overlap with resumption is possible.

These above mentioned studies view the continuum as a rather general development that is applied at a high level of abstraction, that is, on PACs in general. Yet, as already hinted at, all three patterns are still attested in Present-Day German. Although integration is the overall preferred pattern, specific PACs are more strongly associated with either resumption or juxtaposition. Important in this regard is the distinction between canonical (VF) and non-canonical adverbial clauses (V1). In the former, the conjunction signals the function of the adverbial in the host, whereas the latter tends to contribute a condition. The non-canonical adverbial clauses show much similarity to independent V1-clauses such as polar interrogatives and they are in general considered to be less integrated than VF-adverbial clauses (König & van der Auwera 1988). König & van der Auwera (1988)'s study thereby suggests that the continuum is not a process which adverbial clauses go through as one, but sub-types might experience it individually. The high number of studies that focus on one or a few types of adverbial clauses point in the same direction (e.g., Volodina 2006; Speyer 2011; Leuschner 2020), see also typological work (Diessel 2019). Moreover, König & van der Auwera (1988)'s study as well as Baschewa (1983), who discusses concessive clauses, suggest that the decrease of *so* happened at a later stage than Early New High German, at least in contexts in which non-canonical adverbial clauses prevail and the adverbial may carry its own illocutionary force. What this thus calls for is an empirical evaluation of the clause-integration continuum. The study presented in this paper takes the first step.

4 Resumption in German

The previous section suggests that resumption is a rather uniform phenomenon, constituting a step in between juxtaposition and integration. However, this requires more nuance, as previous studies identify multiple adverbial resumptives for the German.

Meklenborg (2020) identifies two types of resumptives in the Germanic V2-languages: specialized and generalized resumptive. While specialized resumptives "have retained their original meaning (…) and may only follow an initial element expressing the same semantics" (Meklenborg 2020: 95), generalized resumptives are semantically bleached and may occur resuming elements that semantically and/or categorically do not match it. For the different stages of German, the elements she identifies as specialized and generalized resumptives are presented in **Table 1**.

	Specialized	**Generalized**
Old High German	comparative *sô*; locative *dâr*; temporal *dô, danna*	(*dô*) *sô*
Early New High German	locative *da, daselbst*; temporal *da, dann*	(*do; also*) *so*
Modern German	locative *da*; temporal *da, dann*	(*so*)

Table 1: Specialized and generalized resumptives in German as in Meklenborg (2020: 96, 105).

This classification follows primarily from the absence/presence of semantic variation of the resumed elements. This semantic difference has not been gone unnoticed for German: Zifonun et al. (1997: 1492–1494) identify semantically specific, less specific and unspecific correlates.[6] Temporal *da* is considered to be less specific than for example causal adverbs *deshalb* 'therefore', and *so* is considered to be semantically unspecific. Syntactically, Meklenborg (2020) argues that both generalized and specialized resumptives are heads and implies that the two are structurally similar.

In a carthographic approach, Catasso (2021a) finds for Middle High German a difference in the use of *dô* and *sô* – the predecessors of Early New High German *da* and *so* – with the former being used with temporal and local adverbials and the latter being hyper-referential. Despite these differences, he proposes a unified analysis of the two resumptives; one in which the adverbial is base-generated in the TP – different than Axel-Tober (2023) – and moves to FrameP via SpecFinP where the resumptive spells out the trace. In other words, the PAC is generated in the middle field, moved leftwards,[7] and is further fronted to a position for frame-setters in the left periphery. In this movement, an element is left in the previous position of the adverbial, namely

[6] The term *Korrelat* 'correlate' is in this context typically synonymous with resumptive.

[7] In his derivation, the finite verb in German stays in FinP and the adverbial moves to check an EPP-like feature (Catasso, pc.).

the resumptive. For later stages of German, he assumes the same derivation. For Present-Day German, at least, Catasso (2024: 6) states explicitly that the spell out of the trace is optional. This suggests that resumption and integration are functionally and structurally identical, as they are different phonological realizations of the same construction.

These two accounts propose a similar underlying structure for either both resumptives and/or the resumptives and integration. This can be translated to a constructional account in terms of *allostructions* (Cappelle 2006: 18), i.e., the two constructions are simple morpho-phonological alternative realizations of one and the same construction. These may be contextually conditioned but the choice for one or the other variant is not typically semantically motivated. However, at least concerning *so*, two other proposals have been put forward in the literature.

Bloom (fthc.a) argues for a non-resumptive *so* in Early New High German. Coming from a constructional perspective, she proposes a rather intricate network of constructions with *so* that center around a prototype in which *so* connects a V1-conditional clause to a declarative main clause. She states that the "resumptive or anaphoric character of *so* is easily associated with the construction," but its primary function is "to signal a construction that prototypically construes the element that fills the slot before *so* as the protasis of the filler of the slot after *so*." The structure is illustrated in **Figure 4**.

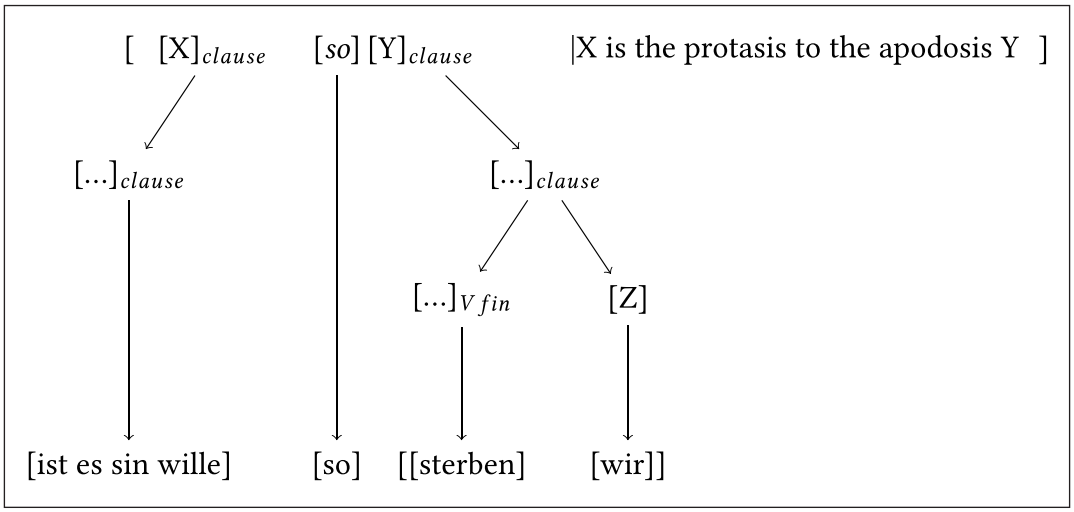

Figure 4: Separate *so*-construction as in Bloom (fthc.a).

For Present-Day German, Axel-Tober (2023) calls into question the status of *so* as a resumptive as well, as it – differently from the modern temporal resumptive *dann* – alternates with non-resumptive V3-structures (i.e., juxtaposition) and lacks a cross-sentential anaphoric function. Moreover, *so* can combine with *dann* within the same sentence, does not collocate with focus particles,[8] and is semantically empty (see also e.g., Patocka 1998: 617–618). Due to its restriction

[8] More precisely, resumptive *so* does not occur with focus particles; as a manner adverb, *so* can be focused.

to the prefield, Axel-Tober (2023) considers *so* to be a (non-presentational) expletive, which may be used when the topic is base-generated clause-externally throughout the history of German. As noted in Section 3, she argues that what has changed is that the adverbial clauses that can be base-generated clause-externally became more restricted around 1400. This resulted in a reanalysis of the originally correlative adverb *da* into a resumptive but no reanalysis of *so* took place, which remained an expletive (Axel-Tober 2023). Because of the restriction on external PACs, the context in which *so* surfaced became more limited as well.

The crucial difference between Bloom (fthc.a) and Axel-Tober (2023) is the structural position of *so*. Bloom (fthc.a) proposes that two clauses are slot-fillers in a *so*-construction. Not only is this compatible with the proposal by Axel & Wöllstein (2009) and Reis & Wöllstein (2010), who argue that V1-conditionals are to this day non-integrated even if they occur directly adjacent to the finite verb of the host and is supported by the prevalence of verb-initial declaratives in Early New High German (Coniglio 2012), the compatibility with imperatives following *so*, and the possibility of the entire sentence complex to function as a complement to e.g., verbs of saying (Bloom fthc.a).

The studies discussed above, regardless of how precisely they analyze *so*, agree that *so*- and *da*-resumption throughout the history of German are quite different from each other, and for *so* two proposals have been put forwards that consider it as not a resumptive. Based on this, the two resumptive patterns must be considered independently in the evaluation of the continuum of clausal integration. The dubious status of *so* as a resumptive furthermore implies that, if one of the resumptive patterns is *not* part of the continuum, it must be *so*-resumption. Further support for this comes from Meklenborg (2024), who in her study focusing on the diachrony of *så* and *tha* in Swedish – relatives of Early New High German *so* and *da* – highlights that the two resumptives undergo different changes; with the frequency of *tha* resumption being affected by the integration of the adverbial clause, whereas this effect is absent for *så*.

5 Methodology

From what has been discussed in the two preceding sections, it follows that at the time integration has been found to rapidly increase in frequency, integration and resumption must have been highly similar functionally and contextually; while juxtaposition must have developed its own niche. Additionally, since there are two (frequent) types of resumption in Early New High German, three possibilities exists: both, one, or none of the patterns compete with integration. The hypothesis of a diachronic continuum in its simplest form would predict the former possibility and if none of the patterns compete with integration, the results would constitute evidence against the hypothesis. In Section 5.1, the data used in this study is presented, the considered variables in 5.2. Section 5.3 introduces the statistical methods and Section 5.4 presents the performance of the models. In a scenario in which only one resumptive competes with integration, it is expected that it would

be the *da*-construction, based on the discussion of the literature in Section 3, as doubt has been cast on *so*'s status as a resumptive.

5.1 Data

The data used in this study originates from seven texts (*Fortunatus, Magelone, Melusine, Pontus, Tristran, Wigalois, and Wilhelm*), which are part of the the *Romankorpus Frühneuhochdeutsch (Roko.UP)* (Bloom et al. 2023). This corpus contains narrative prose texts that have been written between 1450 and 1550, belonging to different narrative traditions. First are prose-adaptations of originally Middle High German verse; second are adaptations from French, and finally, one text is not modeled on another work, but originally composed as Early New High German prose (Bloom et al. 2024). The stability of the genre of narrative prose ensures an absence of the effect of genre on the realization of the prefield, as well as opens the possibility to investigate aspects of narrative structure and to present a contextually informed analysis.

The majority of the texts comes from the East Upper German dialect area; *Magelone* and *Melusine* are written in West Upper German, and the *Pontus* comes from the West Middle German dialect area and is Rhine Franconian with Mosel Franconian traits (Schneider 1961).

For convenience, I have summarized the short text name and its abbreviation, the year of publication,[9] the origin, the dialect and the word count for each text in **Table 2**.

	Short text name	**Year**	**Dialect**	**Origin**	**Size**
P	*Pontus*	2nd half 15th c.	West Middle	French	78145
M	*Melusine*	1474	West Upper	French	40218
O	*Wilhelm*	1481	East Upper	Middle High German	40033
T	*Tristran*	1484	East Upper	Middle High German	53175
F	*Fortunatus*	1509	East Upper	Early New High German	55328
W	*Wigalois*	1519	East Upper	Middle High German	24717
S	*Magelone*	1535	West Upper	French	23750

Table 2: Early New High German texts based on Bloom et al. (2024).

For the data extraction, the first 75 PACs (after the prologue), the last 75 PACs (before the epilogue) and 75 PACs from the middle of the texts were collected. Two text contained less than 225 PACs, *Melusine* (145) and *Wigalois* (142). To make up for this, 50 additional PACs were extracted from the two largest texts – *Pontus* and *Tristran*. In total, this resulted in a set of 1512 PACs.

[9] Specifically, this represents the year of publication of the edition that underlies the transcription.

PACs are included when they can be the initial element of the clause or form syntactic units on their own. Excluded are PACs preceded by *dann, darumb, darnach, doch, nun, zestund* or another adverb, as in (6). In some of these cases, the most natural reading is to see the PAC as modifying the adverb and in other cases, the adverb is more likely to contribute something to the sentence independently of the PAC. Regardless, in neither configuration is it evident that the PAC is either the initial constituent of the clause or an independent unit.

(6) *darnach so du für die stat kommpst so orden den zeüg weißlich*
thereafter CONJ you for the city come SO order.IMP the things wisely
'Thereafter when you come to the city, [so order the things] wisely.' (Wilhelm, 39v)

Further excluded are PACs that are followed by more than one element. Clauses that are preposed to clauses introduced by a complementizer are excluded as well.[10] Finally, PACs are excluded for which an interpretation as belonging to the preceding main clause is likely, i.e., which may in fact be postposed.

The final data set of 1512 PACs were subsequently annotated for i) the realization of the (rest of the) left periphery of the host; ii) the type of PAC, defined by the conjunction; iii) narrative speed; iv) the position in the narration; and the v) the text. These variables will be introduced in the following section.

5.2 Considered variables

5.2.1 Prefield

The response variable is PREFIELD, which encodes the element (besides the PAC) that occurs in the prefield of the host sentence. In other words, it annotates the element that occurs in between the PAC and the finite verb of the host. This could either be nothing ('–'); the element *so* ('so'); the temporal *da*, which might also be realized as *do* ('da'); or a core argument of the host's finite verb ('arg'). The frequency of these elements is presented in **Table 3**.

-	da	so	arg	other	total
664	330	330	155	33	1512
43.92%	21.83%	21.83%	10.25%	2.18%	100%

Table 3: Frequency of the response variable.

[10] These are sentences such as *Jch hab an dir gemerkt wenn du mich ansichst das du betrůbt wirst* 'I have noticed that if you look at me you become sad' (Fortunatus, 389). Unlike Present-Day German, the complementizer *das* 'that' follows rather than precedes the adverbial clause in Early New High German.

The most frequent pattern in the data set is the direct adjacency of the PAC and the finite verb, which in most cases can be taken as a signal that the PAC fills the prefield of the host, assuming a V2-structure of the host. There are five case in which this analysis is unlikely; four of which come from *Pontus*, exemplified in (7).

(7) *Jst das ir sie zornig sehent* ***machent*** *sie zu freden mit gutten dogenden*
is that you her sad see **make.IMP** her happy with good virtues
'Is it that you see her sad, **make** her happy with good virtues.' (P, 127vb)

In these cases, the host is an imperative, which generally has the verb in initial position. These are removed from the further data set to increase the likelihood that this category actually captures integrated PACs. Despite this, the integrated status of the adverbial cannot be guaranteed due to the prevalence of verb-initial declarative clauses in Early New High German (Ebert et al. 1993: 431f, Demske 2018: 145). Moreover, this issue has even been debated for Present-Day German (Axel & Wöllstein 2009; Reis & Wöllstein 2010). Therefore, the use of the term 'integration' throughout this paper refers to the structure in which the PAC and the finite verb of the host are directly adjacent to each other, in which it is *possible* that the PAC realizes the prefield of the host.

So and *da* occur with equal frequency. These are what has been called the resumptive patterns, which are, in the hypothesized continuum, an intermediate stage between juxtaposition and integration. Together, their share is as large as that of integration (ca. 44%).

The patterns in which an argument ('arg') occupies the prefield is generally taken to be juxtaposition. However, it should be noted that in 27 sentences, the pronoun *das* occupies the prefield, which refers to the adverbial clause and realizes it as a subject or object in the host (see also Horacek 1957: 425ff.). This is illustrated in (8).

(8) *vnnd hett jch es besser.* ***das*** *teylet jch euch auch mit.*
and had I it better **that** share.1.SG I.SBJ you also with
'And if I had it better, I would also share **that** with you.' (T, 110v)

As such, these structures are potentially resumptive, rather than true juxtaposition. The same is true for the four cases with *des* in the prefield and the one with *dz*. However, since the pronoun here does not have an adjunctive function in the host but rather functions as an argument of the finite verb, this structure is different from that of the other two patterns that have been classified as resumptive and is therefore treated as juxtaposition. Overall, juxtaposition accounts for roughly 10% of the data; 8% if one disregards structures like (8).

Finally, the data set of 1512 PACs contains 33 observations that do not fall in any of the above mentioned categories, e.g., (9).

(9) a. *als vast nun dye cristen gott an růffent.* ***als vast*** *růfften die*
as quickly now the Christians god on called **as quickly** called.3.PL the
heyden jre gőt an.
heathens.SBJ their god on
'As quickly as the Christians now called upon God, **so quickly** called the heathens upon their God.' (Wil, 69v)

b. *Ach herr pontus wan ich uch nit sehe vnd entperen muß* ***wie*** *sol*
Oh lord Ponthus if I you not see and miss must **how** shall.1.SG
ich geleben
I.SBJ live.INF
'Oh lord Ponthus, if I cannot see you and must miss <you>; **how** shall I live?' (P, 57vb–58ra)

These are primarily instances of other correlative constructions than the two discussed in this paper (as in 9a), or cases in which an adverbial occupies the preverbal position (see 9b). As these are a minority pattern (see **Table 3**), these data are not further considered.

After removing the discussed observations, the final data set contains 1474 sentences.

5.2.2 Type of PAC

The type of PAC is identified by the element that introduces it, be it conjunction or adverb, or – in the case of non-canonical PACs – the verb-initial position. The six most frequent types of PACs are lexically specified, the remainder are classified as 'other' so that the data can be statistically evaluated. Their frequency in the data is visualized in **Table 4**.

da	als	V1	so	wann	ob	other	total
507	394	218	61	57	48	189	1474
34.40%	26.73%	14.79%	4.14%	3.87%	3.26%	12.82%	100%

Table 4: Frequency of the types of PACs.

Da, also realized as *do*, typically introduces a temporal adverbial clause, but may also be used with a clause that presents an explanation or justification for the following event. These meanings are not mutually exclusive, see for example (10), where the PAC both communicates the temporal relation between the two propositions and that the first expressed event presents an explanation for the second.

(10) ***Do*** *nun das heÿdnisch volck ires herren tod empfunden do wurden*
then.CONJ now the heathen folk their lord dead perceived then became.3.PL
sÿ gancz sigloß
they.SBJ completely victory-less
'**Since** the heathens now found their lord dead, they became completely without victory. ' (Mel, 82)

Such vagueness is prevalent in the data set and is precisely why this study has chosen to define the type of PAC by the introducing element rather than the meaning of the adverbial clause, despite the potential polysemy of the conjunctions. For many PAC unambiguous classification is not possible and as a result, what some might view as imprecise proxies provide stable, reproducible variants that can be statistically evaluated. *Als*-clauses usually have a temporal meaning but are also found with conditionals, comparatives, and clauses expressing manner (see also Demske (2014) on *als*-clauses and other hypothetical comparatives). V1-clauses are primarily conditional, though they occasionally also contribute an adversative or temporal/justifying meaning. Adverbial clauses introduced by *so* are the most polysemous of the bunch and may be temporal, conditional, causal, and comparative. Most of the *wann*-clauses express a conditional and/or temporal relation; and *ob*-clauses are primarily conditional – or when *ob* collocates with *doch* – adversative.

5.2.3 Narrative speed

Narratives are structured temporally. This temporal dimension can be translated to both the story level, which concerns the events that are reported, and narrative time, which relates to the reporting of the events. As the text, which reports the events progresses, the story time also progresses. However, the rate at which the story progresses in relation to the progression of the text can be higher or lower, resulting in different velocities. This temporal relation between story time and narration/text time is what is here understood by narrative speed.

Bloom (fthc.b) finds in the Early New High German Pontus that PACs followed by *da* occur in narrative summaries, where the story time (ST) progresses more rapidly than the narration time (NT). In contrast, those with *so* tend to occur in narrative scenes and dialogues, which are associated with isochrony, i.e., the equal progression of narration and story time. The question is whether this is something text-specific, or whether it is a more general tendency.

The narrative summary is defined as in Genette (1980: 95), who identifies four[11] different narrative speeds.

[11] The theoretically possible 'stretch' (NT > ST) is not canonically used in narrative analysis; slowing down of the narration is instead mainly achieved by means of pauses (Genette 1980: 93–112).

i. Pause, in which the text continues, but ST halts (NT ∞ > ST)
ii. Scene, in which NT and ST coincide (NT = ST)
iii. Summary, in which NT progresses quicker than ST (NT < ST)
iv. Ellipsis, in which ST is not represented in NT (NT < ∞ ST)

I have decided to here encode a binary distinction between the sections that are narrative summaries and those that are not. This is because these speeds are a categorical schema of an in reality continuous rate (Packard 2008; Kukkonen 2020), ellipsis is not relevant,[12] narrative summary has been found to have the strongest effect (Bloom fthc.b), and because it is useful for practical, statistical purposes. Therefore, I labeled sentences that represent sequences of events more rapidly than the telling-event as summary ('sum'). As a temporal baseline, segments of direct speech are taken to be cases of isochrony (Genette 1980), in which the progression of the text time is taken to coincide with the progression of the story time. Segments in which the story time progresses more rapidly than that, i.e., when more story time is uttered by less text, is considered a summary.

(11) *vnd da alle ding bereyt waren da gieng sie zů dem Peter*
and then all things ready were then went.3.SG she.SBJ to the Peter
'And when all things were ready, she went to Peter.' (Mag, 670)

The summary is illustrated in (2) repeated in (11), where preparing all things and going to Peter are plot events that are reported by the narrator directly (and not via one of the characters). This telling of events happens in a way that the duration of the events described is reduced.

Under non-summary, I capture sentences that are partly or constitute fully narrative pauses (e.g., extra-diegetic comments by the narrator or descriptions), scenes (e.g., dialogues), and cases in which adverbial clause and host apply to different levels of discourse. This latter is exemplified in (12).

(12) *Vnd das ich nun die materi zum kürczesten mache so lebten die zweÿ so*
and that I now the matter to.the shortest make SO lived.3.PL the two.SBJ so
freüntlich zesamen das Melusina der selben nacht eins suns schwanger ward
friendly together that Melusina the same night of.a son pregnant became
'And so that I make the matter as brief as possible, they were so friendly with each other that Melusina became that night pregnant with a son.' (Mel, 43)

[12] Ellipsis means the absence of linguistic material while the studied object in this study necessarily includes the presence of linguistic material.

The PAC in (12) provides an extra-diegetic comment by the narrator, which constitutes a pause in the progression of the story time: It is a comment on the text, not a report of or comment on an event of the plot. Differently, the host sentence summarizes events that happen in the story world. As such, the PAC and the host do not jointly progress the narration.

It is important to note that many types of PACs are associated with a particular velocity. **Table 5** presents the adjusted standardized residuals, which reflect the difference between expected and observed frequencies (Agresti 2007: 38–39, see e.g., Fliessbach 2023: 189–197 for an application). In particular, *als*- and *da*-clauses occur less than expected in non-summaries and more in summaries; the opposite is true for *ob*-, *so*-, and *wann*-clauses, others, and – most pronounced – for V1-clauses. In fact, *ob*-clauses and V1-clauses are not attested in narrative summaries.

Both variables – NARR.SPEED and TYPE.PAC – are included. Where the TYPE.PAC is an approximation for the function of the adverbial clause within the host sentence, the variable NARR.SPEED is indicative of the function of the entire complex sentence within the larger narration. The consideration of both variables makes it possible to identify which of these factors is the stronger predictor for the realization of the prefield.

	not summary	**summary**
als	−15.98	15.98
da	−18.65	18.65
ob	8.93	−8.93
so	8.77	−8.77
V1	20.29	−20.29
wann	9.21	−9.21
other	10.82	−10.82

Table 5: Adjusted standardized residuals for TYPE.PAC and NARR.SPEED.

5.2.4 Position in the narration

Because of the data-extraction method, the position in the narration is also controlled for. This encodes whether the sentence occurs in the initial part of the text, the middle, or the final section. The position may have an effect, because e.g., syntactic self-priming effects may take place (Jacobs et al. 2019), making the selection bias stronger later in the text. As this variable will not turn out to be highly relevant, no further attention will be paid to it in this paper.

5.2.5 Text

The text is considered primarily in order to control for author-specific preferences. In addition, due to the varying dialects, origins, and date of the texts, the variable may also shed light on these factors. (See Section 5.1.)

Again, it must be noted that the type of PACs are not equally distributed among the texts. **Table 6** presents the adjusted standardized residuals. The cells in the table are color-coded for Bonferroni corrected significance; light gray has simulated $p < 0.05$, dark grey $p < 0.01$.[13]

	F	Mag	Mel	P	T	Wig	Wil
als	1.23	3.45	−5.74	−10.60	10.13	7.54	−5.68
da	−4.37	−0.16	8.11	4.44	−7.42	−5.45	5.56
ob	−1.70	−2.14	4.69	−0.65	3.15	−1.28	−1.69
so	−0.39	8.01	−0.82	−2.73	−2.07	−1.69	−0.38
V1	3.22	−5.69	−2.46	6.77	−0.12	−0.93	−1.91
wann	3.62	−2.10	0.25	1.29	−1.53	−2.49	0.60
other	0.20	−0.73	−3.46	1.77	−2.30	1.87	2.42

Table 6: Adjusted standardized residuals for TYPE.PAC and TEXT.

What must be commented on is the variation regarding the *als*- and *da*- clauses. Specifically, *Pontus* hardly contains any *als*-clauses at all but has comparatively more *da*-clauses; the same is true for *Wilhelm* and *Melusine*. Later texts, in particular, *Tristran* and *Wigalois* contain more *als*-clauses and less *da*-clauses. Furthermore noteworthy is the higher than expected frequency of V1-clauses in *Pontus* and their low frequency in *Magelone*, which coincides with a lower than expected frequency of *so*-clauses in *Pontus* and a higher one in *Magelone*.

Regarding the distribution of narrative speed, the texts diverge less than the type of adverbial clause. Still, *Fortunatus* and *Pontus* have a relatively high amount of non-summaries and few summaries, while *Magelone* contains few summaries and more non-summaries than expected.[14]

5.3 Statistical methods

To predict the construction, I have modeled six random forests (Strobl et al. 2008), each having a binary response. These are represented in **Table 7**.

[13] This is calculated and assessed with the function chisq.posthoc.test(simulate.p.value = TRUE, method = "bonferroni") (Ebbert 2019).

[14] Adjusted standardized residual 3.62 and −3.62 for *Fortunatus*; 5.79 and −5.79 for *Pontus*; and −3.41 and 3.41 for *Magelone*.

Model no.	Name	Response
1	*da*-resumption – *so*-resumption	'da' & 'so'
2	integration – *da*-resumption	'–' & 'da'
3	integration – *so*-resumption	'–' & 'so'
4	juxtaposition – *da*-resumption	'arg' & 'da'
5	juxtaposition – *so*-resumption	'arg' & 'so'
6	integration – juxtaposition	'–' & 'arg'

Table 7: Models.

The CFOREST-function of the 'party'-package in R was used to model the random forests (Hothorn et al. 2006). A random forest grows a multitude of conditional inference trees, which are a type of classification tree. Each individual conditional inference tree within a forest considers a restricted number of predictor variables and a random sample of the data. In the current study, the models consider two variables at each split (mtry = 2) (Levshina 2015: 297). The models select the variable with the strongest association to the response, which then motivates a split in the data. This is repeated until there is no predictor variable that allows for a statistically significant split. The entire process is repeated a specified number of times, with each tree taking a new sample of the data and of the predictor variables (Tagliamonte & Baayen 2012; Levshina 2015). In this study, the random forests are instructed to grow 1000 trees.

In order to assess which variables are important in predicting the response variable, variable importance measures are calculated. Due to unequal class size of the response variable (see **Table 3**), I opted for an AUC-based permutation of variable importance measures (Janitza et al. 2013), available in the 'party'-package (VARIMPAUC(), conditional = TRUE).

For the important variables, I use partial dependence plots (henceforth: *PDPs*) for each of the models to gain insight into the relation between the specific variables and the constructions. The partial dependence scores (henceforth: *PD-scores*) are plotted with the PARTIAL-function of the 'pdp'-package (Greenwell 2017) and visualized with the 'ggplot'-package (Wickham 2016) loaded as part of the 'tidyverse'-package (Wickham et al. 2019). PD-scores indicate the direction and strength of the effect that a given category of a predictor variable has on the response variable. With a categorical variable, the model takes one category of a variable and replaces all categories of that variable with the selected category. It then computes the averaged predictions (Molnar 2020: par. 5.1), the PD-scores. For the specific algorithm and details, see Greenwell (2017). The PD-scores for all (simple) values of the variables are then collected and the mean and standard deviation are calculated for each model. The interpretation is intuitive: The further a value of a variable is from the mean, the stronger the model predicts one construction over

the other, viz., the more contrastive the constructions are in this aspect. Due to the interaction between the variables NARR.SPEED and TYPE.PAC, their scores are plotted within a single graph.

The choice for multiple binary models has the advantage of increased interpretability: If a variable is identified as important for predicting one construction over another, it can straightforwardly be interpreted as a contrasting factor. By contrast, in one model with more response levels, a variable may be identified as important for various reasons: Either one or multiple constructions are strongly or weakly associated with one factor and thus contrast with the other(s), or the difference in association may be a matter of degree. Moreover, the direction and strength are straightforwardly interpretable with binary or numeric variables but are quite uninterpretable with a non-binary categorical response.

5.4 Model performance

For each of the models, **Table 8** presents the percentage of accurately identified constructions, the percentage a naive model[15] would correctly predict, the C-value (C), Somers' *D* (Dxy) and the number of observations in the data set (n).

Model	Accuracy	Naive accuracy	C	Dxy	n
1: *da*-resumption – *so*-resumption	96.97%	50.00%	0.99	0.98	660
2: integration – *da*-resumption	84.33%	66.63%	0.91	0.81	989
3: integration – *so*-resumption	93.53%	66.63%	0.98	0.96	989
4: juxtaposition – *da*-resumption	91.55%	68.04%	0.94	0.88	485
5: juxtaposition – *so*-resumption	76.70%	68.04%	0.83	0.66	485
6: juxtaposition – integration	92.87%	80.96%	0.97	0.95	814

Table 8: Model performance (seed = 2317).

Overall, the models do highly to extremely well, reaching a 77% to 97% accuracy. In comparison with the naive models, the tested model significantly improves the amount of correct predictions for each model (with $p < 0.05$), although the individual cells do not reach significance for Model 5. These results indicate that the tested variables significantly help the prediction between one construction over the other except for the model with juxtaposition and *so*-resumption. The low accuracy suggests that these constructions are not strongly contrastive regarding the tested variables.

[15] A naive model is here defined as a model that predicts the most frequent value of the response variable for everything.

In Section 6, the results from Model 1 will be central; in Section 7, the two models with integration (Model 2 and Model 3) will be more thoroughly discussed, and Section 8 presents the models with juxtaposition, in particular Model 4 and Model 5.

6 Resumption: a unified phenomenon?

The first question raised by the clause-integration continuum is whether resumption is to be considered a homogeneous phenomenon. In the last few years, a number of studies have cast doubt on this assumption (e.g., Haegeman et al. 2023). For German in particular, Meklenborg (2020) and Catasso (2021a) have analyzed *da* and *so* as two different types of resumptives, while Axel-Tober (2023) and Bloom (fthc.a) propose a non-resumptive analysis of *so*. These studies were discussed in Section 4 and the differences between the patterns are here evaluated statistically.

Specifically, in this study, it is confirmed that the *da* and *so* following PACs have to be considered independently: The random forest is extremely accurate in distinguishing *da*-resumption from *so*-resumption, with a staggering 96.97% accuracy, meaning that based on the tested variables, the model wrongly predicts only 20 of the resumptive patterns (see **Table 8**).

The variable importance measures (VIM) in **Figure 5** indicate that the primary distinguishing factor between the two patterns is the function of the PAC in the host (TYPE.PAC). Narrative speed (NARR.SPEED) has a (weak) effect as well. The other two tested variables are below or very close to zero and not deemed important.

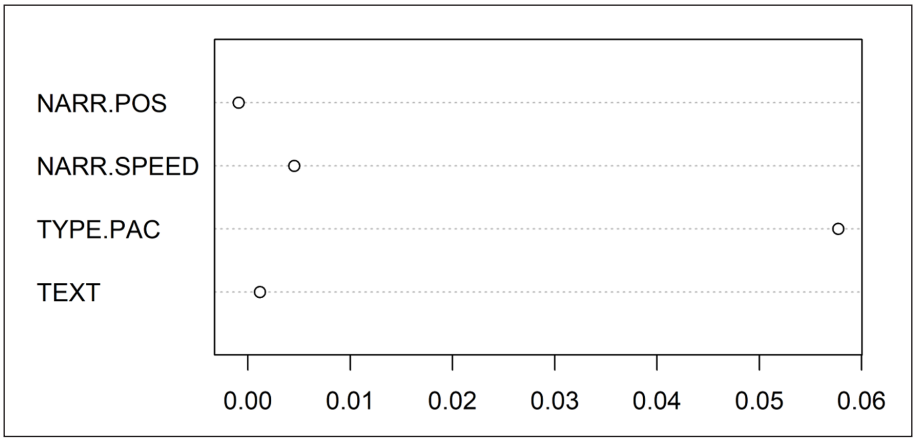

Figure 5: Conditional VIM of model 1: *da*-resumption – *so*-resumption.

To understand these variables better, **Figure 6** visualizes the corresponding PD-scores. The diamonds indicate the PD-scores. The higher PD-score, the more strongly the model predicts *da*-resumption if the specified values are set. Conversely, the lower the score, the more strongly

the model predicts *so*-resumption. For interpretability's sake, the mean of the PD-scores in the model is represented by the dashed line; the standard deviation from the mean by the lighter blue dotted lines.

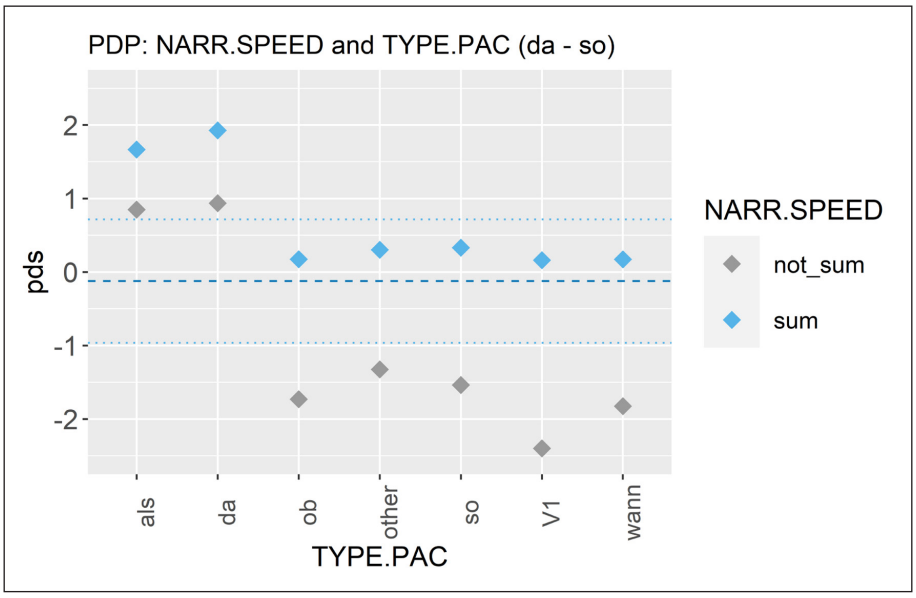

Figure 6: PDP of TYPE.PAC and NARR.SPEED in *da*-resumption – *so*-resumption.

Across all types of PACs, the PD-score for non-summaries ('not sum') is lower than that of 'sum'. This means that in general, narrative summaries are most strongly associated with *da*-resumption and non-summaries with *so*-resumption. There is an interaction with the type of adverbial clause: *Als*- and *da*-clauses, regardless of their narrative speed are strongly associated with *da*-resumption, evident from a positive PD-score. The other clause types, which have low PD-scores, tend towards *so*-resumption with non-summaries.

Pairings of a resumptive with a certain type of PAC that go against their normal preference can perhaps be explained by differences in narrative speed. This was suggested in Section 5.2.3 and will be explored here. In the rare case that the types of PAC that are typically associated with *so*-resumption (V1, *ob, so, wann* and 'other') occur with *da*, 11/18 sentences are indeed cases of narrative summary, as illustrated in (13a). However, this is by no means a general tendency, since the exclusion of the group 'other' results in 3/5 cases of narrative summaries all of which occur in *Melusine*.[16] For the unexpected pairings of *als*- and *da*-clauses with *so*-resumption – nine

[16] Moreover, *da* in the two other sentences is not convincingly resumptive:

(1) a. *wenn ich daz aufsetz oder ain anderer wo er dann begeret zu sein* ***da*** *ist er*
if I that on.put or an other where he then wishes to be **there** is he.SBJ
'If I or another put it on, wherever he then wishes to be, **there** he.SBJ is.3.SG.' (F, 496)

in total – only two can be explained by narrative speed; the other seven, as for example (13b), are narrative summaries. As such, this conclusion cannot be drawn.

(13) a. *Vnd* ***so*** *sÿ wider zů inselbes ettwas waren kommen.* ***do*** *weinten*
and **SO.CONJ** they again to themselves somewhat were came **DA** cried.3.PL
sÿ beÿde pitterlichen ser vnd alles volck mit inen
they.SBJ both painful much and all folk with them
'And **when** they had come to themselves a bit, [**then** cried they both] painfully much and all the people with them.' (Mel, 121)

b. ***do*** *sÿ nun zů dem perg kamen vnd den perg auff riten*
then.CONJ they now to the mountain came and the mountain on ride
So *kommt der kuntman auff einen velsen vnd kert sich*
SO comes.3.SG the guide.SBJ on a rock and turns.3.SG REFL
'Now, **when** they came to the mountain and climb the mountain, [**so** comes the guide] upon a rock and turns around.' (Mel, 128)

Rather, **Figure 6** visualizes that the types of PACs and narrative speed conspire: When the narrative context is one of summary and the adverbial clause has a temporal meaning, the preference for *da*-resumption is clear. Simultaneously, if the narrative speed is slower ('not sum') and the adverbial clause introduces alternative events, the preference for *so* is strong. If the two do not coincide, there is no strong preference for either construction.

The results confirm that the two 'resumptive' patterns are not one homogeneous phenomenon but that they are functionally and contextually contrastive: Patterns with *da* are contextually associated with narrative summaries and collocate with adverbial clauses introduced by *da* and *als*, expressing temporal simultaneity and temporal sequence. Patterns with *so* favor V1-clauses and clauses introduced by *ob, so* and *wann*, they typically introduce alternative events rather than events that are presupposed or stated to have happened within the narrated plot, and they are not associated with a rapid progression of the story. Instead, they tend to occur in dialogues and in comments by the narrator. Due to the functional and contextual differences between the two and the quite stable symbolic relation for each of them, it is clear we are dealing here with two separate constructions. The are not two – perhaps contextually conditioned – realizations of the same construction as they are semantically very different. *Da* and *so* exhibit similarities only on a rather schematic and abstract level, cannot be reasonable conceived of as 'alternative ways

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b. *Vnd ob er der geleichen gewesen ist.* ***do*** *sŏlen wir nit* ***von*** *sagen.*
and if it the same been is **there** will.1.PL we.SBJ not **of** say
'And even if it has been the same, we will not speak **of it**.' (Wig, J_iiir)

For the first, the use of *da* is locative; the first adverbial clause is not resumed. The second example is is a case of narrative pause, with the narrator commenting on a night of passion, with *wir* referring to the reader and narrator. Here *do* can be analyzed as the prepositional object of *von*.

of saying the same thing' (Labov 1999: 550), and as such there is no indication that *so* and *da* were in competition with each other in Early New High German.

7 Resumption to integration?

The results in Section 6 highlighted that the two 'resumptive' patterns are distinct as they are associated with different narrative contexts and meaning of adverbial clauses. This casts doubts on the possibility that 'resumption' of adverbial clauses in general stood in competition with integration in Early New High German and raises the question which of them (if any) became largely replaced by integration. This section considers this question and evaluates for the two patterns their relation to integration.

In Section 5.3, it was reported that the two models with integration (Model 2 and Model 3) relatively reliably distinguish between integration and the resumptive pattern based on the tested variables (**Table 8**). The model that had to predict either integration or *so*-resumption was more reliable (93.53%) than the one with *da*-resumption (84.33%), which already announced that integration is most different from *so*-resumption.

The VIM, as visualized in **Figure 7**, indicate that this is primarily an effect of the text. Functionally and contextually, the two patterns are not so different, seeing that neither TYPE.PAC nor NARR.SPEED factor in in the identification of one or the other pattern.

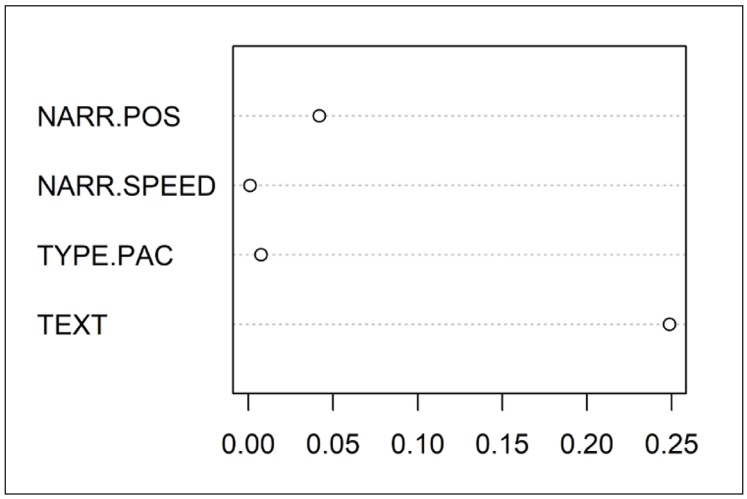

Figure 7: Conditional VIM of model 2: integration – *da*-resumption.

The model with integration and *so*-resumption performs better than the one with *da*-resumption, i.e., the model more often accurately predicts the pattern. Here, the most important variable is not the text – although it is important – but narrative speed, see **Figure 8**. The type of PAC has an effect as well. This reveals that integration and *so*-resumption are functionally different and

are found in different narrative contexts. There is no such indication for *da*-resumption and the model cannot differentiate the two constructions based on these factors.

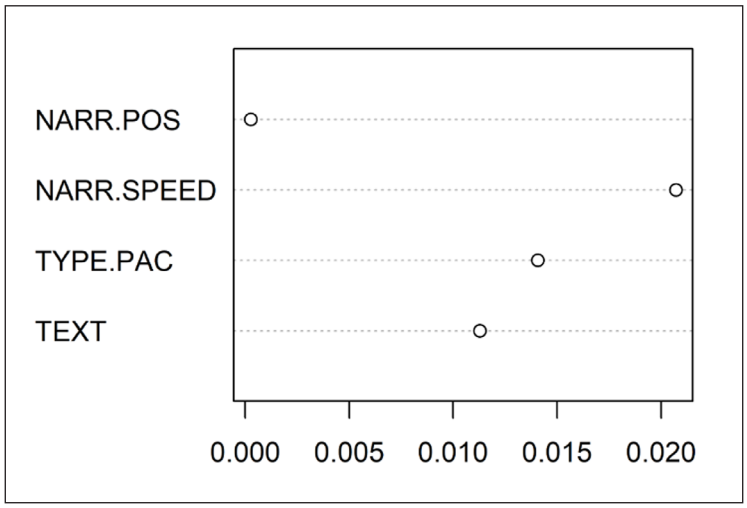

Figure 8: Conditional VIM of model 3: integration – *so*-resumption.

7.1 Textual variation

For both models with integration and resumption, the text in which the sentence is found is an important predictor for the choice between the two. I have decided to simply discuss this by means of a frequency table, presented in **Table 9**, to not distract too much from the primary point of the paper. For completeness sake, 'total' contains all annotated PACs found within the text (i.e., includes juxtaposed and 'other') so that relative frequencies can be compared.

	F	**Mag**	**Mel**	**P**	**T**	**Wig**	**Wil**
integration	100	145	8	13	181	83	129
da	27	49	91	102	17	21	23
so	66	10	33	79	56	30	56
total	225	225	145	275	275	142	225

Table 9: Frequency of construction per text.

What is evident is that *Pontus* and *Melusine* have the fewest amount of integration (5% and 6%) among the texts. *Melusine* has the highest amount of *da*-resumption (63%), *Pontus* also contains more (37%), but relatively less than *Melusine*. Interestingly, these are the two texts that are the oldest, which provides a suggestive but not conclusive argument for the idea that there is

here a development from *da*-resumption to integration. The amount of *so*-resumption is relatively stable: With the exception of *Magelone* (4%), *so*-resumption accounts for ca. 20–30% of the PACs.

7.2 Functional and contextual contrast between so-resumption and integration

The differentiation between integration and *so*-resumption was not primarily due to TEXT but determined by NARR.SPEED and TYPE.PAC, with NARR.SPEED being identified as the more important variable (**Figure 8**). As in **Figure 6**, the PD-scores of these variables are presented in **Figure 9**.

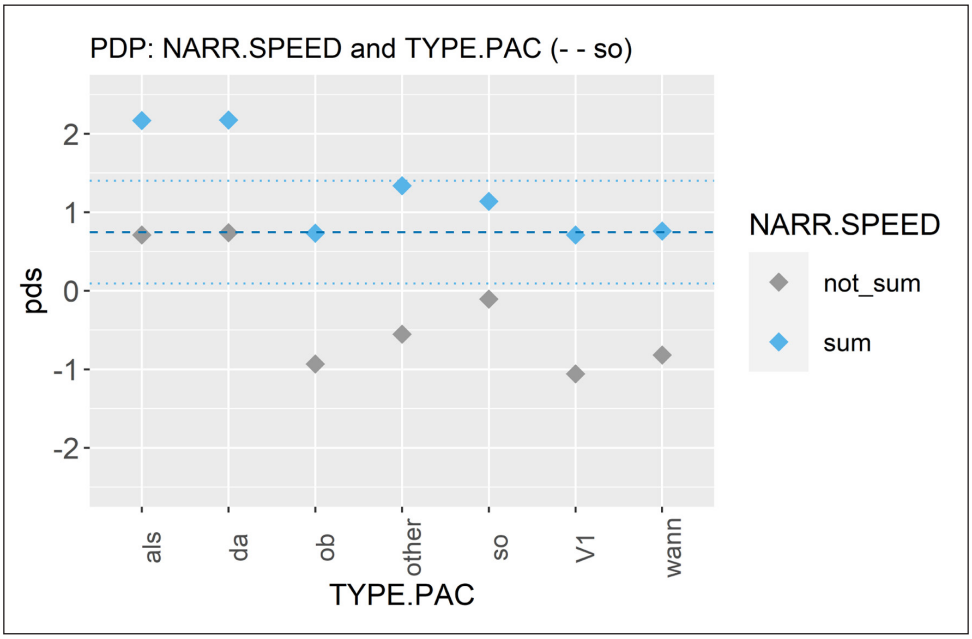

Figure 9: PDP of TYPE.PAC and NARR.SPEED in integration – *so*-resumption.

Similar to the model with the two resumption patterns, it is so that 'not sum' has lowest PD-score, viz. the strongest association with *so* across all types of PAC, while 'sum' tends towards integration. This is dominant in *als*- and *da*-clauses, while the preference for *so*-resumption by non-summary is most pronounced for *ob*-, V1-, *wann*- and 'other' adverbial clauses.

These results suggest that integration and *so*-resumption contrast regarding the narrative context in which the sentences are used, with the more rapid story progression being associated with integration and the slower progression with *so*-resumption. Moreover, the patterns contrast with regard to the functional contribution of the PAC to the host sentence, as signaled by the conjunction: Integration is associated with *als*- and *da*-clauses, which primarily present temporal information, be it simultaneity or sequence. The clause types that predominantly introduce

alternative events and thereby do not progress the story temporally – *ob*- and V1-clauses – are those that most strongly tend towards *so*-resumption.

Now, we can connect these results to the hypothesis that clausal resumption developed into integration. The prediction that followed from the competition-hypothesis was that integration must have been functionally and contextually overlapping with resumption at the time integration has been claimed to take over. This is borne out for *da*-resumption but not for *so*-resumption. These results can then be taken as support for the development of resumption into integration, especially if one considers the doubts raised previously on *so* as a resumptive as discussed in Section 4.

8 Juxtaposition's niche?

The results in the previous section provide support for a competition scenario between *da*-resumption and integration. The final question is then whether juxtaposition had developed its own niche.

The model in which juxtaposition is predicted against *da*-resumption performs well (91.55%, see **Table 8**), meaning that *da*-resumption is accurately distinguished from juxtaposition. The performance of the model with *so* is comparatively much less accurate with an accuracy of 77.53%. In other words, with regards to the tested variables, *so*-resumption and juxtaposition behave much more similar.

A clear impact of the type of PAC is found for both models, but in the model with *so*-resumption, the text is identified as important as well, as **Figures 10** and **11** indicate. **Figure 12** presents the PD-scores of TYPE.PAC in the model with *da*-resumption. What it reveals is that *als*- and *da*-clauses are associated with *da*-resumption, whereas *so*- and *ob*-clauses and V1-clauses in particular tend towards juxtaposition.

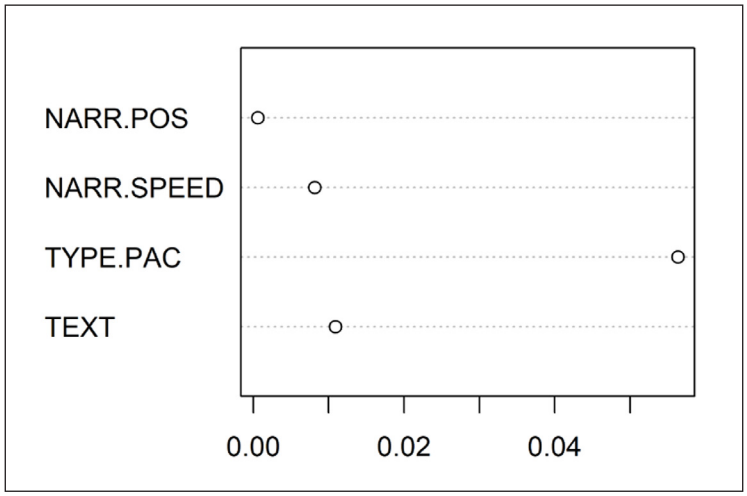

Figure 10: VIM of juxtaposition – *da*-resumption.

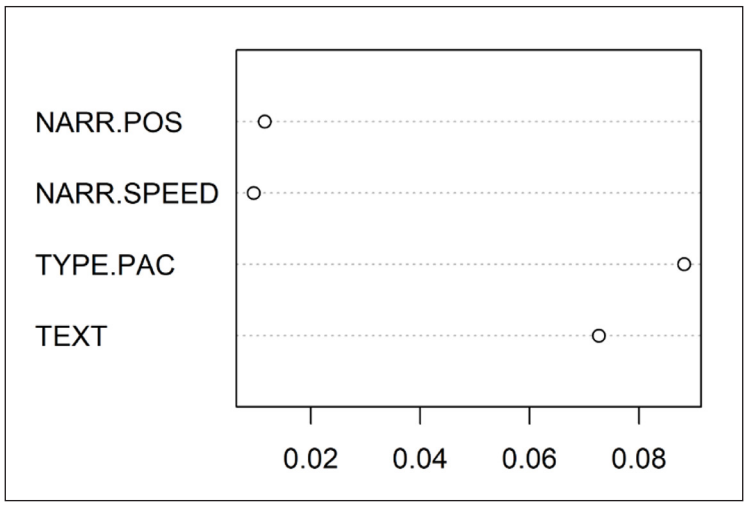

Figure 11: VIM of juxtaposition – *so*-resumption.

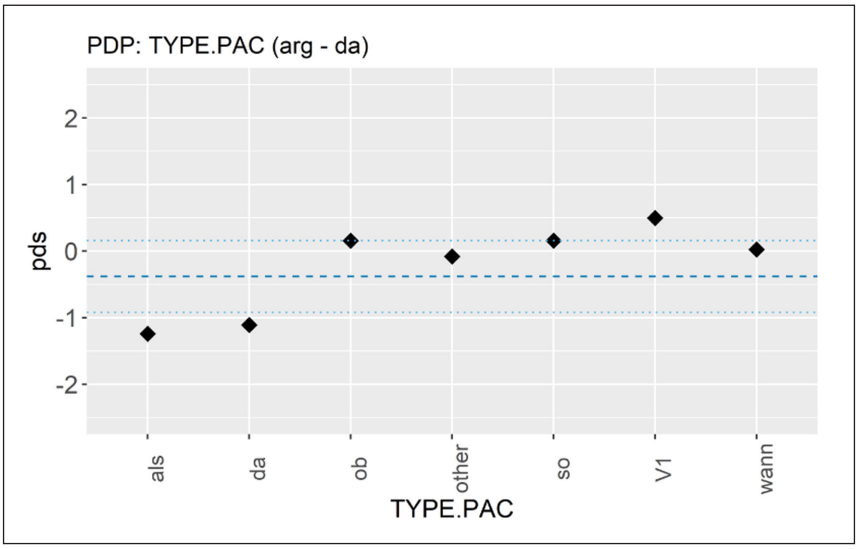

Figure 12: PDP of TYPE.PAC in juxtaposition– *da*-resumption.

For the model with *so*, **Figure 13** illustrates that *da*-clauses tend towards juxtaposition and *wann*-clauses towards *so*. Taking into account the results of the other models, there is not one type of PAC that is specifically associated with juxtaposition. As we know from previous models that *als* and *da*-clauses are also not particularly drawn towards *so*-resumption, the models instead suggest that juxtaposition is rejected in *als*-clauses and *da*-clauses and has been almost ousted from these contexts. Furthermore, in the model with *so*-resumption and juxtaposition, text was deemed important and the model suggests the strongest preference for *so* in *Wilhelm* and for juxtaposition in *Magelone*, which seems to be a preference from the individual author. Moreover, it must be kept in mind that this model overall is much worse in identifying the individual

constructions. This suggests thus that juxtaposition has not developed its own niche as compared to *so*-resumption, though it is repelled from positions where *da*-resumption is particularly dominant, i.e., *da*- and *als*-clauses.

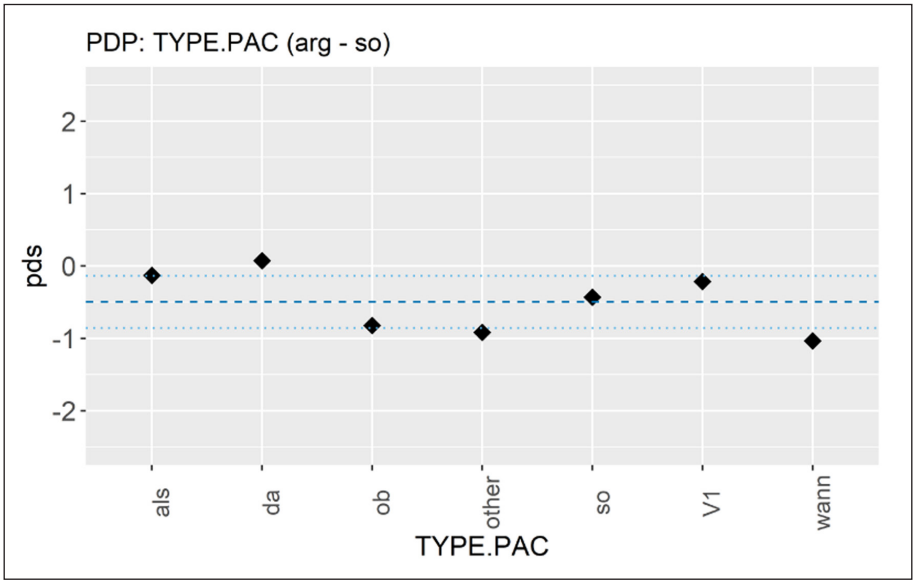

Figure 13: PDP of TYPE.PAC in juxtaposition – *so*-resumption.

A deeper dive into the juxtaposition patterns notices that only in *Pontus* juxtaposition with a complex noun phrase in the prefield occurs more than once or twice (14a). Juxtaposition to an *wh*-interrogative is only attested in *Fortunatus* (14b), while personal pronouns, although infrequent, are attested in five out of the seven texts (14c) and demonstratives (14d) in all of them.

(14) a. *Da sie in das hohe mere qwamen* ***der marner der inn dem schiffe***
then.CONJ they in the high sea came **the mariner.SBJ who in the ship**
verborgen lach *macht sich her vor vnd nam das Ruder inn die hant*
hidden lay did.3.SG REFL here for and took.3.SG the wheel in the hand
'When they came in the high seas **the mariner who had lain hidden in the ship** came out and took the wheel in his hand.' (P, 4rb)

b. *do du nit mer gelts hettest dann souil* ***was***
then.CONJ you not more money had.SBJV than so.much **what**
woltestu anfahen.
wanted.2.SG.you.SBJ begin.INF
'When you would not have had more money than so much, **what** would you have done?' (F, 407)

c. *ob sy verprennt werde **sy** sterbe on laster*
if she burned become.SBJ **she**.SBJ dies.SBJV.3.SG without slander
'If she would be burned, **she** would die without slander.' (T, 85v)

d. *Hab jch jchtt gethan **das** will jch gern bůssen.*
Have I something done **that** will.3.SG I.SBJ gladly atone.INF
'If I have done something wrong, I would gladly pay **for that**' (T, 98v)

What this suggests is that true juxtaposition of an adverbial clause and a V2-declarative clause is already rare and quite restricted in Early New High German prose, with the exception of one text, *Pontus*, which is likely the oldest of all of them and is written in a different dialect than the others (i.e., Rhinefranconian).

The niches that are often ascribed to juxtaposition of PACs in Present-Day German are counterfactual, (ir)relevance conditional, and speech act modifying adverbial clauses (e.g., König & van der Auwera 1988; Pittner 1999; 2013; D'Avis 2004; Volodina 2006; Frey 2020). This is not necessary in Early New High German, as examples in (14) indicate. For example, (14c) presents an hypothetical, in which the PAC presents the condition under which she would die without slander; which is neither counterfactual nor an (ir)relevance conditional, nor does the PAC comment on the speech act itself. Consider as an additional example, the sentence in (15). In the preceding discourse, it is extensively described how Ponthus and Sidonia separate from each other.

(16) *Da sie nu gescheyden waren Sydonie begunde mit irn jungffern zu reden*
when.CONJ they now separted were Sidonia.SBJ began.3.SG with her ladies to talk
'When they were now separated, Sidonia began to talk with her ladies.' (P, 16rb)

While the PAC in the example is juxtaposed– and contains *nu* (Philipowski & Zeman 2022), there is no reason to assume that the temporal PAC carries illocutionary force: The separation is part of the common ground and is presented as the temporal setting in which Sidonia begins to talk. It is factual, given and relates to the propositional content, which suggests that the niche associated with juxtaposition in Present-Day German is not yet in place at this time.

As a final remark, I draw the attention to the complete absence of a resumptive element anywhere in the sentence in (14a–14c), which is the norm rather than the exception in these juxtaposition patterns. This is interesting in light of Lötscher (2006)'s analysis (discussed in Section 3) and their overall infrequency: Although there is no evidence suggesting a general grammaticalization from juxtaposition to resumption, the patterns in which there is no tie (Halliday & Hasan 1976: 4) creating cohesion (14a–14b) are infrequent in Early New High German. This

suggests that juxtaposition has become increasingly restricted to coherent structures, be it with referential continuity (14c) or explicit reference to the proposition (14d). As such, the move away from pure parataxis seems to be evident, as only remnants of this are present in the Early New High German.

9 Conclusion

This study here presented has analyzed the ways in which the preposed adverbial clauses connected to their host sentence in Early New High German. Central was the diachronic continuum that has been suggested in previous literature, namely that PACs went from being juxtaposed to being resumed to being fully syntactically integrated.

In its simplest form, two predictions follow from the continuum: 1) At the time integration spreads, resumption and integration were functionally interchangeable, 2) juxtaposition must have been ousted by resumption or developed its own niche. A complicating factor for this scenario is that previous literature has identified (at least) two possible types of resumptives: *da* and *so* in Early New High German, although this has been debated for *so*.

The study confirms that the two resumptive patterns with *da* and *so* do not form one homogeneous category but are functionally and contextually contrastive: The former are associated with clauses that provide a temporal setting to the proposition expressed by the host and occurring in narrative summaries, while the latter tend to occur with adverbial clauses that introduce alternative events and do not proceed the plot events in the same speed.

Consequently, the hypothesis that resumption and integration were in competition was tested for *da*-resumption and *so*-resumption individually. The results pinpoint functional overlap between *da*-resumption and integration as the selection between the two is primarily determined by the text in which the sentence occurs. Differently, PACs followed by *so* lack systematic similarity to integration and are contrastive regarding the narrative speed the sentence complex encodes as well as the function of the PAC within the host. These findings can be interpreted as (partial) support for the clause-integration continuum, especially if the doubts raised on *so*'s status as a resumptive in Early New High German are taken seriously. The data furthermore bring to light that the take-over of integration did not happen in one fell swoop. Instead, integration becomes particularly prevalent with temporal adverbial clauses that occur in narrative summaries in this period.

As a final step, the similarities and differences between juxtaposition and resumption were assessed. The prediction that juxtaposition had developed its own niche was not borne out by the data, at least the model could not easily discriminate PACs with *so* from juxtaposition. In comparison to *da*-resumption, juxtaposition was associated with different types of PACs and was repelled from temporal adverbial clauses. In this context, juxtaposition has been (almost)

ousted. The similarity between *so*-resumption and juxtaposition on the one hand speaks in favor of the analysis of *so* as something else than a resumptive, e.g., a linking element (Bloom fthc.a). These results are furthermore compatible with Lötscher (2006)'s account, who suggests that the grammaticalization of juxtaposition to resumption is not completed (in Middle High German), and coherence is starting to gain weight as a motivator for grammatical structure. Juxtaposition is at this stage still holding strong, but primarily in context in which grammatical coherence is signaled by ties, especially in the form of referential continuity, explicit reference to the proposition, or a linking element.

Supplementary files

The data set and R-code used for this paper is based on can be found here: https://osf.io/kfngx/.

Funding information

This research was funded by the Deutsche Forschungsgemeinschaft (Project 456973946, 'Wortstellung und Diskursstruktur in der Frühen Neuzeit').

Acknowledgments

I thank the three anonymous reviewers for their feedback. Thanks go out to Ulrike Demske and Malika Reetz, and to the three student assistants who have been involved in the project: Jette Purwin, Alona Prozorova, and Johann Heidrich.

Competing interests

The author has no competing interests to declare.

References

Agresti, Alan. 2007. *An introduction to categorical data analysis*. Hoboken: John Wiley & Sons 2nd edn. DOI: https://doi.org/10.1002/0470114754

Axel, Katrin. 2004. The syntactic integration of preposed adverbial clauses on the German left periphery: A diachronic perspective. In Lohnstein, Horst & Trissler, Susanne (eds.), *The syntax and semantics of the left periphery*, 23–58. Berlin: Mouton de Gruyter. DOI: https://doi.org/10.1515/9783110912111.23

Axel, Katrin & Wöllstein, Angelika. 2009. German verb-first conditionals as unintegrated clauses: A case study in converging synchronic and diachronic evidence. In Winkler, Susanne & Featherston, Sam (eds.), *The fruits of empirical linguistics*, vol. 2: Product, 1–35. Berlin: Mouton de Gruyter. DOI: https://doi.org/10.1515/9783110216158.1

Axel-Tober, Katrin. 2023. Adverbial resumption in German from a synchronic and diachronic perspective. In De Clercq, Karen & Haegeman, Liliane & Lohndal, Terje & Meklenborg, Christine (eds.), *Adverbial resumption in verb second languages*, 167–194. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/oso/9780197651148.003.0007

Baschewa, Emilia. 1983. Untersuchungen zur Diachronie des Konzessivsatzes im Neuhochdeutschen. In Schieb, Gabriele & Fleischer, Wolfgang & Große, Rudolf & Lerchner, Gotthard (eds.), *Beiträge zur Erforschung der deutschen Sprache, 3. Band*, 77–107. Leipzig: VEB Bibliographisches Institut Leipzig.

Bloom, Barthe. 2021. *Lateral relations & multiple source constructions: The Old English subject relative clause and the Norwegian han mannen-construction*: Friedrich-Schiller-Universität Jena PhD dissertation.

Bloom, Barthe. 2022. The spread of the VO pattern in subject relative clauses: The OV/VO Alternation in Old and Middle English. In Lavidas, Nikolaos & Nikiforidou, Kiki (eds.), *Studying language change in the 21st century*, 76–101. Leiden: Brill. DOI: https://doi.org/10.1163/9789004510579

Bloom, Barthe. fthc.a. Adverbial V3 in Early New High German? Construction(s) with *so*. *Journal of Germanic Linguistics* 36(4). DOI: https://doi.org/10.1017/S1470542724000072

Bloom, Barthe. fthc.b. Structuring the narrative with preposed adverbial clauses: A study of the German and Dutch Ponthus adaptations. In Demske, Ulrike & Bloom, Barthe (eds.), *Discourse structure and narration: A diachronic view from Germanic*, Berlin: Language Science Press.

Bloom, Barthe & Reetz, Malika & Demske, Ulrike. 2023. Romankorpus Frühneuhochdeutsch (Roko.UP). https://zenodo.org/records/10210705.

Bloom, Barthe & Reetz, Malika & Demske, Ulrike. 2024. Romankorpus Frühneuhochdeutsch (Roko.UP): A collection of Early Modern German narrative prose. *Journal of Open Humanities Data* 10(17). 1–7. DOI: https://doi.org/10.5334/johd.188

Cappelle, Bert. 2006. Particle placement and the case for "allostructions". *Constructions Online* 15(1). DOI: https://doi.org/10.24338/cons-381

Catasso, Nicholas. 2021a. Generalized and specialized adverbial resumption in Middle High German and beyond. *Journal of Historical Syntax* 5(2). 1–38. DOI: https://doi.org/10.18148/hs/2021.v5i1-13.40

Catasso, Nicholas. 2021b. How theoretical is your (historical) syntax? Towards a typology of verb-third in Early Old High German. *The Journal of Comparative Germanic Linguistics* 24(1). 1–48. DOI: https://doi.org/10.1007/s10828-021-09123-7

Catasso, Nicholas. 2024. A cartographic approach to verb movement and two types of FinP V2 in German. *Languages* 9(1). 21. DOI: https://doi.org/10.3390/languages9010021

Coniglio, Marco. 2012. On V1 declarative clauses in Middle High German. *Linguistische Berichte* 229. 5–38. DOI: https://doi.org/10.46771/2366077500229_1

Croft, William. 2000. *Explaining language change: An evolutionary approach*. Harlow: Longman.

Davies, Mark. 2010. The corpus of historical American English (COHA): 400 million words, 1810–2009. http://corpus.byu.edu/coha/.

D'Avis, Franz Josef. 2004. In front of the prefield – inside or outside the clause? In Lohnstein, Horst & Trissler, Susanne (eds.), *The syntax and semantics of the left periphery*, 139–178. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110912111.139

De Smet, Hendrik & D'Hoedt, Frauke & Fonteyn, Lauren & Van Goethem, Kristel. 2018. The changing functions of competing forms: Attraction and differentiation. *Cognitive Linguistics* 29(2). 197–234. DOI: https://doi.org/10.1515/cog-2016-0025

Demske, Ulrike. 2014. Verbstellungsvariation in hypothetische Vergleichssätzen. *Linguistische Berichte* 238. 101–140. DOI: https://doi.org/10.46771/2366077500238_1

Demske, Ulrike. 2018. Syntax and discourse structure: Verb-final main clauses in German. *Linguistische Berichte* 25. 135–159. Special Issue: Non-Canonical Verb Positioning in Main Clauses.

D'hoedt, Frauke & Cuyckens, Hubert. 2017. The development of the *as*-secondary predicate construction: constructionalization and internalization. *Language Sciences* 59. 16–35. DOI: https://doi.org/10.1016/j.langsci.2016.06.003

Diessel, Holger. 2019. Preposed adverbial clauses: Functional adaptation and diachronic inheritance. In Schmidtke-Bode, Karsten & Levshina, Natalia & Michaelis, Susanne Maria & Seržant, Ilja A. (eds.), *Explanation in typology: Diachronic sources, functional motivations and the nature of the evidence*, 97–122. Berlin: Language Science Press. DOI: https://doi.org/10.5281/zenodo.2583812

Diessel, Holger. 2023. *The constructicon*. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/9781009327848

Ebbert, Daniel. 2019. chisq.posthoc.test: A post hoc analysis for Pearson's chi-squared test for count data. https://CRAN.R-project.org/package=chisq.posthoc.test. DOI: https://doi.org/10.32614/CRAN.package.chisq.posthoc.test

Ebert, Robert & Reichmann, Oskar & Solms, Hans-Joachim & Wegera, Klaus-Peter. 1993. *Frühneuhochdeutsche Grammatik*. Tübingen: Max Niemeyer Verlag. DOI: https://doi.org/10.1515/9783110920130

Fabricius-Hansen, Cathrine. 1992. Subordination. In Hoffmann, Ludger (ed.), *Deutsche Syntax. Ansichten und Aussichten*, 458–483. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110622447-022

Fliessbach, Jan. 2023. *The intonation of expectations: On marked declaratives, exclamatives, and discourse particles in Castilian Spanish*. Berlin: Language Science Press. DOI: https://doi.org/10.15460/repohh/sub.2024200015

Fonteyn, Lauren & Maekelberghe, Charlotte. 2018. Competing motivations in the diachronic nominalization of English gerunds. *Diachronica* 35(4). 487–524. DOI: https://doi.org/10.1075/dia.17015.fon

Frey, Werner. 2020. German concessives as TPs, JPs and ActPs. *Glossa* 5(1). 1–31. DOI: https://doi.org/10.5334/gjgl.763

Frey, Werner. 2023. Types of German causal clauses and their syntactic-semantic layers. In Jędrzejowski, Łukasz & Fleczoreck, Constanze (eds.), *Micro- and macro-variation of causal clauses: Synchronic and diachronic insights*, 51–100. Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/slcs.231.03fre

Genette, Gérard. 1980. *Narrative discourse: An essay in method*, vol. 25. Ithaca: Cornell University Press.

Goldberg, Adele E. 1995. *Constructions: A Construction Grammar approach to argument structure*. Chicago: The University of Chicago Press.

Goldberg, Adele E. 2006. *Constructions at work: The nature of generalization in language*. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/acprof:oso/9780199268511.001.0001

Greenwell, Brandon M. 2017. pdp: An R package for constructing partial dependence plots. *The R Journal* 9(1). 421–436. DOI: https://doi.org/10.32614/RJ-2017-016

Haegeman, Liliane. 2012. *Adverbial clauses, main clause phenomena, and the composition of the left periphery*. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/acprof:oso/9780199858774.001.0001

Haegeman, Liliane & De Clercq, Karen & Lohndal, Terje & Meklenborg, Christine. 2023. Adverbial resumption in V2 languages: The background. In Haegeman, Liliane & De Clercq, Karen & Lohndal, Terje & Meklenborg, Christine (eds.), *Adverbial resumption in verb second languages*, 7–42. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/oso/9780197651148.003.0002

Halliday, Michael Alexander Kirkwood & Hasan, Ruqaiya. 1976. *Cohesion in English*. Hong Kong: Longman.

Hammarström, Emil. 1923. *Zur Stellung des Verbums in der deutschen Sprache*. Lund: Håkan Ohlssons Buchdruckerei.

Hilpert, Martin. 2018. *Ten lectures on Diachronic Construction Grammar*. Leiden: Brill. DOI: https://doi.org/10.1075/cal.21.c2

Holyoak, Keith J. 2012. Analogy and relational reasoning. In Holyoak, Keith J. & Morrison, Robert G. (eds.), *The Oxford handbook of thinking and reasoning*, 234–259. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/oxfordhb/9780199734689.013.0013

Horacek, Blanka. 1957. Zur Verbindung von Vorder-und Nachsatz im Deutschen. *Beiträge zur Geschichte der deutschen Sprache und Literatur (PBB, Halle)* 79. 415–439.

Hothorn, Torsten & Hornik, Kurt & Zeileis, Achim. 2006. Unbiased recursive partitioning: A conditional inference framework. *Journal of Computational and Graphical Statistics* 15(3). 651–674. DOI: https://doi.org/10.1198/106186006X133933

Jacobs, Cassandra L. & Cho, Sun-Joo & Watson, Duane G. 2019. Self-priming in production: Evidence for a hybrid model of syntactic priming. *Cognitive Science* 43(7). DOI: https://doi.org/10.1111/cogs.12749

Janitza, Silke & Strobl, Carolin & Boulesteix, Anne-Laure. 2013. An AUC-based permutation variable importance measure for random forests. *BMC Bioinformatics* 14(1). 1. DOI: https://doi.org/10.1186/1471-2105-14-119

Jurafsky, Daniel. 1991. *An on-line computational model of human sentence interpretation: A theory of the representation and use of linguistic knowledge*. University of California PhD dissertation. DOI: https://doi.org/10.21236/ADA604298

König, Ekkehard & van der Auwera, Johan. 1988. Clause integration in German and Dutch conditionals, concessive conditionals, and concessives. In Haiman, J. & Thompson, Sandra (eds.), *Clause combining in grammar and discourse*, 101–133. Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/tsl.18.07kon

Kukkonen, Karin. 2020. The speed of plot: Narrative acceleration and deceleration. *Orbis Litterarum* 75(2). 73–85. DOI: https://doi.org/10.1111/oli.12251

Labov, William. 1999. *Principles of linguistic change*, vol. 1: Internal factors. Oxford: Blackwell.

Lehmann, Christian. 1988. Towards a typology of clause linkage. In Haiman, John & Thompson, Sandra A. (eds.), *Clause combining in grammar and discourse*, 181–226. Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/tsl.18.09leh

Leuschner, Torsten. 2020. Concessive conditionals as a family of constructions. *Belgian Journal of Linguistics* 34(1). 235–247. DOI: https://doi.org/10.1075/bjl.00049.leu

Levshina, Natalia. 2015. *How to do linguistics with R. Data exploration and statistical analysis*. Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/z.195

Lötscher, Andreas. 2006. Linksperiphere Adverbialsätze in der Geschichte des Deutschen: Pragmatische Aspekte eines grammatischen Wandels. *Beiträge zur Geschichte der deutschen Sprache und Literatur (PBB)* 127(3). 347–376. DOI: https://doi.org/10.1515/BGSL.2005.347

Meklenborg, Christine. 2020. Adverbial resumptive particles and verb second. In Woods, Rebecca & Wolfe, Sam (eds.), *Rethinking verb second*, 90–125. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/oso/9780198844303.003.0005

Meklenborg, Christine. 2024. Tracing the origins of resumption in Swedish. manuscript.

Molnar, Christoph. 2020. *Interpretable machine learning: A guide for making black box models explainable*. Christoph Molnar. https://christophm.github.io/interpretable-ml-book/.

Noël, Dirk. 2016. For a radically usage-based Diachronic Construction Grammar. *Belgian Journal of Linguistics* 30(1). 39–53. DOI: https://doi.org/10.1075/bjl.30.03noe

Packard, Stephan. 2008. Two-dimensional narrative velocity. *Journal of Literary Semantics* 37(1). 55–67. DOI: https://doi.org/10.1515/jlse.2008.004

Patocka, Franz. 1998. Zur Linksversetzung im Mittelhochdeutschen. In Ernst, Peter & Patocka, Franz (eds.), *Deutsche Sprache in Raum und Zeit. Festschrift für Peter Wiesinger zum 60. Geburtstag*, 611–621. Vienna: Edition Praesens.

Petré, Peter. 2019. How constructions are born: The role of patterns in the constructionalization of be going to INF. In Busse, Beatrix & Moehlig-Falke, Ruth (eds.), *Patterns in language and linguistics*, 157–192. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110596656-007

Philipowski, Katharina & Zeman, Sonja. 2022. Wann und wo ist nû? Literarische Strategien des Präsens-Gebrauchs (am Beispiel des >Wilhalm von Wenden< Ulrichs von Etzenbach). *Beiträge zur Geschichte der deutschen Sprache und Literatur* 144(1). 92–120. DOI: https://doi.org/10.1515/bgsl-2022-0004

Pijpops, Dirk & Van de Velde, Freek. 2016. Constructional contamination: How does it work and how do we measure it? *Folia Linguistica* 50(2). 543–581. DOI: https://doi.org/10.1515/flin-2016-0020

Pittner, Karin. 1999. *Adverbiale im Deutschen: Untersuchungen zu ihrer Stellung und Interpretation*. Tübingen: Stauffenburg.

Pittner, Karin. 2013. Adverbialsätze. In Meibauer, Jörg & Steinbach, Markus & Altmann, Hans (eds.), *Satztypen des Deutschen*, chap. 23, 501–525. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110224832.501

Reis, Marga & Wöllstein, Angelika. 2010. Zur Grammatik (vor allem) konditionaler V1-Gefüge im Deutschen. *Zeitschrift für Sprachwissenschaft* 29. 111–179. DOI: https://doi.org/10.1515/zfsw.2010.004

Rosenbach, Anette. 2008. Language change as cultural evolution: Evolutionary approaches to language change. In Eckardt, Regine & Jager, Gerhard & Veenstra, Tonjes (eds.), *Variation,*

selection, development: Probing the evolutionary model of language change, 23–72. Berlin: Mouton de Gruyter. DOI: https://doi.org/10.1515/9783110205398.1.23

Schneider, Karin (ed.). 1961. *Pontus und Sidonia in der Verdeutschung eines Ungenannten aus dem 15. Jahrhundert*. Berlin: Erich Schmidt Verlag.

Sommerer, Lotte & Hofmann, Klaus. 2021. Constructional competition and network reconfiguration: Investigating *sum(e)* in Old, Middle and Early Modern English. *English Language and Linguistics* 25(1). 1–33. DOI: https://doi.org/10.1017/S136067431900039X

Speyer, Augustin. 2011. Zur Integriertheit kausaler (Neben-)Sätze im Frühneuhochdeutschen. *Sprachwissenschaft* 36(1). 53–84.

Strobl, Carolin & Boulesteix, Anne-Laure & Kneib, Thomas & Augustin, Thomas & Zeileis, Achim. 2008. Conditional variable importance for random forests. *BMC Bioinformatics* 9. 307. DOI: https://doi.org/10.1186/1471-2105-9-307

Sweetser, Eve. 1990. *From etymology to pragmatics: metaphorical and cultural aspects of semantic structure*. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/CBO9780511620904

Tagliamonte, Sali A. & Baayen, R. Harald. 2012. Models, forests, and trees of York English: *was/were* variation as a case study for statistical practice. *Language Variation and Change* 24(2). 135–178. DOI: https://doi.org/10.1017/S0954394512000129

Torrent, Tiago Timponi. 2015. On the relation between inheritance and change: The constructional convergence and the construction network recognfiguration hypotheses. In Barðdal, Jóhanna & Smirnova, Elena & Sommerer, Lotte & Gildea, Spike (eds.), *Diachronic Construction Grammar*, 173–211. Amsterdam: John Benjamins.

Traugott, Elizabeth C. 2018. Modeling language change with constructional networks. In Bordería, Salvador Pons & Lamas, Óscar Loureda (eds.), *Beyond grammaticalization and discourse markers*, 17–50. Leiden: Brill. DOI: https://doi.org/10.1163/9789004375420_003

Traugott, Elizabeth C. 2020. The intertwining of differentiation and attraction as exemplified by the history of recipient transfer and benefactive alternations. *Cognitive Linguistics* 31(4). 549–578. DOI: https://doi.org/10.1515/cog-2019-0042

Traugott, Elizabeth C. & Trousdale, Graeme. 2013. *Constructionalization and constructional changes*. Oxford: Oxford University Press. DOI: https://doi.org/10.1093/acprof:oso/9780199679898.001.0001

Uhrig, Peter. 2015. Why the principle of no synonymy is overrated. *Zeitschrift fur Anglistik und Amerikanistik* 63(3). 323–337. DOI: https://doi.org/10.1515/zaa-2015-0030

Volodina, Anna. 2006. *wenn*-Relationen: Schnittstelle zwischen Syntax, Semantik und Pragmatik. In Breindl, Eva & Gunkel, Lutz & Strecker, Bruno (eds.), *Grammatische Untersuchungen. Analysen und Reflexionen*, 359–379. Tübingen: Narr.

Wickham, Hadley. 2016. *ggplot2: Elegant graphics for data analysis*. New York: Springer. https://ggplot2.tidyverse.org. DOI: https://doi.org/10.1007/978-3-319-24277-4_9

Wickham, Hadley & Averick, Mara & Bryan, Jennifer & Chang, Winston & McGowan, Lucy D'Agostino & François, Romain & Grolemund, Garrett & Hayes, Alex & Henry, Lionel &

Hester, Jim & Kuhn, Max & Pedersen, Thomas Lin & Miller, Evan & Bache, Stephan Milton & Müller, Kirill & Ooms, Jeroen & Robinson, David & Seidel, Dana Paige & Spinu, Vitalie & Takahashi, Kohske & Vaughan, Davis & Wilke, Claus & Woo, Kara & Yutani, Hiroaki. 2019. Welcome to the tidyverse. *Journal of Open Source Software* 4(43). 1686. DOI: https://doi.org/10.21105/joss.01686

Zehentner, Eva. 2019. *Competition in language change: The rise of the English dative alternation*. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110633856

Zehentner, Eva & Traugott, Elizabeth C. 2020. Constructional networks and the development of benefactive ditransitives in English. In Sommerer, Lotte & Smirnova, Elena (eds.), *Nodes and links in the network: Advances in Diachronic Construction Grammar*, 168–211. Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/cal.27.05zeh

Zifonun, Gisela & Hoffmann, Ludger & Strecker, Bruno & Ballweg, Joachim & Braußе, Ursula & Breindl, Eva & Engel, Ulrich & Frosch, Helmut & Hoberg, Ursula & Vorderwülbecke, Klaus. 1997. *Grammatik der deutschen Sprache*. Berlin: Walter de Gruyter.