Chapter 26

Diachronic syntax

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Basic questions of language change concern the what, how, why of a change. The present paper focusses on syntactic change and addresses the question how a representational framework as HPSG can be used to model syntactic change. Taking the history of German as a showcase, different types of morpho-syntactic changes are considered including changes within the verb phrase as well as the noun phrase.

1 Dimensions of syntactic change

Syntactic change links the language of two speech communities which are chronologically related such as Old and Modern Norwegian. Only the grammar of the first speech community allows null subjects in restricted contexts, while referential subjects are obligatory in Modern Norwegian. As shown by Kinn (2015), Norwegian changes from a partial null-subject language to a language disallowing null subjects.

(1) a. Sægir hann þat at   æigi man *pro* satt vera.   (Old Norwegian)
        says   he   that that not can [it] true be
        'He says that it cannot be true.'

     b. Han sier at   *(han) ikke kan komme.   (Modern Norwegian)
        he   says that   he   not can come
        'He says that he cannot come.'

The reinterpretation of non-subjects as subjects in the history of English provides a second example (Denison 1993): A verb like *langian* 'long for' selects an accusative but no nominative noun phrase in Old English as exemplified in (2).

As shown by the translation, the experiencer argument of the verb *long* has been promoted from object to subject in Modern English.

(2) þa   ongan hine   eft   langian on his cyþþe   (Old English)
     then began him.ACC again long   for his native land

     'Then he began again to long for his native land.'

Linking (1a) and (1b) as well as the English versions of (2) in terms of syntactic change would amount to the linking of surface manifestations instead of the underlying grammars. And it is in fact the underlying grammar that is affected by syntactic change triggered by internal and external factors. Internal factors belong to the linguistic system and may be part either of the syntax or any other module of the grammar as the morphology or the lexicon. As regards the syntactic change in the history of English, illustrated above, it may be taken as lexically driven, modifying the argument structure of verbs with experiencer objects, as suggested by (Denison 1993). Lightfoot (1979) on the other hand considers the change to be syntactically driven, i.e. as an effect of the word order change from OV to VO orders in the history of English.

The impact of morphological changes on the syntactic component of the grammar has always been of particular importance in diachronic syntax. Strong correlations are supposed to hold between a rich morphology on the one hand and the possibility of for instance word order variation or null subjects. Thus an attested collapse of case distinctions may be made up by a less variable word order with structural positions conveying the information formerly provided by case markers. The loss of morphology may also be compensated by replacing case marked noun phrases by prepositional phrases with prepositions now providing the relevant information. A pertinent example from English concerns the loss of adnominal genitives as a consequence of the loss of the genitive as a morphological case. While the postnominal genitive phrase is superseded by the *of*-phrase, the prenominal genitive marker is reanalyzed as a clitic (Allen 2006). In Old English, adnominal genitives are attested in pre- and post-head position.

(3) a. & þær wæs Kola ðæs   cyning-es heahgereafa   (Old English)
         and there was Kola the.GEN king-GEN high reeve

         'And there was Kola, the king's high reeve.'

     b. þæt wæron þa ærestan scipu deniscra   monna þe   ...   (OE)
         that were   the first   ships Danish.GEN men.GEN which ...

         'those were the first ships of Danish men which ...'

Syntactic change may also be driven by external factors such as language

processing, information packaging or language contact: According to Hawkins (2004), grammars conventionalize syntactic structures depending on their degree of preference in performance. And the rise of VO patterns in the German variety of Cimbrian is due to its contact with the Italian VO order in the North Eastern part of Italy (Grewendorf & Poletto 2005).

(4) a. Haütte die Mome hat gebläscht di Piattn.   (Cimbrian)
         today the mother has washed   the plates
         'Today, mother has washed the plates.'

     b. Heute hat die Mutter die Teller gespült.   (Present-day German)
         today has the mother the plates washed

Derivational approaches such as Government and Binding and Minimalism assume that language change happens in the course of first language acquisition. Individual language learners reanalyze the linguistic input they get during the acquisition process, resulting in the resetting of a parameter value (Lightfoot 1979). The nature of parameters has substantially changed from GB to Minimalism: Resetting of a parameter value in terms of GB meant for the loss of null subjects, as illustrated in (1a) and (1b), for instance that the value from the null-subject parameter changed from [+] to [-] in the history of Norwegian. The minimalist view of parameters restricts parametric variation to lexical items in general and to the formal features of functional heads in particular (Borer-Chomsky Conjecture according to Baker (2008)). The null-subject parameter will then be phrased in terms of a feature bundle associated with a functional verbal head with the loss of null-subjects triggered by the absence of particular features. Depending on the range of specific formal features, Biberauer & Roberts (2017) distinguish four types of parameters according to their size: macro-, meso-, micro-, and nanoparameters, with the first type being the most stable one in the development of a language (e.g. rigid head-final or head-initial order). They further claim that formal features are not pre-specified in Universal Grammar but emerge from the interaction of Universal Grammar, primary linguistic data, and general cognitive optimization strategies in the sense of Chomsky (2005). Two principles in particular are suggested by Biberauer & Roberts (2017): (i) feature economy, restricting the acquisition of features to those with robust evidence in the input data, thereby minimizing computation; and (ii) input generalization, requiring to make maximal use of the acquired features. A case in point for the latter strategy are languages with harmonic head-final or head-initial word orders triggered by the generalization of the head parameter. The resetting of parameters in a Minimalist framework is therefore no longer restricted to the linguistic system, but

includes external factors such as acquisition strategies. Since robust evidence in the primary linguistic data is required to allow a particular formal feature to be present in the underlying grammar, its frequency in the linguistic input will play a prominent role. And here further external factors come into play: Processing ease as well as language contact might affect the frequency of individual variants in the lifespan of a speaker, thus modifying her output and consequently the input of language learners. A case in point is the continuous form in Pennsylvania German (Louden 1988): While the pattern is still restricted in Common Pennsylvania German (1850–1950), it is widely spread in Plain Pennsylvania German (since 1950) motivated by the contact with its English counterpart. Another instance is the contact between Low German and Swedish. As shown by Petzell (2016), Swedish scribes of Low German frequently use a VO instead of an OV order, motivated by their L1 language. Such changes might result in changes of the underlying grammar of subsequent generations.

(5) a. er lasst de Hund los   (Common Pennsylvania German)
          he lets the dog   loose

     b. er is de Hund an   los   lasse   (Plain Pennsylvania German)
         he is the dog   PREP loose let
         'He is letting the dog loose.'

Under the assumption that syntactic change is triggered by changes affecting the lexicon, one might conclude that there is no such thing as syntactically triggered change, as Biberauer & Walkden (2015) actually suggest. We would then expect that lexicalist approaches to syntactic change such as HPSG or LFG are at least equally well suited as derivational approaches to model syntactic change, cf. Vincent (2001) and Börjars & Vincent (2017) for LFG. The remainder of the paper will hence provide some case studies to illustrate how HPSG can be used to model the way structure can change over time. All case studies are taken from the history of German.

The outline is as follows: Grammaticalization processes are exemplified by the rise auf auxiliary verbs in section 2.1. Changes with respect to word order are addressed in sections 2.2 regarding verb clusters and 2.3 with respect to word order changes within the noun phrase. Overall, section 2.3 is devoted to various changes affecting the left periphery of noun phrases and also touches upon the issue why particular changes happen.

2 Case studies

The case studies presented in this section are supposed to exemplify different types of syntactic change. Grammaticalization processes typically give rise to grammatical markers with the development of auxiliary verbs from main verbs figuring as a prominent example. The next section will therefore deal with the emergence of the passive auxiliaries *kriegen*, *bekommen* 'get' and *geben* 'give' in the history of German. A second type of change are word order changes which are the topic of section 2.2, focussing on the order of verbs at the right clausal periphery in German, a syntactic change which has attracted a lot of interest from a descriptive as well as a more formal perspective. The third case study addresses several changes affecting the left periphery of noun phrases, including the grammaticalization of the definite determiner as well as the word order change of adnominal genitives.

2.1 Grammaticalization: rise of auxiliary verbs

Grammaticalization processes have an impact on the way grammatical information is marked in a language. Grammatical information such as verbal mood may be expressed either by morphological means as in (6a) or by syntactic means as in (6b) which uses the auxiliary verb *werden* to convey a modal meaning. With the grammatical meaning being alike, a morphological marker such as *-e* in (6) is taken to be further down on the grammaticalization cline as the corresponding auxiliary verb because of its morphological boundedness.

(6) a. Fred ging-e   ins   Kino.   (Present-day German)
       Fred went-SBJV to.the movies

     b. Fred würde ins   Kino   gehen.   (Present-day German)
       Fred SBJV   to.the movies go

       'Fred would go to the movies.'

Further prominent examples of grammaticalization processes involve the rise of negation markers in French such as *pas* from the Latin noun *passus* 'step' or *personne* 'no-one' which both were originally restricted to a positive meaning. A well-known German example for a grammaticalization process is the subordinating conjunction *weil* 'because' evolving from the noun *Weile* 'while'. Grammaticalization typically consists of a reduction in meaning (lexical » grammatical) and in form (syntactic marker » morphological marker).[1]

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[1]Cf. Lehmann (2015) for his seminal work on issues of grammaticalization.

As regards the class of auxiliary verbs in Present-day German, the verbs *krie-gen* and *bekommen*, both meaning 'get', are fairly recent members of this class (Reis 1976). They pattern with passive auxiliaries such as *werden* 'get' and *sein* 'be' in German, triggering classic diagnostics for passive constructions: An object of the active counterpart figures as subject of the finite verb in the passive clause, and the subject of the active clause is optionally realized as *von*-PP in its passive equal. A crucial difference to the canonical passive construction concerns the status of the object: It is not the direct but the indirect object which becomes the subject of the passive clause, hence the term *dative passive.*[2] In (7), the indirect object of *sagen* 'tell' was promoted to grammatical subject of *bekommen*,favored by the fact that both verbs select for experiencer arguments although in different slots of their argument structure. The *dass* 'that'-clause can only be understood as an argument of *sagen* 'tell', providing evidence for an analysis of *bekommen* 'get' as auxiliary.

(7) Ich habe nur gesagt bekommen, dass er Probleme mit   den Hinterreifen
     I   have only told   got   that he problems with the rear tires
     hat.   (BRZ13/APR.07807)
     has

     'I was just told that he has problems with his rear.tires.'

Both verbs *kriegen* 'get' as well as *bekommen* 'get' have developed a grammatical meaning alongside their lexical meaning in the recent history of German (Glaser 2005; Lenz 2012). Early examples for their use as auxiliary verbs come from the 16th and the 17th century with both auxiliaries typically combining with past participles of lexical verbs which select for experiencer arguments in object position (*schenken* 'grant', *schicken* 'send'), which may be interpreted as experiencer arguments of the governing predicate. The same holds for the theme argument which may be selected either by the lexical verb or the emerging auxiliary. Examples as in (8) therefore represent the beginning of the grammaticalization process. Diagnostics for the passive construction include the *von*-phrase in (8a) as well as the valency alternation turning the indirect objects of the corresponding active clause into subjects of the passive clause.

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[2]The focus here is on the passive meaning of the verbs in question. Resultative uses of *bekommen, kriegen* 'get' are disregarded in the present context. *Selma kriegt die Gleichung gelöst* 'Selma manages to solve the equation', means that *Selma* is an agent argument reaching a particular goal with some effort with the auxiliary conveying an active meaning. Cf. Reis (1985) for a discussion of both types of constructions.

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(8) a. da   hatte ich eben ein paar Ducaten vom   Herrn geschenckt
         EXPL had I   just a   few ducats   by the master granted
         kriegt   (1672: Weise)
         got
         'I just got a few ducats by the master.'

     b. Es   verdrüst sie/ daß du Wein hast geschickt bekommen/ und sie
         EXPL annoys   her that you wine have send   got   and she
         keinen.   (1695: Reuter)
         none
         'She is annoyed, because you got wine, but she has not.'

Examples like (8) are taken to represent stage 1 in the grammaticalization process, while examples like (7) are instantiations of stage 2, because the direct object can only be interpreted as argument of the non-finite verb.[3] Stage 3 on the grammaticalization cline includes verbs with a privative semantics, indicating that the emerging auxiliary is grammaticalized to such a degree that indirect objects are no longer restricted to recipient arguments. The use of intransitive verbs like *helfen* 'help' are considered to represent stage 4 on the grammaticalization path (Ebert 1978).

(9) a. Aber nach einer Woche hatte sie   noch nicht einmal die Fäden
         but after one   week had she.NOM not again   the stitches
         gezogen bekommen.   (RHZ03/DEZ.09011 RZ)
         removed got
         'After one week, she had not again removed the stitches.'

     b. Sie   wollen konkret   geholfen bekommen.   (PHE/W18.00094)
         sie.NOM want   definitely helped   get
         'They definitely want to get help.'

The use of *kriegen, bekommen* 'get' as passive auxiliaries is attested in all German varieties with stilistic differences between the two verbs.[4] This does not hold for the verb *geben* 'give' which may be used as a passive auxiliary only in certain dialects. Like *kriegen* and *bekommen*, the verb *geben* developed into a passive auxiliary in the recent history of German (Lenz 2007). As (10) shows, the experiencer argument of *mitnehmen* 'give a lift' appears as subject of the auxiliary

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[3]These examples provide evidence against the claim that the direct object is assigned a thematic role by both the finite and the nonfinite verb, cf. Haider (1986).

[4]While *bekommen* is used in the standard variety of German, *kriegen* is confined to less formal registers. The verb *erhalten* 'get' is only rarely used as an auxiliary with a passive meaning.

geben 'give', while the agent argument is realized by a *von*-phrase as expected in a passive construction.[5]

(10) De Tobi gebbt vom   Yannick mitgehol.   (West Central German)
      the Tobi gives by the Yannick given a lift

      'Tobi is given a lift by Yannik.'

In a minimalistic framework, grammaticalization processes are modeled as a categorial reanalysis of lexical categories as functional categories or of hierarchically lower functional categories as higher ones in line with the Borer-Chomsky Conjecture (Roberts & Roussou 2003). In many instances, grammaticalization means the loss of features, as predicted by a cognitive optimization strategy as feature economy. How do declarative frameworks such as LFG or HPSG account for this type of change?

An HPSG analysis of the dative passive in Present-day German includes a lexical entry for the passive auxiliary *bekommen* and a lexical rule deriving the lexical entry for a passive verb from its active counterpart. The feature description for the passive auxiliary in (11) captures the fact that auxiliaries are underspecified for their argument structure, i.e. *become* takes as its complement the passive participle and all the complements the passive verb requires. In contrast to the passive participle in the standard passive, participles in dative passive constructions may assign accusative case when an appropriate argument is present. Examples as (9b) have shown that the dative passive is not restricted to ditransitive verbs in Present-day German as has been claimed by Kordoni & van Noord (2009).

(11) *bekommt*-AUX 'gets':

$$
\begin{bmatrix}
\text{PHON} \ \langle \ bekommt \ \rangle \\
\text{SYNSEM|LOC|CAT} \begin{bmatrix}
\text{HEAD} \begin{bmatrix} verb \\ \text{VFORM} \ fin \\ \text{AUX} \quad + \end{bmatrix} \\
\text{ARG-ST} \ \left\langle \begin{bmatrix} \text{HEAD} \quad passive\text{-}part \\ \text{ARG-ST} \ \left\langle \ \text{NP}[nom]_{\boxed{1}}, (\text{NP}[acc]_{\boxed{2}}) \ \right\rangle \end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
$$

The passive lexical rule derives the passive participle subcategorized by the auxiliary *bekommen* 'get', illustrated by way of its input and output feature description
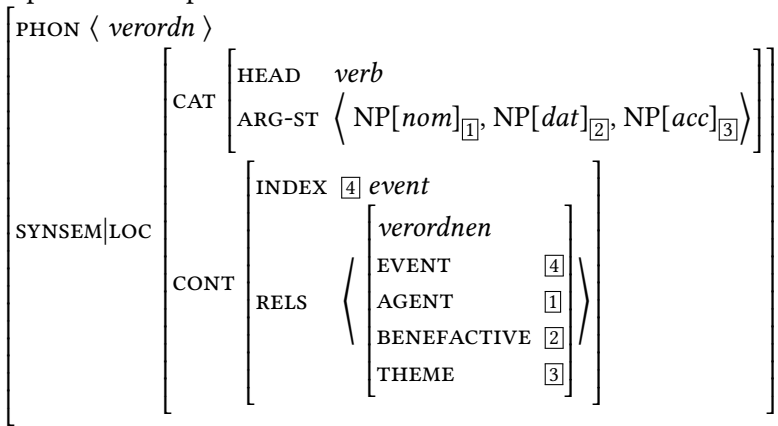
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[5] Thanks go to Christian Ramelli for his native speaker judgment as regards the West Central German variety spoken in the Eastern part of the Saarland.
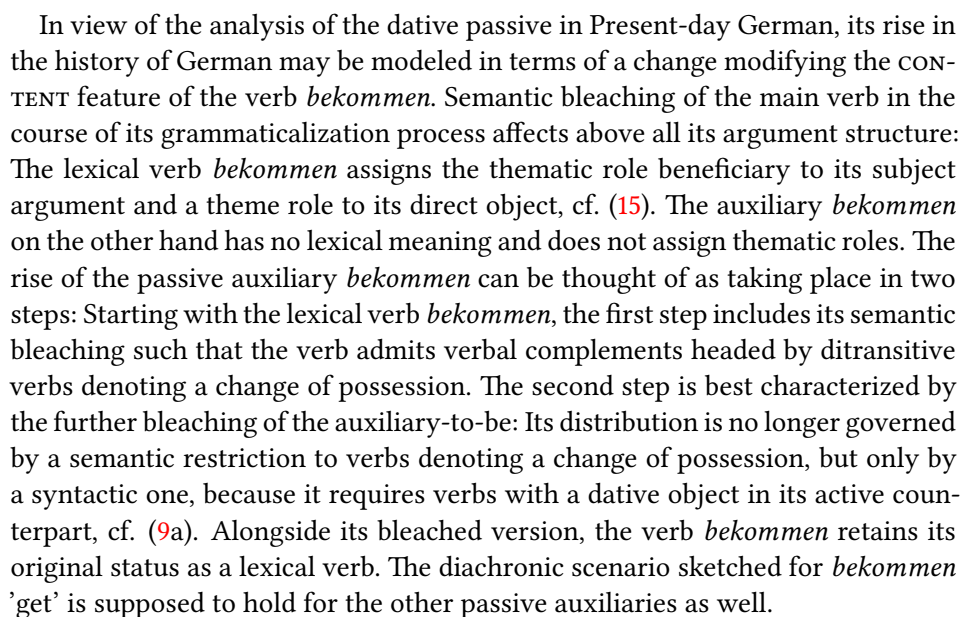
in (15) and (14), cf. Müller (2018: 285) for the standard passive construction in German. The dative passive rule suppresses the most prominent argument, the agent, of the active verb and promotes the argument marked for dative case by the active verb, the beneficiary, to subject of the passive verb *verordnet* 'prescribed'. The theme argument is not affected by the dative passive rule.[6]
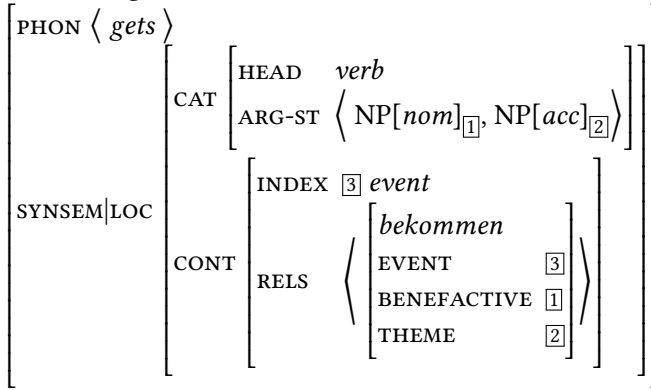
(12) Er   bekommt strenge Bettruhe   verordnet.
      he.NOM gets   strict   bed rest.NOM prescribed
      ' Strict bed rest was prescribed to him.'

(13) Input *verordn-* 'prescribe'

$$
\begin{bmatrix}
\text{PHON} \langle \textit{verordn} \rangle \\
\text{SYNSEM|LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD} & \textit{verb} \\
\text{ARG-ST} & \langle \text{NP}[\textit{nom}]_{\boxed{1}}, \text{NP}[\textit{dat}]_{\boxed{2}}, \text{NP}[\textit{acc}]_{\boxed{3}} \rangle
\end{bmatrix} \\
\text{CONT}
\begin{bmatrix}
\text{INDEX} & \boxed{4}\ \textit{event} \\
\text{RELS} & \left\langle
\begin{bmatrix}
\textit{verordnen} \\
\text{EVENT} & \boxed{4} \\
\text{AGENT} & \boxed{1} \\
\text{BENEFACTIVE} & \boxed{2} \\
\text{THEME} & \boxed{3}
\end{bmatrix}
\right\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

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[6]Assuming a lexical rule to derive a passive participle that fits the requirements of the passive auxiliary *bekommen*, results in three different participles, i.e. perfect participle, passive participle for standard passive constructions and passive participle for dative passive constructions. Müller (2018) argues that only one lexical rule is needed to derive the past participle. According to him, the respective auxiliary determines which arguments are realized in a perfect or a passive context. Whether his analysis is better suited to fit the participle data in German does not touch upon the issue of the grammaticalization process illustrated here.

(14) Output *verordnet* 'prescribed'

$$
\begin{bmatrix}
\text{PHON} \ \langle \ \textit{verordnet} \ \rangle \\[2pt]
\text{SYNSEM|LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD}
\begin{bmatrix}
\textit{verb} \\
\text{VFORM} \ \textit{passive-part}
\end{bmatrix} \\[6pt]
\text{ARG-ST} \ \big\langle \ \text{NP}[\textit{nom}]_{\boxed{2}}, \ \text{NP}[\textit{acc}]_{\boxed{3}} \ \big\rangle
\end{bmatrix} \\[20pt]
\text{CONT}
\begin{bmatrix}
\text{INDEX} \ \boxed{4} \ \textit{event} \\[4pt]
\text{RELS} \ \Bigg\langle
\begin{bmatrix}
\textit{verordnen} \\
\text{EVENT} & \boxed{4} \\
\text{AGENT} & \boxed{1} \\
\text{BENEFACTIVE} & \boxed{2} \\
\text{THEME} & \boxed{3}
\end{bmatrix}
\Bigg\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

In view of the analysis of the dative passive in Present-day German, its rise in the history of German may be modeled in terms of a change modifying the CON-TENT feature of the verb *bekommen*. Semantic bleaching of the main verb in the course of its grammaticalization process affects above all its argument structure: The lexical verb *bekommen* assigns the thematic role beneficiary to its subject argument and a theme role to its direct object, cf. (15). The auxiliary *bekommen* on the other hand has no lexical meaning and does not assign thematic roles. The rise of the passive auxiliary *bekommen* can be thought of as taking place in two steps: Starting with the lexical verb *bekommen*, the first step includes its semantic bleaching such that the verb admits verbal complements headed by ditransitive verbs denoting a change of possession. The second step is best characterized by the further bleaching of the auxiliary-to-be: Its distribution is no longer governed by a semantic restriction to verbs denoting a change of possession, but only by a syntactic one, because it requires verbs with a dative object in its active counterpart, cf. (9a). Alongside its bleached version, the verb *bekommen* retains its original status as a lexical verb. The diachronic scenario sketched for *bekommen* 'get' is supposed to hold for the other passive auxiliaries as well.

Draft of 29th May 2019, 13:58

(15) *bekommt* 'gets':

$$
\begin{bmatrix}
\text{PHON } \langle \textit{gets} \rangle \\
\text{SYNSEM|LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD} & \textit{verb} \\
\text{ARG-ST} & \langle \text{NP}[\textit{nom}]_{[1]}, \text{NP}[\textit{acc}]_{[2]} \rangle
\end{bmatrix} \\
\text{CONT}
\begin{bmatrix}
\text{INDEX} & [3] \; \textit{event} \\
\text{RELS} & \left\langle
\begin{bmatrix}
\textit{bekommen} \\
\text{EVENT} & [3] \\
\text{BENEFACTIVE} & [1] \\
\text{THEME} & [2]
\end{bmatrix}
\right\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Other studies on the rise of auxiliary verbs in representational theories of grammar include Schwarze (2001) who models this change within the framework of lexical functional grammar. He suggests to capture the rise of auxiliary verbs in Romance by a difference with respect to the f-structure features in the lexical entries between lexical and auxiliary verbs. In actual Romance, the f-structure of a passive clause is headed by the non-finite verb, while the modern Romance counterparts of *esse* 'be' may no longer function as heads of an f-structure with their transition to auxiliary status.

2.2 Word Order Changes in the Verbal Complex

Present-day German is an OV language with the finite verb occuring at the right edge of subordinate clauses. In case more than one verb appears in final position, the canoncial order is descending, i.e. $V_3V_2V_1$ with the governing verb following the governed verb as illustrated by the three-place verb cluster in (16). The occurrence of non-canonical orders like $V_1V_3V_2$ is restricted in Standard German with respect to the number of verbs in the cluster (at least three verbs) and the type of auxiliary. While the auxiliary verb *haben* 'have' requires the non-canonical word order, cf. (17a), the tense auxiliary *werden* 'will' and the modal verbs may occur with both orders. As regards the auxiliary *sein* 'be', the non-canonical order is not available (17b).

(16) Auch wenn Selma die Noten gefunden$_3$ haben$_2$ wird$_1$,
      even if   Selma the notes found   have   will
      'Even if Selma will have found the music'

(17) a. Auch wenn Fred das hätte$_1$ wissen$_3$ müssen$_2$,
even if   Fred this had   know   must
'even if Fred should have known this'

b. *Auch wenn er gestern   in der Vorlesung ist$_1$ gesehen$_3$ worden$_2$,
even if   he yesterday in the lecture   is   seen   been
'Even if he has been seen in the lecture yesterday '

Neither of these restrictions holds for non-standard varieties of German: Upper German dialects provide ample evidence for both descending and ascending verb orders, even if the verb cluster includes only two verbs (Dubenion-Smith 2010). Likewise historical stages of German witness a wide variety of word orders regardless of the number of verbs appearing in final position and independent of the nature of the auxiliary (Ebert 1981; Härd 1981; Sapp 2011). The Early New High German examples in (18) render attestations for a two-place verbal complex with *haben* preceding a past participle and a three-place verbal complex with the auxiliary verb *sein* preceding two past participles. Both patterns are ruled out in the standard varieties of Present-day German.

(18) a. uns ist ein Abentüer widerfaren underwegen, daz uns ein Wolff
us   is an adventure happened   on the way   that us a   wolf
vil   Leids hat$_1$ gethon$_2$ (Ulenspiegel 226.4)
much harm has done
'An adventure happened to us on the way: a wolf has done much harm to us.'

b. so schreibt man auch aus   Holl.   das newlich in Frießlandt ein
so writes   one also from Holland that recently in Friesland a
fewriger fliegender Trach   sey$_1$ gesehen$_3$ worden$_2$ (Aviso 35.14)
fiery   flying   dragon were seen   been
'News come from the Netherlands that a fiery flying dragon has been seen in Friesland.'

The restrictions effective in Present-day German arise in a two-step process: The order V$_2$V$_1$ becomes fixed with two-place verbal complexes troughout the 16th century, while it took about a hundred more years for the order V$_3$V$_2$V$_1$ to become the canonical order for three-place verbal complexes (Ebert 1981; Härd 1981; Sapp 2011).

How is this change modeled in a representational framework such as HPSG? Auxiliary verbs and their verbal complements as given in (16) through (18) are

supposed to build verb clusters with the arguments of the respective verbal complement being attracted by the auxiliary (Hinrichs & Nakazawa 1994; Pollard 1994; Kathol 2000; Müller 2002; 2008).[7] Accordingly, the structure of a verb cluster exemplifying the canonical descending order can be represented as in the passive verb cluster *dass sie die Fäden gezogen bekam* 'that she had removed the stitches':
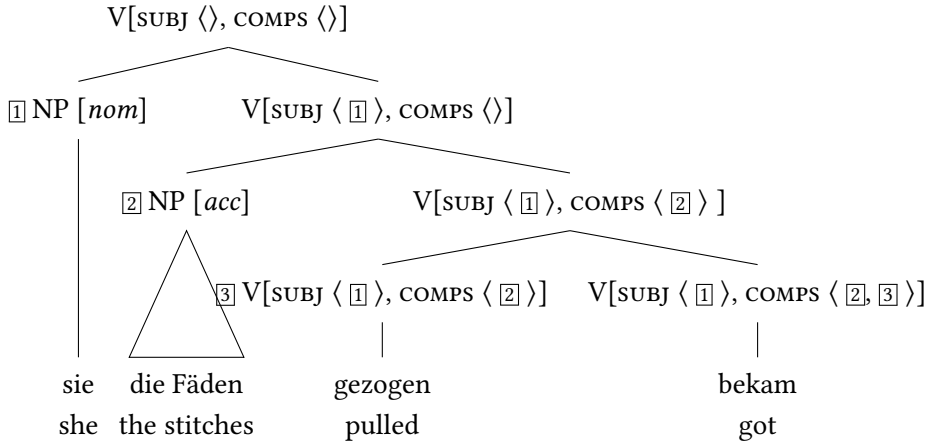

Figure 1: Passive verb cluster in *dass sie die Fäden gezogen$_2$ bekam$_1$*

The variation regarding the order of auxiliary and lexical verb in verb clusters is currently addressed from two perspectives: (i) non-canonical patterns of three-place verb clusters in Present-day German as in (17a) which figure under the notion of *Oberfeldbildung* since Bech (1955), and (ii) the canonical order in Dutch verb clusters which is ascending instead of descending, i.e. $V_1V_2V_3$. Building on previous proposals, one way to account for the word order change affecting the verbal complex in the history of German would include the assumption of an appropriate head feature as advocated by Hinrichs & Nakazawa (1994). They emphasize that a lexical approach to the word order within the verb cluster would account also for the variation on the level of individual speakers.

Recent work suggests the head feature GOVR which indicates the direction of government of non-finite verbs and was proposed to capture synchronic variation in German and Dutch (Bouma & van Noord 1996; Kathol 2000; Augustinus

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[7]Abeillé & Godard (2002) argue that verbal complements of auxiliary verbs in French are part of a flat VP when the auxiliary conveys tense information, while the passive auxiliary *être* 'be' takes a VP complement.

[2015]).[8] From a diachronic perspective, one would either assume that infinitival as well as participial complements carry a feature GOVR which is underspecified in earlier stages of German (= GOVR *dir*) allowing for the attested variation of word orders, cf. figure 2, or one would go on the assumption that the head feature GOVR arises only later in the history of German. In the context of example (18b), the value of GOVR may be determined as follows: The participle *gesehen* 'seen' is governed by the auxiliary *worden* 'been' appearing on its right side and the GOVR value of the verb cluster *gesehen worden* is feature shared with its head daughter *worden* which is governed by the auxiliary *worden*.

Figure 2: Three-place verb cluster in Early New High German

In Present-day German, a three-place verb cluster including the auxiliary *sein* 'be' exhibits the canonical word order $V_3V_2V_1$. In contrast to Early New High German, the feature value is provided by the lexical entry of the respective verb. A partial lexical description of the passive participle *worden* 'been' is illustrated below, indicating that its governing auxiliary has to appear on the right side.

(19) *worden*-AUX 'been':

$$
\begin{bmatrix}
\text{PHON} \ \langle \ worden \ \rangle \\[2pt]
\text{SYNSEM|LOC|CAT} \ \begin{bmatrix} \text{HEAD} \ \begin{bmatrix} verb \\ \text{VFORM} \ passive\text{-}part \\ \text{AUX} \ + \\ \text{GOVR} \ \rightarrow \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$

As has been suggested in work on synchronic variation as regards verb cluster in German and Dutch, diachronic variation can be modeled in a straightforward

---

[8]The head feature suggested by Hinrichs & Nakazawa (1994) is FLIP which indicates government to the right when exhibiting a positive value as in example (17a) above.

way by building on lexical entries of verbs. The analysis of the word order change sketched above makes use of the possibility that a lexical feature may be underspecified in a particular variety of a language.

2.3 Left Periphery of Noun Phrases

The third case study presents a bundle of changes affecting the left periphery of noun phrases in the history of German. All changes might be due to a single change as regards the relationship between nominal and determiner (Demske 2001).

The historical record indicates that the distribution of adjectival inflection types is semantically governed in Old High German, i.e. definite determiners trigger weak adjectival inflection, whereas indefinite determiners call for strong adjectival inflection. In (20), the weak declension type is triggered by the demonstrative and the possessive determiner, respectively, while the strong declension type in (21) is motivated by the indefinite pronoun. In contrast to Present-day German the strong declension type is used irrespective of the morphology of the indefinite determiner (cf. *ein* vs. *einemo*). Old High German behaves in this respect as Modern Icelandic.[9]

(20) a. thiz irdisg-a   dal   (OHG)
          this worldly-WEAK valley
          'this worldly valley'

      b. min liob-o   sun   (OHG)
          my good-WEAK sun
          'my good sun'

(21) a. ein arm-az   uuîb   (OHG)
          a   poor-STRONG woman
          'a poor woman'

      b. einemo diur-emo   merigrioze   (OHG)
          a   valuable-STRONG pearl
          'a valuable pearl'

In Present-Day German the distribution of adjectival inflection types is morphologically governed: If grammatical features are overtly marked by the determiner,

---

[9]In Modern Icelandic, a definite noun phrase requires a weakly inflected adjective and an indefinite noun phrase a strongly inflected one: *þessi raud-i hestur* 'this red horse' vs. *raud-ur hestur* ' a red horse'.

the following adjective instantiates the weak inflection type, otherwise the adjective exhibits strong inflection (cf. *ein* vs. *einem*).

(22) a. ein herausragend-er   Cellist   (PDG)
         an outstanding-STRONG cellist

     b. einem herausragend-en   Cellisten   (PDG)
         an   outstanding-WEAK cellist

         'an outstanding cellist'

The changing nature of the relationship between determiner and nominal may be captured by a change in the feature structure of the determiner: In Old High German, it is the CONTENT feature of the determiner that drives the distribution of adjectival declension types, in Present-day German on the other hand, the distribution is driven by its CAT feature. The feature description of the indefinite determiner Old High German includes as AGRfeatures CASE, NUMBER and GENDER[10]. The feature SPR indicates that the determiner requires a nominal expression lacking a specifier, i.e. NOM(Sag et al. 2003). The index ⒈ signals the structure sharing of the determiner's CONTENT feature with the DECLfeature of the nominal expression. Determiner and nominal agree in the following example with respect to indefiniteness.

$$
(23) \quad
\begin{bmatrix}
\text{PHON} \ \langle \ \textit{einemo} \ \rangle \\[2pt]
\text{SYNSEM|LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD}
\begin{bmatrix}
\textit{det} \\
\text{AGR}
\begin{bmatrix}
\text{CASE} & \textit{dat} \\
\text{NUM} & \textit{sg} \\
\text{GEND} & \textit{masc}
\end{bmatrix}
\end{bmatrix} \\[20pt]
\text{SPR} \quad \langle \ \text{NOM} \ [\text{DECL} \ \boxed{1}\ ] \ \rangle
\end{bmatrix} \\[20pt]
\text{CONTENT}
\begin{bmatrix}
\text{DET} & \textit{exists} \\
\text{RESTIND} & \boxed{1}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

In Present-day German, the DECLvalue of NOMno longer conveys information about its definiteness. The determiner selects for NOMaccording to categorial features: In case the determiner provides information on the AGRvalue of the noun phrase, it asks for a weakly inflected NOMas in (24).[11] Otherwise the information

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[10]Disregarding the context in (21), the determiner *einemo* may also agree with a neuter noun.

[11]In my view, DECLis not a HEAD feature of the determiner, since declension type is an inherent feature of determiners. Cf. however Kiss (1995: 72).

in question has to be provided by a strongly inflected ɴᴏᴍ.[12]

$$(24)\quad \begin{bmatrix} \text{PHON } \langle \textit{ einem } \rangle \\[2pt] \text{SYNSEM|LOC|CAT} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{det} \\ \text{AGR} \begin{bmatrix} \text{CASE} & \textit{dat} \\ \text{NUM} & \textit{sg} \\ \text{GEND} & \textit{masc} \end{bmatrix} \end{bmatrix} \\[10pt] \text{SPR} \quad \langle \text{ NOM } [\text{DECL } \textit{weak}] \rangle \end{bmatrix} \end{bmatrix}$$

The changing nature of the relationship between determiner and ɴᴏᴍcan be modeled by modifying the feature structure of sᴘʀ in the lexical description of the determiner. A possible motivation for this change comes from the increasing grammaticalization of the definite determiner: While the determiner is attested above all with sortal concepts in Old High German testifying to its use as a demonstrative, it lacks in cases where the head noun refers to functional concepts that are inherently unambiguous (Demske 2001). The examples in (25) illustrate this distribution: A head noun like *figboum* 'figtree' has a sortal meaning, i.e. its unique referent is specified by the context in (25a), while the noun *erda* 'earth' denotes a functional concept which refers unambiguously irrespective of particular situations (25b). A demonstrative determiner as *ther* 'this one' is hence excluded in such a context.

(25)   a.   Inti quad Imo, niomer fon thir uuahsmo arboran uuerde zi éiuuidu
         thô sâr sliumo arthorr&a **ther figboum**.   (OHG)
         'and he saith unto it, Let there be no fruit from thee henceforward for
         ever. And immediately the fig tree withered away.'

       b.   Inti **erda** giruorit uuas Inti steina gislizane uuarun   (OHG)
         'And the earth shook and the rocks were split.'

The rise of weak definites in the course of Early New High German represents a further step in the grammaticalization process of the definite determiner: Relational nouns with their argument in postnominal position may lack any determiner (26a) or they exhibit either the indefinite or the definite determiner (26b, 26c). The third pattern is the default pattern in Present-Day German (Demske 2019).

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[12]Pollard & Sag (1994: 373) point out that nouns like *Verwandter* 'relative' support the assumption that ᴅᴇᴄʟis a feature not only of adjectives but also of nouns, because the declension class of these nouns is governed by the respective determiner.

(26) a. Vnd wie wol ich bin **sone eins konigs**   (ENHG)

'And though I am the son of a king.'

b. Sie namen **einen Zahn eines Thiers** / welches so groß ist wie eine
Ratte   (ENHG)

'They took the tooth of an animal which was as big as a rat.'

c. ich verstunde gleich aus ihrem Diskurs (…) daß ihr Mann beim Senat
wäre, und ohngezweifelte Hoffnung hätte, denselben Tag **die Stell
eines Landvogts oder Landamtmanns** zu bekommen   (ENHG)

'From her conversation I came to discover that her husband was in
the senate (…) He was also supposed to have had good expectations of
receiving the position of a district governor or a bailiff that very day.'

In Present-Day German, definite determiners are used with sortal, functional and
relational nouns, cf. (27), suggesting that the definite determiner is no longer
licensed on semantic grounds as in Old High German, but on morphological
grounds. The changing distribution of the definite determiner fits nicely the as-
sumption that the specifier relation originally is semantically based and then
turns into a morphologically based relationship.

(27) a. Der Mond ist aufgegangen.   (PDG)

'The moon has risen.'

b. Sie ist die Tochter eines Unternehmers.   (PDG)

'She is the daughter of an entrepreneur'

The increasing grammaticalization of the nominal left periphery has further
effects on pre-head constituents. The demonstrative pronoun *solch* 'such' has
either a sortal or an individual reading in older stages of German allowing for
singular count nouns to occur without another determiner (28). In Present-Day
German, *solch* is restricted to a sortal interpretation and exhibits classical diag-
nostics for adjectivehood including the requirement of a determiner with singu-
lar count nouns (Demske 2005). The developing restrictions governing the use
of the demonstrative pronoun *solch* 'such' are easily modeled within a lexical
approach, going on the assumption that there are either two lexical entries for
the demonstrative in earlier stages of German or that the HEAD feature allows
both a SPR as well as a MOD relation between the demonstrative and the nominal
head. With the development of the demonstrative *ther* 'this one' into the definite
determiner, the demonstrative *solch* conventionalizes its use as a demonstrative
adjective while losing the one as a determiner.

(28)   derselbe Landherr hatt an jetzo **solche Türckin** / weil jhr man nicht zur
       hand / sondern verreist gewest / wider vnder die Türcken vmb etliche
       Türckische Teppich vnd andere sachen verkaufft /   (ENHG)

       'this overlord has sold now this Turkish woman to other Turkish people
       for several Turkish tapestry and other things, because her husband has
       been abroad.'

A significant role in the history of the left periphery is played by the adnominal
genitive. Three stages have to be distinguished in its development: In the first
stage, genitive noun phrases systematically appear in prenominal position as
attested in OHG sources (29). The genitive is a prenominal complement at this
stage indicated by the preceding determiner and adjective as illustrated by the
second example. Note that the determiner and the adjective are marked for dative
case as required by the initial preposition *in* 'in'.

(29)   a.   scouuot thes accares lilia   uuvo sie   uuahsen   (OHG)
            observe the   field's   lilies how they grow
            'Observe how the lilies of the field grow.'

       b.   In dhemu heilegin daniheles chiscribe   (OHG)
            in the   holy   Daniel's   scripture
            'in the holy scripture of Daniel'

The adnominal genitive of stage two also occurs in prenominal position, provided
that it denotes humans or animals, cf. (30). All adnominal genitives marked [-
animate] are now limited to postnominal position as testified by historical data
from the Early New High German period (Ebert 1988). The prenominal genitive
is still a full noun phrase in stage two, allowing not only for pre-head, but also
for post-head dependents as shown by the postnominal modifiers in (30), which
can be phrasal or sentential.

(30)   a.   **Der Frawen zu vnseren zeiten** kunst weyßheit vnd tugende ist nit
            not zu erzelen   (ENHG)

            'The art, wisdom and virtue of women in our days does not need to be
            recounted'

       b.   Dieser Tagen seyn allhie **der Evangel. Fürsten vnnd Städt/ so zu
            Schwäbschen Hall jüngst beysamen gewest/** Abgesandte alher
            komen   (ENHG)

            'These days envoys of the Protestant sovereigns and cities have come
            here, after they have met at Schwäbisch Hall recently.'

The final stage in the development of the adnominal genitive is represented by Present-day German: The prenominal position is restricted to proper names and kinship terms disallowing any pre-head or post-head modifier. Genitive phrases headed by individual nouns appear in postnominal position irrespective of the feature [±animate].

(31) a. Selmas/Vaters   altes Fahrrad
         Selma's/Daddy's old   bike

     b. *der Menschheit ältester Traum
          the mankind's oldest   dream

(32) a. das Gartenhaus   des   alten Goethe
         the summer house of the old   Goethe

     b. *des alten Goethe Gartenhaus
          the old   Goethe summer house
         'the summer house of late Goethe'

The historical scenario sketched for the development of the adnominal genitive fits in well with other changes affecting the left periphery of noun phrases: While the adnominal genitive is a full noun phrase in Old High German functioning as a complement of the head noun, the adnominal genitive is used as a possessive determiner in Present-day German. Again the change can be modeled as a change affecting the relation between a prenominal constituent and the nominal head. The Old High German demonstrative pronouns *ther* 'this one' and *sulîh* 'such' conventionalize either an individual or a sortal reading in the history of German. Patterning with the former, the prenominal genitive conventionalizes a determiner relation to the nominal, provided that it can contribute a possessive meaning. Adnominal genitives with the feature [-animate] are consequently postponed and they retain their grammatical function as complements of the head noun. Prenominal genitives on the other hand become possessive determiners establishing a SPR relation to nominals with strong inflection (Pollard & Sag 1994: 54):

(33) Lexical item for *Selmas*:

$$
\begin{bmatrix}
\text{PHON} \; \langle \; Selmas \; \rangle \\[2pt]
\text{SYNSEM|LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD} \;\; det \\
\text{SPR} \;\; \langle \; \text{NOM} \, [\text{DECL } strong, \; \text{INDEX } \boxed{1}, \; \text{RESTR } \boxed{2} \,] \; \rangle
\end{bmatrix} \\[20pt]
\text{CONTENT}
\begin{bmatrix}
\text{DET} \;\; the \\
\text{RESTIND}
\begin{bmatrix}
\text{INDEX} \; \boxed{1} \\
\text{RESTR} \; \left\langle
\begin{bmatrix}
\text{RELN} \;\; poss \\
\text{POSSESSOR} \; \boxed{3} \\
\text{POSSESSED} \; \boxed{1}
\end{bmatrix}
\right\rangle \oplus \boxed{2}
\end{bmatrix}
\end{bmatrix} \\[30pt]
\text{CONTEXT|BACKGR} \; \left\langle
\begin{bmatrix}
\text{RELN} \;\; naming \\
\text{BEARER} \; \boxed{3} \\
\text{NAME} \;\; Selma
\end{bmatrix}
\right\rangle
\end{bmatrix}
\end{bmatrix}
$$

The reanalysis of the relation between prenominal possessive and nominal in the history of German not only affects the pre-head genitive but also the possessive pronoun. In Middle High German and still in Early New High German, the possessive pronoun patterns with adjectives considering its co-occurrence patterns: It may follow a definite determiner and may even agree with another adjective as regards its declension type as in (34a). Here possessive pronoun and adjective both exhibit weak declension triggered by the preceding definite determiner. At this stage in the history of German, the possessive pronoun ist still a constituent of the nominal. The Early New High German example in (34b) shows that a possessive pronoun may also follow a prenominal adjective suggesting that it functions as a modifier itself (note also the agreement with respect to declencion type between adjective and possessive pronoun). This word order is excluded in Present-day German.

(34) a. die iuwer-n scoen-en tohter (MHG)
the your-WEAK beautiful-WEAK daughter
'your beautiful daughter'

b. mit gross-em jhr-em Rhum vnd Lob (ENHG)
with big-STRONG their-STRONG glory and praise
'with their big glory and praise'

Once again, it is the relation between prenominal element and head noun which is subject to change: The possessive pronoun behaves as an adjectival modifier in earlier stages of German, before it becomes a possessive determiner (i.e. MOD

relation develops into SPR relation). According to Pollard & Sag (1994: 54), its lexical description looks very much like the description of the prenominal genitive given above (disregarding the CONTENT and the CONTEXT value).

Changes at the left periphery of noun phrases start with the grammaticalization of the definite determiner throughout the period of Old High German, testified by a widening of its distribution. In Present-day German, not only sortal, but also functional and relational nouns combine with the definite determiner. The steady increase in the use of the determiner triggers a reanalysis of the relation between determiner and nominal: A semantically driven relation turns into a relation that is also morphologically based as evidenced by the changing trigger for the adjectival declension type. The determiner is consequently licensed by the CAT feature in the noun's feature structure as shown for the functional noun *Mond* 'moon' which subcategorizes for its determiner in Present-day German but has not done so in Old High German.

$$
(35) \quad
\begin{bmatrix}
\text{PHON } \langle\, \textit{Mond}\, \rangle \\[4pt]
\text{SYNSEM|LOC|CAT}
\begin{bmatrix}
\text{HEAD} & \begin{bmatrix} \textit{noun} \\ \text{AGR } \boxed{1} \end{bmatrix} \\[10pt]
\text{SPR} & \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{det} \\ \text{AGR } \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \\[10pt]
\text{ARG-ST} & \langle\,\rangle
\end{bmatrix}
\end{bmatrix}
$$

The reanalysis of the relation between determiner and nominal has consequences for the interpretation of other prenominal constituents: Possessive pronouns as well as possessor phrases are likewise taken to instantiate a specifier relation to the nominal in question, thus augmenting the class of determiners in German. In addition, pre-head constituents precluding a specifier interpretation are postponed, cf. genitive complements with [-animate], and pre-head constituents ambiguous between a specifier and a modifier reading are limited to one interpretation, cf. *solch* 'such' behaving as a demonstrative adjective in Present-day German. All changes can be modeled in a straightforward way as lexical changes.

3 Summary

Recent years witnessed a growing consensus that syntactic change is best accounted for in the lexicon of a language. The consensus holds across frameworks: Biberauer & Walkden (2015) highlight the role of the lexicon in Minimalism, the

volume by Butt & King (2001) exhibits case studies of syntactic change in the representational framework of LFG. The present contribution set out to show how the typed feature structures of HPSG can be used to model the way syntactic structures change over time. Different types of morpho-syntactic change have been considered in the history of German: the grammaticalization of auxiliary verbs and of demonstrative pronouns, word order changes affecting verb and noun phrases and changing relations between prenominal constituents and the respective nominal. In all cases, the change in question can be modeled in terms of feature structures in the lexicon of a language.

Abbreviations

Acknowledgements

Sources

Include a list the historical sources used in the paper?

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Draft of 29th May 2019, 13:58