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# ***Mit Hilfe von Kreativität?***

How German Complex Prepositions Are Shaped

**Abstract:** This paper deals with the formation and the diachronic development of German complex prepositions following the general syntactic pattern [P N P/GEN] and sets to answer two general questions: (i) Do individual complex prepositions follow a general pattern of formation? And, (ii) if yes, how active and productive is this pattern? Traditionally, a diachronic scenario of a reanalysis followed by the gradual conventionalization and routinization of individual elements is assumed to be at work for individual instances of complex prepositions. The present study will show that complex prepositions are often formed directly after a productive schema by filling its open slots with lexical material. In this case, a diachronic scenario involving the creative application of a pattern that gets extended and strengthened over time is more likely. As we will show, the data reveals a differentiated picture, suggesting that both diachronic ways have been taken on the road towards complex prepositions in German.

## **1 Introduction: Complex Prepositions in German**

Complex prepositions (henceforth CPs) in German are usually described as an open class of multi-word expressions (cf. e.g. Di Meola 2000; Szczepaniak 2009; Stefanowitsch et al. 2020). However, it has been notoriously difficult to provide a precise definition of this class, as the boundaries to the simple prepositions on the one hand and to free syntactic combinations on the other hand are often blurred (see e.g. Lehmann and Stolz 1992: 17; Meibauer 1995).

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The majority of CPs in present-day German are realizations of the syntactic pattern containing a simple preposition (=P1), an optional determiner (=DET), and a noun (N), that are followed by another preposition (=P2) or a genitive noun phrase (=GEN). This structure is exemplified in (1), and will be referred to as [P1 (Det) N P2/GEN] throughout the article.

- (1) *in<sub>P1</sub> Bezug<sub>N</sub> auf<sub>P2</sub>, im<sub>P1</sub> Zusammenhang<sub>N</sub> mit<sub>P2</sub>, mit<sub>P1</sub> Hilfe<sub>N</sub> von<sub>P2/GEN</sub>, im<sub>P1</sub> Vergleich<sub>N</sub> zu<sub>P2</sub>*  
 ‘in relation to, in connection with, with the help of, in comparison with’

In present-day German, most “newcomers” into the class of CPs are formed according to this structure. In the following, the principal characteristics of CPs of this syntactic pattern will be shortly introduced (for the complete list of criteria see Beneš 1974: 34–35; Lehmann and Stolz 1992; Lindqvist 1994; Di Meola 2000; Szczepaniak 2009; Hüning et al. 2020; see also Quirk and Mulholland 1964: 65; Huddleston 1984; Quirk 1985: 671–672; Huddleston and Pullum 2002 for English). Most researchers argue, and we agree with them, that none of the characteristics discussed in the literature may be taken as a unique defining property of a CP, as individual members usually display only a bundle of these properties and sometimes to a different degree. Nevertheless, these characteristics are important to delimit the class of CPs from regularly formed syntactic combinations.

First, in typical CPs of the structure [P1 (Det) N P2/GEN], the first preposition P1 is usually invariable for a given multi-word item, cf. (2).

- (2) *im/\*mit/\*bei Zusammenhang mit; im/\*unter/\*mit Gegensatz zu*  
 ‘in/\*with/\*at connection with; in/\*under/\*with contrast to’

The second, postnominal preposition P2 or the genitive case of the noun phrase are also widely taken as being fixed, see (3).

- (3) *im Zusammenhang mit/\*an/\*auf/\*zu; im Gegensatz zu/\*mit/\*auf*  
 ‘in connection with/\*at/\*up/\*to; in contrast to/\*with/\*up’

Normally, the genitive phrase can be substituted by a prepositional phrase with *von* ‘of’; this happens not only in contexts of CPs but also in other syntactic contexts outside of CPs.

With respect to the nominal core [(Det) N] of the pattern, most of the literature cited above notes that the noun cannot be modified syntactically, for exam-

ple by adjectives and determiners, or morphologically, for example by plural marking, see e.g. (4) for the CP *im Zuge* ‘in the course’ (cf. also Di Meola 2000: 105–109).

- (4) a. *Im Zuge der Verhandlungen hat sich eine Kompromisslösung abgezeichnet.*  
 ‘In the course of the negotiations, a compromise solution has emerged.’  
 b. determiner  
*\*In dem Zug der Verhandlungen . . .*  
 ‘In the course of negotiations . . .’  
 c. adjective  
*\*Im schnellen Zug der Verhandlungen . . .*  
 ‘In the quick course of negotiations . . .’  
 d. plural marking  
*\*In den Zügen der Verhandlungen . . .*  
 ‘In the courses of negotiations . . .’

Generally, the characteristic properties of CPs introduced above are associated with the formal fixedness of these multi-word expressions. From a diachronic point of view, the formal fixedness is usually seen as resulting from a gradual process of automatization and conventionalization leading from regular syntactic combinations towards fixed expressions, via repetition in usage. During this diachronic process, the individual elements of the previously freely combined syntactic structure successively become less autonomous, gradually coalescing into a holistic and idiosyncratic structure. The mechanism of reanalysis (or rebracketing) is assumed to be mainly at work here, and this can be exemplified in (5).

- (5) a. P1 N P2  
 $[in [Bezug [auf NP]_{PP}]_{NP}]_{PP} > [[in Bezug auf]_{CP} [NP]]_{PP}$   
 b. P N GEN  
 $[im [Laufe [NP GEN]_{NP}]_{NP}]_{PP} > [[im Laufe]_{CP} [NP GEN]]_{PP}$

For German, it is generally believed that most recently emerged CPs follow the pattern [P1 (Det) N P2/GEN] and originate from regular syntactic structures. The postnominal genitive phrase in (5b) or the prepositional phrase in (5a) are traced back to the originally postnominal attributive phrases that are then reanalyzed as a complement of a new CP (see Lehmann 1998 for the detailed account of the reanalysis). However, there are some problems with this traditional assumption, and we will show in the remainder of this paper that only some of the CPs in German have arisen via this diachronic path. Many present-day CPs, on the other

hand, do not follow this directionality and show little or no evidence of the “free syntactic” stage prior to their establishment as CPs.

The paper is structured as follows. In Section 2, we will introduce our research questions. Section 3 presents data and methods. Section 4 summarizes the results of the corpus analysis. In Section 5, the implications of the results obtained in this study for the general diachronic development of CPs in German will be discussed, with particular attention to the concepts routine, routinization, and creativity. Section 6 concludes with some open questions for further research.

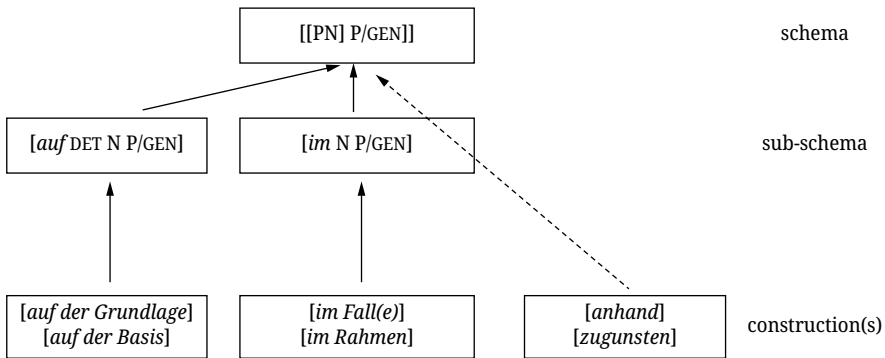
## 2 Research Questions

From a diachronic point of view, the category of CPs in German is usually conceived of as a constantly expanding open class. As mentioned in Section 1 above, it is generally assumed that most recently emerged CPs follow the syntactic pattern [P1 (Det) N P2/GEN] and stem from regular syntactic combinations with compositional semantics. The reanalysis schema introduced in (5) above takes this regular syntactic structure with a postnominal attributive (noun or prepositional) phrase of the core noun as input, and turns it into a fixed output structure where this postnominal attributive phrase functions as a complement of a new CP.

The problem with this view is however that, as demonstrated by Hoffmann (2005) for English, for many CPs there is no convincing empirical evidence of a development from a free combination to a fixed item. In English, most of them appear in the written record abruptly in the target form [P1 (DET) N P2]. This suggests that at least some CPs may have emerged by analogy to existing individual cases, which in turn had emerged previously in the way outlined in (5). Hoffmann called this process ‘grammaticalization by analogy’ (2005: 86). At another point in his study, he evokes the existence of an ‘abstract construct’: “the sequence ‘preposition–noun–preposition’ appears to be available as a grammaticalized yet abstract construct which under certain circumstances can be filled by new lexical entities to form a new complex preposition” (Hoffmann 2005: 171). In other words, what Hoffmann (2005) suggests is what we could call, in constructionist terms, a schematic and productive construction. The existence of such a constructional schema means, among others, that speakers can create new CPs spontaneously by filling the variable slots [P1] and [N] with lexical material. And this is what seems to have happened to many of the CPs in English. Given this situation in English, it is fair to ask whether this scenario may also hold for the development of CPs in German. In particular, the [N]-slot in the schema [P1 (Det) N P2/GEN] seems a very good candidate, as nouns from the same or similar semantic

class may easily enter the pattern and thus expand the range of possible members of the open class of CPs.

In diachronic terms, such a productive schema may be considered a booster of creativity, namely the F-creativity in the sense of Sampson (2016), meaning that speakers access the existing pattern and (re-)use it to form novel expressions, thus expanding the inventory of CPs. In Smirnova & Sommerer (2020), a first sketch has been offered of how the category of CPs in German may be modeled in terms of a constructional network with several levels of abstraction and with different sub-schemas within the general schema [P1 (DET) N P2/GEN] (see Figure 1).



**Figure 1:** Partial network of German complex prepositions (slightly adapted from Smirnova & Sommerer 2020: 16).

Figure 1 represents the partial network modelled on the basis of a handful of individual CPs which differ from each other with respect to the formal pattern and the semantic content. Smirnova & Sommerer (2020: 17) suggested that synchronically, several constructional sub-schemas in the network can be assumed, which function as generalizations across different individual construction types.

The present study offers a dynamic and diachronic take on the phenomenon of CPs. It is guided by the central research questions concerning the existence of constructional schemas at work in the diachronic development of CPs in German. In other words:

- Do individual CPs follow a general pattern of formation in German?
- If yes, how can this pattern be best modelled in a constructional network?
- If yes, how productive is this pattern in the sense that it regularly produces new CPs?

These research questions are directly linked to the more general issues of creativity and routine in diachronic change. If the traditional view is correct and German CPs predominantly arise via the reanalysis of a previously regular syntactic combination, as it has been sketched in (5) above, one would expect a rather slow diachronic emergence of a small number of CPs in the course of time. This would support a diachronic scenario of a gradual process of *routinization* (other terms found in the diachronic literature are lexicalization, institutionalization, automatization, fossilization, etc.) of individual instances of CPs, as particular syntactic combinations should first achieve a sufficiently high frequency of use in the community of speakers to be reanalyzed and to function as a lexical unit. On the other hand, if there exists an abstract constructional schema after which CPs are formed by directly filling the open slots of the schema with lexical material, we would expect a rather rapid emergence of many different individual CPs, and this does not need to be necessarily associated with a prior gradual increase in usage frequency. This would support a diachronic scenario of a creative application of a schema that gets extended and strengthened every time a new instance is built according to it. As will be shown in the remainder of this paper, the data reveals a more differentiated picture, suggesting that both diachronic ways have been taken on the road towards CPs in German.

### 3 Data and Method

The present study focuses on the pattern [P1 (Det) N P2/GEN] where the first preposition P1 is represented by *mit* ‘with’, and the noun is an abstract deverbal noun N<sub>dev</sub>, i.e. [*mit* (DET) N<sub>dev</sub> P/GEN], see e.g. (6) and (7) below. This syntagmatic pattern is recurrent in many recent CPs. Moreover, these CPs may be traced back in time (at least) to the 17<sup>th</sup> century, representing a good test case for the two diachronic scenarios described in Section 2. The study is based on a data sample from the DTA (Deutsches Textarchiv)<sup>1</sup> that covers nine periods and amounts to about 10% of the entire corpus. Table 1 represents the composition of our data sample.

From this data, we extracted all occurrences of deverbal nouns, based on the list that was compiled using the studies by Kamber (2008), Hartmann (2016) and Smirnova & Stöber (2022). The data from the last three periods, i.e. from the 19<sup>th</sup> century, is not only the largest proportion of our corpus, but it also contains the most occur-

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<sup>1</sup> <https://www.deutschestextarchiv.de>

**Table 1:** Investigated periods.

Period	Years	corpus size
1	1605–1607	544,752
2	1643–1646	286,361
3	1683–1685	367,164
4	1719–1722	1,282,914
5	1758–1760	1,154,723
6	1797–1800	2,172,629
7	1834–1836	4,366,178
8	1871–1874	2,256,498
9	1896–1899	4,411,414
TOTAL		<b>16,842,633</b>

**Table 2:** Most frequent nouns with *mit* in the 19th century.

lemma	N
<i>Hilfe</i> ‘help’	338
<i>Ausnahme</i> ‘exception’	262
<i>Rücksicht</i> ‘regard’	217
<i>Bezug</i> ‘reference’	106
<i>Ausdruck</i> ‘expression’	28
<i>Berücksichtigung</i> ‘consideration’	26
<i>Blick</i> ‘view’	25
<i>Zusatz</i> ‘addition’	21
<i>Anwendung</i> ‘application’	21
<i>Beziehung</i> ‘respect’	21

rences of CPs and related syntagmatic patterns. To illustrate this, Table 2 gives the ten most frequent nouns in our data set in the 19<sup>th</sup> century (= periods 7 to 9).<sup>2</sup>

For the present analysis, structures with 20 deverbal nouns were selected (see Table 3). This selection is motivated by frequency and by the semantics of the nouns, and is based on the three most frequent nouns that occur in the syntagmatic pattern [*mit* (DET) N<sub>dev</sub> P/GEN] (see Table 2): *Hilfe* ‘help’ (n=338), *Rücksicht* ‘consideration’ (n=217), and *Bezug* ‘reference’ (n=106).<sup>3</sup> In addition to these three

<sup>2</sup> A complete list of the nouns as well as the data used for this study can be found at <https://osf.io/yancd>

<sup>3</sup> For semantic reasons, the noun *Ausnahme* ‘exception’ (n=262) will not be considered here. Whereas *Hilfe* and *Bezug/Rücksicht* are in close paradigmatic relation to other semantically simi-

nouns, their contextual synonyms were also considered, i.e. other deverbal nouns that are attested in the pattern [*mit* (DET) N<sub>dev</sub> P/GEN] in our data and, in these uses, are semantically close to the frequent nouns *Hilfe*, *Bezug*, and *Rücksicht*. Examples (6)–(7) illustrate what is meant by contextual synonymy in the present study.

- (6) *Mit **Hilfe/Anrufung/Beihilfe** eines Rechtsanwalts wurde der Prozess entschieden.*

‘With help/invocation/assistance of a lawyer, the case was decided.’

- (7) *Mit **Bezug/Hinsicht/Rücksicht auf** das Wetter entschieden sie sich gegen die Wanderung.*

‘With reference/regard/consideration to the weather, they decided against the hike.’

Based on the semantics of the nouns in the usage pattern [*mit* (DET) N<sub>dev</sub> P/GEN], two groups of structures in the data were distinguished: the so-called *Hilfe*-group on the one hand, with the total of 486 occurrences in the data, and the *Bezug*-group on the other, with the total of 407 occurrences (resulting in a data set of 895 observations in total). Table 3 shows the absolute and the normalized frequency of these nouns in the syntagmatic pattern [*mit* (DET) N<sub>dev</sub> P/GEN], the periods of attestation, and the total frequency of the nouns in the corpus.

All 12,317 observations were manually annotated with regard to the following variables:

- DETERMINER: presence/absence of a determiner before the noun; if a determiner is present, the type of determiner
- PRENOMINAL MODIFICATION: presence/absence of a modifier before the noun; if a modifier is present, the type of modifier
- NUMBER: number of the noun; singular/plural
- POSTNOMINAL ELEMENT: prepositional phrase or genitive noun phrase.

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lar nouns and build clusters of semantically related exemplars, *Ausnahme* behaves exceptionally, as it forms a unique construction [*mit Ausnahme von*/GEN].



Table 3: Analysed nouns.

lemma	absolute frequency in [mit (DET) Ndev P/GEN]	normalized frequency (per 100.000 words)	attested in periods <sup>4</sup>	absolute frequency in the corpus
<b>Hilfe-group</b>				
<i>Hilfe</i> 'help'	416	2.47	1–9	1,852
<i>Anbetung</i> 'worship'	1	0.01	9	83
<i>Anrufung</i> 'invocation'	4	0.02	1–9	44
<i>Beihilfe</i> 'assistance'	8	0.05	4–9	121
<i>Beistand</i> 'support'	12	0.07	2–9	313
<i>Beiziehung</i> 'consultation'	1	0.01	6	2
<i>Heranziehung</i> 'reference'	2	0.01	8–9	27
<i>Rat</i> 'advice'	5	0.03	1–4	1,433
<i>Unterstützung</i> 'support'	18	0.11	7–9	410
<i>Zuziehung</i> 'consultation'	19	0.11	3–9	43
<b>Bezug-group</b>				
<i>Bezug</i> 'regard'	104	0.62	7–9	970
<i>Aufsicht</i> 'attendance'	1	0.01	7	350
<i>Berücksichtigung</i> 'consideration'	26	0.15	7–9	158
<i>Beziehung</i> 'relation'	21	0.12	7–9	2,022
<i>Einsicht</i> 'insight'	6	0.04	7–9	768
<i>Ersuchen</i> 'request'	1	0.01	4	58
<i>Hinsicht</i> 'regard'	3	0.02	6–7	612
<i>Rücksicht</i> 'consideration'	223	1.32	6–9	1,639
<i>Schein</i> 'appearance'	5	0.03	5–8	717
<i>Zusatz</i> 'addition'	17	0.1	4–9	591
TOTAL	895			12,317

<sup>4</sup> For the sake of lucidity, the numbered periods as indicated above are used here. The periods indicated correspond to the occurrence of the individual lemmas.

## 4 Results

The presentation of the results of the corpus study will proceed in two steps. We will first present the results for the *Hilfe*-group (Section 4.1), and then for the *Bezug*-group (Section 4.2) separately, before we come to the synthesis. In each case, we will start by giving the frequency numbers, as they shed light on the presence or absence of a schema. A slow and gradual increase can be interpreted in terms of gradual conventionalization, whereas a rather abrupt rise would indicate a direct insertion of the noun into an open slot of an existing schema (see Section 2). We then proceed by reporting the results regarding the internal structure of the pattern [*mit* (DET) *N<sub>dev</sub>* *P/GEN*], focusing on the parameters DETERMINER use and PRENOMINAL MODIFICATION. The interpretation of these parameters is less straightforward, as these characteristics cannot be taken as directly indicating the status of an individual combination as a CP or not (see Section 1 on the definitional problems of CPs). Nevertheless, they may help to delineate more fixed syntagmatic structures with less syntactic regularity from regularly formed syntactic structures. In the last step, the semantic aspects will be taken into account.

### 4.1 *Hilfe*-Group

Changes in the frequency of use of the individual instances of the syntagmatic pattern [*mit* (DET) *N<sub>dev</sub>* *P/GEN*] with the nouns of the *Hilfe*-group are shown in Figure 2. It can be seen that most of the nouns in this group only rarely occur in the syntagmatic pattern [*mit* (DET) *N<sub>dev</sub>* *P/GEN*], the only exception being the noun *Hilfe* ‘help’. Importantly, the structure [*mit* (DET) *Hilfe* *P/GEN*] displays a relatively high frequency of use right from the start of the analyzed period, and the frequency gradually increases towards the end of the analyzed period, before it picks up in the last decade of the 19<sup>th</sup> century. For the other nouns, it can be seen that they are attested in the pattern already in the earliest periods at the beginning of the 17<sup>th</sup> century. However, towards the end of the 19<sup>th</sup> century, they don’t show any signs of frequency increase and are still very rarely used in the relevant structure [*mit* (DET) *N<sub>dev</sub>* *P/GEN*].

A closer look at the internal structure of the pattern [*mit* (DET) *N<sub>dev</sub>* *P/GEN*], in particular with respect to the use of determiners and prenominal modifiers, reveals that not all nouns of this group behave in the same way in this syntactic configuration. Namely, *Hilfe* and *Beihilfe* are predominantly attested in structures without any determiner or modifier between the preposition *mit* and the noun, as shown in (8)–(9).



Figure 2: *Hilfe*-group (normalized frequencies per 100,000 words).

- (8) *Es ist freylich keine Frage, daß man nicht **mit Hülfe** der guten englischen, französichen und spanischen Stücke ein so gutes Repertoire zusammen bringen sollte.* (Eckermann, 1836)

‘There is of course no question that one should not bring together such a good repertoire **with help** of the good English, French and Spanish pieces.’

- (9) *Hiernächst zeigen auch die Versuche, welche man **mit Beihülfe** derer Vergrößerungsgläser anstellet, daß die Kraft des Herzens noch über diese Grenzen hinauswirke.* (Haller, 1759)

‘First of all, the experiments carried out **with aid** of magnifying glasses also show that the power of the heart still works beyond these limits.’

On the other hand, other nouns from the group are often found in structures where they are either preceded by a determiner, see (10), or by an adjectival modifier, see (11).

- (10) *befonders **mit der Unterstützung** Papst Gregors brachte er ein Collegium für sie in Douay zu Stande.* (Ranke, 1836)

‘especially **with the support** of Pope Gregory, he brought about a college for them in Douay.’

- (11) *Darauff so sage ich, mit vorhergehender Anruffung Göttlicher Gnade, daß die Menschen ertlich aus Verfehung der Vernunft, auch in Krafft und vermöge des natürlichen und aller Völcker Rechtens gemeiniglich das, so ihnen nutz und zu Erhaltung ihrer Nahrung dienlich seyn mag, zu überkommen trachten* [ . . . ]. (Fleming, 1719)

‘Whereupon I say, **with foregoing invocation** of divine grace, that men, first of all, by accident of reason, and also in virtue and by virtue of natural and all peoples’ right, commonly strive to obtain that which may be of use to them and may serve for the preservation of their food.’

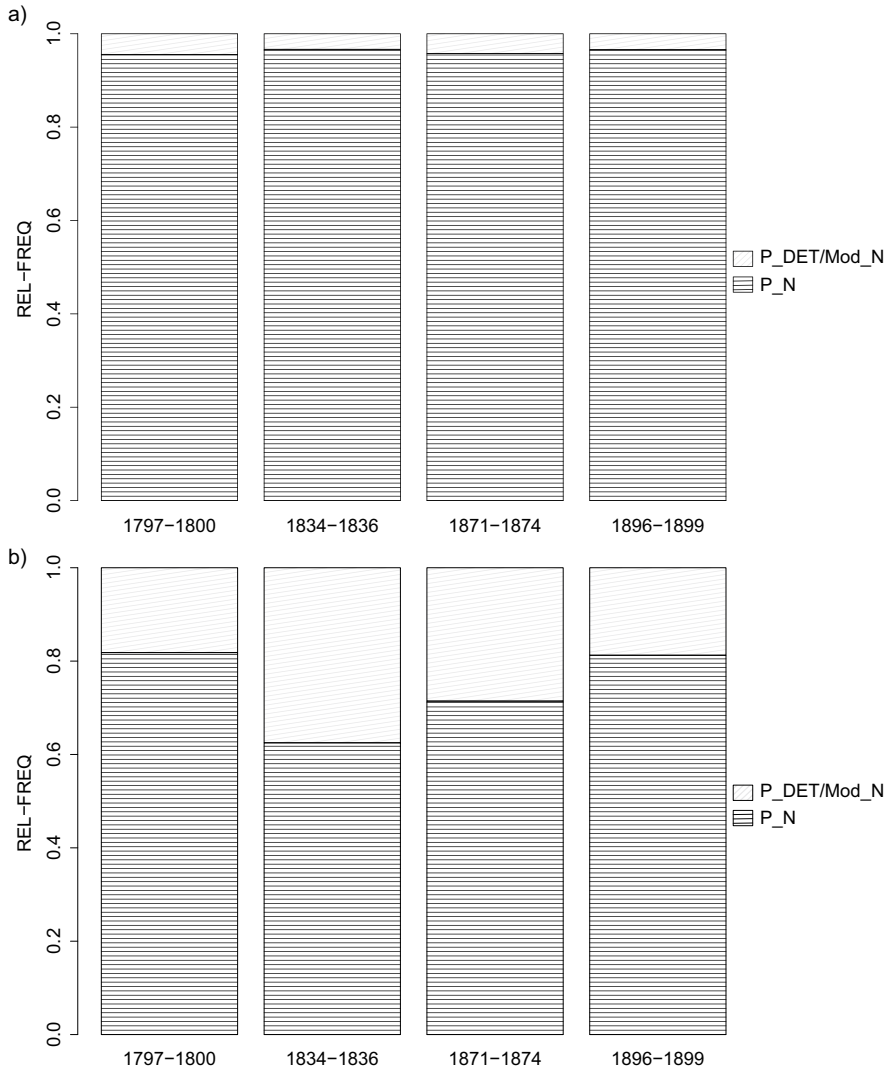
These two types of syntactic behavior are summarized in Figures 3a and 3b.

The horizontally striped bars represent structures without any intervening material between the preposition *mit* and the noun (= P\_N); the diagonally striped bars illustrate structures with a determiner and/or a modifier between the preposition and the noun (= P\_DET/Mod\_N). In Figure 3a, the structures with *Hilfe* and *Beihilfe* are found, and in Figure 3b, other nouns of the group are represented.<sup>5</sup> It can be seen Figure 3a that *Hilfe* and *Beihilfe* predominantly lack any linguistic material between the preposition *mit* and the noun. In contrast, the other nouns of the *Hilfe*-group show a more heterogenous picture, and there are significantly more observations with an article and/or a modifier.

Two further points deserve attention in this connection. First, as can be seen from Figure 3b, the structures relatively often lack a determiner and/or a modifier when they are attested in the relevant syntagmatic structure [*mit* (DET) N<sub>dev</sub> P/GEN]. However, if we take a look at the numbers in Table 4, we see that only a very small percentage of the overall uses of these nouns is accounted for by the uses in the relevant structure. In contrast to the noun *Hilfe*, which occurs in 22% in the pattern [*mit* (DET) N<sub>dev</sub> P/GEN], the other nouns are hardly attracted to this particular syntagmatic structure.<sup>6</sup> As we will see in the next section, this is different for the nouns of the *Bezug*-group.

<sup>5</sup> As the data is sparse during the first periods, and for better comparability of the two subgroups, only the more recent four periods are taken into account.

<sup>6</sup> The figures for the noun *Beziehung* can be ignored at this point, as it occurs only 2 times in the entire corpus. The noun *Zuziehung* is indeed unusually frequent in the relevant structure, but its affinity to the structure is best explained not by the semantic similarity to *Hilfe* but by other factors specific to this particular noun. Due to the limits of space, this will not be discussed here in greater detail. However, the frequent use of this one noun does not invalidate the claim that no clear schema can be seen that would motivate the syntactic and semantic behavior of the nouns.



**Figure 3a (top) and b (bottom):** Intervening material between mit and N top: *Hilfe, Beihilfe*, bottom: *Anbetung, Anrufung, Beistand, Beiziehung, Heranziehung, Rat, Unterstützung, Zuziehung*.

**Table 4:** Proportion of uses in relevant structures (based on Table 3).

noun	proportion of uses in [mit (DET) N <sub>dev</sub> P/GEN]
<i>Hilfe</i> ‘help’	0.22
<i>Anbetung</i> ‘worship’	0.01
<i>Anrufung</i> ‘invocation’	0.09
<i>Beihilfe</i> ‘assistance’	0.06
<i>Beistand</i> ‘support’	0.03
<i>Beziehung</i> ‘consultation’	0.5
<i>Heranziehung</i> ‘reference’	0.07
<i>Rat</i> ‘advice’	0.003
<i>Unterstützung</i> ‘support’	0.04
<i>Zuziehung</i> ‘consultation’	0.44

Second, from the earlier historical periods of German, we know that the structure [mit (DET) *Hilfe* P/GEN] had not always been restricted to the uses without any intervening material between *mit* and *Hilfe*. For example, in the data from Middle High German we often find regular syntactic structures with determiners and/or modifiers, cf. (12)–(13).

- (12) *ufe deme roste cvm uns armen zu troste mit der helfe andir úwer gesellen* (REM,<sup>7</sup> 13\_1-thurhess-PV-X > M107S-N1)  
‘on the pyre come to comfort us poor **with the help** of other fellows of yours’
- (13) *di fvlñ wír lefchen vnd vertiligen mît der heiligen hilfe der tvlt* (REM,<sup>8</sup> 13\_1-bair-PV-G > M409-G1)  
‘we shall extinguish and destroy them **with the holy help** of forbearance’

This indicates that the predominance of the fixed structure without any determiner and/or modifier represented in Figure 3a above has not been there from the start, but should be seen as a result of a long diachronic process of rigidification. That is, what we see in our data is just the final stage of the development of the fixed structure [mit *Hilfe* von/GEN] that was preceded by the stage of variation between the regular syntactic uses of the noun, i.e. with articles and modifiers, and the more fixed structure without them.

<sup>7</sup> REM, accessed through the ANNIS interface, <https://annis.linguistics.rub.de/?id=6f31a09c-418b-42c0-a6eb-b3b1ac2bc55e>

<sup>8</sup> REM, accessed through the ANNIS interface, <https://annis.linguistics.rub.de/?id=da823c93-c8be-4e2c-ba23-e4d88f6647bc>

To be able to answer the question whether there is a constructional schema, we need also to look into the semantics of this structural pattern. As exemplified in (14), see also (8) above, *mit Hilfe* has instrumental semantics.

- (14) *der Dieb war mit Hilfe einer Feuerleiter in das oberste Giebfenster eingestiegen* (Fontane, 1873)  
 ‘the thief had climbed into the top gable window **with help of a fire escape**’

Importantly, *Hilfe* is the only noun from the group that is often used with inanimate referents as in (14). Other nouns from the same group are however predominantly used with animate referents and retain their original semantics of helping events as exemplified in (15)–(16).

- (15) *Sin-pu fiel, nachdem am 10. Juni Ward mit Unterstützung der Engländer seine Truppen unter grossem Verlust aus der Stadt gezogen hatte* (Martens, 1873)  
 ‘Sin-pu fell after Ward, **with assistance of the English**, had pulled his troops out of the city with great loss on June 10’
- (16) *Man hat Beispiele, dass auf solche Art ein Heger mit Beihilfe einiger Kinder täglich 6000 bis 9000 Stämmchen ausgesetzt oder eine Area von 2 bis 3 Joch bepflanzt hat.* (Gerstner, 1834)  
 ‘There are examples that in such a way a hunter, **with help of some children**, has released 6000 to 9000 stems a day or planted an area of 2 to 3 yokes.’

This supports the interpretation that [*mit Hilfe von*/GEN] has gone through a long diachronic process during which it has become syntactically more restricted, but at the same time semantically broader, as it developed instrumental semantics in addition to the original meaning of helping.

From that, it may be concluded that nouns that are semantically related to the noun *Hilfe* and that occur in same or similar syntagmatic patterns do not form a homogeneous class and thus cannot be assumed to follow the same formation pattern. Instead, two different sub-groups within the *Hilfe*-group can be distinguished. On the one hand, the noun *Hilfe* (and to a lesser extent the relatively infrequent noun *Beihilfe*) shows a steadily increasing token frequency, reduced syntactic variability, and semantic broadening along with syntactic context expansion. The syntagmatic structure is fixed, articles and modifiers are hardly used in these structures (see Figure 3a). The nouns *Anbetung*, *Anrufung*, *Beistand*, *Beziehung*, *Heranziehung*, *Rat*, *Unterstützung*, and *Zuziehung*, on the other hand,

are used with a stable and low token frequency in the relevant structures, they are less fixed and more variable as concerns their syntactic behavior, and they maintain their original semantics of helping, which is seen in their contextual preferences for human referents.

## 4.2 *Bezug*-Group

A similar situation holds for the second group of nouns, the so-called *Bezug*-group. We start by presenting the frequency numbers. Figure 4 shows the changes in the frequency of use of the individual instances of the syntagmatic pattern [*mit* N<sub>dev</sub> P/GEN] with the nouns from the *Bezug*-group.

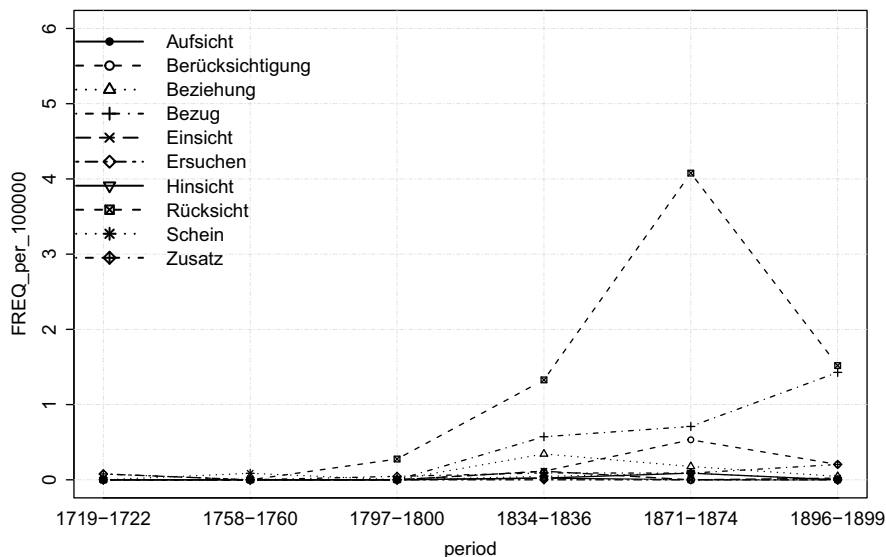
As can be seen from Figure 4, the nouns are only attested in the relevant construction starting from the end of the 18<sup>th</sup> century. The nouns *Bezug* and *Rücksicht* are more frequent than the others, and *Rücksicht* shows a very steep rise in frequency between 1800s and 1870s. Importantly, if we compare Figure 4 with Figure 2 in Section 4.1, we see that in contrast to the *Hilfe*-group, where only *Hilfe* has high frequency of use right from the start of the analyzed period, several nouns of the *Bezug*-group increase in frequency at about the same time. Also, a look at the relative proportions of usages in the relevant structures with respect to the total occurrences in the corpus represented in Table 5 reveals a picture that is very different to the *Hilfe*-group discussed in Section 4.1.

As can be seen from Table 5, there is no clear winner in this group. Instead, several nouns are attested with a relative frequency between 11% and 16% in the structure [*mit* N<sub>dev</sub> P/GEN]. Notably, their first attestations in the structure occur at about the same time, between 1800 and 1830.

A closer look at the internal structure of the pattern [*mit* N<sub>dev</sub> P/GEN] with the nouns from the *Bezug*-group reveals a similar bipartite distinction we described for the *Hilfe*-group, but the difference between the two sub-groups is even more pronounced here. There are nouns which clearly prefer syntactic structure without any intervening material between the preposition and the noun, cf. (17)–(18). Other nouns show more variability and more uses of article and/or modifier, cf. (19)–(20).

- (17) *Man kann sie aber **mit Bezug auf** die verschiedene Behandlungsweise in eigentliche Obstdgärten und Weingärten eintheilen* (Baumstark, 1835)  
 ‘However, one can divide them into actual orchards and vineyards **with regard to** the different methods of treatment’





**Figure 4:** Bezug-group (normalized per 100,000 words).

**Table 5:** Proportion of uses in relevant structures (based on Table 3).

noun	proportion of uses in [mit (DET) N <sub>dev</sub> P/GEN]
<i>Bezug</i> ‘regard’	0.11
<i>Aufsicht</i> ‘attendance’	0.002
<i>Berücksichtigung</i> ‘consideration’	0.16
<i>Beziehung</i> ‘relation’	0.01
<i>Einsicht</i> ‘insight’	0.007
<i>Ersuchen</i> ‘request’	0.01
<i>Hinsicht</i> ‘regard’	0.004
<i>Rücksicht</i> ‘consideration’	0.14
<i>Schein</i> ‘appearance’	0.007
<i>Zusatz</i> ‘addition’	0.03

- (18) *Diese sämtlich hier zu besprechen, müssen wir uns **mit Rücksicht auf** den knapp bemessenen Raum, der uns noch zur Verfügung steht leider versagen.* (Wrangel, 1898)  
 ‘Unfortunately, we have to refrain from discussing all of them here **with regard to** the limited space available to us.’

- (19) *Das lateinische Exemplar wies sich offenbar als eine Uebersetzung des italienischen aus; nur etwas frei, mit dem Zusatz einer leichten Nuance des Gedankens.* (Ranke, 1836)

‘The Latin copy evidently proved to be a translation of the Italian; only somewhat free, **with the addition** of a slight nuance of thought.’

- (20) *Angeriebene Farben waren damals noch nicht zu haben; es wurde ein gläserner Reibestein mit einem Läufer angeschafft, um die rohen Pigmente mit gehörigem Zusatz von aufgelöstem Gummi anwendbar zu machen.* (Parthey, 1871)

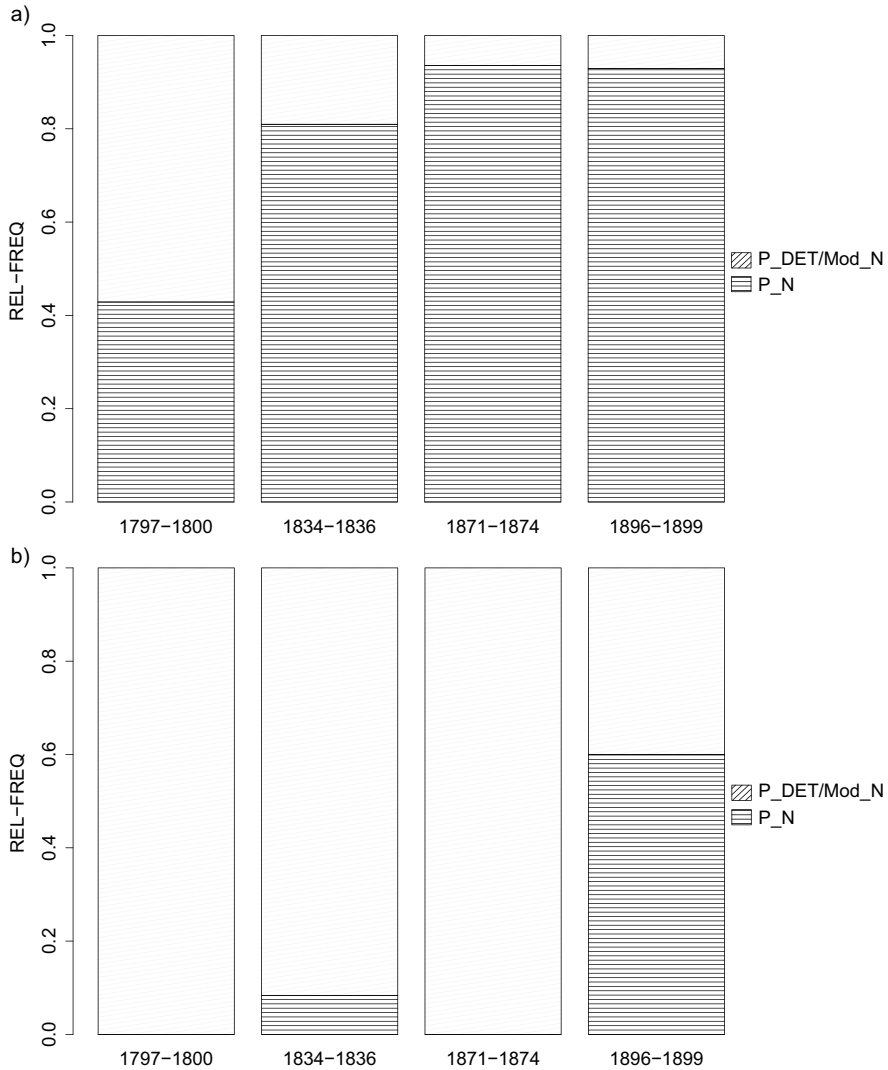
‘Coated colours were not yet available at that time; a glass rubbing stone with a runner was purchased to make the raw pigments applicable **with proper addition** of dissolved rubber.’

Figures 5a and 5b show the distribution of the two types of syntactic behavior in our data. Similar to Figures 3a and 3b, the horizontally striped bars represent structures without any intervening material between the preposition *mit* and the noun (= P\_N); the diagonally striped bars illustrate structures with a determiner and/or a modifier between the preposition and the noun (= P\_DET/Mod\_N). Figure 5a depicts the aggregated results for five nouns *Bezug*, *Berücksichtigung*, *Beziehung*, *Hinsicht*,<sup>9</sup> and *Rücksicht*. In Figure 5b, the nouns *Aufsicht*, *Einsicht*, *Ersuchen*, *Schein*, and *Zusatz* are represented.<sup>10</sup>

What we clearly see in Figure 5a, is a pronounced diachronic tendency towards a relatively fixed syntagmatic pattern [*mit* N<sub>dev</sub> P/GEN] without any intervening material between the preposition *mit* and the noun, as the use of articles and/or modifiers constantly declines (cf. Figure 5a). The nouns *Aufsicht*, *Einsicht*, *Ersuchen*, *Schein*, and *Zusatz* are predominantly used in structures with determiners and/or modifiers, and there is no clear tendency in the data (cf. Figure 5b). Though the use without an article or modifier increases in the 1890s, it is nowhere near the same level as the sub-group in Figure 5a. That is, five nouns *Bezug*, *Berücksichtigung*, *Hinsicht*, *Beziehung*, and *Rücksicht* show an increasing token frequency and reduced syntactic variability, whereas the other five, i.e. *Aufsicht*, *Einsicht*, *Ersuchen*, *Schein*, and *Zusatz* are associated with a stable but low token frequency and are more variable syntactically.

<sup>9</sup> The nouns *Hinsicht* and *Beziehung* are included here into the group on the left-hand side for reasons of their syntactic behavior. Namely, they behave more similarly to the nouns *Bezug* and *Rücksicht* than to the nouns *Einsicht* or *Aufsicht*. Although the frequency information from Table 5 suggests that *Hinsicht* and *Beziehung* do not group together with *Bezug* and *Rücksicht*, the syntactic behavior strongly indicates that the same pattern is in question here.

<sup>10</sup> Here again, as the data is sparse for the first periods, only the most recent four periods are taken into account.



**Figure 5a (top) and b (bottom):** Intervening material between mit and N top: *Bezug, Berücksichtigung, Hinsicht, Rücksicht, Beziehung*; bottom: *Aufsicht, Einsicht, Ersuchen, Schein, Zusatz*.

With respect to semantic aspects, the structures with the nouns *Bezug*, *Beziehung*, *Berücksichtigung*, *Hinsicht*, and *Rücksicht* are associated with very similar contextual interpretations and may be best described as evoking the abstract semantics of reference, see (21)–(23).

- (21) *Mit Rücksicht auf* die Sylvesterfeier beginnt die Vorstellung schon um 6 Uhr Abends. (Mährisches Tagblatt, 1896)  
 ‘**With regard to** the New Year’s Eve celebration, the performance will begin already at 6 o’clock in the evening.’
- (22) *fank [ . . . ] zu einem Niveau herab, das mit Bezug auf* die Erkenntniß der Wahrheit nur als Barbarei bezeichnet werden kann. (Ernst Haeckel, 1899)  
 ‘sank [ . . . ] to a level which, **with regard to** the recognition of truth, can only be described as barbarism.’
- (23) [ . . . ] und zuletzt sang Klein, *mit Beziehung auf* das warme Wetter sein schönes Frühlingslied (Parthey, 1871)  
 ‘. . . and at the end Klein, **with reference to** the warm weather, sang his beautiful spring song’

From that, it may be concluded that nouns that are semantically related to the noun *Bezug* and that – at first sight – occur in the same or similar syntagmatic patterns, do not form a homogeneous class, similarly to the situation of the *Hilfe*-group discussed in Section 4.1. However, there are some important differences to the *Hilfe*-group, which we would like to emphasize at this point.

First, the five nouns in this group show very similar behavior, with respect to syntactic and semantic characteristics as well as with respect to frequency changes. This strongly supports the idea of the presence of an abstract schema [*mit* N<sub>dev</sub> P/GEN] with the open slot [N<sub>dev</sub>] that attracts semantically related nouns. The relatively rapid increase in frequency at about the same time (see Figure 4), coupled with the gradual shift of syntactic variability towards a fixed pattern [*mit* N P/GEN] represented in Figure 5a, corroborate this idea. Additional evidence for the existence of a schema comes from what we know about the time of coining of these deverbal nouns. Indeed, they were coined in different historical periods of German: *Bezug* has existed since Old High German, *Beziehung* was coined in the Early New High German period, and the nouns *Berücksichtigung*, *Hinsicht*, and *Rücksicht* are of rather recent origin between 1750 and 1780. With this chronology in mind, one could imagine that *Bezug* would have been the first to establish the relevant structure, and the others would follow its lead. And still, all of these nouns appear in the pattern [*mit* N<sub>dev</sub> P/GEN] at about the same time more or less simultaneously. This

again speaks for the plausibility of a schema. The other five nouns from the group, on the other hand, display characteristics that qualify them as regular syntactic combinations, similar to the majority of the nouns from the *Hilfe*-group described in Section 4.1.

In sum, the syntagmatic patterns of the nouns in the *Hilfe*-group are very unlikely to be motivated by a constructional schema, whereas some of the nouns in the *Bezug*-group clearly follow a common pattern of formation.

## 5 A Constructional Network of the Pattern [*mit* N<sub>dev</sub> P/GEN]

From what has been said so far, we would like to argue that, in both semantically defined groups of nouns used in the general syntactic pattern [*mit* N<sub>dev</sub> P/GEN], a very similar general distinction can be observed. On the one hand, we find regular syntactic combinations with compositional semantics, and on the other hand there are more or less fixed syntagmatic patterns with reduced semantic compositionality. Table 6 summarizes these findings.

The crucial difference between the two groups boils down to the different analyses of the structures that do not qualify as regular syntactic combinations with compositional semantics, but rather as fixed syntactic structures with reduced compositionality. They are represented in the middle column in Table 6. These structures display distinct formal characteristics and should be treated as two distinct constructional entities, as we would like to argue in the following.

The results of our corpus study show that *mit Hilfe* can be best characterized as a fixed multi-word lexical item, i.e. as an individual lexically filled construction. It displays high token frequency, reduced compositionality and has instrumental semantics. It does not qualify as a productive schema, as it did not expand further by integrating more and more synonymous nouns into this syntagmatic pattern.

The analyzed data suggests that the pattern [*mit* N<sub>dev</sub> *auf*] with the nouns *Bezug*, *Berücksichtigung*, *Rücksicht*, *Hinsicht*, and *Beziehung*, on the other hand, does qualify as an abstract and productive constructional schema, as it attracts different nouns with similar semantics and displays its own stable semantic content across different instantiations. This analysis can be visualized in the form of a constructional network (see Figure 6, which is a modified version of Figure 1 from Section 2). Note that the situation modelled in Figure 6 holds for the end of the 19<sup>th</sup> century, as our data set goes only till 1899. Though intuitively, we think

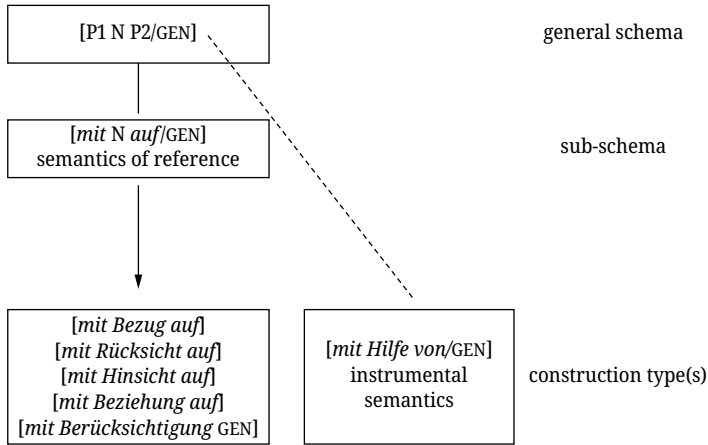
**Table 6:** Sub-groups within the general pattern [*mit* (DET) N<sub>dev</sub> P/GEN].

GROUP		Hilfe-group
NOUN	<i>Hilfe</i>	<i>Anbetung, Anrufung, Beihilfe, Beistand, Beiziehung, Heranziehung, Rat, Unterstützung, Zuziehung</i>
CHARACTERISTICS	increasing token frequency reduced syntactic variability establishment of fixed structure shift towards instrumental semantics	stable and low token frequency syntactic variability regular syntactic behavior compositional semantics
CONSTRUCTION TYPE	[ <i>mit Hilfe von</i> /GEN]	no particular construction type regular syntactic combinations
GROUP		Bezug-group
NOUN	<i>Bezug, Berücksichtigung, Rücksicht, Hinsicht, Beziehung</i>	<i>Aufsicht, Einsicht, Ersuchen, Schein, Zusatz</i>
CHARACTERISTICS	increasing token frequency reduced syntactic variability establishment of fixed structure shared semantics of reference	stable and low token frequency syntactic variability regular syntactic behavior compositional semantics
CONSTRUCTION TYPE	[ <i>mit</i> N <sub>dev</sub> <i>auf</i> ]	no particular construction type regular syntactic combinations

that the present-day situation should be very similar to those represented in Figure 6, it ought to be tested on the basis of present-day corpus data.

The schematic construction [*mit* N<sub>dev</sub> *auf*/GEN] is located on a middle level of abstraction and is connected via the instantiation link to the more abstract and general schema [P1 N P2/GEN] higher up in the hierarchy. We would like to argue that the most general schema at the highest level of abstraction is neither active nor productive, as only schemas on lower levels of abstraction are connected to semantic content. The general schema is surely a useful generalization for us linguists, but it remains to be investigated whether it can be used by the speakers to produce new CPs in German.

The proposed sub-schema [*mit* N<sub>dev</sub> *auf*] is associated with the meaning of reference, and this meaning is stably attested for five different individual constructions in our data. The construction [*mit Hilfe von*/GEN], on the other hand, does not qualify as a productive schema. Instead, it is best described as an individual lexically specified construction type with its own instrumental meaning. It is located on the same level of the hierarchy as individual instantiation types of the schema [*mit* N<sub>dev</sub> *auf*/GEN], but it is not directly connected to any higher-level



**Figure 6:** Partial network of German complex prepositions with *mit*.

schema, nor does it instantiate any further constructions lower down in the network. We connected this construction directly to the highest node in the partial network, to the most general schema [P1 N P2/GEN], and the dashed line serves to mark the fact that the connection is very weak, as it is only motivated structurally, but not semantically.

## 6 Conclusions and Outlook

This paper has offered a diachronic take on the formation of CPs in German, and we would like to conclude this section with some considerations related to the issues of routine and creativity. We started this paper by contrasting the received view of the diachronic development of CPs in German with a more recent hypothesis about their emergence. According to the traditional view, German CPs predominantly arise via reanalysis of previously regular and compositional syntactic combinations. According to the alternative hypothesis, CPs are formed directly after a general schema by filling its open slots with lexical material. We hope to have shown that both diachronic pathways have been taken on the road towards CPs in German and that the open class of CPs has been expanded using different diachronic processes and mechanisms.

The mechanisms at hand in the traditional scenario, along with reanalysis, are entrenchment and conventionalization of a syntagmatic string. Our study has demonstrated that the CP [*mit Hilfe von/GEN*] emerged in accordance with this sce-

nario. The process had started presumably very early in the history of German, as already in the Middle High German period, we find syntactic variation with respect to the internal structure, i.e. the variation in the use of articles and modifiers. In the course of the Early New High German period, the process seems to have consolidated, so that we find a relatively fixed structure towards the end of the 17<sup>th</sup> century. That is, [*mit Hilfe von*/GEN] developed through a rather slow diachronic process, whereby at some stage in this process, this string was reanalyzed into a CP.

How is the development of this particular complex preposition related to the issues of routine and creativity? We believe that the interpretation in terms of routine and creativity is not straightforward. In the subsequent paragraphs, we will argue that the interpretation is rather contingent on the perspective one adopts towards a phenomenon under scrutiny.

On the one hand, we are dealing with a new multi-word lexical item, a new CP that had not previously existed in the language. Importantly, it is the violation of the original and regular syntactic structure that defines this new item: for example, the noun loses its ability to behave as a regular noun and be accompanied by articles and/or modified by adjectives. In this respect, the development of [*mit Hilfe von*/GEN] can be seen as involving E-creativity (in the sense of Sampson 2016), as original syntactic rules are broken to produce this new item. On the other hand, if we zoom in on the process itself, and not only on the input and the output of this process, a rather different interpretation seems plausible as well. From this perspective, the gradual diachronic development of [*mit Hilfe von*/GEN] represents a good case of routinization of one particular structural variant of the original structure. It got established through repeated use by the members of the speech community and were gradually entrenched as a unit in the minds of individual speakers. Though as a result of this process, a new lexical item is added to a language, and the grammatical system is expanded by a new CP (=E-creativity), the process itself essentially includes many small steps, each of them boiling down to the repetition of the same structure by more and more speakers in more and more communicative situations. It is thus the conformity to some previously existing uses that drives the development, i.e. the routine, and less so a deviation from some rule.

As we have shown, the alternative scenario is also supported by our corpus evidence, in which individual CPs are instantaneously formed after a schematic pattern by filling its open slots. This is the case for the schema [*mit* N<sub>dev</sub> *auf*/GEN] with the nouns *Bezug*, *Beziehung*, *Berücksichtigung*, *Hinsicht*, and *Rücksicht* in our data. As expected, we observed a rather rapid emergence of five different individual CPs following the same formation pattern and displaying very similar semantics. This diachronic scenario does not rely on gradual entrenchment and conventionalization of



a particular syntagmatic string, instead, it essentially involves the establishment of a schema. Whether this diachronic process is motivated by creativity or by routine, (at least) two different interpretations might be considered here as well, similar to the case of [*mit Hilfe von*/GEN] discussed above. On the one hand, the establishment of a schema itself heavily relies on a repeated use of individual instantiations in individual communicative situations by individual members of a linguistic community. From this point of view, the development of a schema may be seen as a process of routinization that is motivated by repeated use of particular syntagmatic strings. No creative “abuse” of some rule is required to be involved in this process, i.e. no E-creativity. On the other hand, it is due to the productive expansion of this schema that new CPs are coined in German at that time. Productivity is related to creativity, as is well known. Indeed, for Sampson (2016: 19), productivity roughly equals F-creativity, i.e. “activities which characteristically produce examples drawn from a fixed and known”. In our view, the formation of any new CP after this productive pattern indeed involves the creative use of the resources available to the speakers of a speech community, and cannot be reduced to the mere reproduction of some earlier syntagmatic strings. It is thus the creative access to the schema [*mit N<sub>dev</sub> auf*/GEN] by speakers/writers that leads to the production of several individual instances of CPs and at the same time serves to strengthen the schema itself.

To conclude, if it comes to the role of routine and creativity in different diachronic processes, it might be rather the question of perspective that we adopt towards the phenomenon, and a change in perspective might well result in very different interpretations. In this connection, we would like to refer to a conclusion presented in Bergs (2019) regarding the relationship between E- and F-creativity:

In other words, while it seems theoretically absolutely plausible to distinguish the two types, differentiating between the two on the basis of real-life utterances is a lot more difficult. [...] So, from a practical point of view, what we ultimately end up with is not so much a clear dichotomy between F-creativity and E-creativity but rather a continuum between these two poles. (Bergs 2019: 181)

In a similar way, it seems to us that the dichotomy between routine and creativity can be conceived of as a matter of degree; additionally, this dichotomy is largely dependent on the vantage point that is adopted in a particular case. It might be the case that a predominantly synchronic perspective will yield totally different interpretation of the role of creativity and routine with regard to the same research object, in our case, German complex prepositions. We have focused on diachronic shifts, but even from a diachronic perspective, one could choose either to take a global view on the phenomenon, or to concentrate on small-scale changes; one could either focus on shifts on the community level ( $\approx$  conventionalization) or rather on changes in individual speakers ( $\approx$  entrenchment); one could as well

choose to abstract away from individual constructions and look at productive patterns, schemas, and rules. Every time the perspective changes, our interpretation of routine and creativity might change as well. Concerning further research, we believe that it is useful to distinguish between individual conventionalized lexical items on one hand, and schematic patterns of formation on the other. The question that deserves particular attention in future studies is, among others, whether the notions of creativity and routine may be applied in a similar fashion to them.

Of course, the class of CPs in German is much more diverse and consists of many more members following different structural patterns, as for example [*in N mit*] as in *in Zusammenhang mit* ‘in connection with’ or [*im N von/GEN*] as in *im Zuge* ‘in the course of’. Whether the two scenarios discussed above apply to the diachronic development of other CPs, remains an open question for further research.

By means of conclusion, we would like to briefly touch upon some further perspectives for research on CPs and on complex multi-word expressions in general. If we look at the evolution of these different patterns, we see that in the case of [*mit Hilfe von/GEN*], we have a conventionalized lexical item whose internal structure became more and more fixed, and the meaning became less compositional and shifted towards the instrumental semantics. Some other synonymous nouns which, given their semantic content, had the potential to follow the analogical model of [*mit Hilfe von/GEN*], such as *Beistand* or *Unterstützung*, did not succeed in this way. That is, the establishment of [*mit Hilfe von/GEN*] did not trigger further analogical extensions. The schematic pattern of formation [*mit N<sub>dev</sub> auf/GEN*], on the other hand, appears to have evolved spontaneously as a generalization over several individual structures. These structures, leading to the establishment of a more general schema through generalization, did lead to further coinings of CPs. From the more recent history of German, especially from the 20<sup>th</sup> century, we know that it resulted in further creations like e.g. *mit Blick auf* ‘in view of’. Furthermore, a related pattern with the first preposition *in* [*in N<sub>dev</sub> P/GEN*] existed simultaneously and produced many instances of CPs. This raises the question as to which of the developments is more characteristic in general and especially for the category of CPs. In other words, are the pathways of change somehow determined or motivated by the target category the structures develop into?

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