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The grammaticalization of Dutch moeten

Modal and post-modal meanings

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The grammaticalization of Dutch *moeten*: modal and post-modal meanings

Abstract: This chapter provides a synchronic and diachronic description of the Dutch modal *moeten*, which means 'must' in Modern Dutch. The synchronic description combines Narrog's (2005) distinction between volitive and non-volitive modality with Hengeveld's (2004) approach to modality, which subcategorizes modal distinctions according to their domains and their targets. It is shown that *moeten* can be used to express all of these distinctions, although it is rare in the function of objective epistemic modality. The diachronic description focuses on deontic *moeten* and post-deontic non-modal meanings. It consists of two parts, the first describing the Old Dutch *moeten* 'may' and its development into an expression of optative illocution in Middle Dutch, as well as its semantic shift to modal necessity. In this context Nuyts' (2011, 2013) claim, according to which *moeten* has been undergoing a process of degrammaticalization from Middle Dutch onward, is critically evaluated. The second part of the diachronic description of *moeten* is dedicated to a 20th century innovation which consists of the use of *moeten* in an imperative-like construction. The chapter ends with a synthesis of the changes undergone by *moeten* from Old Dutch onward making use of the Functional Discourse Grammar approach to grammaticalization (Hengeveld this volume).

Keywords: modal necessity, modal possibility, optative, imperative, degrammaticalization, Dutch

1 Introduction[1]

As opposed to most other Germanic languages, such as English, German, or Danish (Mortelmans, Boye and van der Auwera 2009), Modern Dutch has only

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one auxiliary expression of modal necessity, *moeten*.[2] As a consequence, *moeten* is highly polysemous, i.e. it can express almost any kind of modal necessity of both the non-epistemic and the epistemic type. With the deontic modals of most other Germanic languages (except English), it shares the property of being able to occur without a lexical verb in a number of contexts, such as in that of directional movement. Consider the following examples from Dutch (1a), German (1b) and Danish (1c) quoted from Mortelmans, Boye and van der Auwera (2009: 25, 29, 45):

(1) a. *Zij   moet   naar   huis.*
        she   must.PRS   to   home
     b. *Sie   muss   nach   Hause.*
        she   must.PRS   to   home
     c. *Hun   skal   hjem.*
        she   must.PRS   home
     d. **She must home*
        'She has to go home'

The difference between Dutch, German, Danish and also Swedish (Lissan Taal-Apelqvist pers. com.) is, however, that Dutch allows the independent use of *moeten* with eventive subjects, as shown in example (2):

(2) *Moet   dat   dan,   vraag   ik,   gelukkig   worden?*
     must.PRS   that   then   ask.PRS.1SG   I   happy   become.INF
     'Is that really necessary, I ask, to be happy?'
     (DRAPAC 28 MtH)

The wide applicability of deontic *moeten* as a lexical verb has led to the idea that *moeten* might be in the process of degrammaticalization (Nuyts 2011: 180; 2013: 131–132).[3]

On the other hand, *moeten* has an innovative auxiliary use which is far more grammaticalized than the grammatical expressions of modal necessity in other Germanic languages. Consider the following example:

(3) *Moet   je   horen   wat   ze   nu   weer*
     must.PRS.SG   you   hear.INF   what   they   now   again

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2 In fact, there is a second one, *dienen te* 'need, ought to', which covers rule based necessity only and appears exclusively in very formal written contexts, such as legal texts and instructions.
3 Nuyts (2014: 369–379) presents an explanation of this "degrammaticalization" in terms of iconicity, which is, however, too much dependent on the Cognitive Grammar view on deontic modality to be helpful in this context.

bedacht   *hebben*
invented.PTCP   AUX.PRS.PL
'Now listen what they have been contrieving now!'
(DRAPAC 20 AF)

In this construction *moeten* has developed beyond the modal domain proper into an expression of an imperative-like illocution (or "sentence mood" in the terms of Narrog 2005, 2012, this volume).

Our contribution will explain the property illustrated in (2) and focus on the grammaticalization of *moeten* within and beyond modality, thus providing an account of the case illustrated in (3). It is the aim of this paper to describe the grammaticalization of *moeten* making use of an approach to the grammaticalization of modals presented in Hengeveld (this volume). In order to account for this process adequately, we will first describe the modal uses of *moeten* from a synchronic perspective and then discuss both its semantic and its syntactic development from a diachronic perspective, in the course of which we will show that, in a certain sense, there is a kind of "degrammaticalization" of *moeten*, but not in the way Nuyts (2011, 2013) proposes. The synchronic data used in this paper will consist of a corpus of 20th century literary prose of 3.156.483 words, which has been drawn from the *Dutch-Russian Amsterdam Parallel Aligned Corpus* (DRAPAC), and the *Corpus Hedendaags Nederlands* 'Corpus of Modern Dutch' (CHN), provided online by the Institute for the Dutch Language (INT). For the diachronic section of this paper we will use the online diachronic dictionaries of the INT.

Section 2 of this study will be dedicated to the description of the modal functions of *moeten* in Modern Dutch making use of a categorization of modality that is inspired by Hengeveld (2004, this volume). In Section 3, we will consider the diachrony of *moeten* discussing both the semantic and syntactic developments as well as the potential degrammaticalization of this modal. Section 4 will deal with the use of the innovative post-modal *moeten* and explain the restrictions on this use. Section 5 will discuss the grammaticalization of modal and post-modal *moeten* from a Functional Discourse Grammar perspective, and Section 6 will be dedicated to our conclusions.

2 The modal meanings of *moeten*

Our point of departure is the definition of modality provided by Narrog (2005: 697), according to which "the expression of a state of affairs is modalized if it is marked for being undetermined with respect to its factual status, i.e. it is neither positively nor negatively factual". We interpret the concept of "state of affairs"

as used here in a non-technical sense and read it as including propositional contents, too. Our classification of modality makes use of Hengeveld's (2004) distinction between domains and targets of modal evaluation. The domains include facultative, deontic and (objective and subjective) epistemic modality, and the targets are (i) primary participants (mostly agents) in events, (ii) events, and (iii) propositional contents. We will, therefore, distinguish, for instance, between participant-oriented and event-oriented deontic modality. However, we will deviate from Hengeveld (2004) at one point: instead of his presentation of the domain of modal evaluation as forming one whole, we rather prefer the distinction used by Narrog (2005) between those domains that have "an element of will" in the source of modality, and those that have not. [4] We therefore follow Narrog in making a basic distinction between "volitive" and "non-volitive" modal domains, the former including deontic and boulomaic and the latter inherent, circumstantial and epistemic modal distinctions. Furthermore, we make use of the concept of "episode" (cf. Hengeveld this volume), which we consider to be basically a "tensed state of affairs". The most important modal distinctions that result from this approach and can be expressed by *moeten* are represented in Tab. 1, in which the bracketed numbers refer to the examples to be given below.

Tab. 1: Modal distinctions expressed by *moeten*.

Target	Domain	
	volitive	non-volitive
participant	*deontic* (4)	*inherent* (9)
event	*prescriptive deontic* (5–6)	*circumstantial* (10)
episode	*evaluative deontic* (7–8)	(*objective epistemic*)
proposition	–	*subjective epistemic* (11)

The general idea of the schema in Tab. 1 is that its vertical orientation reflects the increasing scope of the modalization: in the case of participant-oriented modality,

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4 The "element of will" can concern any source of modalization, be it an individual or some norms or rules, which, in the end, are always manmade. Narrog (2005: 683–685) refers back to Jespersen (1924), who first introduced this distinction between different types of what he named "mood" as well as to Heine (1995) and Palmer (2001), who have reintroduced this distinction before him.

the modal is supposed to modify the relation between the predicate and its arguments; event-oriented modals modify a non-tensed state of affairs and may take participant-oriented modals in their scope; episode-oriented modals modify a state of affairs that can be located in time and may take event-oriented modals in their scope, and proposition-oriented modals modify propositional contents and as such can take all the lower elements in their scope. We will provide evidence for these scope relations in the discussion of the volitive domain.

Examples (4)–(11) illustrate the different uses of *moeten* listed in Tab. 1. The example (4) illustrates the case of participant-oriented deontic (volitive) modality, which concerns the necessity that is imposed by either some person or some general rule on a specific human participant in the state of affairs referred to.

(4) *Hij schreef mij eens dat wij niet hard moesten*
    he write.PST.SG me once that we not hard must.PST.PL
    zijn in ons oordeel over haar.
    be.INF in our judgement about her
    'He wrote me once that we shouldn't be hard in our opinion about her.'
    (DRAPAC 24 HH)

The fact that the modal is in the past tense is due to past tense copying (*consecutio temporum*) from the main clause, which does, however, not affect the principled posterior orientation of the modalized expression (cf. Laca 2014: 82).

We now turn to the event-oriented volitive category, i.e. prescriptive deontic modality, as referred to in Tab. 1. In this case the source of the modal necessity consists of general or institutional norms, laws, as well as any type of instructions, whereas the target is some state of affairs, the primary argument of which refers either to a second order entity, or to an inanimate or non-specific animate first order entity. Example (5) illustrates the second order entity type:

(5) *Milieuvriendelijk en -bewust gedrag moet*
    environment_friendly and _conscious behaviour must.PRS.SG
    worden gestimuleerd
    AUX.INF stimulated.PTCP
    'Environment-friendly and -conscious behaviour must be stimulated'
    (CHN, Press 2010)

Example (6) is another example of prescriptive deontic modality. In this example the source is Government Information and the target is a state of affairs, because the referent of the first argument is a group of people which is identifyable but not specific. This means that the potential referents know that they are meant, but the writer of the text does not know who they are (Hengeveld and Mackenzie 2008: 36).

(6) *Ook   uitzendkrachten,   vrijwilligers of   stagiairs,   moeten*
    also   temporary_employees volunteers   or   trainees   must.PRS.PL
    zich   kunnen   identificeren   met   een   origineel   identiteitsbewijs.
    REFL.3   can.INF   identify.INF   with   a   original   proof_of_identity
    'Even temporary employees, volunteers, or trainees must be able to identify
    themselves with an original ID'
    (*Informatie van de Rijksoverheid*, internet)

This example furthermore illustrates the fact that event-oriented modality can
have participant-oriented modality in its scope, in this case participant-oriented
possibility, expressed by *kunnen* 'can', because the individuals in question are
required to take the necessary measures in order to be able, in concrete cases, to
produce an ID.

    As opposed to prescriptive deontic modality, evaluative deontic modality[5]
has its source in a personal view on what is considered necessary. This modal
distinction can scope over prescriptive deontic modality. In (7) *moeten* has
an auxiliary expression of prescriptive deontic possibility *mogen* 'may' in its
scope:

(7) *Wie   zo   denkt   'houdt   niet   van   en   is*
    who   like_this think.PRS.SG care.PRS.SG   not   for   and   is
    tegen   joden'   en   is   een   anti-semiet, die   men
    against jews   and   is   a   anti-semite   who   INDEF.PRON
    straffeloos   zo   moet   mogen   noemen.
    unpunished   like_this   should.PRS.SG may.INF   call.INF
    'Who thinks like this 'is not fond of and is against jews' and is an anti-
    semite, whom one should be allowed to refer to as such without being
    punished.'
    (CHN, Essay 1995)

In addition, evaluative deontic *moeten* can concern a state of affairs in the past:

(8) [An accusation of murder]
    Ze   hadden   een   ander   doelwit   moeten   uitzoeken.
    they   have.PST.PL   a   different target   must.INF   choose.INF

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5 In Olbertz and Gasparini Bastos (2013) this distinction has been referred to as one between
"objective" and "subjective" deontic modality. However, given that "subjective deontic modality" is
not subjective in the strict sense of the term, we prefer the labels "prescriptive" and "evaluative" here.

Bram   was   niet   schuldig.[6]
Bram   was   not   guilty.
'They should have chosen a different target. Bram was not guilty.'
(DRAPAC 61 LdW)

This does not mean that the obligation expressed by the modal concerns the past state of affairs, rather the state of affairs remains posterior to the modalization (Lyons 1977: 824). However, both the modalization and the state of affairs are anterior to the moment of speaking, i.e. the moment at which the evaluation takes place (Narrog 2008: 288).[7] What (8) expresses is the speaker's opinion that in the past there was a necessity for the state of affairs *een ander doelwit uitzoeken* 'chose a different target' to occur, and that neither the modalization through *moeten* nor the state of affairs are real, as indicated by means of the pluperfect tense marking. Given the fact that the evaluation in (8) concerns a past state of affairs, we account for this use in FDG by making use of the "episode", which corresponds to (sets of) tensed states of affairs.

Let us now turn to the non-volitive semantic domain, where we will start again with participant-oriented modality working downwards toward the propositional modalization. The participant-oriented non-volitive necessity is basically inherent, that is to say, it finds its origin in physical or psychological needs of an animate individual, and does, indeed have a restricted applicability, including "nutrition and excretion", as Narrog (2012: 10) aptly remarks. But in Dutch it includes also weeping, yawning, and laughing as in the following example:

(9) *Anna,   even   alles   vergetend, moest   lachen*
Anna   for_a_bit   everything   forgetting   must.PST.SG   laugh.INF
om   deze   zeldzame   vorm   van   bijgeloof   in_het_kwadraat.
about   this   rare   form   of   superstition   squared
'Anne, for a moment forgetting everything, couldn't help but laugh about this rare form of utter superstition.'
(DRAPAC 36 TdL)

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6 In (7) the past form of the auxiliary *hebben* 'have' one would normally require the past participle form of the auxiliary verb *moeten*, which does indeed exist, because Dutch modal verbs are not defective. However, the Dutch *moeten* has the infinitival form because it is followed by the infinitive of a main verb. In the combination with an infinitival full verb modal and aspectual verbs never have a participial form due to the rule *infinitivus pro participio*, which Dutch has in common with German (cf. e.g. IJbema 1997 for more details).
7 We are grateful to Heiko Narrog for pointing this out to us.

Turning to event-oriented necessity, we find circumstantial necessity as the non-volitive distinction at this level. As Narrog (2012: 10) observes, it is indeed difficult to find truly circumstantial cases of necessity which do not allow for a deontic reading, but they do exist: in the case quoted in the following example, the necessity depends on the rising sea level, an objective factor exterior to the event in question:

(10) *Volgens* *Van Ravenswaay* *is* *het* [*industriële*] *park*
according_to Van Ravenswaay is the industrial park
belangrijk *vanwege* *de* *stijgende* *zeespiegel,* *waardoor*
important because_of the rising sea_level whereby
sowieso *moet* *worden* *uitgeweken* *naar* *het* *zuiden*
anyway must.PRS.SG AUX.INF swerved.PTCP to the south
van *het* *land.*
of the country
'According to Van Ravenswaay the [industrial] park is important because of the rising sea level, due to which the park will have to be relocated to the South of the country anyway.'
(CHN, Press 2010)

The remaining distinction to be discussed is subjective epistemic necessity, because we have not found any case of objective epistemic necessity expressed by *moeten*. Usually, objective epistemic necessity is expressed in Dutch by means of adjectival expressions. As opposed to subjective epistemic cases of *moeten*, objective epistemic *moeten* is motivated by objective calculations.[8]

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8 Occasionally, however, *moeten* can fulfil that function, too, as shown in the following example suggested to us by Kees Hengeveld (in 2015):

(i) *Hij* *is* *in januari 2000* *geboren,* *dus* *hij* *moet* *nu* *15* *zijn.*
he is in januari 2000 born so he must.PRS.SG now 15 be.INF
'He was born in January 2000, so he must be 15 by now.'

At first glance, the concepts "objective" and "epistemic" seem to be incompatible, since "epistemic" generally presupposes the individual evaluation of the external world rather than a description of the external world. However, cases of objective epistemic *moeten*, such as the one exemplified here, are possible in situations in which the speaker – until the moment of speaking – did not realize that the given state of affairs is indeed necessarily the case.

Example (11) illustrates the expression of subjective epistemic necessity by means of *moeten*:

(11) *Bij   deze   woorden   kon   ik   een   glimlach,   die*
    at   these   words   can.PST.SG   I   a   smile   which
    iets   zeer   kwetsends   moet   gehad   hebben,
    something   very   offensive   must.PRS.SG   had.PTCP   have.INF
    niet   onderdrukken.
    not   suppress.INF
    'At these words I couldn't suppress a smile, that must have had a very
    offensive effect.'
    (DRAPAC 18 ME)

Hengeveld (1988: 236–237) provides a number of tests for subjectivity, the most generally applicable ones are the following two: (i) subjectively modalized expressions are bound to declarative illocution, objectively modalized expressions are not, and (ii) subjectively modalized expressions cannot be contained in hypothetical sentences, objectively modalized expressions can. Now let us compare (11) to a (somewhat simplified) adjectival expression of the same content (12):

(12) *Het   is   waarschijnlijk   dat   de   glimlach   iets   zeer*
    it   is   probable   that   the   smile   something   very
    kwetsends   had.
    offensive   have.PST.SG
    'It is likely that the smile had a very offensive effect.'

When questioning both expressions, then (11a) is marginally acceptable as an echo question in reaction to (11), whereas (12a) is grammatical and acceptable without such a restriction.

(11) a. ??*Moet   de   glimlach   iets   zeer   kwetsends*
       must.PRS.SG   the   smile   something   very   offensive
       gehad   hebben?
       had.PTCP   have.INF
       'Must the smile have had a very offensive effect?'

(12) a. *Is   het   waarschijnlijk   dat   de   glimlach   iets   zeer*
       is   it   probable   that   the   smile   something   very
       kwetsends   had?
       offensive   have.PST.SG
       'Is it likely that the smile had a very offensive effect?'

Let us now apply the second test mentioned in (ii) above, which consists in using the subjective and the objective epistemic modal expressions in a conditional apodosis:

(11) b. ⁇*Als   de   glimlach   iets   zeer   kwetsends   gehad*
        if   the   smile   something   very   offensive   had.PTCP
        moet   hebben,   heb   ik   met   je   te   doen.
        must.PRS.SG   have.INF   have.PRS.1SG   I   with   you   to   do.INF
        'If the smile must have had a very offensive effect, I pity you.'

(12) b. *Als   het   waarschijnlijk   is   dat   de   glimlach   iets*
        if   it   probable   is   that   the   smile   something
        zeer   kwetsends   had,   heb   ik   met   je
        very   offensive   have.PST.SG   have.PRS.1SG   I   with   you
        te   doen.
        to   do.INF
        'If it's likely that the smile had a very offensive effect, I pity you.'

Again, the subjective epistemic expression in (11b) is awkward, whereas the objective modal expression in the conditional clause in (12b) is fine. The conclusion is therefore that the epistemic use of *moeten* is virtually restricted to the subjective type, i.e. to the expression of the commitment to the truth of a proposition either by the speaker or a different subject referent.[9]

    We have shown in this Section that *moeten* is able to express any kind of volitive and non-volitive distinction of modal necessity. As the volitive distinctions discussed here are all of a deontic nature, we will, henceforward, refer to the volitive domain as "deontic domain". The remainder of this paper will be dedicated exclusively to the deontic domain, which is the one that gave rise to the imperative-like *moet je* construction, which is the focus of this paper.

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9 Although, as a general rule, the subject in such cases refers to the speaker, this is not necessarily the case:

(i) *Volgens   Irene   moet   zijn   algemene   indruk   wel   juist*
    according_to   Irene   must.prs.sg   his   general   impression   indeed   correct
    zijn   geweest.
    be.inf   been
    'According to Irene his general impression must have been correct.'

3 The diachrony of deontic *moeten*

In this section we will consider the diachronic semantic and syntactic development of deontic *moeten* with the first and foremost aim to find out if the predictions with regard to grammaticalization implied in Tab. 1 can be confirmed. In addition, we will also take a glance at the development of the independent, i.e. lexical variant of *moeten* in order to challenge Nuyts's (2011, 2013) claim. We will first present the relevant data in Section 3.1 and discuss these data in Section 3.2.

3.1 Diachronic data

This section will make use of the data provided in the four historical dictionaries of Dutch, made available online by the INT.[10] We will first look at the semantic development of *moeten* from the first attestations onward and then consider the development of lexical uses of *moeten*.

In the first attestations of Old Dutch (approx. 950–1150) *moeten* (in the form of *mozon*) primarily expressed participant-oriented possibility 'may':

(13) *That   se   blîuen   mozon   in   [g]odes   riche.*
that   they   stay.INF may.PRS.PL in   god.GEN   empire
'That they may stay in God's empire.'
(*Mittelfränkische Reimbibel*, 1151–1200, ONW)

This meaning of *moeten* can still be found in Middle Dutch (approx. 1200–1550):

(14) *Die   man   bat   hem ..., dat   hi   met   hem*
that   man   asked.PST.SG him   that he   with   him
moeste   varen,   maer Jhesus   ontseid   hem
may.PST.SG sail.INF but   Jesus   forbid.PST.SG_it   him
'This man asked him permission to sail with him but Jesus denied it.'
(*Rijmbijbel*, ms 1300–1350?, MNW)

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10 According to the information provided by the INT, The Old Dutch Dictionary (ONW) covers the period from ca. 500 to 1200, the Early Middle Dutch Dictionary (VMNW) the period from ca. 1200 to 1300, the Middle Dutch Dictionary (MNW) that from 1250 to 1550 and the Modern Dutch Dictionary (WNT) from 1500 to 1976 (however, the entry on *moeten* dates from 1907). Given the overlap between Early Middle Dutch and Middle Dutch, we will lump the two together under the heading of "Middle Dutch".

Most cases are similar to (14) in having specific human referents for the primary participant slot, and are therefore expressions of participant-oriented modality. However, in contexts of laws and instructions, *moeten* is also used with non-specific human referents, i.e. as an expression of event-oriented deontic possibility, as illustrated in (15):

(15) *Dat   men   voortaan   gheen   brandewijn   sal   moeten*
     that   one   henceforth   NEG   brandy   shall.PRS.SG may.INF
     tappen
     serve.INF
     'That henceforth no brandy may be served'
     (*Wfr. Stadsrechten*, 1536, WNT)

In addition, this example is illustrative of the fact that from the 16th century onward *moeten* is used in the sense of deontic possibility only in the combination of *moeten* with some kind of negation.[11] As an expression of deontic possibility, *moeten* gradually comes to be substituted in early Modern Dutch by *mogen* 'may', which in Old Dutch had the exclusive function of expressing physical ability and was still relatively rare as an expression of deontic possibility in Middle Dutch (Duinhoven 1997: 409–410).

In addition to the strictly modal meanings, *moeten* had developed an optative function from Middle Dutch onward:

(16) *Onse   here   moete   met   u   wesen*
     our   lord   must.PRS.SUBJ.SG   with   you   be.INF
     'May our Lord be with you'
     (*Spiegel Historiael*, ca. 1350, MNW)

This optative function of *moeten* has been lost in the 18th century and is presently expressed by the subjunctive paradigm of the verb *mogen* 'may', which was infrequent in this function in Middle Dutch (Duinhoven 1997: 408).

We now turn to the first attestations of deontic necessity expressed by *moeten* in Medieval Dutch. As opposed to what we have seen so far, these are of the participant-oriented (17) as well as of the event-oriented (18) type, and there is no way of assessing which was first.

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11 For an overview of diachronic changes between necessity and possibility in other languages, see Narrog (2012: 185–199), who emphasizes the role of negation in this process, as proposed by, among others, Goossens (1987) for English and Bech (1951) for German.

(17) *Gi   muet   allene   [bute]n   staen.*
you   must.PRS.SG   alone   outside   stand.INF
'You must stay outside alone.'
(*Reinaert E*, 1276–1300, VMNW)

(18) *sijn   aes   moet   sijn   uersch   ende   leuende*
its   bait   must.PRS.SG   be.INF   fresh   and   alive
'its bait must be fresh and alive'
(*Der Naturen Bloeme*, 1287, VMNW)

In the period between the 15th and the 18th centuries, deontic modality expressed by *moeten* gradually becomes predominantly an expression of deontic necessity. By then the participant-oriented is only a bit more frequent than event-orientation: out of the 17 unambiguous cases of deontic necessity, 10 are participant-oriented and 7 are event-oriented. Example (19) illustrates the former and (20) the latter:

(19) *Sonder   sneven   moetti   mijn   hoge   gebod   volbringen*
without   hesitate.INF   must.PRS.SG_he   my   high   order   fulfil.
'Unwaiveringly he must fulfil my high assignment'
(*De sevenste bliscap van Maria*, 1445–1465, MNW)

(20) *Men   moet   Gode   meer   gehoorsaem   zijn   dan*
one   must.PRS.SG   god   more   obediant   be.INF   than
den   menschen
the   men
'One must be more subserviant to God more than to men'
(*Statenbijbel*, 1688, WNT)

In 18th century Dutch, we also find cases of *moeten* in the evaluative deontic necessity function, which we classified as episode-oriented in Tab. 1 in Section 2. As mentioned earlier, evaluative deontic necessity modalizes either a modalized state of affairs or an anterior one. The latter is the case in the following example:

(21) *Een   schurk,   die   al   lang   moest   zyn*
a   scoundrel   who   already   long   must.PST.SG   be.INF
opgehangen   geworden,
hanged.PTCP   AUX.PTCP
'A scoundrel, who should have been hanged long ago,'
(*Willem Leevend*, 1784–1785, WNT)

As regards the independent use of *moeten*, in Early Middle Dutch already *moeten* in its deontic necessity meaning can be used independently as long as directional movement is implied, such as illustrated in the following example:

(22) *Wi   moeten   int   helsce   vier.*
     we   must.PRS.PL   in_the   infernal fire
     'We must [go] into the infernal fire.'
     (*Rijmbijbel*, 1285, VMNW)

The use of independent *moeten* of the type illustrated in this example has become very frequent in Modern Dutch. As would be expected, independent *moeten* occurs primarily with human referents as primary arguments, a situation that remains basically unchanged in Middle Dutch.[12] In early stages of Modern Dutch (1500–today), however, we find independent uses of *moeten* in its deontic necessity meaning in (metaphorical) directional movement contexts, now more frequently with inanimate referents:

(23) *Daer   most   een   drinckpenningh   off*
     there   must.PRS.SG   a   gratuity   off
     'A gratuity must [be deducted] from it'
     (*Boere-klucht*, 1612, WNT)

About two hundred years later, there are also cases of event-oriented deontic modality that are unrelated to movement, where the first argument refers to an event rather than to an object:

(24) *Hij   zou   zeker...   trotsch   worden;   en   dat*
     he   would.SG   certainly haughty   become.INF   and   that
     moet   niet
     must.PRS.SG   not
     'He would certainly become haughty and that must not [happen]'
     (*Maurits Lijnslager*, 1808, WNT)

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12 However, in the examples quoted in VMNW, there are also two cases with non-animate referents, one of which is the following:

(i) *Want   alle   dinc   muᵒt   wiᵉder   tuᵒt   sinre   naturen*
    for   all   thing   must.PRS.SG again   to   its   nature
    'For everything must [return] to its nature'
    (*Moraalboek*, 1270–1290)

In Modern Dutch, *moeten* can be used independently also in clear cases of evaluative deontic necessity:

(25) [*En je kunt nu eenmaal niet een vrijhandelsakkoord sluiten en daarbij bepaalde sectoren uitsluiten.* 'And you just cannot conclude a free trade agreement and at the same time exclude certain sectors.']

> *Maar   achteraf   bekeken   had   dat   misschien*
> but   from_back   viewed.PTCP   AUX.PST.SG   that   perhaps
> *wel   gemoeten.*
> indeed   must.PTCP
> 'But looking back maybe this should have [happened] indeed.'
> (CHN, Press, 2003)

Now we have seen five phenomena of diachronic change within the deontic domain of *moeten*: (i) the increasing prominence of deontic necessity meaning, (ii) the concomitant loss of the deontic possibility meaning, a process that was parallelled by (iii) the increasing use of *moeten* in other than participant-oriented functions, (iv) the loss of the optative, and (v) the gradual broadening in terms of different uses of *moeten* as a lexical verb.

3.2 Discussion

In this section we will start with the last case of diachronic change mentioned above, the expansion of *moeten* as an independent lexical verb, and then discuss the other changes.

Nuyts (2011: 161; 2013: 126) shows, on the basis of corpus analysis, that the independent use of *moeten* has increased between Old Dutch and Modern Dutch from 0% in Old Dutch to 5% in written Modern Dutch and 10.5% in spoken Modern Dutch. This ratio in Modern Dutch is confirmed by an analysis of a section (165,879 words) of our own written corpus. The semantic distribution yields the picture represented in Tab. 2. In addition, Tab. 2 shows that 94% of the independent uses of *moeten* express directional movement, and that almost all of these are directed towards specific human referents, i.e. are expressions of participant-oriented modality.

Tab. 2: Independent use of *moeten* in Modern Dutch literature (165,879 words).

Total *moeten*:	635		
	of which independent:	35 (5.57%)	
		of which directional movement:	33 (94.0%)
		of which participant-oriented:	30 (85.7%)

Nuyts (2011, 2013) proposes to view this process, as well as similar processes in the case of *kunnen* 'can' en *mogen* 'may', as one of "degrammaticalization", but he also shows that the case of the Dutch modals does not fit the concept of "degrammaticalization" as it stands. The most influential study of degrammaticalization, Norde (2009), defines the relevant type of "degrammation" as a shift (i) from grammatical to lexical content or (ii) from more grammatical to less grammatical content (Norde 2009: 133). Therefore, Nuyts (2011: 179–180; 2013: 132) introduces the concept of "primary degrammaticalization", which is supposed to account for cases of partial loss of auxiliary properties, irrespective of possible semantic changes.

Our hypothesis with respect to the rise of the independent lexical uses of *moeten* is, however, that deontic *moeten* was first lexicalized in the context of directional movement in participant-oriented contexts, where it would always be read as 'must go to', as in example (22). On analogy to the participant-oriented cases, lexical *moeten* would then also be used when the primary participant refers to an inanimate object as in (23), which becomes more frequent from the 17th century onward. Later on, on analogy to the movement cases, lexical *moeten* came to be used incidentally in non-movement contexts.[13] This means that there is just a gradual and analogical process of lexicalization, for which Nuyts does not provide anything but a new label.

As regards the semantic processes, the gradual expansion of deontic *moeten* in general to event-oriented and later episode-oriented contexts, which we have described in Section 3.1, confirms our expectations with regard to the increasing scope of *moeten*. However, this expectation is not borne out with respect to deontic necessity: in this context we would have expected *moeten* to start off with participant-orientation and then spread to event-orientation, but the fact is that both develop in parallel. A possible explanation may be related to the fact that the expression of deontic necessity was taken over from Old Dutch *sullan* 'shall' (Modern Dutch *zullen*), when this ceased to express deontic necessity and came to express future tense exclusively. The Old Dutch dictionary (ONW) entry of *sullan* mentions twelve cases of deontic necessity, ten of which are participant-oriented, one is event-oriented and one is doubtful. Another possible explanation may be in the very nature of deontic necessity: the source of deontic necessity probably more often is a "collective will" i.e. general rules rather than the will of an individual, and deontic necessity from a general source can be equally targeted to states of affairs and to participants in states of affairs.

A further aspect in the development of *moeten* that calls for an explanation is the loss of the optative function, which could in fact be analyzed as a true case of "degrammation" in Norde's (2009) terms, because the optative is

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13 For a diachronic study of this problem see Honselaar and Olbertz (2016).

generally regarded as a sentence type or sentence mood, to be associated with illocution rather than with modality (Levinson 1983: 42; Hengeveld 2004: 1191; Hengeveld and Mackenzie 2008: 71). We believe that the "retraction"[14] of *moeten* from the illocutionary domain can be explained through the loss of the function of deontic possibility. As we have seen, this was the most prominent function of *moeten* until the 15th century and most probably the source of the development of the optative (van der Auwera and Plungian 1998: 107, 112–113), the first occurrence of which dates from the 13th century. The most probable explanation of this process is the following: when the possibility function of *moeten* gradually gave way to the necessity function, the optative function shifted together with the expression of deontic possibility to the – by then innovative – modal auxiliary *mogen*.

As we will show in the next section, *moeten* has recently come to fulfil a new illocutionary function; this time it is one which is more in line with the semantic specialization of volitive *moeten* to the domain of deontic necessity.

4 A new illocutionary function of *moeten*

This section deals with the imperative-like construction with *moeten*, which we will preliminarily refer to as the *moet je* construction, exemplified in (3) in the introduction to this chapter, which we repeat here for convenience.

(3) Moet   je   *horen*   *wat*   *ze*   *nu*   *weer*
    must.PRS.SG you hear.INF what they now   again
    bedacht   *hebben*
    invented.PTCP   AUX.PRS.PL
    'Now listen what they have been contrieving now!'
    (DRAPAC 20 AF)

Occasionally we find, instead of the informal second person pronoun, *je*, the neutral plural pronoun *jullie* or the rather formal singular pronoun *u*:

(26) [speaker wants primary schoolteachers to be experts in certain subjects
    rather than being generalists]
    Moet   u   *zich*   *eens*   *voorstellen*
    must.PRS.SG   you.FORMAL   REFL.2.FORMAL   MIT   imagine.INF

---

14 Haspelmath (2004: 33–35) defines "retraction" as a process consisting of the loss of manifestations of higher degrees of grammaticalization of a given lexical item.

wat	*daar*	*voor*	*didactische*	*en*	*pedagogische*	*impuls*
what	there	for	didactic	and	pedagogical	impulse

van	*uitgaat!*
from	emanate.PRS.SG

'Imagine what a didactic and pedagogical impulse this produces!'
(CHN, Press, 2003)

The *moet je* construction appears in the 20th century DRAPAC corpus from the 1940s onward. In the literature it has been mentioned in the 1950s already by Droste (1956: 33), who refers to this construction as 'invitation' and relates it to the imperative. Apart from this, the *moet je* construction has not received much attention in the literature on Dutch modals, with the notable exception of Janssen (2006).[15] Our aim in this section is to pin down the exact interactional function of the *moet je* construction, which obviously is similar but not equal to the imperative. This section will be organized as follows: in 4.1 we will present the form of the *moet je* construction and in 4.2 we will explain this form in relation to the function of this construction.

4.1 The form of the *moet je* construction vs the imperative

Like the imperative, the *moet je* construction is not tensed, which implies that *moeten* is obligatorily present tense marked (Droste 1956: 33; Janssen 2006: 337). Thus the past tense variant of (27a), namely (27b), is ungrammatical.

(27) a. [*Ik reed me daar op een avond door de Westgaag en opeens zag ik er een midden op de weg zitten. Ik probeerde nog af te remmen maar het was al te laat, hij sprong recht in mijn gezicht, zo van de grond af*, 'One evening I was cycling through the *Westgaag* and suddenly I saw one [a skunk] sitting in the middle of the street. I tried to brake but it was too late: he jumped right into my face, from the streetlevel,'

moet	je	*nagaan,*	*terwijl*	*ik*	*op*	*een*	*hoge*
must.PRS.SG	you	imagine.INF	while	I	on	a	high

fiets	*zat*.
bicycle	sat.PST.SG

'just imagine, while I was sitting high on a bicycle.'
(DRAPAC 29 MtH)

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15 Nuyts, Byloo and Diepeveen (2007: 167) quote an example of this construction and, without taking note of its specific properties, interpret it as a *sterk advies* 'strong piece of advice' (2007: 168). Nuyts (2011, 2013) does not mention the *moet je* construction at all.

b. *moest   je   *nagaan,*   *terwijl* *ik* *op* *een* *hoge*
   must.PST.SG you   imagine.INF while   I   on   a   high
   fiets   *zat*.
   bicycle sat.PST.SG
   'just imagined, while I was sitting high on a bicycle.'

A second property that the *moet je* construction shares with the imperative is its addressee-orientation, i.e. the subject in the construction with *moeten* must always have a second person referent. Therefore the 1st person plural variant of (28a), i.e. (28b), is ungrammatical as it stands, although interpretable as a deontic question.

(28) a. [Talking about World War II: one of two imprisoned members of the
        Dutch resistance is telling how they passed their time talking about their
        work while waiting for their execution]
        Moet   je   *je*   *voorstellen*   *hoe*   *we*
        must.PRS.SG you   REFL.2SG   imagine.INF   how   we
        daar   *zaten*
        there sat.PST.PL
        'Just imagine how we were sitting there'
        (DRAPAC, 38 HM)
   b. *Moeten*   we   *ons*   *voorstellen*   *hoe*   *we*
        must.PRS.PL we   REFL.1PL   imagine.INF   how   we
        daar   *zaten*
        there sat.PST.PL
        'Must we imagine how we were sitting there'

A third property the *moet je* construction shares with the imperative is the position of the finite verb, which must always be sentence initial. (29b), where the pronoun is in sentence initial position, is interpretable, but only as a declarative participant-oriented deontic expression.

(29) a. [During an interview, Pieter van den Hoogenband, Dutch swimming
        champion, shows the interviewer his first swimming certificate, gained
        at the age of five]
        Moet   je   *dit*   *zien*
        must.PRS.SG you   this see.INF
        'Just take a look at this'
        (CHN, Press, 2011)
   b. ≠*Je*   *moet*   *dit*   *zien*
        you   must.PRS.SG this see.INF
        'You must see this'

Now let us turn to the properties that distinguish the *moet je* construction from the imperative. First, the *moet je* construction must always contain a pronoun referring to the addressee: compare (30), which exemplifies the *moet je* construction, with the imperative in (31).

(30) a. *moet*   *je*   *hier*   *ruiken*
     must.PRS.SG   you   here   sniff.INF
     'take a sniff at this!'
     (DRAPAC 27 MtH)
   b. **moet*   *hier*   *ruiken*
     must.PRS.SG   here   sniff.INF
     'must sniff at this'

(31) *Ruik*   *eens…*   *dit*   *is*   *de*   *geur*   *van*   *heiligheid.*
     sniff.IMP   MIT   this   is   the   smell   of   sacredness
     'Just take a sniff … this is the smell of sacredness.'
     (CHN, Press, 2011)

Secondly, the *moet je* construction allows only unstressed addressee pronouns (Droste 1956: 33) as shown in (32), while imperatives allow emphatic pronominal reference to the addressee for the exclusive purpose of contrastive focus marking (33).

(32) a. *Moet*   *je*   *eens*   *luisteren,*   *Marco.*
     must.PRS.SG   you   MIT   listen.INF   Marco
     'Listen, Marco!'
     (CHN, Press, 2006)
   b. **Moet*   *jij*   *eens*   *luisteren,*   *Marco.*
     must.PRS.SG   you.EMPH   MIT   listen.INF   Marco
     'Must you listen, Marco.'

(33) [−*Hoor nou eens even* … 'Now just listen …']
   −   *Nee,*   *luister*   JIJ   *nou*   *eens*   *even!*
        no   listen.IMP   you.EMPH   PRT   MIT   MIT
   '− Now YOU just listen!'
   (E. Proper and S. van den Eynden, *Vals profiel.* 2010, internet)

Thirdly, the *moet je* construction is bound to positive polarity, as shown in (34a) and (34b), while imperatives may be negated as, can be gathered from example (35).

(34) a. *Moet*   *je*   *kijken!*
     must.PRS.SG   you   look.INF
     'Look!'   (DRAPAC 38 HM)

b. *Moet   *je*   niet   *kijken!*
   must.PRS.SG   you   not   look
   'Don't you want to look!'

(35) *Kijk*   niet   *Eddy, kijk*   niet
     look.IMP   not   Eddy   look.IMP   not
     'Don't look, Eddy, don't look!'
     (CHN, *Van hier en daar en overal*, 1986)

Fourthly, the *moet je* construction does not admit a temporal modifier such as *morgen* 'tomorrow' in the state of affairs it has in its scope (36), while such a modification is possible in the case of imperatives (37).

(36) a. [*"Als lucht ben je onzichtbaar en overal.* ' "Being air, you are invisible and you are everywhere.']
     Moet   *je*   *je*   *eens*   *indenken,*   *eekhoorn."*
     must.PRS.SG   you   REFL.2SG   MIT   imagine   squirrel
     'Just imagine, squirrel." '
     (DRAPAC 56 TT)

b. *Moet   *je*   *je*   morgen   *eens*   *indenken,*   *eekhoorn.*
   must.PRS.SG   you   REFL.2SG   tomorrow   MIT   imagine   squirrel
   'Imagine tomorrow, squirrel." '

(37) *Kom*   morgen   *maar*   *terug*.
     come.IMP   tomorrow   MIT   back
     'Come back tomorrow.'
     (CHN, Press, 2004)

Finally, the use of the *moet je* construction is restricted to verbs of physical and mental perception, that of the imperative is not. Consider the imperative of the verb *come* in (38a) and the application of the same verb to the *moet je* construction in (38b), which yields an ungrammatical result.

(38) a. *"Henri,*   kom   *eens*   *hier*   [..]*" riep*   *hij.*
     Henri   come.IMP   MIT   here   shouted.PST.SG   he
     ' "Henri, just come here [...]" he shouted.'
     (DRAPAC 48 GR)

b. **Henri, moet*   *je*   *eens*   *hier*   komen
   Henri   must.PRS.SG   you   MIT   here   come.INF
   'Henri, must you just come here'

From the examples we have seen so far, we can gather that the lexical restriction is such that it allows for all kinds of perception; (i) visual: *zien, kijken* 'look'

(cf. examples (29) and (34), respectively), (ii) auditive: *horen*, *luisteren* 'listen' (cf. examples (3) and (32), respectively), (iii) olfactory: *ruiken* 'sniff' (cf. example (30)), and (iv) mental: *nagaan*, reflexive *voorstellen* and reflexive *indenken* 'imagine' (cf. examples (27), (28), and (36), respectively).

In the following section, we will show that despite these numerous restrictions, the *moet je* construction can be viewed as a grammaticalized expression of an illocutionary distinction.

4.2 The function of the *moet je* construction: immediate perception imperative

We have shown in Section 4.1 that *moet je* behaves like a positive imperative requiring from the addressee the perception of some state of affairs. This perception, i.e. the perlocutionary effect of the imperative, needs to be realized immediately at utterance time, this is why temporal marking is excluded, hence "immediate perception" is required.

The impossibility to stress the addressee in this construction is related to the fact that there is obligatory focus marking elsewhere, i.e. on the element expressing the required perlocutionary effect. This may be the verb, as in the following example:

(39) *Moet   je   eens   KIJKEN*
     must.PRS.SG you   MIT   look.INF
     'Just LOOK!'
     (CHN, Press, 2005)[16]

However, whenever there is additional information present specifying the object to be perceived, such as the noun phrase *dit tolletje* 'this little tol' in the following example, then this element is in focus:

(40) *moet   je   DIT   TOLLETJE   zien*
     must.PRS.SG you   this   tol.DIM   see.INF
     'Look at THIS LITTLE TOL!'
     (CHN, Press, 2005)

Elements such as the noun phrase in (40), the demonstrative pronoun *dit* 'this' in example (29) and the locative adverb *hier* 'here' in example (30) always have

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16 In this case, the verb is the only possible element to be stressed, because mitigating particles, such as *eens* in this case, cannot be stressed (Elffers 1997: 60). For the use of particles in Dutch imperatives and the like cf. Vismans (1994).

deictic reference to an entity present in the situation of the interaction. As a general rule, we can therefore establish that this construction always requires focus marking on the most focal element expressed in the construction.[17]

What we have not explained so far is the incompatibility of the *moet je* construction with negation. The function of this construction is to draw the attention of the interlocutor to something to be perceived, this attention drawing is a type of linguistic action, i.e. in terms of Hengeveld and Mackenzie (2008: 47) it is the realization of a "discourse act". As such it cannot be negated, very much in the same way as a performative speech act cannot be negated.

Given the properties described in this section, we will refer to this construction as the "immediate perception imperative".[18]

5 The grammaticalization of deontic *moeten*

In this section we will account for the diachronic development of deontic *moeten* and for its synchronic scope relations within the framework of Functional Discourse Grammar (Hengeveld and Mackenzie 2008, 2010), in which such a development can be accounted for in a straightforward way, as shown in Hengeveld (2011, this volume).

Functional Discourse Grammar (FDG) is conceived as a top-down layered model of the grammatical competence of speakers in view of verbal interaction as the main function of language. The highest components of the grammar consist of an interactional pragmatic and a semantic level, where the former governs the latter. Each of these components has an internal structure of

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17 Janssen (2006) refers to the *moet je* construction as "focus construction". The situation becomes more complex in the case of mental perception, where, depending on a number of contextual factors either the object to be perceived or the verb can be in focus:

(i) *moet*   *je*   *je*   MIJN   SITUATIE   *eens*   *voorstellen!*
     must.PRS.SG you   REFL.1SG   my   situation MIT   imagine.INF
     'Just imagine MY SITUATION!'

(ii) *moet*   *je*   *je*   *mijn* *situatie* *eens*   VOORSTELLEN!
     must.PRS.SG you   REFL.1SG   my   situation   MIT   imagine.INF
     'Just IMAGINE my situation!'

Obviously, prosodic factors play an important role in the pragmatics of the *moet je* construction, but we will not go into details here. We are indebted to Cecilia Odé for discussion and suggestions in this field.

18 This post-modal development confirms the unproven claim made by Bybee, Perkins and Pagliuca (1994: 210) that deontic necessity can develop into imperativity; see also van der Auwera and Plungian (1998: 96) and Narrog (2012: 159–160, this volume).
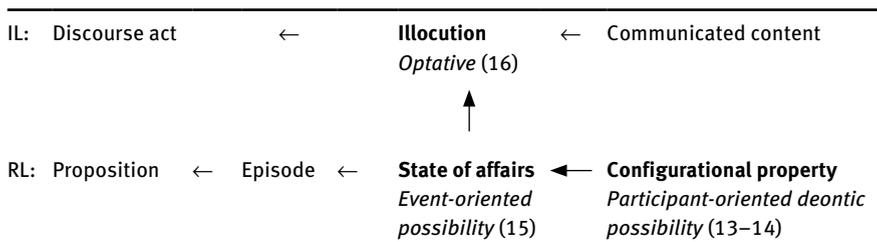
hierarchical layers that corresponds to linguistic scope relations. We have seen the internal structure of the semantic level ("representational level" in Functional Discourse Grammar) on the vertical axis in Tab. 1: (i) participant-oriented modality operates on the predicate and its arguments ("configurational property" in FDG), (ii) event-oriented modality operates on the state of affairs, (iii) episode-oriented modality operates on (a set of) states of affairs that can be freely located in time, (iv) proposition-oriented modality operates on a propositional content, which can be located in neither time nor space but can be evaluated in terms of truth.

The interactional pragmatic level is called the "interpersonal level" in FDG and has a hierarchical structure, too. The highest layer is the individual "discourse act", which may or may not equal a clause. The discourse act basically consists of the illocution and the content to be communicated.[19]

In the representations given in Tabs. 3 and 4, the interpersonal level is abbreviated as IL and the representational level as RL. Within each level, the relevant internal hierarchical layers are given, and the arrows indicate the expected direction of change. The boldfaced layers and arrows correspond to the changes that have actually taken place. The modal meanings are given in italics and the numbers refer to the example(s) given for each type in the course of this paper.

Table 3 represents the Medieval development of *moeten* as an expression of deontic possibility, before these meanings definitively shifted to the modal *mogen* in the 18th century.

Tab. 3: Historical development of *moeten* in the function of deontic possibility (12th–18th c.).

IL:	Discourse act	←	**Illocution** *Optative* (16)	←	Communicated content
RL:	Proposition ← Episode ←		**State of affairs** *Event-oriented possibility* (15)	◄—	**Configurational property** *Participant-oriented deontic possibility* (13–14)

The case of *moeten* as an expression of deontic necessity, represented in Tab. 4, is different for the simple reason that a more differentiated development has taken place within the – semantic – representational level.

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[19] For more details on the theory of Functional Discourse Grammar, see Giomi (this volume).

Tab. 4: Historical development of *moeten* in de function of deontic necessity (13th–20th c.).

IL:	Discourse act ←	**Illocution** *Immediate perception imperative* (26–30), (32), (34), (36), (39–40)	←		Communicated content
		↑			
RL:	Proposition ←	**Episode** *Evaluative deontic necessity* (21)	← **State of affairs** *Prescriptive deontic necessity* (18), (20)	——	**Configurational property** *Participant-oriented deontic necessity* (17), (19)

A further important point of divergence is that in this case the diachronic data do not reflect any historical development from participant-oriented modality to event-oriented modality, which is marked by the fact that there is no arrow but a dash between the configurational property and the state of affairs. Nevertheless, the mutual ordering of these elements correctly reflects the fact that despite of the lack of diachronic evidence, there is a synchronic scope relation between participant-oriented and event-oriented modality such that the latter scopes over the former, rather than the other way round.

This analysis provides additional evidence for the development of grammaticalization within and across levels in Functional Discourse Grammar (Hengeveld this volume).

6 Conclusion

In this paper we have shown that in Modern Dutch *moeten* expresses all kinds of deontic and non-deontic modal meanings, among which objective epistemic modality is rather marginal. Modern Dutch *moeten* also has a lexical version, which we interpret as a case of lexicalization, rather than degrammaticalization. Viewed from a diachronic perspective, deontic *moeten* developed twice from semantics proper to the domain of illocution: in Medieval Dutch it developed from deontic possibility to optative illocution, and in 20th century Dutch it developed from deontic necessity to imperative illocution, giving rise to the "immediate perception imperative". Although the results of the first development shifted in the 18th century to a new expression, i.e.

mogen 'may', both developments are interesting cases of what according to Narrog (2012: 160) "can be taken as a paradigm example of increased speech act orientation." Narrog (2012, this volume) presents quite a number of similar diachronic changes. Whereas Narrog prefers to represent these changes with the emphasis on their graduality, we have chosen the Functional Discourse Grammar approach (Hengeveld this volume) which emphasizes the stepwise hierarchical layering to be observed in the development of *moeten* from both a synchronic and a diachronic perspective.

Uncommon abbreviations

DIM = diminutive, EMPH = emphasis, FDG = Functional Discourse Grammar, IL = interpersonal level, INT = Institute for the Dutch Language, MIT = mitigation, PRT = particle, RL = representational level.

Corpora

[CHN] *Corpus Hedendaags Nederlands*. Leiden: Institute for Dutch Lexicology (INL).
      https://portal.clarin.inl.nl/search/page/search (accessed 14 January 2015)
[DRAPAC] *Dutch-Russian Amsterdam Parallel Aligned Corpus*. Amsterdam: Department of Slavic
      Studies, University of Amsterdam.
[MNW] *Middelnederlandsch Woordenboek*. Leiden: Institute for the Dutch Language (INT).
      http://gtb.inl.nl/ (accessed 14 April 2014)
[ONW] *Oudnederlands Woordenboek*. Leiden: Institute for the Dutch Language (INT).
      http://gtb.inl.nl/ (accessed 14 April 2014)
[VMNW] *Vroegmiddelnederlands Woordenboek*. Leiden: Institute for the Dutch Language (INT).
      http://gtb.inl.nl/ (accessed 14 April 2014)
[WNT] *Woordenboek der Nederlandsche Taal*. Leiden: Institute for the Dutch Language (INT).
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