The rise of complex verb constructions in Germanic

1   Purpose and aims

This project is situated in the field of historical linguistics. It addresses an understudied case of language change: the rise of complex verb constructions in Germanic. This development is present in all Germanic languages, yet the exact outcome of the change is different for each individual language, leading to cross-linguistic variation. The project aims to increase our factual knowledge of the rise of complex verb constructions in Germanic, with an empirical focus on English, Dutch, German and Swedish. It also aims to enhance our understanding of the process of 'constructional complexification' which is hypothesized to lie behind the rise of complex verb constructions. The project investigates both language internal and external motivations and mechanisms of complexification combining the frameworks of diachronic construction grammar and comparative linguists. Methodologically, it introduces the use of parallel corpora in historical linguistics, compiling a multilingual parallel corpus of historical Bible translations, which will be made available for other diachronic research after the completion of the project.

2   Research topic

Complex verb constructions (also known as 'long verb clusters') combine two or more auxiliary verbs with a lexical verb, as illustrated in (1) and (2) for English, Dutch, German and Swedish.

(1)   [MODAL MODAL VERB] a.k.a. 'double modal construction'
      I must be able to come.
      Ik moet kunnen komen.
      Ich muss kommen können.
      Jag måste kunna komma.

(2)   [PERFECT MODAL VERB] a.k.a. 'complex perfect construction'
      I have been able to come.
      Ik heb/ben kunnen komen.
      Ich habe kommen können.
      Jag har kunnat komma/kommit.

These examples show some of the cross-linguistic variation in the combinatory patterns and formal coding of long verb constructions in Germanic (more details are given in section 6.5). The semantic and formal properties of complex verb constructions are rather well-studied in the present-day Germanic languages, especially in Dutch and German (Den Besten & Edmondson 1983, Wurmbrand 2001, Broekhuis et al. 2015-2016). However, little is known on why and how such complex verb constructions came into being.

3   Survey of the field

This section brings together the available literature on the origin and history of complex verb constructions in Germanic. It forms the empirical and theoretical backdrop of this project.

3.1 Empirical state of the art

Our empirical knowledge on the rise of complex verb constructions is limited. The genesis of double modal constructions is documented best, with some dedicated studies on Middle English (Nagle 1993, Ogura 1993) and Middle Dutch (Coupé 2009, 2015, Coussé 2015). The

construction first emerges in the 13th century in both languages and was initially only headed by the finite modal *shall*, as illustrated in (3) and (4).

(3) þatt mannkinn <u>shollde</u> <u>muʒhenn</u> well Upp <u>cumeunn</u> inntill heoffne (Ormulum, ca. 1200)
that mankind should.3SG must.INF well up come.INF into heaven
'that mankind should be able to come into heaven'

(4) soe dat deen sonder den andren niet daer towe en <u>sal</u> <u>moghen</u> <u>gaen</u> (Charter Brussels, 1277)
so that the.one without the other not there to not shall.3SG may.INF go.INF
'so that the former one shall not be able/allowed to go there without the other one'

These few observations raise a wealth of research questions. Why do double modal constructions only arise in the 13th century when simple modal constructions date from the earliest sources in Germanic (6-7th century)? Why are early double modal constructions restricted to *shall*? Why do early double modals in English and Dutch emerge in parallel? Why does the construction eventually disappear in English? Why does the same construction survive in Dutch and even expands its collocational range? These questions are of course not limited to the rise of double modal constructions but are relevant for many other complex verb constructions in Germanic.

3.2 Theoretical framework

On a theoretical level, the historical study of Germanic verb constructions has been dominated by grammaticalization theory since the nineteen eighties. The framework investigates how lexical items start functioning as grammatical markers (cf. Hopper & Traugott 2003). The development of auxiliaries has been studied as one of the prime examples of grammaticalization. The framework has some relevance for this project as the grammaticalization of auxiliaries is a prerequisite for the subsequent combination of auxiliaries into larger complex constructions. However, the framework falls short explaining why and how multiple auxiliaries are integrated into complex structures. As Noël (2007:177) insightfully points out, the main focus of grammaticalization lies on the "change of extant constructions along a path towards the grammatical end of the meaning continuum".

This project therefore explores the potential of diachronic construction grammar (Traugott & Trousdale 2013, Hilpert 2013, Barðdal et al. 2015, Coussé et al. forthcoming) for analyzing complex verb constructions. Diachronic construction grammar is a relatively new framework building on insights from grammaticalization theory and construction grammar. Construction grammar is a model of grammar that takes constructions as the basis of grammatical description (Langacker 1987, Fillmore et al. 1988, Goldberg 1995). Constructions are symbolic pairings of meaning and form; as such, they are signs in the Saussurean sense of the word. They may differ with regard to their level of schematicity and complexity (Croft & Cruse 2004:255). Diachronic construction grammar addresses questions like: how do constructions emerge, how do they change, and how are they integrated into a constructional network? It is in particular the network dimension of diachronic construction grammar that offers a wider perspective on language change than grammaticalization does.

4   Preliminary results

Coussé & Van de Velde (2014) and Coussé (2015) are two pilot studies of early complex verb constructions in Middle Dutch: the double modal construction and the complex perfect construction (cf. examples (1) and (2)). These studies show how diachronic construction grammar can contribute to analyzing the rise of complex verb constructions.

De Smet et al. (2013) make the case that constructions often stem from more than one source construction at once, in other words, they have 'multiple source constructions'. Coussé & Van de Velde (2014) and Coussé (2015) argue that complex verb constructions are a prime example of this phenomenon: they can be considered the result of integrating two or more simple verb constructions (consisting of one auxiliary and a main verb) into an innovative more complex structure.

Coussé (2015) also elaborates on the fact that complex verb constructions are more complex than their sources, in the sense that they are longer and have more internal structure. Diachronic construction grammar mostly focuses on increased schematicity in constructional change, called 'schematization' in Traugott & Trousdale (2013). The rise of complex verb construction highlights the relevance of increased constructional complexity in change, something Coussé (2015) coins 'constructional complexification'. It is the central theoretical aim of this project is to come into grips with this process of constructional complexification.

Coussé (2015) provides a seminal account of complexification in double modal constructions. Compare the Dutch double modal in (1) to its historical cognate in (4). The modern construction is no longer restricted to particular modals but has become a highly schematic construction combining two open slots for modals with one open slot for lexical verbs. Coussé (2015) argues that the modal slots in the modern construction stand in an 'asymmetric scope relation', i.e. the embedded modal falls under the semantic scope of the finite modal. A more technical construction grammar representation of this relation is given in (5).

(5) $[[\text{MODAL}_i \text{ MODAL}_j \text{ VERB}_k] \leftrightarrow [\text{HIGHER SCOPE}_i (\text{LOWER SCOPE}_j (\text{PREDICATE}_k))]]$

This representation shows how each modal slot adds a layer of modal meaning to the predicate. It is still an open question how this layered structure developed in time. This project will explore the hypothesis that complexification proceeds through the incremental adding of layers of modal (and related tense-aspect-mood) meanings to verbal predicates.

5   Significance

This section elaborates on the theoretical significance of the process of constructional complexification beyond the historical study of complex verb constructions. Section 5.1 takes a language internal perspective, arguing that complexification appears in other areas of the constructional network than only in verb constructions. Section 5.2 takes a comparative perspective, exploring the areal dimension of complexification in language change.

5.1 The network dimension of complexification

The process of complexification is not limited to the rise of complex verb constructions. Van de Velde (2009) argues that noun phrases appear to 'fold out' over time in Dutch, i.e. they acquire a layered structure with dedicated slots for different lexical modifiers. It is striking how the development of this layered structure reminds of the development in double modal constructions described by Coussé (2015). In both areas of the constructional network, the rise of complex constructions seems to come with the emergence of dedicated slots for particular modal meanings. What is more, these slots appear to stand in an asymmetric scope relation. Van de Velde (2009) shows more specifically how higher layers of meaning are incrementally added to already existent slots in the course of time.

Given the potential relevance of constructional complexification in several areas of the constructional network, the project aims to uncover the motivations and mechanisms of complexification, not only in verb constructions in their own right, but with an eye to the entire constructional network. Van de Velde (2009) demonstrates the importance of such a network perspective for the noun phrase. He finds that new modifier slots recruit grammatical elements that previously were situated at the clause level. Dahl (2011:161) argues that structural complexity in such cases "shifts downwards, from a higher level to a lower one". This project aims to further explore the network dimension of complexification along these lines.

5.2 The areal dimension of complexification

The rise of complex verb constructions is not restricted to one particular language but surfaces in several Germanic languages, as example (1) and (2) demonstrate. Also the growth of noun phrases is not limited to Dutch but seems to be at least a West Germanic phenomenon (cf. Van de Velde & Lamiroy 2016). These observations point to the fact that constructional complexification has an areal dimension that goes beyond the confines of one particular language.

The project therefore takes a comparative perspective on complexification exploring the motivations and mechanisms for the spread of innovative complex constructions in time and space. Genetic relationship can be ruled out as a potential explanation for the parallel rise of complex verb constructions in Germanic, since this innovation arose many centuries after the breakup of Proto-Germanic. A more promising avenue of research is language contact. Heine & Kuteva (2006) have made the case that grammatical change, notably grammaticalization, may be transmitted by language contact. This project will explore whether constructional complexification may be accounted for along the same lines, aiming to extend Heine & Kuteva's (2006) concept of 'contact-induced grammaticalization' to 'contact-induced complexification'. This idea ties in with the work of Hoelzl (forthcoming) who develops the concept of 'constructionalization areas' as a construction-based alternative to Heine & Kuteva's (2011:299) 'grammaticalization areas', i.e. "a group of geographically contiguous languages that have undergone the same grammaticalization process as a result of language contact".

6   Project description

Since our factual knowledge of the rise of complex verb constructions is very limited, this project requires extensive empirical groundwork. The methodological choices for this empirical work are given in section 6.1. The project is structured in three work packages, each organized around the expertise of one of the three project members, who are introduced in section 6.2. The work packages are presented one by one in section 6.3 to 6.5. A time plan for the entire project is given in section 6.6.

6.1 Methodological choices

The project investigates the rise of complex verb constructions by means of three complementary methods – seeking a balance between maximal empirical coverage and time efficiency.

6.1.1 Qualitative survey of historical grammars
Historical grammars are a reliable and easily accessible source of historical data. The project therefore aims to make a comprehensive survey of all available historical grammars of the Germanic languages (including Grimm 1837, Behaghel 1932, Visser 1963-1973, Schrodt 2004 and Van der Horst 2008).

6.1.2 Quantitative study of language-specific historical corpora

Historical corpora allow us to uncover historical trends with more quantitative precision than historical grammars. The method is however time-consuming (details are given in section 6.3 and 6.6). The project therefore chooses to study only corpora from the four largest Germanic languages: English, Dutch, German and Swedish. The first three languages are part of a well-studied typological continuum known as the 'Germanic sandwich' (Hüning et al. 2006). Swedish adds a northern perspective to the comparison. There are excellent digital historical corpora available for all of the four languages from the 13th century onwards, marking the start of the written text tradition in Dutch and Swedish (see short URL https://goo.gl/KRfvfa for an overview). The corpus study has the ambition to follow the entire history of complex verb constructions, from the first attestations in the 13th century to the wealth of variation observed today.

6.1.3 Quantitative study of a historical parallel corpus

Comparing data across corpora often proves difficult due to differences in corpus compilation. A solution from contrastive linguistics to use a parallel corpus, i.e. a collection of texts written in one language placed alongside their translations in one or several other languages. Diachronic parallel corpora have – to our knowledge – not systematically been used in historical linguistics but we believe the method has large potential for the discipline: it allows us to follow the recurrent translation of the same source construction through time.

The potential of this method will be illustrated by one simple example, featuring the history of the double modal construction in English and Dutch. (6) presents a selection of historical translations to both languages of the same verse from the Bible – the only source text that is translated in the Germanic languages over and over again, especially from the protestant reformation in the 16th century onwards.

(6) a. Et ecce eris tacens et non <u>poteris</u> <u>loqui</u> usque in diem quo haec fiant (Vulgate Luke 1:20)
      b. heono ðu bist suigende ne <u>mage</u> ðu <u>gesprece</u> oðð on doege of ðæm ðas geworðes (Lindisfarne Gospels, ca. 700)
      c. And loo! thou shalt be stille, or doumbe, and thou <u>shalt</u> not <u>mowe</u> <u>speke</u> til in to the day, in which thes thingis schulen be don (Wycliffe Bible, 1382-1398)
      d. And, behold, thou <u>shalt</u> <u>be</u> dumb, and not <u>able to</u> <u>speak</u>**,** until the day that these things shall be performed (King James Bible, 1611)
      e. Ende siet, ghi sult wesen stom, ende en <u>sult</u> niet <u>mogen</u> <u>spreken</u> tot diendach, in welc dese dingen sullen gheschien (Vostermanbijbel, 1528-1531)
      f. Ende siet ghy sult swijghende sijn, ende ghy en <u>sult</u> niet <u>connen</u> <u>spreken</u> tot opden dach toe dat dese dinghen ghescieden sullen (Leuvense Bijbel, 1548)

The Middle English Wycliffe translation in (6c) is the earliest example of a double modal construction in the list. It corresponds to a simple modal construction in the Old English Lindisfarne Gospels in (6b). This finding suggests that double modals in Middle English could be used to replace some of the usages that were expressed by simple modals in Old English. The King James Bible translation in (6d) uncovers the replacement of the embedded modal *may* by the semi-modal *be able to* by the Modern English period. The Late Middle Dutch translation in the Vostermanbijbel (6e) shows striking resemblance to the Middle English corresponding version in (6c). This suggests that the early development of double modal constructions is very similar in both English and Dutch. The Leuvense Bijbel in (6f) finally uncovers the replacement

of the embedded modal *mogen* 'may' by *kunnen* 'can' – reflecting an ongoing meaning shift in the modals of that time.

Given the potential of parallel texts for the historical study of grammar, the project sets out to compile a multilingual parallel corpus of historical Bible translations. The language trio English, German and Dutch is best fit for such an endeavor in view of the available historical translations (details in section 6.4).

6.2 Collaborators

The project brings together three experienced linguists with complementary expertise in historical linguistics, corpus compilation and computational data-analysis. Each of them is in charge of a work package (WP) to be presented in section 6.3 to 6.5.

Evie Coussé (Project leader & WP3 leader)
- PhD in linguistics, 2008 (Ghent)
- Habilitation (Swedish *docent*) in linguistics, 2014 (Gothenburg)
- Researcher at the Department of languages and literatures at the University of Gothenburg
- Historical linguist. Specialized in historical grammar, in particular verb constructions in Dutch. Also published contrastively on English, German and Swedish syntax. Compiled the Compilation Corpus Historical Dutch (Coussé 2010).

Nicoline van der Sijs (WP1 leader)
- PhD in historical linguistics, 2001 (Leiden)
- Professor at Radboud University Nijmegen. Researcher at the Meertens Institute Amsterdam.
- Historical linguist. Large expertise in digitalizing historical texts, in particular Bible translations, and linguistic crowdsourcing (Van der Sijs 2015).

Gerlof Bouma (WP2 leader)
- PhD in linguistics, 2008 (Groningen)
- Researcher at the Department of Swedish and Språkbanken at the University of Gothenburg
- Computational and quantitative corpus linguist. Expertise in corpus construction and handling; automatic and manual annotation of historical Swedish. Also published on German and Dutch syntax.

6.3 Work Package 1: Compilation of a diachronic parallel Bible corpus

WP1 has as its task to compile a diachronic multilingual parallel Bible corpus for the languages English, Dutch and German. The work package is maximally time-efficient thanks to the use of (a) available digitized historical Bible translations and (b) linguistic crowdsourcing (Van der Sijs 2015).

Quite a number of historical Bible translations have been digitized: nine Dutch translations from the period 15th-17th centuries (cf. http://www.bijbelsdigitaal.nl/, Beelen & Van der Sijs 2010, 2014, 2016) and some historic English and German translations are likewise digitally available, mostly from the 19th and 20th centuries (e.g. http://paralleltext.info/data/). A comprehensive inventory of available digital Bible translations will be made at the start of WP1. The providers or copy-right owners of the digital translations will be contacted for permission to include the digitized texts into a multilingual research corpus.

WP1 has as its objective to include at least one translation per century for all three languages from the oldest versions until recent times. On the basis of the available digital translations, the project expects to fully achieve this objective for the period 15th-18th century. This period allows us to zoom in on the early development of complex verb constructions (cf. the Dutch in Transition Corpus of Coupé 2015 covering the period 15-17th century). Gaps in the corpus will be filled by digitalizing (strategic sections of) additional Bible translations through crowdsourcing. The leader of WP1 has access to a large network of volunteers who have experience with the digitization of historical Dutch Bibles (*Stichting Vrijwilligersnetwerk Nederlandse Taal*) and plan to extend this network to include English and German.

The collected translations will be automatically aligned at chapter and verse level, followed by manually checking through crowdsourcing. The corpus will be made publically available through the infrastructure of Språkbanken.

6.4 Work Package 2: Extraction and annotation of corpus data

WP2 is designed to facilitate the extraction and annotation of corpus data in the project. The work package aims for maximal time-efficiency by (a) making use of advanced computer-assisted data-handling and (b) adapting existing tools designed for contemporary language to fit the historical corpus data.

A first preparatory step is selecting and collecting the language-specific corpora needed for the project. These corpora (together with the parallel corpus to be delivered by WP1) will then be prepared for data extraction. The identification and extraction of complex verb constructions on a large scale requires at least automatic sentence segmentation, part-of-speech tagging and morphological analysis. These tasks are normally considered routine in natural language processing but turn out to be rather challenging on historical corpora (cf. Adesam & Bouma 2013, 2016 on processing Old Swedish texts). One challenge is the high rate of variation in historical corpora, even within one time frame and sometimes within one document, which relates to the lower level of language standardization in older times. In particular, variation in spelling and punctuation conventions may cause trouble for existing computational methods. Another challenge is the relative lack of tools and annotated corpora available for creating tools for our historical material. This contrasts with the wealth of computational tools developed for modern language data. WP2 aims to meet the above challenges by combining two strategies, on the one hand, the adaptation of existing tools developed for modern language to our specific historical corpora, and, on the other hand, the adaptation of our historical corpora to existing tools, for instance, by normalizing spelling (cf. Pettersson et al. 2014 on data extraction from historical Swedish texts).

A final step in WP2 is the manual inspection of (samples of) the annotated historical corpora and the extracted data. This step is crucial for assessing the quality and validity of our corpus data for further linguistic analysis in WP3. The corpora with automatic annotations will be made available and fully searchable through the infrastructure at Språkbanken; the annotation tools will also be made publically available.

6.5 Work Package 3: Linguistic analysis

The annotated data delivered by WP2 will serve as the empirical basis for the linguistic analysis in WP3. Both work packages will continuously provide input and feedback to each other, in

order to optimize data extraction and annotation in WP2, which in turn leads to more complete and reliable data for WP3.

The first work task in WP3 is to create a comprehensive data base of complex verb constructions at different stages in the Germanic languages. This data base will be examined for overall trends in order to reconstruct and sketch the history of complex verb constructions in Germanic. Next, a number of case studies will be selected for further examination. The choice of case studies depends on the trends emerging from the collected data, but some promising areas of interest may at this point be identified.

One such area is unexpected morphological coding of embedded auxiliaries. Consider the complex perfect constructions in (2). The modal embedded under the perfect auxiliary is expected to be a past participle (or supine – the dedicated form of the past participle for perfects in Swedish). The Dutch and German embedded modal is however an infinitive, a phenomenon known as infinitivus pro participio or IPP-effect. Quite a number of analyses have been put forward in historical linguistics to explain this phenomenon (from Grimm 1837 to Coupé 2015). This project will explore what diachronic construction grammar can contribute to the discussion (elaborating on the pilot study of Coussé & Van de Velde 2014 on Middle Dutch). We suspect that neighboring constructions in the constructional network, like double modal constructions with an embedded modal infinitive, affect the coding of the embedded auxiliary in these constructions. Another case of unexpected coding in (2) is the possibility to code the lexical verb in Swedish as a supine instead of the expected infinitive, a phenomenon known as the double supine (Larsson 2014). It may be expected that the data base will contain other unexpected coding that requires further analysis.

6.6 Time plan

The project is planned to take four years. WP3 is the linguistic backbone of the project, running for the entire project period. WP1 and WP2 are limited to the first two project years, delivering empirical input to WP3. The project leader is in charge of keeping the time plan.

2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WP1	Collecting texts			Digitizing additional translations						Alignment		
WP2	Collecting corpora			Normalization			Data extraction and annotation					
WP3	Survey grammars			Developing theoretical framework						Data base: creation		

2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WP1	Manual check			Public release								
WP2	Annotation			Manual check			Public release					
WP3	Data base: analysis; publication						Case study 1: literature review;					

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WP3	analysis; publ.			Case study 2: literature review; analysis; publication								

2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WP3	Case study 3: literature review; analysis; publication									Archiving project		

7 International and national collaboration

The project involves international collaboration between researchers from the University of Gothenburg (Sweden) and the Meertens Institute Amsterdam (The Netherlands). Communication between the project members will take place on a regular basis by means of e-mail, telephone and video conference. The project members will also come together for two-day project meetings in Gothenburg or Amsterdam at least every six months. These project meetings will be complemented by thematic workshops where the expertise of both local and international colleagues will be consulted, more specifically:

- workshop on diachronic parallel corpora at Meertens Institute in Amsterdam (Spring 2018)
- workshop on historical corpus annotation at Språkbanken in Gothenburg (Autumn 2018)
- workshop on diachronic construction grammar in Gothenburg (Summer 2019)

Finally, the project members will discuss their work in progress at workshops and conferences.

8 Output

The project will generate the following output (all available via open access):

- A diachronic multilingual parallel Bible corpus for English, Dutch and German – which can be used for a variety of diachronic research questions in the humanities
- Generic tools for automatic data extraction and annotation in historical corpora
- A data base of attested complex verb constructions in the history of Germanic languages
- At least four research articles in peer-reviewed international journals (e.g. *Diachronica*, *Journal of Historical Linguistics, Journal of Germanic Linguistics, Languages in Contrast*)

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