Elena Smirnova

The diachronic development of the verbal bracket construction in German

https://doi.org/10.1515/gcla-2021-0008

Abstract: This work-in-progress paper reports the first results of a study dedicated to the investigation of the cognitive status of the sentence bracket construction in German. The project aims at a comprehensive corpus analysis of diachronic data from the Early New High German period (ENHG, 1350–1650). The study focuses on the syntactic structures of German main clauses and is guided by two general research questions. First, on the conceptual level, it addresses the question of whether the sentence bracket construction can be considered a construction in its own right. Second, the paper deals with the issue of the diachronic source(s) of the sentence bracket construction. Based on ENHG corpus data, it examines the role of grammaticalization of verbal auxiliaries in the development of the bracket construction. On a more general level, the objective of the paper is to encourage the discussion on the cognitive status of syntactic phenomena which often escape a straightforward modelling in cognitive and constructionist terms, as they do not seem to bear a particular dedicated semantic and/or functional value.

Keywords: sentence bracket construction, German, Early New High German, grammaticalization

1 Introduction

One of the central syntactic regularities of German is the sentence bracket construction (also called verbal frame construction, *Satzklammer, verbale Klammer* or *Satzrahmen*). It is often assumed to serve as a basic structuring device of the German clause. Depending on the clause type, the sentence bracket construction may be composed of different linguistic elements. In the main clause, the finite verb appears as a second constituent (=V2) and forms the left sentence bracket. The non-finite parts of the predicate, such as e.g. separable verbal particles (1b), participles (1a), infinitives (1c) or both (1d), appear in clause-final position and form the right sentence bracket. In this way, the two parts of the verbal predicate *frame* the sentence.

Elena Smirnova, Université de Neuchâtel, elena.smirnova@unine.ch

(1) a. *Der König* ***hat*** *den Minister* ***angerufen***.
the king has$_{FIN}$ the minister call$_{PTCP}$
'The king has called the minister.'
b. *Der König* ***ruft*** *den Minister* ***an***.
the king call$_{SFIN}$ the minister PTC
'The king calls the minister.'
c. *Der König* ***will*** *den Minister* ***anrufen***.
the king want$_{SFIN}$ the minister call$_{INF}$
'The king wants to call the minister'
d. *Der König* ***soll*** *den Minister* ***angerufen*** ***haben***.
the king should$_{FIN}$ the minister call$_{PTCP}$ have$_{FIN}$
'The king should have called the minister.'

In the subordinate clause, all verbal forms occur in clause-final position and represent together the right sentence bracket, while the complementizer forms the left sentence bracket, as in (2).

(2) a. *...* ***dass*** *der König den Minister* ***angerufen*** ***hat***.
...that the king the minister call$_{PTCP}$ has$_{FIN}$
'... that the king has called the minister.'
b. *...* ***dass*** *der König den Minister* ***anruft***.
... that the king the minister calls$_{FIN}$
'... that the king calls the minister.'
c. *...* ***dass*** *der König den Minister* ***anrufen*** ***will***.
... that the king the minister call$_{INF}$ wants$_{FIN}$
'... that the king wants to call the minister.'
d. *...* ***dass*** *der König den Minister* ***angerufen*** ***haben*** ***soll***.
... that the king the minister call$_{PTCP}$ have$_{INF}$ should$_{FIN}$
'... that the king should have called the minister.'

In the traditional topological model of the German clause (*Stellungsfeldermodell,* see Wöllstein-Leisten 2010), the sentence bracket construction frames the rest of the clause and divides it into several fields, as shown in Table 1. The position before the left bracket is called the prefield (*Vorfeld*), the position after the right bracket is the post-field (*Nachfeld*), and the position between the brackets is the middle field (*Mittelfeld*).

With respect to the verb placement, there is an asymmetry between V2 in main clauses and OV in subordinate clauses. Generative syntactic approaches generally assume that the basic word order in German is verb-final or OV, which corresponds to the canonical word order of the subordinate clause, and that the word order in the main clause is the derived one (cf. Grewendorf 1998, 2002). The

Table 1: The topological model of the German clause

	PREFIELD	LEFT SENTENCE BRACKET	MIDDLE FIELD	RIGHT SENTENCE BRACKET	POST-FIELD
a	*Der König*	*hat*	*den Minister*	*angerufen.*	
	the king	has	the minister	called	
b	*Der König*	*will*	*den Minister*	*anrufen*	*um Abschnied*
	the king	wants	the minister	call	*zu nehmen*
					to say goodbye
c	*Gestern*	*hat*	*der König den Minister*	*angerufen*	
	yesteday	has	the king the minister	called	
d	...	*dass*	*der König den Minister*	*angerufen hat*	
	...	that	the king the minister	called has	

fronting of the finite verb to the left, i.e. the second position of the main clause, is seen as the result of a movement operation, whereby the finite verb is moved from its basic final position into the left periphery of the clause. As only one non-verbal constituent is allowed to be placed before the finite verb, i.e. in the prefield, German qualifies as a strict V2 language with respect to the word order in main clauses.

These syntactic regularities have most probably developed in the earliest stages of German (cf. Axel 2007). As regards the sentence bracket construction, it had been present already since the Old High German period, but it was not fully established before the 18th century.[1] There is a wealth of syntactic studies that focus on the phenomenon of extraposition, i.e. the occurrence of non-clausal constituents to the right of the right sentence bracket (see e.g. Benes 1968, Admoni 1972, Ebert 1980, Wills 1985, Sapp 2011, 2014; Hinterhölzl 2010). In these studies, changes with respect to frequency and the syntactic status of extraposed constituents are interpreted as evidence for the grammaticalization of the bracket construction. Most of the studies look at extraposition out of the subordinate clause and try to determine the factors that favor or disfavor extraposition, synchronically as well as diachronically. For the main clause, however, there is close to nothing in the literature on the extraposition, and more generally on the sentence

1 "Zwar wird die Zunahme der Klammerbildung bereits fürs Frnhd. angenommen, doch ist der typisch deutsche Satzklammerstil erst im 17./18. Jh. auf seinen Höhepunkt gelangt" [Although the increase in the use of the sentence bracket is assumed to have already occurred in ENHG, the typical German bracket style did not reach its peak until the 17th/18th century; my translation; ES] (Ágel 2000: 1874)

bracket construction (a notable exception being Schildt 1976, see below). In some studies, it is mentioned in passing that the main clause should basically follow the same or similar regularities as those of the subordinate clause, with the exception that the finite verb is moved into the second position. Others point out that there are some slight differences between main and subordinate clauses, these differences being rather quantitative than qualitative in nature.

The fact that previous research has predominantly focused on the subordinate clause may be due to a number of reasons. From a theoretical point of view, the strong assumption of the basic OV word order has certainly biased previous research towards the subordinate clause. From a more practical perspective, the empirical fact that all verbs including the finite verb are in the clause-final position has certainly played a role as well. For example, a main clause with a non-separable simple verbal predicate like *beschimpfen* 'berate' like in (3a) will always be ambiguous with respect to the (virtual) position of the right sentence bracket, and thus with respect to possible extraposition. In such cases, the only verb of the clause always surfaces in the second position. In a subordinate clause, on the other hand, the finite verb obligatorily occurs in the final position, and the extraposition of constituents like in (3c) can be easily distinguished from cases without extraposition, see (3b).

(3) a. *Der König **beschimpfte** den Minister wegen seiner Affäre.*
the king berate$_{FIN}$ the minister for his affair
'The king berated the minister for his affair.'

b. *... **dass** der König den Minister wegen seiner Affäre **beschimpfte**.*
... that the king the minister for his affair berate$_{FIN}$

c. *... **dass** der König den Minister **beschimpfte** wegen seiner Affäre.*
... that the king the minister berate$_{FIN}$ for his affair

Thus, it stands to reason that for theoretical as well as for practical considerations, it has been safer to empirically investigate the extraposition relying on the subordinate clause, where all verbal parts are (expected to) occur in the final position.

Contrary to previous research, the present study focuses on the German main clause. The paper reports current work-in-progress on the diachronic development of the sentence bracket construction in German main or matrix clauses. More specifically, and in order to overcome the empirical difficulty just mentioned, it

looks at sentence bracket constructions composed of two (or more) elements. The present study is based on the corpus data from the Early New High German period (ENHG, 1350–1650).

Two general questions guide the study. First, on a conceptual level, it addresses the general question of whether the sentence bracket in German can be considered a construction in its own right (see Sections 2 and 3). Second, the paper deals with the issue of the diachronic source(s) of the sentence bracket construction. Based on analyses of the corpus material from ENHG, it examines the role of the grammaticalization of auxiliaries in its development (Section 4).

More generally, the objective of the present study is to initiate and encourage the discussion on the cognitive status of syntactic phenomena which often escape a straightforward modelling in cognitive and constructionist terms. On the one hand, they come in many different shapes, which makes it difficult to determine their formal and structural characteristics. On the other hand, they do not seem to bear a dedicated semantic and/or functional value. These aspects will be discussed in the concluding section of the paper (Section 5).

2 *Satzklammer*: a construction in its own right or a family of constructions?

So far, the German sentence bracket construction has been predominantly described in the context of two syntactic approaches: generative syntax on the one hand and the topological model (*Stellungsfeldermodell*) on the other. In the topological model, the sentence bracket construction serves as a basis for the distinction between the prefield, the middle field and the post-field (see Table 1 above). In the generative-syntactic approach, it is seen as an epiphenomenon, since it is the phrase structure of the sentence that is of primary interest in this approach. Normally, in the generative tradition, the level of CP is exploited to model the derivation of V2 word order from the basic OV word order (cf. e.g. Grewendorf 2002). The head of CP, the highest level of the clause located in the left initial position, is taken up by complementizers in subordinate clauses and by finite verbs in matrix or main clauses. In this way, the position of C in the phrase structure roughly corresponds to the left sentence bracket in the topological structure; and the clause-final position of V in the phrase structure is associated with the right sentence bracket in the topological structure.

It is important to note at this point that both approaches posit the bracket construction as a central organizational principle of the German clause more or

less axiomatically. They do not in principle differentiate between the bracket construction of main clauses on the one hand and those of the subordinate clause on the other, assuming them to be surface representations of the same underlying deep structure. In this vein, the sentence bracket construction has usually been attributed a purely structural function, cf. e.g.:

> [B]estimmte Bestandteile eines Satzes [werden] so von zwei Grenzsignalen umschlossen, dass der Hörer/Leser aus dem Auftreten des ersten Signals mit sehr großer Wahrscheinlichkeit schließen kann, dass der betreffende Bestandteil erst beendet sein wird, wenn das passende zweite Signal in der Sprechkette erscheint. (Ronneberger-Sibold 2010: 87)[2]

As can be seen from the well-known definition by Ronneberger-Sibold (2010) cited above, the boundary signaling function of the bracket construction is defined in a very abstract fashion and therefore can be applied to many different types of linguistic structure. For instance, the noun phrase of German is also assumed to have a bracket construction, called the nominal bracket (see Ronneberger-Sibold 2010). In this sense, the bracket structure is often considered a characteristic trait of German.[3]

In a recent paper, Bittner (2010) argues against the view that the bracket constructions serve a purely structural function of signaling boundaries. Instead, she proposes that the sentence bracket structure is a by-product of the language-specific realization of two partially conflicting maxims of information structure: the marking of assertion by V2 word order on the one hand and the realization of the theme-rheme structure by OV word order on the other. Bittner (2010) suggests that the sentence bracket does not carry any function on its own, cf.:

> Die Klammerstruktur des Deutschen muss daher als Epiphänomen der syntaktischen Realisierung informationsstruktureller Maximen eingeordnet werden. **Sie erfüllt keine eigenständige Funktion**. Man kann lediglich annehmen, dass diese Strukturfestlegungen nach ihrem Erwerb mit bestimmten Präsuppositionen, d.h. Erwartungen hinsichtlich der syntaktischen Struktur von Äußerungen verbunden werden. (Bittner 2010: 243; emphasis added)[4]

---

2 'certain elements of a sentence are enclosed by two boundary signals in such a way that the listener/reader can conclude with a very high degree of probability from the appearance of the first signal that the element in question will not be completed until the matching second signal appears in the speech chain.' [my translation; ES]

3 In this context, it should be mentioned that in some grammatical descriptions of German, the bracket structures are even promoted to a kind of a desirable "objective" of the German language, cf. e.g. "das Streben des Deutschen nach einem Satzrahmen" (Erben 1980: 110).

4 'The bracket structure of German must therefore be classified as an epiphenomenon of the syntactic realization of information structural maxims. It does not fulfill an independent function. It can be assumed that these structural determinations, after their acquisition, are connected with certain presuppositions, i.e. expectations concerning the syntactic structure of utterances.' [my translation; ES]

Without going into much detail of this account at this point, I would like to argue that the arguments presented in Bittner (2010) do not necessarily lead to the conclusion advocated in her article, namely that the sentence bracket construction "does not fulfil an independent function". The problem is rather, in my opinion, that Bittner (2010), following the German research tradition described above, aims at providing a unified account of the bracket construction in German and hence does not distinguish between several syntactic types or constructions. I will take up this idea further below.

For a cognitive functional linguist, however, this way of reasoning is unsatisfying, for obvious reasons. The questions that a linguist working within a cognitive and/or constructionist framework will definitely pose are: What is the function and the cognitive motivation of the sentence bracket construction (cf. the "primacy of semantics" principle mentioned in the Introduction to this volume)? Does the bracket construction serve the same function in the main clause and in the subordinate clause, given that they are constituted by different linguistic elements?

Approaching this issue from a usage-based and constructionist perspective, I would like to put forward the hypothesis that there is no one single sentence bracket construction in German, but instead several constructions or construction types that differ from each other with respect to their formal and functional/semantic characteristics as well as with respect to their diachronic development. By looking more closely at one particular type of bracket construction, i.e. complex verbal predicates in main clauses, the present paper makes a first step towards a more cognitively plausible and coherent account of word order regularities in German.

The idea of different construction types is not completely new. As for the formal realizations of the bracket construction, that is, [$V2_{FIN}$_V] in the main clause and [COMP_V] in the subordinate clause, some critical voices have been raised in the literature, especially with respect to diachrony.

> [...] die zwei Unterarten der Satzklammer [haben sich] nicht ganz gleich entwickelt. (Ebert 1986: 105)[5]

> Der vollständige Rahmen im Hauptsatz scheint auf allen Etappen des Neuhochdeutschen weniger folgerichtig durchgeführt zu sein als die Endstellung des Verbs im Nebensatz. (Ebert 1986: 112)[6]

5 'the two types of the sentence bracket [have not] developed in the same way' [my translation; ES]

6 'The complete sentence frame in the main clause seems to have been carried out less consistently at all stages of New High German than the final position of the verb in the subordinate clause.' [my translation; ES]

For example, Robinson (1997), investigating the Old High German text *Isidor*, found that 32.3% of main clauses and 28.8% of subordinate clauses have extraposition. Näf (1979) comes to a similar conclusion in his study of Notker's texts, also from Old High German. According to Fleischer and Schallert (2011: 160), extraposition occurs in 43–47% of main clauses and 26–34% of subordinate clauses in Middle High German and Early New High German texts. The quantitative differences in frequency counts provide first evidence to support the view that sentence bracket construction does not display the same regularities in different clause types.

Taking up this idea, the present paper develops the hypothesis that the German sentence bracket construction can be best described in terms of a family of interconnected construction types, which are linked to each other by similar but not identical functions. I suggest that it is reasonable to assume several construction types, and that these construction types are characterized by their own formal and syntactic regularities. Moreover, it is hypothesized that these construction types do not follow the same diachronic paths in their evolution.

To underpin this view, a comprehensive and careful investigation of a large amount of empirical data is absolutely necessary. Considerable amount of valuable work has been done by the previous research. However, none of the previous studies seem to have taken seriously the idea of different construction types. For this reason, many of the available research results cannot be directly used to test the hypothesis put forward here, cf. e.g.:

> Trotz der zahlreichen Einzeluntersuchungen zur Satzklammer haben wir immer noch kein klares, empirisch und methodologisch abgesichertes Bild von deren Geschichte. […] Wohl kein anderer Bereich der Syntaxgeschichte würde so viel methodologische Sorgfalt erfordern wie die Untersuchung der Satzklammer. Und wohl kein anderer Bereich ist durch einen so niedrigen Grad der methodologischen Reflexion gekennzeichnet wie dieser. (Ágel 2000: 1873)[7]

> Die Fragen nach Herkunft und Gründen der Durchsetzung des Satzrahmens […] bleiben soweit ungeklärt. (Betten 1987: 134)[8]

The present study takes a first step beyond the traditional approaches and aims at underpinning the proposed view by examining a portion of Early New High

7 'Despite the numerous individual studies on the sentence bracket, we still do not have a clear, empirically and methodologically secure picture of its history. […] Probably no other area of syntax history would require as much methodological care as the study of the sentence bracket. And probably no other area is characterized by such a low degree of methodological reflection as this one.' [my translation; ES]

8 'The questions about the origins and the reasons for the establishment of the sentence bracket […] remain so far unresolved.' [my translation; ES]

German syntactic structures. In the next section, the more specific questions of this study will be discussed in more detail.

3 Research questions and hypotheses

To substantiate the idea of the constructional family put forward in the previous section, a comprehensive empirical investigation of German syntactic structures is necessary, and this analysis should take into account many different parameters such as individual historical periods, dialect areas, text types, authors, sociolinguistic factors, and many more. For this first study, I decided to begin with one specific aspect of the general development of German that has been sometimes mentioned in the literature on the German sentence bracket and that, in my view, bears a direct connection to the verbal morphosyntax: the grammaticalization of analytic verbal constructions.

On the one hand, it is generally known that many analytical constructions have grammaticalized since the earliest attested stages of German, among them the perfect constructions with the auxiliary verbs *haben* 'have' and *sein* 'be', the passive constructions with the auxiliaries *werden* 'become' and *sein* 'be', the future tense construction with *werden* 'become' as well as the analytical subjunctive construction with *würde* 'would'. In this respect, German is often described as a language with the strong diachronic tendency towards analyticity (cf. e.g. Bittner & Gaeta 2010).

On the other hand, it has been stated in the literature that the grammaticalization of verbal periphrastic constructions, above all the perfect constructions, constitutes a necessary condition for the establishment of the sentence bracket construction in main clauses, cf. e.g.:

> Für die Prosasyntax ist letztlich vor allem die Position der einzelnen verbalen Teile von Bedeutung, denn das für den deutschen Satzbau typische Phänomen der Satzklammer wird erst durch das Vorhandensein analytischer Verbformen ermöglicht. (Betten 1987: 102)[9]

Building on these two largely uncontroversial observations, the following general hypothesis may be formulated for the study: The grammaticalization of analytical verbal constructions influenced the establishment of the sentence bracket construction. That is, a unidirectional causal relation will be assumed between

9 'For the syntax of prose texts, the position of the individual verbal parts is of particular importance, because the phenomenon of the sentence bracket, which is typical for the German sentence structure, only becomes possible through the presence of analytic verb forms.' [my translation; ES]

the grammaticalization of analytical verbal constructions and the development of the sentence bracket construction in main clauses.

According to this general hypothesis, the following prediction can be made for the corpus data from the Early New High German period: In contexts with auxiliary verbs, the sentence bracket construction should be more firmly established than in contexts with other complex verbal predicates. To operationalize the concept of more and less firmly established bracket construction, extraposition rates can be used. Extraposition of non-clausal constituents happens more easily when the sentence bracket construction is less firmly established; extraposition is less likely if the sentence bracket construction is more firmly established. This can be translated into the following specific hypothesis:

Hypothesis 1: In the corpus data, we should observe a lower rate of extrapositions in contexts with auxiliaries. On the other hand, we should observe higher rates of extrapositions in contexts with verbal predicates formed by other verbs.

4 Pilot study

For the pilot study, I decided to look carefully at one particular text from the ENHG period. As mentioned above, the study by Schildt (1976) is one notable exception to the research tradition in that it investigates the extraposition in German main and matrix clauses. In the material of Schildt, the texts from two dialect areas showed a relatively high rate of extraposition (see Table 2): West Central German (WCG) with 27.8 % in the period 1470–1530 and 21.8% in 1670–1730, and East Upper German (EUG) with 28.2% in 1470–1530 and 14.0% in 1670–1730. As West Central German not only showed one of the highest rates of extrapositions but also the lowest degree of their decrease, I decided to first look more closely at a text from this dialect area. So, for the first explorative study I used the data from one single text from the *Referenzkorpus Frühneuhochdeutsch* (ReF.UP; Demske 2019), *Karrenritter* from the time period 1400–1450 (text size: 21,655 tokens).

Table 2: Extraposition rate in the texts examined by Schildt (based on Schildt 1976: 272)

TIME	DIALECT AREA			
	ECG	WCG	EUG	WUG
1470–1530	15.5%	**27.8%**	28.2%	18.9%
1670–1730	14%	**21.8%**	14%	21.9%

In the first, theoretical part of his study, Schildt distinguishes various types of sentence bracket constructions, very much in the spirit of the present proposal. In the statistical evaluation of his corpus, however, the individual types no longer play a role. My intention was thus to look whether I can find differences in syntactic behavior according to Hypothesis 1. Thus, for the pilot study, I looked at all main and matrix clauses in the text that met the criteria of bracket formation, i.e. clauses with complex verbal predicates formed by auxiliaries (4), modal verbs (5) and full verbs (6), as well as verbs with separable particles as in (6).[10]

(4) AUX_V

s148	Jr	**hant**	die	konigin	**verlorn**
	you	have$_{FIN}$	the	queen	lost$_{PTCP}$

(5) MV_V

s447	wir	**sollen**	beide	nach	im	**riten**	vnd	du
	we	shall$_{FIN}$	both	after	him	ride$_{INF}$	and	you
	solt	mit	im	**vehten**				
	shall$_{FIN}$	with	him	fight$_{INF}$				

(6) V_PTC and V_V

s251	Da	**gingen**	im	die	augen	ein	wenig	**zu**
	then	went$_{FIN}$	him	the	eyes	a	little	shut$_{PTC}$
	vnd	die	kemenate	**begund**	ein	wenig	**biedemen**	
	and	the	chamber	began$_{FIN}$	a	little	tremble$_{INF}$	

All clauses with complex predicates but no other non-clausal constituents in the middle field and in the post-field like those in (7) were excluded from the sample.

(7) verbal bracket without the possibility to extrapose non-clausal constituents

s523	Jch	**wil**	**uersuchen**,	ob	ich	uch	erlösen	möge
	I	want$_{FIN}$	try$_{INF}$	if	I	you	redeem	may

In total, the sample for the pilot study comprised 549 observations (cf. Table 3 for an overview). All clauses were classified with respect to the presence/absence of extraposed constituents as well as for the syntactic status of extraposed constituents (pronoun, noun phrase, prepositional phrase, etc.). Note that only

10 Due to the rich syntactic annotation of the corpus, it was possible to search directly for any type of sentence bracket. For example, the search query for main clauses with sentence bracket formed by auxiliary and full verb had the following form: #s : [cat = "S"] & #vafin : [pos = "VAFIN"] & #vp : [cat = "VP"] & #vinf : [pos = ("VVPP" | "VVINF" | "VMPP" | "VMINF" | "VAPP" | "VAINF")] & #vafin .* #vinf & #s > #vafin & #s > #vp & #vp > #vinf.

non-clausal constituents were taken into account. (8) is an example for a clause without extraposition, (9) is an example with extraposition, where a prepositional phrase is located to the right of the right verbal bracket formed by the past participle *gethan* 'done'.

(8) sentence bracket construction without extraposition

s958	nu	**han**	ich	uch	die	wunden	**uergolten**,	die	ir
	now	have$_{FIN}$	I	you	the	wounds	requited$_{PTCP}$	that	you
mir	zur	tauelrunde	stachent /						
me	at	round table	stabbed						

(9) sentence bracket construction with extraposition, here an extraposed prepositional phrase

s60	Jch [...]	**han**	das	me	**gethan**	[durch	uwer
	I	have$_{FIN}$	it	more	done$_{PTCP}$	through	your
	fruntschafft]$_{PP}$						
	friendship						

As shown in Table 3, we can indeed observe a slight variation in extraposition rates with respect to the type of bracket construction.

Table 3: Different types of sentence bracket in *Karrenritter*

Bracket type	No extraposition	Extraposition
AUX_V	111 (88%)	15 (12%)
MV_V	212 (81.5%)	48 (18.5%)
V_V	76 (74.5%)	26 (25.5%)
V_PTC	50 (82%)	11 (18%)
TOTAL	449 (81.8%)	100 (18.2%)

Hypothesis 1 seems to be supported by the data. Verbal predicates formed by auxiliary verbs show the lowest rate of extrapositions (12%) and thus realize the full sentence bracket, whereas the verbal predicates with full verbs display the highest rate of extrapositions (25.5%). The proportions of modal verbs and verbs with separable particles lie in-between these two extremes with 18.5% and 18%, respectively.[11]

11 Interestingly, the total instances of extraposition amount to 18.2%, which is significantly lower compared to Schildt's figures. In Sapp's (2011) selection of MHG and ENHG texts, extraposition (in subordinate clauses) amounts to 16.9% of the total clauses. In Section 4, we will see that there is a great amount of variation between texts from the ENHG period in general.

As the differences do not seem very high though, it is necessary to check whether they are statistically significant. A test commonly performed in such a context is the chi-square test, which shows that the distribution of extrapositions in different contexts is not significant (χ^2 = 7, df = 3, p = .07177, Cramér's V = .113).

However, the chi-square test provides test statistic (χ^2) and effect size (Cramér's V) for the entire table, and does not reveal patterns of association between columns and rows in a table. What is often more revealing is the contribution that an individual cell makes to the overall distribution. In other words, the question is whether a row-by-column combination occurs more often than would be expected if there was no pattern in the data (i.e., if the data were randomly distributed). For instance, how many extrapositions would we expect if we assumed that their share does not differ with respect to sentence bracket type? Consider Table 4, which shows the observed frequencies and the calculated expected values in brackets:

Table 4: Extraposition and different bracket types: observed (expected)

Bracket type	No extraposition	Extraposition
AUX_V	111 (103)	15 (23)
MV_V	212 (211)	48 (47)
V_V	76 (83)	26 (19)
V_PTC	50 (50)	11 (11)

The difference between observed and expected values represents the relative importance of the individual cell for the overall distribution. Pearson residuals are a measure for relative cell importance (see Table 5). If positive, residuals indicate that the observed value is higher than expected (and vice versa for negative values). Residuals ±2 are statistically significant at $p < .05$. Residuals between ±1 and ± 2 indicate that the difference between observed and expected is small, but may be interpreted as a trend in the data.

Table 5: Extraposition and different bracket types: Pearson residuals

Bracket type	No extraposition	Extraposition
AUX_V	0.78	−1.66
MV_V	−0.04	0.09
V_V	−0.81	1.72
V_PTC	0.02	−0.03

Figure 1 shows an association plot, representing construction types and extraposition rates. Each tile represents a cell from Tables 4 and 5. The colour of the tiles mirrors a cell's residual and is blue for a positive association and red for a negative one. Lighter shades indicate the trend (i.e., residuals between 1 and 2, which are statistically not significant); grey shades represent the absence of a trend. The height of a tile stands for the absolute value of the residual, the width of a tile represents the observed frequency and is wider for higher frequencies.

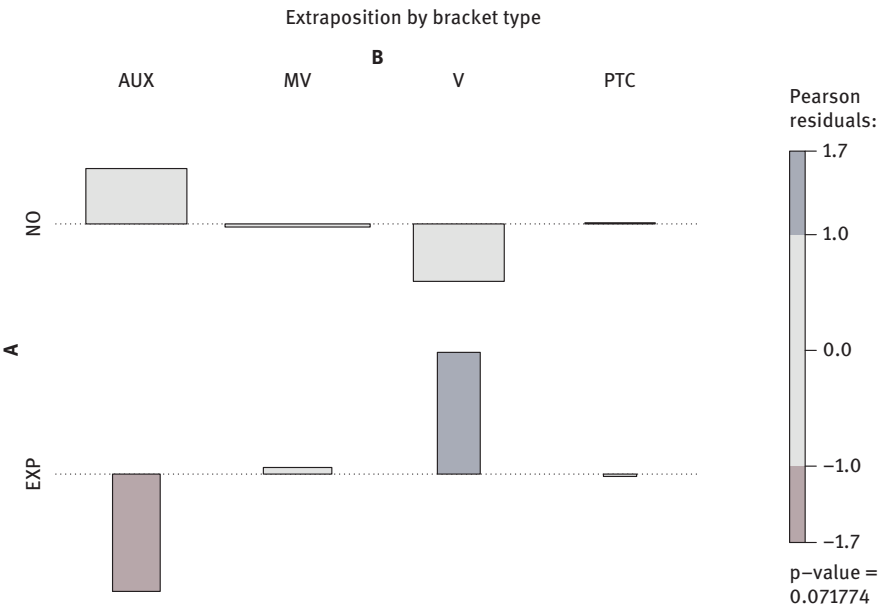

Figure 1: Extraposition by construction type in an association plot, *Karrenritter*

The association plot shows that the contexts with full verbs (V) are positively associated with extraposition (high, blue tile) By contrast, contexts with auxiliary verbs (AUX) are dissociated with extraposition (high, red tile). Although the results are not statistically significant, they still indicate that there are certain trends in the data and that these trends are in line with Hypothesis 1 (see Section 3). As predicted, a more firmly established bracket construction in contexts with auxiliary verbs allows a lower rate of extraposition.

As for the constructions with modal verbs and with separable verb particles, the pilot study did not provide any statistically significant results (grey tiles in Figure 1), which means that the slight difference with respect to the rate of

extraposition may well be due to chance. Of course, as the present pilot study only investigated data from one particular text, more data is needed to be able to draw more reliable conclusions with respect to these types of bracket constructions.

5 By way of conclusion

The previous section has reported the first results of a study that seeks to assess the sentence-bracket construction in German in terms of a constructional family account. The study relies on the data from the entire *Referenzkorpus Frühneuhochdeutsch* (ReF.UP; Demske 2019), which covers the Early New High German period (1350–1650). The corpus currently consists of 26 historical texts from different dialect areas in Germany (East Upper German, West Upper German, West Central German, and East Central German) and comprises 600,500 tokens in 21,430 sentences. The texts cover six time periods à 50 years: 1350–1400, 1400–1450, 1450–1500, 1500–1550, 1550–1600, 1600–1650.[12] For the comprehensive study, all finite verbs were extracted from the corpus (50,150 hits in total). This dataset will serve as the basis for the following stages of the study.

Although the results of the pilot study reported in Section 4 may, at first glance, seem somewhat inconclusive, they nevertheless provide very interesting insights into the word order regularities of older stages of German, and they are useful for the next steps in the project.

The results are partially compatible with the general hypothesis concerning the correlation between the grammaticalization of analytical verbal constructions and the establishment of the sentence bracket construction in main clauses (see Section 3). Further research is certainly needed to test this hypothesis on the basis of more empirical data.

Two observations from the pilot study deserve further attention. First, with respect to the rate of extraposition, the constructions with modal verbs do not seem to differ considerably from constructions with auxiliary verbs (18.5% versus 12%). Second, the constructions with separable verbal particles do not differ significantly from constructions with auxiliary verbs and very much resemble

12 For more detailed information about the *Referenzkorpus Frühneuhochdeutsch* see https://talar.sfb833.uni-tuebingen.de/erdora/cmdi/DATENZENTRUM/fnhd.UP and https://www.uni-potsdam.de/de/guvdds/referenzkorpus-fruehneuhochdeutsch-baumbankup/korpusstruktur

contexts with modal verbs. Several alternative explanations may be considered to explain these observations, each of which require further quantitative and quantitative analysis.

In the remaining part of this concluding section, I would like to report on the envisaged next step in the study, which aims at a more detailed analysis of different auxiliary verbs and different modal verbs. As these verbs do not display the same degree of grammaticalization, it may be suggested that a more thorough analysis of data can reveal relevant differences in according to the general hypothesis of this paper. It is, for example, generally acknowledged that the grammaticalization of perfect constructions with *haben* 'have' and *sein* 'be' in German was already fairly advanced in the Old High German period (OHG), whereby the auxiliary *haben* 'have' progressed faster and formed the analogical model for the grammaticalization of the perfect auxiliary *sein* 'be' (cf. Gillmann 2016). Not only *sein* retained many of its copular uses, also in combination with past participles, it was also involved in the process of grammaticalization towards a passive auxiliary. In brief, the diachronic developments of *haben* 'have' and *sein* 'be' towards perfect auxiliaries display remarkable differences, the most important one for the purposes of this study being that *haben* 'have' displays a higher degree of grammaticalization than *sein* 'be'. A similar observation also holds for the modal verbs: some of them have progressed further on the grammaticalization cline, whereas others have retained more of their lexical characteristics.

Table 6 gives an overview of all instances of finite forms of *haben* 'have' (=AUX), *sein* 'be' (=AUX) and *wollen* 'want' (=MV) that form a part of a complex predicate and form a sentence bracket construction in a main clause in the data.

Table 6: Corpus data per dialect area and time period (total number = 4021)

DIALECT AREA	TIME					
	1350–1400	1400–1450	1450–1500	1500–1550	1550–1600	1600–1650
East Central German (ECG)	152	62	142	122	344	93
East Upper German (EUG)	54	123	128	132	349	215
West Central German (WCG)	46	253	174	205	220	135
West Upper German (WUG)	230	216	123	106	94	303

Table 7 presents the first quantitative results with respect to extraposition in the contexts of these finite verbs. According to the general hypothesis related to the grammaticalization status, the expectation is that we should observe the highest rate of extraposition in contexts with the modal verb *wollen* 'want', less so in contexts of the less grammaticalized auxiliary verb *sein* 'be', and the lowest rate of extrapositions in contexts with the highly grammaticalized perfect auxiliary *haben* 'have'. As can be seen from Table 7, the results are – again – somewhat inconclusive, and invite us to reconsider the initial general hypothesis based on the relevance of grammaticalization of analytical verbal constructions.

Table 7: Extraposition and different finite verbs

V_{FIN}_V	No extraposition	Extraposition
haben 'have'	1509 (82.8%)	312 (17.1%)
sein 'be'	810 (77.4%)	237 (22.6%)
wollen 'want'	948 (82.3%)	205 (17.8%)

A closer look at the different time periods and dialect areas (see Figures 2, 3 and 4 for the individual verbs), however, reveals an enormous amount of variation in the data.

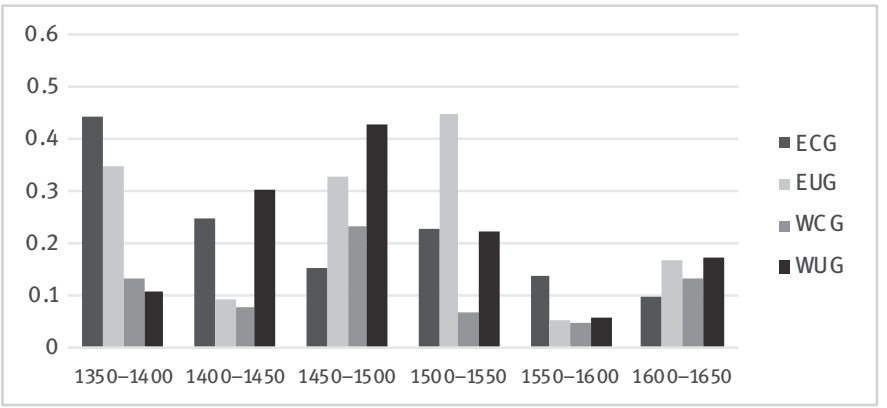

Figure 2: Extraposition in *haben* 'have' contexts

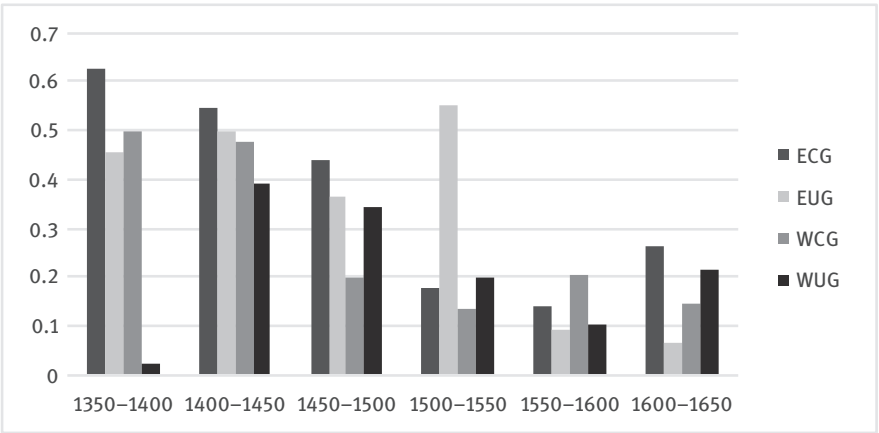

Figure 3: Extraposition in *sein* 'be' contexts

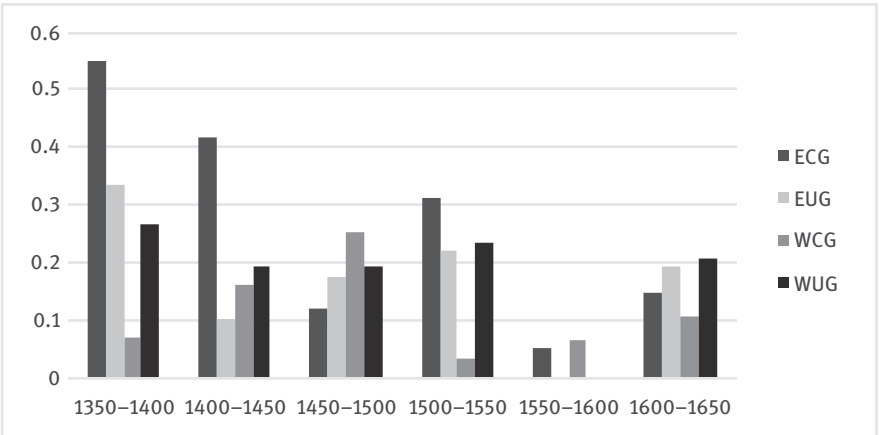

Figure 4: Extraposition in *wollen* 'want' contexts

In the *Referenzkorpus Frühneuhochdeutsch*, each time period is represented by one particular text; we observe thus a very high amount of inter-textual variation as well. The relative frequency counts presented in Figures 2–4 suggest that there the variables TIME, DIALECT and TEXT are not sufficient to explain this variation. A thorough multifactorial analysis of the data is needed to be able to better understand the diachronic development of the sentence bracket construction in main clauses.

A general conclusion that arises from the empirical evidence gathered so far is that the sentence bracket construction is a highly complex phenomenon, and

that it cannot be explained by solely relying on one general hypothesis. It is very likely that – just like most other diachronic processes we know of – the gradual establishment of sentence bracket constructions was motivated by multiple factors. There is still a long way to go before a comprehensive vision of sentence bracket constructions in German is reached. The goal of the further studies will therefore be to pay due attention to all these different factors.

To conclude, I hope to have shown that the phenomenon of the sentence bracket construction, which seems to be one of the most thoroughly investigated syntactic phenomena of German, can still benefit from a thorough multifactorial analysis in the spirit of Diachronic Cognitive Linguistics.

References

Admoni, Wladimir. 1972. Die Entwicklung des Ganzsatzes und seines Wortbestandes in der deutschen Literatursprache bis zum Beginn des 19. Jahrhunderts. In Freudel, Günter (ed.), *Studien zur Geschichte der deutschen Sprache.* Berlin: Akademie-Verlag, 243–279.

Ágel, Vilmos. 2000. Syntax des Neuhochdeutschen bis zur Mitte des 20. Jahrhunderts. In Werner Besch, Anne Betten, Oskar Reichmann, Stefan Sonderegger (eds.), *Sprachgeschichte. Ein Handbuch zur Geschichte der deutschen Sprache und ihrer Erforschung* (= Handbücher zur Sprach- und Kommunikationswissenschaft. 2, 2). Teilband 2. 2., vollständig neu bearbeitete und erweiterte Auflage. Berlin: De Gruyter, 1855–1903.

Axel, Katrin. 2007. *Studies in Old High German Syntax: Left Sentence Periphery, Verb Placement and Verb-second.* Amsterdam: John Benjamins.

Benes, Eduard. 1968. Die Ausklammerung im Deutschen als grammatische Norm und als stilistischer Effekt. Muttersprache 78: 289–298.

Betten, Anne. 1987. *Grundzüge der Prosasyntax: Stilprägende Entwicklungen vom Althochdeutschen zum Neuhochdeutschen*. Berlin: De Gruyter.

Bittner, Dagmar. 2010. „Die deutsche Klammerstruktur. Epiphänomen der syntaktischen realisierung von Assertion und Thema-Rhema-Gliederung". In Bittner, Dagmar and Livio Gaeta (eds.), *Kodierungstechniken im Wandel. Das Zusammenspiel von Analytik und Synthese im Gegenwartsdeutschen*. Berlin: De Gruyter, 123–136.

Demske, Ulrike. 2019. Referenzkorpus Frühneuhochdeutsch: Baumbank.UP. Universität Potsdam: Institut für Germanistik (https://hdl.handle.net/11022/0000-0007-EAF7-B)

Ebert, Robert Peter. 1980. Social and Stylistic Variation in the Order of Auxiliary and Nonfinite Verb in Dependent Clauses in Early New High German. *Beiträge zur Geschichte der deutschen Sprache und Literatur* 103: 204–237.

Erben, Johannes. 1980. *Deutsche Grammatik.* Ein Abriß, 12. Aufl. München: Hueber.

Fleischer, Jürg, and Oliver Schallert. 2011. *Historische Syntax des Deutschen. Eine Einführung*. Tübingen: Narr.

Gillmann, Melitta. 2016. *Perfektkonstruktionen mit* haben *und* sein. *Eine Korpusuntersuchung im Althochdeutschen, Altsächsischen und Neuhochdeutschen.* Berlin: De Gruyter.

Grewendorf, Günther. 1998. *Aspekte der deutschen Syntax*. Tübingen: Narr.

Grewendorf, Günther. 2002. *Minimalistische Syntax*. Tübingen: Francke.

Hinterhölzl, Roland. 2010. Zur Herausbildung der Satzklammer im Deutschen Ein Plädoyer für eine informationsstrukturelle Analyse. In Arne Ziegler & Christian Braun (eds.), *Historische Textgrammatik und Historische Syntax des Deutschen*. Berlin: De Gruyter.

Näf, Anton. 1979. *Die Wortstellung in Notkers Consolatio*. Berlin: De Gruyter.

Robinson, Orrin W. 1997. Clause subordination and verb placement in the Old High German Isidor translation. Heidelberg: Winter.

Ronneberger-Sibold, Elke. 2010. Die deutsche Nominalklammer: Geschichte, Funktion, typologische Bewertung. In Ziegler, Arne (ed.), *Historische Textgrammatik und Historische Syntax des Deutschen: Traditionen, Innovationen, Perspektiven*, Bd. 1, Berlin: De Gruyter, 85–120.

Sapp, Christopher D. 2011. *The Verbal Complex in Subordinate Clauses from Medieval to Modern German*. Linguistik Aktuell/Linguistics Today 173. Amsterdam: John Benjamins.

Sapp, Christopher D. 2014. Extraposition in Middle and Early New High German. *Journal of Comparative Germanic Linguistics* 17.2: 129–156.

Schildt, Joachim. 1976. Zur Ausbildung des Satzrahmens. In Freudel, Günter (ed.), *Zur Ausbildung der Norm der deutschen Literatursprache (1470–*1730). Vol. 1. Berlin: Akademie-Verlag, 235–284.

Wöllstein-Leisten, Angelika. 2010. *Topologisches Satzmodell.* Heidelberg: Winter.