Constructional complexification
The rise of double modal constructions in Dutch

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Abstract

This articles investigates the rise of double modal constructions in Dutch. Double modal constructions combine two modal auxiliaries with one lexical verb (e.g. *zal moeten gaan* 'shall have to go'). Little is known on why and how such complex verb constructions came into being. This article presents historical data for the earliest double modal constructions in Middle Dutch (13th century) drawing on both previous corpus studies and on new empirical observations. The historical data is then analyzed from a diachronic construction grammar perspective. The main theoretical point of this article is that the emergence of double modal constructions is a case of 'constructional complexification', i.e. the process in which constructions become increasingly larger in size.

Keywords

1   Introduction

The development of verb constructions has received a great deal of attention within historical linguistics in recent decades. The emergence of modal verbs, for instance, has featured as a prime example of grammaticalization and of related phenomena such as subjectification and intersubjectification (Plank 1984, Traugott 1989, Diewald 1999, Traugott and Dasher 2002, Byloo and Nuyts 2014, among many others). The focus of that research has recently shifted from studying the development of auxiliaries as such to the wider syntactic context in which they grammaticalize (Diewald 2006, Hilpert 2008, Coussé 2013, 2014), reflecting a growing alliance between grammaticalization research and construction grammar (Traugott 2008, Hilpert 2008, 2013, Traugott and Trousdale 2013). The diachronic study of verb constructions has recently moved beyond the level of individual constructions. Diewald (2009) and Diewald and Smirnova (2012), for instance, have argued that the integration of auxiliaries into a verbal paradigm should be seen as an integral part of their grammaticalization process.

A topic that has been largely ignored is the tendency of verb constructions to start combining into more elaborate assemblies after their initial establishment in the language. This process can be illustrated with the historical development of the Dutch verbal system. The earliest verb constructions in Old Dutch and Early Middle Dutch are two-verb constructions consisting of one auxiliary verb and one non-finite main verb. Longer verb constructions stacking multiple auxiliaries are still very rare in earlier Dutch. It was only in the course of the Middle Dutch period and onwards that such longer constructions were introduced into the language. This process has been mentioned in passing in the literature, but no systematic corpus data are available, let alone a more theoretical account of the process and its underlying motivations. This article presents an exploratory study of this elaboration process in the framework of diachronic construction grammar.

The central idea of this article is that the innovative long verb constructions are more complex than the two-verb constructions that precede them. Croft (2001:17) and Croft and Cruse (2004:255) point out that constructions may vary in their degree of complexity (atomic – complex) and schematicity (substantive – schematic). Studies in diachronic construction grammar typically focus on changes in schematicity in constructions and constructional networks (and other dimensions such as productivity and compositionality, e.g. Trousdale and Traugott 2013:13). Changes in the dimension of complexity are generally overlooked. This article argues that the emergence of long verb clusters is a case of 'constructional complexification', i.e. the process in which constructions become increasingly larger in size.[1] The present study more specifically looks into the motivating factors leading to the creation of long verb constructions, taking the usage-based approach advocated by Von Mengden and Coussé (2014). It also fleshes out how two-verb constructions serve as source constructions for complex verb constructions, relating to the work published in De Smet et al. (2013) on multiple source constructions in constructional change. The article furthermore builds on the constructionist framework laid out in Traugott and Trousdale (2013), detailing how constructional networks change and how new constructions are introduced in the network.

This present study addresses in particular the rise of double modal constructions in Dutch – one of the few complex verb constructions that have been studied in some detail from a diachronic perspective (Coupé 2009, 2015, Coupé and Van Kemenade 2009). The following examples illustrate how two modal verbs may be combined in present-day Dutch.

(1)   *De burger **zal** zijn pensioenprobleem zelf **moeten oplossen**.*[2]
        The citizen shall.3SG his pension.problems self must.INF solve.INF
        'People will have to solve their own pension problems themselves.'

(2)   *Rode Kruis **wil** duizenden Nederlanders om hulp **kunnen vragen**.*
        Red Cross will.3SG thousands Dutchmen for help can.INF ask.INF
        'The Red Cross wants to be able to ask thousands of Dutchmen for help.'

(3)   *Waarom **zou** een man niet **mogen huilen**?*
        Why should.3SG a man not may.INF cry.INF
        'Why would a man not be allowed to cry?'

(4)   *Een grapje op het werk **moet** toch **kunnen**?*
        A joke on the job must.3SG surely can.INF
        'Surely it must be allowed to joke at work?'

There is little research discussing the double modal construction in its own right, apart from the seminal paper of Jędrzejowski and Van de Vate (2013). A defining formal feature of the construction is that the first modal is finite and the second embedded modal has the form of an infinitive. As such the construction differs from the well-studied double modal construction in some Southern American varieties of English, Northern British English and Scots, where two finite modals are combined (Di Paolo 1989, Battistella 1995, Hasty 2012). Jędrzejowski and Van de Vate (2013) show that the double modal construction in Dutch is compatible with a wide range of dynamic, deontic and epistemic meanings.

The article is structured as follows. Section 2 reviews the historical data for the earliest double modal constructions in Middle Dutch, drawing on both previous corpus studies and on my own empirical observations. The focus will be on three-verb constructions combining two modals with one lexical infinitive (thus ignoring cases like (4), reflecting the preponderance of this construction type in the historical data and the secondary literature. Section 3 complements the available historical observations with an exploratory semantic analysis of double modals in the earliest chancery texts for Dutch (i.e. early 13th century). These texts are translations from Latin originals, allowing us to enrich the historical study of modal meanings with methods taken from parallel corpus linguistics. Section 4 addresses the historical development of double modals from a diachronic construction grammar perspective, discussing both possible motivations and mechanisms of constructional complexification in language change. Section 5 brings together the most important empirical and theoretical findings of this study.

2   Historical observations

The first double modal constructions date from the 13th century. Coupé (2009, 2015) and Coupé and Van Kemenade (2009) systematically searched the Corpus Gysseling and the Corpus Van Reenen-Mulder, containing chancery texts from the 13th and 14th century respectively, for double modals with an additional lexical infinitive. They found the first attestation in a chancery text from the city administration of Brussels, dated 1277, presented in (5).

(5)   *soe dat deen sonder den andren niet daer towe en **sal moghen gaen*** (Coupé and Van Kemenade 2009:261)
      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'

The first double modal construction, however predates this by at least a couple of decennia. I was able to identify ten double modals in chancery texts written before 1277. Some of these earlier attestations are given in (6) to (8).

(6)   *Nochdanne neghen uan den mestren ne **salmogen** prouende **gheuen** iemene no sieken no gansen in dit hus; het ne si bi der schepenen wetene. ende bi haren wille.* (1236 Statutes)
      nonetheless none of the masters not shall.3PL.may.INF ration give.INF someone nor sick nor healty in this house it not be by the aldermen's knowledge and by their will
      'Nonetheless, none of the masters shall be able/allowed to give a ration to anyone, neither the sick, nor the healthy inhabitants of this house, except with the knowledge of the aldermen and with their approval.'

(7)   *Te desen dinghen die hir sin uorseit, ne**sullen** scepnen no portren niet **mogen** toe **doen**. no wandelen. no beteren, hensi bi scrauen wille.* (1237 Charter)
      to these things that here are aforesaid not.shall.3PL aldermen nor citizens not may.INF to do.INF nor change.INF nor correct.INF it.not.be by the.count will
      'Neither the aldermen nor the citizens shall be able/allowed to add, change or correct these things, except with the approval of the count.'

(8)   *dit soude wesen grote urome ende bate den lande. ende des **soude** men wel **moghen wl comen*** (Gent 1240-1260)
        this should be great profit and benefit the country and it should.3SG one well may.INF full come.INF
        'This should be of great profit and benefit to the country and one should be able/allowed to accomplish it.'

Most of the earlier examples were found in the *Statuten van de Gentse leprozerie* 'Statutes of the Ghent leper house' (from 1236) and the *Gentse keurenvertaling* 'Ghent charter translation' (from 1237). Both texts represent the oldest chancery documents written in the Dutch language. It is not impossible that the emergence of double modal constructions actually occurred even before these first attestations.

Coupé (2009, 2015) and Coupé and Van Kemenade (2009) observe that the finite modal in early double modal constructions is always a variant of *zullen* 'shall'. This generalization also holds for the ten earlier examples found in this study. The non-finite modal is *mogen* 'may' (first observed in 1277), *willen* 'will' (1281) and *moeten* 'must' (1292). It appears that *zullen* 'shall' and *kunnen* 'can' are not used as embedded modals. Coupé and Van Kemenade (2009) do not draw attention to the fact that *mogen* is used much more frequently than *moeten* and *willen* in their data (39 attestations versus 4 and 2 according to table 15.3 on page 261). In my own ten attestations, embedded *mogen* is also strongly represented, as is *moeten* (5 times each).

The historical observations for Dutch show interesting parallels to the development of double modal constructions in English. Double modals appears to be lacking in Old English. Nagle (1993:366) does find some combinations of modals in the Toronto Microfiche Concordance of Old English, but on closer inspection it turns out that the embedded modals are used as ordinary main verbs with a lexical meaning. Visser (1963-1973 III: §1685, §1649, §2134) reports numerous examples of double modals in Middle English, the earliest ones dating from the 13th century. Some examples are given in (9) to (11).

(9)   *þatt mannkinn **shollde muჳhenn** well **Upp cumenn** inntill heoffne* (c. 1200 Orm 3944)
        that mankind should.3SG must.INF well up come.INF into heaven
        'that mankind should be able to come into heaven'

(10)   *þatt I **shall cunnen cwemenn** Godd.* (c. 1200 Orm 2958)
        that I shall.1SG can.INF please.INF God
        'that I shall be able to please God'

(11)   *He **muste kunne evacuen** him þat is ful of yuel humouris* (c. 1400 Lanfranc)
        he must.3SG can.INF relieve.INF him that is full of yellow bile
        'He needs to be able to relieve him who is full of yellow bile'

Visser (1963-1973 III: §2134) mentions explicitly that the finite modal in these early attestations is almost exclusively *shall* or *should.* As non-finite embedded modals, *may, can* and *will* are reported. Nagle (1993:367) gives additional evidence that double modal constructions in Middle English are predominantly headed by *shall.* He did not find any double modals headed by *may, must* or *might* in the concordances to *Gawain* or to the works of Chaucer. He finds, moreover, that *shall may* is the most common modal combination.

Ogura (1993) presents some additional examples of *shall may* plus infinitive in the Wycliffite Gospels dating from the end of the 14th century.

The combined observations taken from Middle Dutch and Middle English suggest that the double modal construction emerged at the beginning of the 13th century. The earliest attestations show very limited combinatory possibilities: the finite modal is always *zal/shall*; the embedded modal is usually *mogen/may* and to a lesser extent also *moeten* in Early Middle Dutch. These findings suggest that the double modal construction started off in a very specific context, or in more constructionist terms, that it goes back to two micro-constructions (more details are given in section 4.3).

Most of the studies on early double modals focus on their formal properties. Little is known about their meaning. Coupé (2009) suggests that finite *zullen* in early double modals is used as a future auxiliary and that the embedded modal expresses meanings such as obligation and ability. The *Vroegmiddelnederlands Woordenboek* (VMNW) 'Dictionary of Early Middle Dutch' downplays the future interpretation of *zullen* in combination with *mogen* and *moeten*, emphasizing instead its interpretations of obligation and permission; see (12).

(12)   In combinatie met een ander werkwoord met de betekenis 'verplicht zijn, schuldig zijn, moeten, mogen'. Een futuraal aspect is hier niet geheel uit te sluiten. Bij het gebruik van deze formuleringen in keuren e.d. lijkt echter in eerste instantie sprake te zijn van oneigenlijk modaal gebruik. Alleen aangetroffen met *moeten* en *moghen.* (VMNW lemma *sullen* §I.2)
'In combination with another verb with the meaning 'be obliged, owe, must, may'. A future aspect is not to be ruled out entirely here. When used in formulations in chancery texts and the like, however, dynamic modal usage seems to be of prior importance. Only encountered with *moeten* and *mogen.*'

In order to get a better insight into the meaning of early double modals, section 3 presents an exploratory semantic study of the earliest cases found in the statutes of the Ghent leper house from 1236 (henceforth the '1236 Statutes') and the Ghent charter translations from 1237 (the '1237 Charter').

3   An exploratory semantic analysis

The 1236 Statutes and the 1237 Charter are among the oldest chancery texts written in Dutch. They go back to an original written in Latin. This fact is usually seen as a problem in historical corpus studies due to the risk of direct translations from the original. The double modals found in the 1236 Statutes and 1237 Charter thus run the risk of being an artifact of the translation process rather than being an authentic part of the language. This issue can be relatively easily resolved by checking the originals of both texts. We are fortunate that the originals have not only stood the test of time but also are easily accessible in published form (Koch 1960, Gysseling 1963). The preservation of the translations together with their originals also presents us with an opportunity to approach both texts as a small parallel corpus, allowing us to come to grips with the elusive meaning of modals. Latin is known to express some tense and modal categories in a more synthetic way (notably by verbal conjugation and some participial constructions) than Middle Dutch. These Latin inflectional markings may

help us determine what semantic meanings are expressed in double modal constructions in Middle Dutch.[3]

3.1 Corresponding constructions in the Latin original

Let us first consider the cases with *zal mogen* plus an infinitive. The 1236 Statutes contain one attestation of this modal combination (given in 13) and the 1237 Charter provides three attestations (given in 14 to 16). Both the double modal constructions in Dutch and the corresponding sequences in Latin are marked in bold. The English glosses and translations pertain to the Dutch version, as the focus of this study is on double modals in Dutch.

(13) *Nullus autem magistrorum **conferre poterit** prebendam in dicta domo alicui sive sano sive leproso; sine conscientia & assensu scabinorum.*
*Nochdanne neghen uan den mestren ne **salmogen** prouende **gheuen** iemene no sieken no gansen in dit hus; het ne si bi der schepenen wetene. ende bi haren wille.* (1236 Statutes)
nonetheless none of the masters not shall.3PL.may.INF ration give.INF someone nor sick nor healthy in this house it not be by the aldermen knowledge and by their will
'Nonetheless, none of the masters shall be able/allowed to give a ration to anyone, neither the sick, nor the healthy inhabitants of this house, except with the knowledge of the aldermen and with their approval.'

(14) *Quocienscumque uero super huiusmodi falcitate summoniti fuerint, nullatenus **poterunt contradicere**, quin diem a comite sibi prefixum teneant ubicumque comes uoluerit in Flandria.*
*ende so welken tiet so si uan duschedaenre ualsheit werden geboden; so ne**sul**si niet **mogen wedersegghen**. si nemoten houden den dach die hem degraue heft gheset war so hi wille in ulandren.* (1237 Charter)
and so what time so they from such falsehood became summoned so no.shall.3PL.they not may.INF contradict.INF they not.must hold the day that them the.count has assigned where so he wants in Flanders
'And during the time they are being summoned of such falsehood, they shall not be able/allowed to contradict, they rather must hold the day that the count has assigned to them wherever he wants in Flanders'

(15) *Ad hec nec scabini nec burgenses aliquid **addere**, **mutare** nec **corrigere poterunt** nisi per consensum comitis*
*Te desen dinghen die hir sin uorseit, ne**sullen** scepnen no portren niet **mogen** toe **doen**. no wandelen. no beteren, hensi bi scrauen wille.* (1237 Charter)
to these things that here are aforesaid not.shall.3PL aldermen nor citizens not may.INF to do.INF nor change.INF nor correct.INF it.not.be by the.count will
'Neither the aldermen nor the citizens shall be able/allowed to add, change or correct these things, except with the approval of the count.'

(16) ***arrestari facere** et **stare potest**, donec ille qui possessor est bonorum, plegios sufficientes dederit*

*so **sal** hi **mogen doen hahten**. ende **doen staen**. onthir ende die houdre uan dien goede heuet ghegeuen genoegende borghen.* (1237 Charter)

thus shall.SG he may.INF do.INF arrest and do.INF stand.INF until and the owner of the property has given enough pledges

'Thus, he shall be able/allowed to make them stop and let them be arrested until the owner of the property has given enough pledges.'

Inspection of (13) to (16) shows that *zal mogen* plus infinitive corresponds to a periphrastic verb construction in Latin consisting of the finite modal verb *possum* and a lexical verb in the infinitive form. *Possum* is inflected for future tense in (13) to (15) and for present tense in (16). This type of close structural correspondence has also been observed in Middle English. Ogura (1993) found that all cases of *shall may* plus infinitive in the Wycliffite Gospels correspond to future *possum* plus infinitive in the Latin original.

Now let us turn to the attestations of *zal moeten* plus infinitive. All instances of this micro-construction are found in the 1236 Statutes. Two of these cases correspond to a passive subjunctive in Latin, given in (17) and (18), with the corresponding verbs marked in bold.

(17) *Sic minuti aliquantulum commodius **procurentur**.*
*Die dus geblotlat sin; hem **salmen moten** bed**don** ichtewat dan degemene prouende.* (1236 Statutes)

those thus bloodletted are them shall.3SG.one must.INF better.do.INF somewhat than the.ordinary ration

'One will have to provide more to those who have undergone bloodletting than the ordinary ration.'

(18) *Qui uero existenti in penitentia aliquid ad uictum pertinens absque magistri licentia contulerit; conuictus in illius penitentiam **retrudatur**.*
*Sowie danne so dengonen die in penitentien es íet geuet dat tespisen behort sonder desmesters orlof. ende dies bedregen werdet; men **salne moten steken** inds gons penitentie.* (1236 Statutes)

so.who then so the.one who in punishment is something gives that to.eat belongs without the.master permission and it convicted became one shall.3SG.him must.INF put.INF in that punishment

'In case someone gives someone who is being punished something to eat without the permission of the master, and this person is found guilty of it, then one will have to punish him accordingly.'

The passive subjunctives in Latin are turned into an active construction by inserting the generic subject *men* 'one' in Dutch. Thus, the passive sequence *minuti procurentur* 'those who have undergone bloodletting should be taken care of' in (17) corresponds to the active sequence *hem salmen moeten beddon* 'one will have to take care of them better'.

A third example, given in (19), correspondes to two ablative absolute constructions, i.e. a noun and a modifying participle in the ablative case. More specifically, the sequence *salmoten sueren* integrates elements from the ablative absolutes *juramento addito* 'an oath was added' and *fidelitate conservanda* 'loyalty should be observed' and turns them into a finite verb construction.

(19) *Juramento nichilominus addito super fidelitate domui conservanda*
*Oc ne mot niet achter bliuen hine **salmoten sueren** getrowe tesine den hus* (1236 Statutes)
also not must not behind remain he.not shall.3SG.must.INF swear.INF loyalty to.be the house
'It should also not be neglected that he will need to swear loyalty to the house.'

The last two instances of *zal moeten* plus infinitive do not have a corresponding form in the Latin original. The sequence *hi sal moten gedogen de pine* in (20) elaborates on the shorter nominal sequence *sub pena* 'under punishment', and for (21) no correspondence at all was found in the original.

(20) *non sub uoto. sed sub pena inferius annotata*
*mesgripe hi dran; nemar hi **sal moten gedogen** de pine die hierachter ghescreuen es.* (1236 Statutes)
violate he there.on not.but he shall.3SG must.INF endure.INF the punishment that hereafter written is
'If he violates this, he will have to endure the punishment that is written hereafter'

(21) [No Latin correspondence]
*Die dis iet doet; hi **sal moten gedogen** depine die men sculdech es den ouerhoregen.* (1236 Statutes)
who this something does he shall.3SG must.INF endure.INF the.punishment that one culpable is the offender
'If he does something against it, he will have to endure the punishment that one is obliged to assign the offender'

In summary, there turns out to be a wide range of corresponding forms in the Latin orginals. This suggests that double modals should not be seen as a direct translation of one particiular form in Latin. This is particularly true for *zal moeten* plus infinitive, where there is little structural correspondence between the original and the translation. Two attestations have no correspondence at all. The cases of *zal mogen* plus infinitive correspond more closely to the original construction with (future) *possum* plus infinitive. However, it should be pointed out that only a fraction of all cases of future *possum* plus infinitive are translated with *zal mogen* plus infinitive. An informal investigation of all instances of future *possum* plus infinitive in the 1236 Statutes (6 attestations) and the 1237 Charter (15 attestations) shows that they are most often translated with finite *mogen* plus infinitive in Dutch, as in (22).

(22) *Carnibus autem per totum annum excepta quadragesima etiam per aduentum tribus diebus licite **uesci poterunt** in septimana.*
*Flesch **mogen** si **eten** al dat iar. ende oc in aduent drie dage in de weke;* (1236 Statutes)
meat may.3PL they eat.INF all that year and also in Advent three days in the week
'They can/may eat meat all year round and also three days a week during Advent.'

The wide range of forms in Latin also comes with a large variety in meaning. The future tense inflection of *possum* overtly marks future time reference. The verb *possum* itself is used with modal meanings ranging from ability, capacity and permission, according to both the *Oxford*

Latin Dictionary (covering Classical Latin before 200 AD) and the *Lexicon Latinitatis Nederlandicae Medii Aevi* (covering Medieval Latin in the Northern Netherlands). The passive subjunctive is used to express possibility, intention, necessity, and statements contrary to the fact. Ablative absolutes express general circumstances under which the action of a sentence occurs, which can be time, condition or cause, but the exact interpretation needs to be understood from the context (Morwood 1999). This wealth of potential meanings in the Latin original suggests that the double modals of Middle Dutch are also able to cover this broad spectrum of meaning. However, it is possible that not all of the meaning potential of these forms is expressed in actual usage. The next subsection will therefore have a closer look at the meaning of the double modals in the context of their usage.

3.2 Contextual analysis

The double modals under investigation are taken from two chancery documents. The purpose of these documents is concisely stated in excerpts (23) and (24).

(23) *ombe de gemene nutschepe der gonre die nu sin en die hier na wesen sullen; de seden die men int hus gehouden heuet tote nu. ende de gesette dinge die men uord ward mer houden sal; die sin in desen brief gescreuen. bede bi der cracht des biscops uan dornoke. ende bi den goden wille der schepenen uan ghent* (1236 Statutes)
'For the common benefit of the people who are living now and who will be living hereafter, the customs that one has kept in the house until now and the decreed things that one will keep from now on, these are written in this charter, both by the power of the bishop of Tournai, and by the approval of the aldermen of Ghent.'

(24) *Dit sin de pointe die de graue geboet te houdene ouer al sin lant*. (1237 Charter)
'These are the points that the count orders to be kept in the whole of his land.'

The documents describe current rules and regulations (*de seden die men inte hus gehouden heuet tot nu*) and decree new ones (*de gesette dinge die men uord ward meer houden sal*, *de pointe die de graue geboet tehoudene*). Modal meanings such as obligation, permission and prohibition may be expected to prevail in this type of regulatory context. Nuyts et al. (2010:24) subsume these notions under directive modality, i.e. 'the agent participant in the SoA [State of Affairs] is instructed – with some degree of strength: advised, obliged, interdicted – or permitted to do what is involved in the SoA, on behalf of some source (the speaker him/herself, or some other willful being or institution)'. A distinctive property of directive modality is the possibility of specifying the source of obligation or permission in context. Inspection of the double modals in the previous section shows that a number of attestations do have such an explicit source indicator, i.e. *bi der schepenen wetene ende bi haren wille* 'with the knowledge of the aldermen and their approval' in (13), *bi scrauen wille* 'with the approval of the count' in (15), and in (18) *sonder desmesters orlof* 'without permission of the master'. This points to a directive reading of these double modal constructions.

However, it should be noted that the directive source may also be broader than just the authorities specified in (23) and (24). Nuyts et al. (2010:24) argue that some directive usages of modals may be informed by a deontic assessment of the degree of moral acceptability of the proposition. This also seems to be the case for some of the double modals under

investigation. In (16), the instruction to give some patients a larger ration may be ultimately guided by moral (religious) considerations such as compassion and charity. This moral dimension is also made explicit in (23) by referring to the *gemene nutschepe* 'common benefit'. But situational considerations, typically the realm of dynamic modality,[4] may serve as the ultimate driving force for the directive use of double modals. The execution of a punishment in (18) depends on the local circumstances specified by the context. Byloo and Nuyts (2014:26) point out that dynamic-imposed modality is often ambiguous with directive modality in Dutch and that there might be a diachronic development from dynamic-imposed to directive modality.

The excerpt in (23) also makes future time reference explicit by *die hier na wesen sullen* 'who will be living hereafter' and *die men uord ward mer houden sal* 'that one will keep from now on'. However, none of the double modals under investigation is accompanied by such an explicit future reference. This may be a consequence of the explicit marking at the beginning of the document which makes other references redundant. It may also have to do with the fact that future time reference is implied by modal meanings such as obligation, permission and prohibition. Instructing the agent of the clause to do something implies 'a prediction on the part of the speaker that the situation in the proposition, which refers to an event taking place after the moment of speech, will hold', which is the focal use of futures, according to Bybee et al. (1994:244). This future implication is widely assumed to have been grammaticalized as part of the meaning of *zullen*, but is in principle also compatible with a directive usage of *moeten* or *mogen*, as is explicitly mentioned for *moeten* in the VMNW (lemma *moeten* §II) and for *mogen* in Byloo and Nuyts (2011:56).

3.3 Interim summary

The exploratory semantic study of early double modals shows that they are compatible with a wide variety of modal readings. It turns out that double modals translate a broad range of source constructions in Latin, expressing modal meanings such as ability, capacity, permission, necessity, etc. Contextual analysis of these double modals narrowed down these potential interpretations to mainly directive modality (obligation, permission and prohibition), with a flavor of deontic and dynamic-imposed modality also possible. The double modals under investigation also show some evidence of future time reference: a number of attestations translate explicit future tense constructions in Latin, and chancery documents in general are made to decree rules and regulations for the future.

4   A diachronic constructionist account

With the historical data in place, it is now time to integrate these observations into a coherent scenario of language change. A couple of questions are relevant with respect to constructional complexification. The double modal construction was claimed to be a multiple source construction emerging out of already existing 'single modal' constructions. A first major question is why language users start combining the available single modal constructions into more complex assemblies. Section 4.2 explores a usage-based motivation for this complexification process. In order to sketch the historical background for this process, section 4.1 first discusses the development of single modal constructions in Dutch. Another important

question is how language users combine modal source constructions into a more complex verb construction. Section 4.3 elaborates on how combinatory principles from construction grammar can be put to work to arrive at a more complex construction. A third central question is what place the new complex modal construction takes in the constructional network. Section 4.4 analyses how complexification affects the degree of schematicity, productivity, compositionality and complexity of constructions. Finally, section 4.5 explores some further developments from early double modals to the double modals constructions we know today.

4.1 The development of modal source constructions

The emergence of double modal constructions was preceded by a stage with 'single' modal constructions consisting of a finite modal and a lexical infinitive. What do we know about the development of these modal constructions? There has been quite some work on the grammaticalization of the modals in these constructions. Much earlier work (Conradie 1987, Duinhoven 1997, Booij et al. 2006, Coupé 2009) considers Dutch modals to have developed in a chain-like fashion, as summarized by Coupé (2009:99) in table 1.

	zullen	*moeten*	*mogen*	*kunnen*
(Early) Middle Dutch	obligation	permission	ability	(lexical)
Modern Dutch	future/irrealis	obligation	permission	ability

Table 1: Semantic shifts in modal verbs

Coupé (2009) suggests that the semantic shift in the modal system may have been triggered either by the development of a future/irrealis meaning of *zullen* (a pull chain) or by the introduction of *kunnen* as a modal verb expressing ability (a push chain).

One problem with table 1 is that it overtly simplifies the semantic meaning of modals. Section 3 illustrates that double modals are compatible with a wide range of meanings. The same picture also emerges from the empirical study of the 'single modals' *moeten, mogen* and *kunnen* by Byloo and Nuyts (2014) – summarizing a decade of meticulous semantic analysis of modals in historical sources. Their analysis first of all demonstrates that the core modals are polysemous throughout the history of Dutch. *Moeten*, for instance, is used with dynamic, directive, deontic and evidential meanings from the earliest sources onwards. Moreover, these meanings are not easy to distinguish in context but are often ambiguous. Byloo and Nuyts (2014) report a large number of ambiguous cases where two or more readings are possible for the same modal in context. Finally, each modal verb was found to have its own semantic development that goes beyond a systematic push or drag chain.

Let us have a closer look at the modal meanings for each of the modals attested in the period around the emergence of double modals, i.e. Old Dutch and Early Middle Dutch. Byloo and Nuyts (2014) reveal that the core modals are mainly used with dynamic meanings in the earliest sources. The modal *moeten* is also used to express directive meanings in Old Dutch, and in Early Middle Dutch deontic meaning and volition as well. All these meanings are already common for *mogen* in Old Dutch and are complemented with epistemic, concessive and conditional meanings in Early Middle Dutch. The modal *kunnen* is the only modal that is still used with its lexical meaning in Old Dutch. It should however be noted that dynamic meanings already largely prevail for this modal in Old Dutch and Early Middle Dutch.

Another problem with table 1 is that modal meanings are suggested to be part of a 'modal system'. This is a structuralist notion par excellence. Modals are considered to be part of a paradigm and their meaning is defined in terms of oppositions. There have been recent attempts to reconcile the concept of 'paradigm' and 'semantic opposition' with a constructionist approach to grammaticalization (Nørgård-Sørensen, Heltoft and Schøsler 2011, Diewald and Smirnova 2012). I have serious doubts as to whether these structural concepts can successfully be integrated into construction grammar, especially within the cognitive usage-based branch of the framework. However, independent of this essentially theory-internal discussion, it is rather uncontroversial to assume that in the early stages of grammaticalization, modal paradigms are yet not in place. Diewald and Smirnova (2012), for instance, argue that paradigmatic integration should be considered the last stage of grammaticalization. First, constructions develop rather independently from each other, embedded in their own context and following their own grammaticalization path. It is only in later stages of their development that constructions are associated with each other and that their meanings may become constrained by paradigmatic oppositions.

4.2 Usage-based motivation for double modal constructions

The preceding subsection argues that single modal constructions can be used with a wide range of meanings from the earliest sources onwards, in a similar fashion to the double modals in section 3. This raises the question of why double modal constructions emerge when 'single modal' constructions seem to be perfectly able to express the same range of meanings. A complicating factor is that not every modal construction starts combining randomly. The historical data in section 3 clearly show that *zal mogen* and *zal moeten* were the first possible modal combinations in Dutch (and English).

The *Woordenboek der Nederlandsche Taal* (WNT) 'Dictionary of the Dutch Language' suggests that the first double modals are the result of reinforcement, or more specifically, the reinforcement of the directive *zal* by another modal also expressing obligation or prohibition.

(25)   Versterkt met andere ww. in de bet. 'verplicht zijn', 'moeten', of, met ontkenning, '(niet)mogen'. Dit gebruik komt voor in ambtelijke teksten uit de 16de en 17de e. en kan voortkomen uit het verlies van de bet. 'verplicht zijn' van *zullen. Zullen* kan in deze zinnen een temporaal bet.-aspect hebben. (WNT lemma *zullen* §I.1.b)
'Reinforced with other verbs expressing the meaning 'to be obliged', 'must', or, with negation, 'may (not)'. This usage occurs in chancery texts from the 16th and 17th centuries and may arise from the loss of the meaning 'be obliged' of *zullen. Zullen* may have a temporal meaning aspect in these sentences.'

Reinforcement provides a compelling reason as to why two modals are used instead of only one. On a general level, reinforcement means adding new material to existing structures for reasons of emphasis. A typical example of reinforcement is *not at all*, in which the negative marker *not* is emphasized by the additional material *at all.* Reinforcement is a usage-based motivation for change, as it appeals to the socio-psychological behavior of the speaker. Von Mengden and Coussé (2014:5) clarify that 'It is not that much the speaker's aim to achieve any semantic effects, like additions or specifications, but innovative usage is triggered for

instance by the mere wish to achieve the highest possible attention for the point a speaker intends to make'.

In the specific case of double modals, a directive modal is added to *zal* in order to counterbalance its ongoing loss of directive meaning. Although this is not made entirely explicit in (25), this meaning loss is related to the grammaticalization of *zullen* as a future auxiliary. Indeed, it is well-known that speakers resort to reinforcement in the context of grammaticalization when the grammaticalizing element starts losing its original lexical force. A case in point is the negation marker *ne* in French, which came to be reinforced by the lexical element *pas* in the course of its grammaticalization. Similarly, the ongoing loss of directive force in *zullen* as the result of its grammaticalization is counterbalanced by adding another directive modal.

4.3 The integration of modal source constructions

Let us now have a closer look at how the modal source constructions are combined into the first double modal constructions. I assume a model of constructional integration within the framework of usage-based construction grammar (Langacker 1987, Goldberg 1995, Croft 2001). Modal constructions are semi-schematic constructions with the modal as a substantive element and a schematic position for the infinitive. The structure of the relevant modal source constructions is rendered in (26), with the syntactic pole of the construction to the left of the double arrow and the semantic pole to the right, following the notional conventions of Booij (2010) and Traugott and Trousdale (2013).

(26) $zal_i\ V_k$ ↔   **FUT**/DIR$_i$ (PRED$_k$)
    $mag_i\ V_k$ ↔   FUT/**DIR**$_i$ (PRED$_k$)
    $moet_i\ V_k$ ↔   FUT/**DIR**$_i$ (PRED$_k$)

The schematic position for predicates in these constructions was originally elaborated by lexical verbs. It may in principle also be elaborated with more schematic elements, such as another semi-schematic modal construction, if both component structures show enough conceptual overlap. One of the overlapping fragments in all modal constructions in (26) is the schematic position for a predicate. There is no reason to assume that modal constructions impose different selectional restrictions on the types of predicates elaborating the schematic predicate position. Moreover, all modals in (26) were argued to express directive meaning, although this meaning may be on its way out in *zullen*. The modals are also claimed to be compatible with future time reference, as a pragmatic implicature in *mogen* and *moeten*, and grammaticalized as part of its meaning in *zullen*. These differences in meaning salience are rendered in (25) using bold face.

I consider the innovative integration (or embedding, in more traditional terms) of a modal construction into another modal construction as a case of host-class expansion. Himmelmann (2004:32) defines host-class expansion as construction-internal expansion of the class of elements with which the grammaticalizing element is in construction. Usually, host-class expansion is illustrated with a class of substantive elements, such as the nouns co-occurring with demonstratives being grammaticalized into articles (Himmelmann 2004:32) or the past participles combined with the grammaticalizing perfect auxiliaries *have* or *be* (Coussé 2014). Coussé and Van de Velde (2014), however, argue that the integration of a modal

construction into a perfect construction (yielding a three-verb constructions of the type *heeft kunnen werken* 'has been able to work') is a further step in the host-class expansion of perfects observed in Coussé (2014). Conceptually, this host-class expansion represents an expansion in scope of the modal construction from modifying actual propositions to modifying a modal evaluation of this proposition. The integration of the modal constructions in (26) into the earliest double modal constructions is given in (27).

(27) zal_i *mogen*$_j$ V_k ↔ **FUT**/DIR$_i$ (FUT/**DIR**$_j$ (PRED$_k$))
      zal_i *moeten*$_j$ V_k ↔ **FUT**/DIR$_i$ (FUT/**DIR**$_j$ (PRED$_k$))

The discussion has until now focussed on the conceptual side of the integration of modal constructions. An equally important aspect is the formal integration of the source constructions. I suggest that double modal constructions iconically reflect the embedding semantic structure elaborated in (27). One way of signalling embedding is to mark the embedded verb with a non-finite form. Indeed, the embedded modal in double modals has the form of an infinitive from the earliest attestations onwards – which is argued to be an innovation by Coupé (2009). She found that modal infinitives first occur in double modal constructions. Modals only appear with finite morphology in older sources in West Germanic (Old English, Old High German, Old Saxon), which can be related to their origin as preterit-present verbs. How did speakers then arrive at a modal infinitive in double modal constructions? In simple modal constructions, the embedded predicate is the infinitive of a lexical verb, represented in (28).

(28) zal_{vf} V_{inf} ↔ **FUT**/DIR (PRED)
      mag_{vf} V_{inf} ↔ FUT/**DIR** (PRED)
      $moet_{vf}$ V_{inf} ↔ FUT/**DIR** (PRED)

The embedded modal in the *zal* modal construction may likewise be coded as an infinitive. As opposed to ordinary lexical verbs, the infinitive form of modals in Old West Germanic cannot be available as an entrenched form that might be retrieved as a whole from memory. Instead, the infinitive form of modals needs to be composed in situ, as is represented by the square brackets in (29).

(29) zal_{vf} $[mag]_{inf}$ V_{inf} ↔ **FUT**/DIR (FUT/**DIR** (PRED))
      zal_{vf} $[moet]_{inf}$ V_{inf} ↔ **FUT**/DIR (FUT/**DIR** (PRED))

Modal infinitives are thus a case of embedded productivity, a term originally used with regard to complex word formation by Booij (2010:47), but which also turns out to be relevant for complex syntactic constructions.

Another way of coding embedding iconically is through word order. Double modals today stand out among the three-verb clusters by their dominant ordering: finite modal – modal infinitive – lexical infinitive (Barbiers et al. 2008). A historical corpus study by Coupé (2015) shows that this word order also dominated in legal texts from the 14th to 16th century.

4.4 Schematicity and complexity in constructionalization

The integration of the modal source constructions described above gives rise to two new micro-constructions in the verbal constructional network (i.e. the constructions in 29). Most

striking is their innovative form: a finite modal and a lexical verb in the infinitive are supplemented by a newly created modal infinitive. Both constructions also have a new semantic structure: modal meanings are combined in an asymmetric scope relation.[5] Traugott and Trousdale (2013:22) argue that the creation of a new construction, what they call 'constructionalization', is accompanied by changes in schematicity, productivity and compositionality. These three dimensions do not seem to apply very well to the earlier described process of complexification.

The new modal constructions do not differ essentially in schematicity from other modal constructions in the network. They can be characterized as semi-schematic with two substantive elements and one open slot for lexical verbs. The productivity of the new micro-constructions also seems to be rather unremarkable with regard to other modal constructions. There is no reason to assume that double modals impose other selectional restrictions on the lexical verbs in the open slot than the single modals. Only the dimension of compositionality can be argued to differ between the new micro-constructions and the modal source constructions. Traugott and Trousdale (2013:19) define compositionality as 'the extent to which the link between form and meaning is transparent'. It was pointed out in section 4.1 that modals are highly polysemous in the source constructions as a result of their ongoing grammaticalization. The link between form and meaning is more transparent in the new complex modal constructions. I argued that the morphological form and word order of the elements in the syntactic structure reflect their semantic embedding iconically. This isomorphic linking between form and meaning can be made more visible by only representing the most salient meaning components in both constructions, as in (30).

(30) *zal*$_i$ *mogen*$_j$ V$_k$ ↔ FUT$_i$ (DIR$_j$ (PRED$_k$))
       zal$_i$ *moeten*$_j$ V$_k$ ↔ FUT$_i$ (DIR$_j$ (PRED$_k$))

Indeed, each syntactic element in the syntactic pole is linked to one semantic component in the semantic pole, as is indicated by the indexes *i*, *j* and *k* in (30). The modal source constructions do not display such clear one-to-one correspondences between form and meaning. Thus, double modal constructions can be thought to be more compositional than their source constructions.

The dimensions of schematicity, productivity and (to a lesser extent) compositionality turn out to be fairly uninteresting in the initial stage of emerging complex modal constructions[6]. Does this imply that we are not dealing with the formation of new constructions? No. The 'problem' with the diachronic application of these dimensions is that they are mainly informed by research on grammaticalization and lexicalization. Grammaticalization, for instance, typically involves an increase in productivity and schematicity and a decrease in compositionality (Traugott and Trousdale 2013:112). The process of complexification, however, first and foremost affects the dimension of 'complexity' in the constructional network, which has remained beneath the radar in diachronic construction grammar. This can be illustrated in figure 1, representing the constructional network for modal constructions at the time when the first double modal constructions emerge.
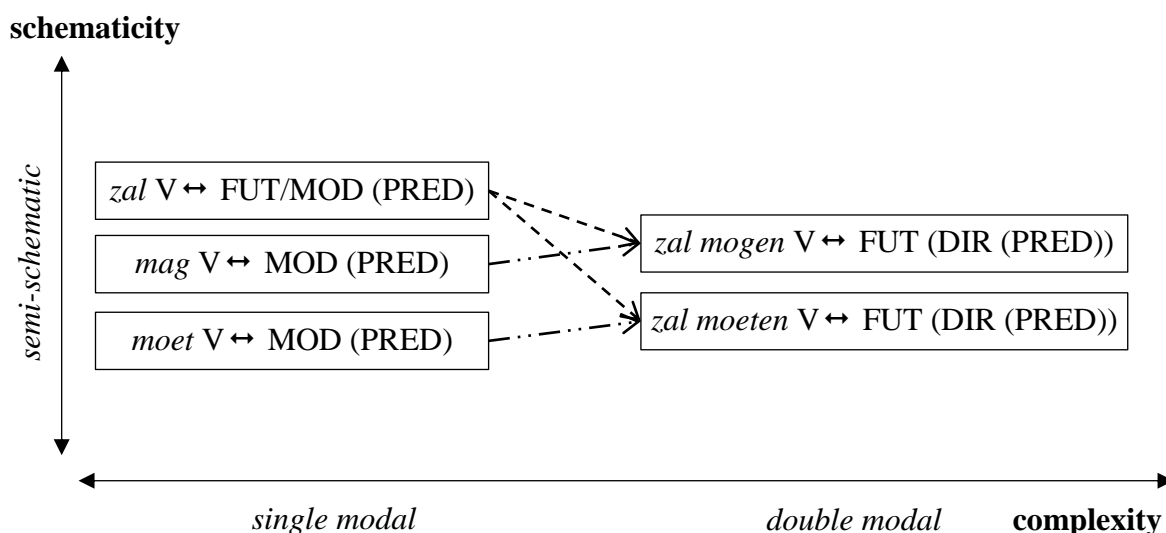
15

schematicity

semi-schematic

zal V ↔ FUT/MOD (PRED)	
mag V ↔ MOD (PRED)	*zal mogen* V ↔ FUT (DIR (PRED))
moet V ↔ MOD (PRED)	*zal moeten* V ↔ FUT (DIR (PRED))

single modal   *double modal*   **complexity**

Figure 1: Modal constructional network

The multidimensional constructional network is projected onto two dimensions. The vertical dimension represents the degree of schematicity of constructions with fully substantive constructions at the bottom and fully schematic constructions on top (not shown in the diagram due to space limitations). Both the single and double modal constructions are at the same level of schematicity somewhere in the middle, being semi-schematic constructions with one open slot for lexical verbs. The horizontal dimension represents the degree of complexity of constructions with atomic constructions to the left (not shown) and complex ones to the right. The double modal constructions cluster more to the right than the single modals.

    Figure 1 demonstrates that the emergence of two new micro-constructions leads to network growth. Instead of expanding into the dimension of higher schematicity, a type of constructional growth that has been identified before, the new constructions venture into the dimension of higher complexity. Growth in the constructional network also comes with an increase in network density. Figure 1 shows how multiple new inheritance links are created between the single and double modal constructions. The links from the *zal* construction can be classified as (metaphorical) extension links relating to the host-class expansion in the *zal* construction, which is needed for the integration of other modal construction. The links from the *mag/moet* constructions can be seen as subpart links. I hypothesize that these inheritance links are a first step towards a tighter association between modal constructions as one family of semantically and formally related constructions. Note in this respect that figure 1 does not draw any inheritance links between the single modal constructions. I see no compelling evidence in the historical data of the time to assume a more schematic construction of the type 'schematic modal verb plus infinitive'.[7]

4.5 Towards modern double modal constructions

After the emergence of *zal mogen/moeten* plus infinitive, other double modal combinations start to be used in the course of the Dutch language history. Unfortunately, there is little historical data on what combinations were introduced when, exactly. We know from the data in Coupé and Van Kemenade (2009:261) that *zullen* occasionally is combined with the volitional modal *willen* in the 13th century. Later on, it may be reasonably assumed that other

modals also start to embed modal constructions, leading up to the wide range of modal combinations we know today. How can these broad developments be accounted for in constructionist terms?

A first issue is why language users start making new modal combinations. The strategy of reinforcement is very specific to the combination of *zullen* and *mogen/moeten* and cannot easily be extended to other modal combinations. My suggestion is that language users instead started 'exploiting' the constructional potential of the early double modals, combining *zal* with *mogen/moeten*. These early double modal constructions more specifically provide a way of combining modal meanings in an asymmetric scope relation. This property of double modals was argued to be the result of the constructional integration of modals used to reinforce each other. However, once the first double modal micro-constructions are in place, their form and semantic structure may be exploited by language users in order to combine other modals, quite independently of the original usage-based motivations for modal integration.

This brings us to the question of how this constructional exploitation comes about. I assume that the exploitation of the early double modal construction is a gradual process guided by analogical thinking. In view of the historical data, language users have first expanded the range of embedded modals in double modals headed by *zullen*. Repetitive embedding of other modals in these early double modal constructions ultimately gives rise to a more schematic construction, as in (31).

(31) *zullen*$_{vf}$ [MV]$_{inf}$ V$_{inf}$ ↔ FUT/DIR (LOWER SCOPE (PRED))

This schematic construction has an open slot for modal verbs in the form pole corresponding to a very general modal meaning in the semantic structure. The only restriction imposed on the embedded modal is that it should have lower semantic scope than the meaning of *zullen*. The establishment of an open slot for modals in double modal constructions is not trivial. It indicates that modals both formally and semantically behave as one category. This observation is relevant in the light of my earlier remark that there is no reason for assuming that modals in the single modal constructions form a category. The creation of a double modal construction with an open slot for modals gives us good evidence that such a separate modal category has been formed.

The diversification of modal combinations with *zullen* may have spurred on the further proliferation of modal combinations, this time not only extending the range of embedded modals but also the finite ones. The incremental introduction of new modal combinations will ultimately lead to the establishment of the present-day double modal construction, given in (32).

(32) MODAL$_{vf}$ [MODAL]$_{inf}$ V$_{inf}$ ↔ HIGHER SCOPE (LOWER SCOPE (PRED))

This construction allows, in the most general way, the combination of two modals in an asymmetric scope relation. It is a fully schematic construction that should be situated high on the vertical schematicity scale in figure 1. Below this fully schematic construction an intricate network of subschemas and micro-constructions could be drawn, if we only had more diachronic data to substantiate them.

5   Conclusion

This study investigated the rise of double modal constructions in Dutch as a case of constructional complexification. This section brings together the most important empirical and theoretical findings of the study.

The empirical study of double modals revealed that the earliest attestations of the construction date from the 13th century. These first observations show very limited modal combinatory possibilities: the finite modal is always *zullen* and the modal infinitive is either *mogen* or *moeten.* An exploratory semantic analysis of the earliest double modals indicated that these cases predominantly express directive meanings with possibly deontic and dynamic-imposed modal overtones. There is also evidence of future time reference in some of the observations. Moreover, future time reference was argued to be available as a pragmatic implication of the directive meanings in all attestations.

One important theoretical question was why language users start combining modal constructions in the 13th century. It was argued that reinforcement is a powerful usage-based motivation for adding new material to already existing structures. Applied to early double modals, this gave rise to the hypothesis that *zullen* is reinforced by the directive modals *mogen* or *moeten* in order to counterbalance its ongoing loss of directive force as a result of grammaticalization.

The study also addressed the question of how exactly two modal constructions were combined into one complex construction. It was proposed that one modal construction was embedded into the schematic slot of the other. This embedding involves a number of innovations. First, the schematic slot of the embedding construction undergoes host-class expansion from incorporating only lexical predicates to more schematic types of predicates. This host-class expansion also implies an expansion in scope for the entire construction, from modifying only actual propositions to modifying a modal evaluation of this proposition. Furthermore, the embedding leads to the creation of modal infinitives, reflecting the embedded status of the second modal.

The embedding of modal constructions gives rise to two new micro-constructions in the modal constructional network. The study showed that the creation of these two new nodes in the network does not correlate with changes in schematicity and productivity, two defining criteria of constructionalization given by Traugott and Trousdale (2013). Complexification instead gives rise to new nodes in the network that are higher in complexity, a network dimension that has largely remained beneath the radar in diachronic construction grammar. The creation of the new double modals also involves an increase in network density through the establishment of multiple inherence links between the source and target constructions.

This study has only scratched the surface of why and how construction complexification may manifest itself in language. The phenomenon is more pervasive than this small case study is able to do justice to. The findings for double modals in Dutch need be related to the development of other complex verb constructions in Dutch – such as the integration of modals in perfect constructions explored in Coussé and Van de Velde (2014). The rise of long verb constructions also shows interesting parallels to the continuous extension of the nominal phrase in the history of Dutch, as detailed in Van de Velde (2009). These developments are of

course not unique to Dutch but also have parallels in other languages. A wealth of case studies lies ahead of us waiting to be explored.

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[1] It should be noted that the notion of complexity in this article (i.e. basically construction size) is not intended to relate directly to issues of complexity in language processing – although larger size typically comes with more embedding and thus potentially higher processing costs.

[2] Examples (1) to (4) are authentic examples found on the internet. Example (1) was found on http://trends.knack.be/economie/nieuws/finance/de-burger-zal-zijn-pensioenprobleem-zelf-moeten-oplossen/article-4000572814603.htm, (2) on http://www.ad.nl/ad/nl/1012/Nederland/article/detail/3636997/2014/04/17/Rode-Kruis-wil-duizenden-Nederlanders-om-hulp-kunnen-vragen.dhtml, (3) on http://plazilla.com/page/4295015312/waarom-zou-een-man-niet-mogen-huilen, consulted 5 May 2014, and (4) on http://www.bureaugelijkebehandeling.nl/nieuws/een-grapje-op-het-werk-moet-toch-kunnen. All pages were consulted on 5 May 2014.

[3] I am indebted to Catharina Peersman at the University of Sheffield for her help with identifying and analyzing the Latin correspondences in both chancery texts.

[4] Defined by Nuyts et al. (2010:17) as 'indicating abilities or needs of the agent participant in a SoA [state of affairs], as expressed by the modal auxiliary in *John can eat like a lion*, or of possibilities or necessities inherent in a SoA as a whole, as involved in the auxiliary in *it can rain here in winter*'.

[5] Asymmetric scope relations in the modal domain have been thoroughly examined from both a formal-generative and a semantic-functional perspective (e.g. Cinque 1999 and Byloo & Nuyts 2013 respectively). The formal-generative approach in particular seems to take the hierarchy of modal meanings (or 'functional projections' in their specific terminology) as a given fact of language, whereas the present article rather takes an emergent perspective. Asymmetric modal scope relations also relate to the so-called epistemic non-finiteness gap in long verb constructions, discussed in Abraham (2001, 2002) and Reis (2001) for German, excluding an epistemic reading of embedded modals.It is beyond the scope of the article to go deeper into these matters.

[6] Note that I am not addressing later developments here. Reviewer Graeme Trousdale points out that the incorporation of a wider range of modals in both the first and second position (as indicated by contemporary examples 1-4) does imply an increase in schematicity. These developments are described in more detail in section 4.5.

[7] Evidence for this is given in section 4.6.