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## MEANING CHANGE IN THE DUTCH CORE MODALS (INTER)SUBJECTIFICATION IN A GRAMMATICAL PARADIGM

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### Abstract

This article presents a corpus-based analysis of the semantic developments in the diachrony of the three most “prototypical” Dutch modals, *kunnen* ‘can’, *mogen* ‘may’, and *moeten* ‘must’. It focuses on the implications for current concepts of (inter)subjectification. The three modals turn out not to behave in a uniform way and to show different diachronic profiles: *kunnen* and *mogen* do but *moeten* does not show clear processes of (inter)subjectification, while *kunnen* is a much ‘younger’ modal than *mogen* and *moeten*. In terms of paths of semantic change, the investigation shows that evolutions toward more (inter)subjective meanings are often not linear. Even if they predominantly emerge from one other meaning, new meanings can have secondary sources. Furthermore, evolutions often happen in parallel, with one specific meaning serving as the source for several others (e.g., deontic, epistemic/evidential and directive meanings typically all evolve in parallel from a dynamic modal meaning).

### 1. Introduction

Modal auxiliaries are generally considered to be prototypical illustrations of the diachronic processes of grammaticalization (Hopper and Traugott 2003) and subjectification (Traugott 1989; Traugott and Dasher 2002). (Morpho)syntactically, they take up a position in between a fully independent “lexical” element – a verb – and a completely dependent grammatical morpheme – a verbal affix. Semantically, they feature a range of “logically” related meanings – the modal meanings – which can be ordered from more “objective” to more “subjective”, and the diachronic development of the forms appears to systematically follow this path of increasing subjectivity.

Most studies on the grammaticalization and subjectification of modals face limitations, however: they typically focus on developments in individual modals in a language; and they are often based on partial, sometimes even exclusively synchronic, data. Comprehensive empirical studies, systematically using historical corpus data, of the grammaticalization and (inter)subjectification of (a significant subpart of) a language’s system of modal auxiliaries, hardly

exist (Diewald 1999 is a rare, if only partial, exception).<sup>1</sup> Yet, sufficiently large sets of corpus data from the relevant historical periods seem indispensable to reliably identify diachronic developments and to raise statements about these processes beyond the level of speculation. Moreover, looking beyond individual forms to developments in *systems* of forms can be expected to offer interesting insights into the nature and properties of these processes and their interrelations.

This article, then, presents a systematic corpus-based analysis of the diachronic evolution of the three most “prototypical” Dutch modal auxiliaries, i.e. *kunnen* ‘can’, *mogen* ‘may’, and *moeten* ‘must’.<sup>2</sup> We focus on the semantic developments in these forms and on the question what new light our analyses throw on current views regarding the processes of (inter)subjectification.<sup>3</sup> The article is organized as follows. Section 2 presents our data. Section 3 offers an overview of the meanings figuring in the analyses. In Section 4, we briefly discuss how the notions of subjectification and intersubjectification are interpreted in this paper. Section 5 presents our findings regarding the diachronic evolution in the three modals. We formulate some conclusions in Section 6.

## 2. Method and data

To investigate the semantic evolution of the three Dutch modals, we compare their semantic profile in four stages in the language’s history, i.e. Old Dutch (OD, before 1150), Early Middle Dutch (EMD, 1200–1300), Early New Dutch (END, 1550–1650), and Present Day Dutch (PDD, after 1950). In principle, we analyze 200 instances per modal per period. However, our OD data include all instances found in the few remaining texts – they never amount to 200. For PDD, we use two sets of 200 instances, since we have access to written as well as spoken data: one, as for the earlier periods, exclusively written (PDDW), one exclusively spoken (PDDS). Given the different nature of spoken and written

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<sup>1</sup> Diewald (1999) is predominantly synchronic. The empirical diachronic part does not (and was not intended to; see Diewald 1999, 7–10) offer a comprehensive analysis of the grammatical and semantic evolution of the German modals in all their uses.

<sup>2</sup> Less prototypical Dutch modals are *zullen* ‘shall’, which is also used as the future auxiliary, *willen* ‘want’, which predominantly expresses volition, and *hoeven* ‘need’, a negative polar form. Ultimately, a fully comprehensive analysis of the patterns of evolution in the system of the Dutch modals will have to include these forms as well. There are actually no earlier systematic empirical diachronic investigations of the Dutch modals. Duinhoven (1997) does offer a sketch of their semantic evolution but his analysis is purely “conceptual”.

<sup>3</sup> See Nuyts (2013) for an analysis of dimensions of grammaticalization in the three forms. Space prevents a detailed presentation of our analysis of their semantic developments. For more details on each of the modals separately, see Van Ostaeyen and Nuyts (2004) and Nuyts (2007) for *kunnen* (but these studies do not cover Old Dutch and spoken Present Day Dutch), Byloo and Nuyts (2011) for *mogen* and Byloo and Nuyts (in preparation) for *moeten*.

language, we will keep these two sets separate in the analyses.<sup>4</sup>

As there is no ready-made systematic historical corpus of Dutch, we self-compiled our corpus from different (for the sake of manageability) electronically available sources. For OD, we used the only two remaining substantial text fragments (*Wachtendonckse Psalmen* from between 900 and 950 and *Leidse Willeram* from between 1100 and 1150). For EMD, we made use of the *Corpus Gysseling*, which covers nearly all known texts before 1300 (see CD-ROM *Middelnederlands* 1998). For END, we used the online *Digitale Bibliotheek voor de Nederlandse Letteren* (see [www.dbnl.org](http://www.dbnl.org)), which offers electronic copies of a wide range of historical documents of different kinds (not only literary ones, pace the name of the database). Since existing written PDD corpora are biased for text genre and/or regional distribution, we used a combination of sources, including the INL-corpora (see [www.inl.nl/nl/corpora](http://www.inl.nl/nl/corpora)), the CONDIV corpus (see Grondelaers et al. 2000), and texts from carefully selected internet sites. For spoken PDD, finally, we used the representative and fully tagged *Corpus Gesproken Nederlands* (see *Nederlandse Taalunie* 2004).

We selected our samples from these sources randomly, within the confines of a few principles. We tried to maintain a balance between a concern for representativity (a reasonable spread within each period, in terms of geography as well as text types and authors) and a concern for comparability between the periods (for PDD, this obviously only applies to the written material; the spoken data are completely separate anyway). Reaching this goal was hampered, however, by the actual availability and accessibility of materials for the different periods. Our selection of data is thus inevitably the result of compromises. For example, we tried to minimize the use of rhymed/poetic materials (because of the biasing effects of rhyme and rhythm pressure), but given their dominant presence in the materials for the older stages, especially EMD, it was impossible to do away with them entirely. What is also problematic for EMD is the large proportion of administrative texts in the materials for that period. They are characterized by the abundant and repetitive use of highly formulaic and archaic phrases and by “special” language use. We could, however, not exclude them from our EMD sample if we wanted to have a reasonable amount of “expository prose” in our data, to maintain a reasonable regional spread and a sufficiently wide range of writers, and to avoid heavy reliance on rhymed materials. It is therefore important to keep in mind the inevitable biases in the composition of our materials when interpreting our findings.

To achieve some degree of interrater reliability, each of the 2479

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<sup>4</sup> 200 instances per form per time slot may seem little but it strikes a balance between what is practically manageable (even now, our total sample includes 2479 instances) and what is needed in view of the goal of getting a first global overview of the meaning evolutions in the system of modal forms.

instances in our sample was analyzed independently by between two and four researchers familiar with the relevant semantic categories. Disagreements were solved through discussion. All instances were analyzed within their wider discourse context, so as to ensure a correct interpretation. Ambiguous cases, which are very numerous in our data (see Section 5), were not forced into a specific semantic category but were coded for all their possible meanings. Not only would forcing them into specific categories have led to a serious distortion of the data, it would also have meant missing potentially relevant information since ambiguity between meanings may be a sign of ongoing processes of metonymic meaning change. The classification of an instance as ambiguous was actually never due to irresolvable disagreement among the analysts: it always meant that the analysts agreed on the ambiguous status of the instance.

As far as statistical testing is concerned, we assess the correlation between the modals' semantic evolution in terms of (inter)subjectification and their evolution through time by means of the Spearman Rank Coefficient of Correlation (SRC). This test renders a rho-value ( $\rho$ ) between 1, i.e. a perfect positive correlation, and  $-1$ , i.e. a perfect negative correlation. The closer the coefficient gets to zero, the weaker the correlation, with zero meaning no correlation at all. Along with the  $\rho$ -value, we also mention ( $\pm x$ ) its "confidence interval" (CI), which indicates the reliability of the correlation. If the interval covers zero, the result of the test is not significant. The interval is systematically set at 95% confidence.

### 3. The meaning categories

The modals of concern here – especially *mogen* 'may' and *moeten* 'must' – exhibit a very wide range of meanings and uses.<sup>5</sup> In this section, we define and illustrate the semantic categories figuring in our analyses (the abbreviations between brackets are used in the tables in Section 5).<sup>6</sup>

Like most modal auxiliaries across languages, our three Dutch modals originate from full verbs. But our data only feature full verb instances for *kunnen*, not for *mogen* and *moeten*. Full verbal *kunnen* originally meant 'to know, to have knowledge', and this use, with this meaning, is still – albeit marginally – present in substandard PDD (it is not attested in our PDD data,

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<sup>5</sup> These include several very minor meanings which we cannot go into here for reasons of space (see Byloo and Nuyts 2011, in preparation). For the purpose of this paper, we have categorized them with the more central categories, to which they are usually very closely related.

<sup>6</sup> For each meaning, we provide an example of each modal that features it. For the sake of brevity, we use simple constructed PDD examples where possible; when the meaning of a modal only occurs in older stages, we give a corpus example and indicate the language period. We do not provide word for word glosses, only free translations. The relevant form is boldfaced.

though). Sentence (1) is a case in point.

- (1) *Hij kan Engels.*  
'He knows English.'

The three modals of course prominently feature modal meanings. In the present article, we adopt the analysis of modality in Nuyts (2005) (see also Nuyts 2006, forthcoming for a comparison of alternative views). We distinguish three modal subcategories.

- (i) *Dynamic modality* indicates abilities/potentials or needs/necessities. There are three subtypes:
- (ia) *Participant-inherent dynamic modality* (DYN-INH): an ability or need inherent in the first argument participant to realize the state of affairs (SoA) in the clause, as in (2).
- (2) a. *Jan kan fietsen.*  
'John is able to ride a bike.'  
b. ... *dat ick niet lijdén mach Datje soo veel over-hoop haelt.* (END)  
'... that I cannot stand it that you mess up things so much.'  
c. *Ik moet naar toilet.*  
'I need to go to the bathroom.'
- (ib) *Participant-imposed dynamic modality* (DYN-IMP): a possibility or necessity for the first argument participant to realize the SoA, conditioned by the circumstances, as in (3).
- (3) a. *De poes kan buiten, de deur staat open.*  
'The cat can get out, the door is open.'  
b. *Ik heb vandaag iets moois mogen meemaken.*  
'Today something nice happened to me.'  
(lit.: 'I've been able to experience something nice today.')
- c. *Je moet door de keuken om in de tuin te geraken.*  
'You have to pass through the kitchen to get into the garden.'
- (ic) *Situational dynamic modality* (DYN-SIT): a potential or inevitability inherent in the SoA as a whole, rather than in any participant in it, as in (4).
- (4) a. *Het kan hier sneeuwen in de winter.*  
'It can snow here in winter.'

- b. *Hulp **mag** hier niet meer bateni.*  
‘This situation is hopeless.’  
[lit.: ‘Help cannot be of advantage here anymore.’]
  - c. *Die scheiding **moest** er wel van komen, met al dat geruzie.*  
‘The divorce was inevitable, after all their quarreling.’
- (ii) *Deontic modality* (DEO) indicates the degree of moral acceptability of the SoA mentioned in the clause, as in (5).<sup>7</sup>
- (5)
- a. *We **kunnen** hem toch niet zomaar in de steek laten.*  
‘We cannot [it is morally unacceptable to] let him down just like that.’
  - b. *We hebben dat aan onze kiezers beloofd, we **mogen** hen niet ontgoochelen.*  
‘We have made this promise to our voters, we shouldn’t disappoint them.’
  - c. *We **moeten** hem nu helpen, hij heeft ons ook nooit in de steek gelaten.*  
‘We must help him now, he has never let us down either.’

Against common practice in the literature, our concept of deontic modality does not include the notions of permission and obligation (see below).

- (iii) *Epistemic modality* (EPI) indicates the degree of likelihood of the SoA in the clause, as in (6).<sup>8</sup>
- (6)
- a. *Dat zou inderdaad wel eens het geval **kunnen** zijn.*  
‘That might be the case indeed.’
  - b. *Dese voorseyde redenen **moghen** ooc wel al te samen staen. (END)*  
‘The aforementioned causes may be applicable all together.’

A category which is usually not labeled ‘modal’ in the literature but which is closely related to the modal categories is the following:

- (iv) *Inferential evidentiality* (EVI) indicates that the hypothetical SoA is inferred from other, known or perceived, facts, as in (7).

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<sup>7</sup> To simplify the presentation, we include under DEO the few instances of *mogen* in our data that express “boulomaic modality” (see Byloo and Nuyts 2011, 16), which indicates the degree of “likability” of the SoA, as in *ik mag haar niet* ‘I don’t like her’. Boulomaic modality is semantically very close to deontic modality (see Nuyts 2005, 24).

<sup>8</sup> Example (6b) is actually ambiguous between an epistemic and a situational dynamic reading. There are no unambiguous epistemic instances of *mogen* in our data.

- (7) *Er wordt aan de deur geklopt, dat moet Jan zijn.*  
'Somebody is knocking at the door, that must be John.'

Next to these modal and related meanings, the three modals also exhibit a range of nonmodal meanings and uses.

- (v) The most prominent one is *directivity* (DIR). It marks a permission, an obligation, an interdiction, an advice, etc., to realize the SoA expressed in the clause, as in (8).
- (8) a. *Ik heb genoeg gehoord, je kan gaan!*  
'I've heard enough, you can go / leave!'  
b. *Je mag nu antwoorden.*  
'You may answer now.'  
c. *Je moet onmiddellijk naar huis komen.*  
'You must come home immediately.'

As mentioned before, we do not follow the traditional view that permission, obligation, etc. are "deontic modal" notions (see Nuyts, Byloo and Diepeveen 2010 for a detailed justification). They can be argued to be precisely the same categories as expressed by the imperative mood. As such, they are illocutionary/ speech act-related and, unlike "true" deontic modality as defined above, not modal. The analyses in this paper actually offer further support for this reanalysis (see Section 5.3).

- (vi) Two other nonmodal uses are *volition* (VOL), which marks a wish or desire that the SoA in the clause would become real, and *intention* (INT), which marks the goal to realize the SoA, as in (9) and (10) respectively.
- (9) a. *Je mag me niet verkeerd verstaan.*  
'You shouldn't [I don't want you to] misunderstand me.'  
b. *Mijn broer moet meegaan, anders voel ik me onzeker.*  
'My brother should [I want him to] join me, otherwise I'll feel insecure.'
- (10) *Deze pilaar moet het gebouw ondersteunen.*  
'This pillar is meant to support the building.'

Our analysis of these notions as nonmodal goes against tradition as well (they are often considered part of deontic modality). As argued in Nuyts (2008), directivity, volition, and intention are intimately related and in a way form a group: volition marks a pre-stage in the conception of an action plan to realize the SoA, intention codes the existence of such an

action plan, and directivity concerns the instigation or the (non)hindering of action plans to realize the SoA in/by others.

- (vii) There are two uses of the modals that essentially involve the coding of the discursive status of their clause: the *conditional* use, which marks a conditional protasis (COND), and the *concessive* use (CONC), as in (11) and (12) respectively.
- (11) a. *Mocht je een biertje willen, het staat in de ijskast.*  
'If you want a beer, there's one in the fridge.'  
b. *Moest er nog iets overblijven dan wil ik het wel.*  
'If something is left over I wouldn't mind getting it.'
- (12) *Dat mag zo zijn, maar het lost ons probleem niet op.*  
'That may be, but it doesn't solve our problem.'
- (viii) Finally, some of the modals are occasionally used in a special way in our data, usually as fossilized parts of idioms (see Section 5.2). These uses are subsumed under the label *other* in the tables in Section 5. For reasons of space, they are not discussed in the analyses.

#### 4. (Inter)subjectification

The semantic processes of subjectification and intersubjectification, as defined in Traugott (1989, 1995, 2010) and Traugott and Dasher (2002), have received quite some attention in recent years (see López-Couso 2010 for an overview).<sup>9</sup> Even though Traugott's concepts have changed over the years, the bottomline has remained constant. Subjectification is a process whereby a linguistic element gradually develops from a meaning pertaining to the description of the "objective world" – broadly defined – to a meaning concerning the speaker's "inner world", i.e. his/her evaluation of or attitude toward that "objective world". Intersubjectification is a process whereby a linguistic element evolves toward a meaning or use to do with the speaker's position vis-à-vis the addressee – in a broad sense. In Traugott's current thinking, intersubjectification always follows subjectification. Both processes are assumed to be unidirectional: in principle, forms do not de-(inter)subjectify.

As Traugott (2010, 56) herself admits, these notions so defined remain somewhat vague, relying heavily on intuition. Hence they are vulnerable to multiple interpretations. Therefore, we adopt a more specific interpretation (as

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<sup>9</sup> Another notion of subjectification is Langacker's (1990, 1999, 2006). Pace attempts in the literature to relate Traugott's and Langacker's notions, we assume here (along with Langacker 1999, 393–394; Traugott and Dasher 2002, 97–99; López-Couso 2010, 145; Nuyts 2012) that they are addressing substantially different phenomena. The present article focuses entirely on the semantic phenomena covered by Traugott's notion.

proposed earlier in Nuyts 2001a, 2007, 2012, 2013), which makes them more “objectively” reconstruable and testable. Central to the present definition are the concept of the “hierarchy of qualificational categories” and the distinction between conceptual and communicative dimensions of language use.

The hierarchy of qualificational, or time–aspect–modality, categories has been proposed in the functionalist literature to account for their relative extension of semantic scope. There are different versions (e.g. Foley and Van Valin 1984; Bybee 1985; Hengeveld 1989; Dik 1997; Van Valin and LaPolla 1997; Nuyts 2001a). The one used here is rendered in (13).<sup>10</sup>

- (13) > evidentiality
  - > epistemic modality
    - > deontic modality
      - > time
        - > quantitative aspect/dynamic modality
          - > phasal aspect
            - > state of affairs

Let us give just one brief illustration of what this hierarchy captures. Consider the relation between epistemic modality and time in (14).

- (14) John will **probably** return home **tomorrow**.

The epistemic judgment in *probably* concerns “John’s returning home tomorrow”, i.e. it has scope over both the SoA and its temporal situation. The temporal marker *tomorrow*, however, only affects the SoA, not the epistemic assessment: the probability judgment is not situated tomorrow but applies at the moment of speaking. And so one can perfectly say *It is probably the case that John will return home tomorrow*, but *\*It is the case tomorrow that John will probably return home* is nonsensical. Accordingly, it must be concluded that epistemic modality has wider scope than time or, in other words, that the former has scope over the latter but not vice versa. Comparable observations can be made for the other qualificational categories, and the observed relations turn out to be stable both within and across languages (though the picture is sometimes blurred by complicating factors, see Nuyts 2001a). The hierarchy in (13) is

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<sup>10</sup> This version is incomplete. It features only the most important dimensions and the most relevant ones for our present purposes. It simplifies matters in a number of respects. But it is beyond the scope of the present article to go into details. Most categories have been defined in Section 3. As for the others: *time* involves the situation of the SoA in time, *quantitative aspect* the frequency of the SoA (semelfactive, habitual, iterative, generic, etc.) and *phasal aspect* the “state of deployment” of the SoA ((im)perfect, prospective, ingressive, progressive, etc.).

meant to capture these relations: the higher up in the scheme, the wider the scope of the categories; hence categories have scope over those below them but not over those above them.

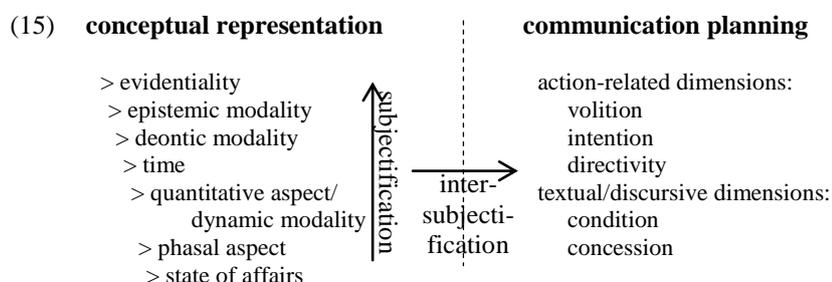
How is this hierarchy relevant for the notion of (inter)subjectification? Although it is based on observations about semantic scope and the correlated grammatical behavior of qualificational expressions (e.g. in terms of word order), the hierarchy may be assumed to reflect the relative positions of the different categories in our conceptualization of the world (see Nuyts 2001a, 2009). From this perspective, there appears to be a much more fundamental cognitive rationale behind it. Briefly (see Nuyts 2009 for an elaborate discussion), climbing up the hierarchy involves a gradual widening of the perspective on the SoA and, correspondingly, an increasing role for the “qualifying subject”: the higher up in the hierarchy, the more (s)he has to do in terms of interpreting the situation, and so the more room there is for creative involvement on his/her part in coming to the qualification of the SoA. It is in this sense that the hierarchy also reflects increasing subjectivity. Traugott’s notion of subjectification can thus be defined as a process whereby the meaning of a linguistic element, over time, climbs up in the hierarchy in (13).

The notion of intersubjectification can be reinterpreted against the background of the distinction between conceptual and communicative dimensions of language use. Elements to do with the regulation of the interaction between speaker and hearer are not a matter of our conceptual representation of world knowledge. Rather, they pertain to aspects of the planning of our acts of communication about conceptual knowledge with others (see Nuyts 2008). Hence, intersubjectification can be defined as the process whereby a linguistic element “leaves” the conceptual qualificational hierarchy in (13) to assume a function in the realm of interaction and discourse planning and management, for instance as an illocutionary marker, a politeness marker, a clause connector, etc.<sup>11</sup> This analysis of the processes of subjectification and intersubjectification is represented in the scheme in (15).<sup>12</sup>

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<sup>11</sup> In this paper, we use the notions of subjectivity and intersubjectivity as defined above. They should not be confused with the notion of (inter)subjectivity as used in other work by the second author (see Nuyts 2001a, 33ff; 2001b; 2012).

<sup>12</sup> The categories listed under “communication planning” are definitely not exhaustive. The list only features the categories relevant for our present purposes. See below.



Of the meanings and uses of the Dutch core modals listed in Section 3, the original meaning of *kunnen* ‘know’ pertains to the level of the state of affairs at the bottom of the conceptual hierarchy in (13)/(15), while the modal meanings plus evidentiality – traditionally prime examples of the subjectification hypothesis – feature among the qualificational dimensions in the hierarchy. As argued in Nuys (2005), dynamic modality is very different from deontic and epistemic modality and evidentiality: the latter are attitudinal, the former is not. As a fairly “objective” meaning, dynamic modality is positioned quite low in the hierarchy while deontic and epistemic modality and evidentiality, as “subjective” meanings, are very high in the hierarchy. The three subtypes of dynamic modality are not mentioned separately in (13)/(15), the reason being that they all show the same scope relationship to the categories above and below them. Sentence (4c), for instance, demonstrates that even situational inevitability is affected by a time marker as it is situated in the past by the past tense. Hence, the subtypes occupy basically the same position in the hierarchy. But this does not mean that they do not differ in scope, mutually. We assume that the order of their presentation in Section 3 reflects an increase in scope, which correlates with the increasing role of contextual and situational elements in the different subtypes (note also that situational dynamic *potentially* affects participant-inherent *can*, but not vice versa, in *Potentially, everybody can learn a foreign language*).<sup>13</sup>

All remaining meanings or uses mentioned in Section 3 should be considered nonqualificational and thus do not figure in the qualificational hierarchy in (13). As mentioned, the notions of volition, intention and directivity all have to do with illocutionary or other “action related” dimensions: they concern the planning of actions, not the conceptual qualification of an SoA (see Nuys 2008). The conditional and concessive uses involve the marking of the discursive status of the clause in which they occur. As such, they are all

<sup>13</sup> There is one other qualificational notion that is marginally present in our data: a few instances of *mogen* in EMD could possibly be interpreted as referring to future time, though this interpretation is never clear-cut. Given the highly tentative nature of this reading, we disregard it here.

intersubjective in the sense of (15). It is not immediately obvious, however, whether, or how, the different intersubjective categories can be “ordered” in terms of a developmental path comparable to the path of increasing subjectification sketched above – which is why (15) does not indicate nor wishes to imply an order among the “communicative” categories. In other words, it is not clear whether there are also degrees of intersubjectivity in (our interpretation of) Traugott’s concept. There is a certain partial, “logical” order between volition, intention, and at least some types of directivity: wanting something usually precedes intending to do something about it, which may then result in ordering someone else to do it (see Nuyts 2008). But this chain is already less obvious for directive categories such as permission and advice. A logical ordering between these “action related” categories and the “textual” categories of conditional and concessive is even harder to imagine.

It is important to note that our reconception of volition, intention, and directivity as not being subsumed by deontic modality (see Section 3) or, more generally, by the qualificational meanings, but as being intersubjective dimensions, has considerable implications for our analysis of the processes of subjectification and intersubjectification in the Dutch modals. In a traditional analysis, which subsumes these uses under the deontic ones (directivity basically always, volition and intention quite often), the development of volitional, intentional, or directive uses would be considered to involve subjectification. In the present analysis, they are considered to involve intersubjectification.

## 5. Results

### 5.1 Overview

Tables 1 to 3 show the frequency of the different meaning categories of, respectively, *kunnen*, *mogen*, and *moeten* in the different periods, with separate columns for PDDW and PDDS.<sup>14</sup> The categories are ordered in terms of the “(inter)subjectification logic” discussed in Section 4: first, the original main verbal use (in *kunnen*); then, the qualificational meanings in order of increasing subjectivity; finally, the arbitrarily ordered intersubjective categories, with first the illocution-related categories in the tentative “logical” order suggested in section 4, and then the textual categories in random order. All frequencies of semantic categories are expressed in terms of their relative share (in percentages, rounded) in the total number of instances of the modal in the relevant period, as indicated in the top row. In each period, the middle column indicates the

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<sup>14</sup> We should mention that our data show a change in semantic strength in *moeten*. From END onward, it is exclusively a strong modal expressing necessity, inevitability, obligation, etc. But in all OD instances and in 7% of the EMD instances, notably in the DYN (all types) and DIR ones, it expresses the weaker values of ability/possibility and permission. We disregard this change here because it is not immediately relevant for the discussion of (inter)subjectification.

frequency of the meanings in unambiguous instances. The left and right columns indicate the frequency of the meanings in ambiguous instances: the left column (labeled “most (IS)”) indicates how often it figures as the most (inter)subjective among the alternative readings, the right column (labeled “least (IS)”) shows its frequency as the least (inter)subjective alternative.<sup>15</sup> In ambiguous instances with three or four alternative readings, the meanings “in the middle” have been counted as both most and least (inter)subjective. The “totals” row shows the total shares of unambiguous and, separated by a slash, of ambiguous instances in the period at stake.<sup>16</sup>

The presentation of the ambiguous instances in the tables is motivated by the (inter)subjectification hypothesis and by the assumption that ambiguity patterns are a potential signal of ongoing (inter)subjectification (see Section 5.3). The left – “most (IS)” – column indicates how often, in a specific period, the meaning “combines” with less (inter)subjective readings, i.e. meanings listed higher up in the table. Such cases of ambiguity may be instances in which the meaning emerges as a conversational implicature from the less (inter)subjective meanings. The right – “least (IS)” – column shows how often, in a particular period, the meaning combines with more (inter)subjective readings, i.e. meanings listed further down in the table. Possibly, such cases of ambiguity are instances in which the meaning serves as the basis for deriving more (inter)subjective meanings through conversational implicature. Thus, a relatively high frequency in the left – “most (IS)” – column (as compared to the “unambiguous” and “least (IS)” columns) suggests that the meaning at stake is still unstable. It is not (fully) “semanticized” yet and still (predominantly) emerges as a conversational implicature from other meanings. By contrast, a relatively high frequency in the middle and right columns (i.e. the “unambiguous” and “least (IS)” instances) suggests that we are dealing with a stable, fully semanticized meaning.

Figures 1 to 3 are diagrammatic representations of the data in Tables 1 to 3. The graphs represent the meaning evolutions of, respectively, *kunnen*, *mogen*, and *moeten*. The meanings are ordered (on the vertical axis) from bottom to top in terms of increasing (inter)subjectivity; the intersubjective categories have been

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<sup>15</sup> In principle, the sum total of the left and the right column is identical, but sometimes there are small differences due to the fact that the frequencies have been rounded.

<sup>16</sup> Sometimes the sum of the frequencies in the left or in the right column is more than the total of ambiguous instances mentioned in the bottom row. This is due to the fact (see above) that meanings “in the middle” in triple and quadruple ambiguous instances have been counted both as least and most (IS), but such instances are only counted once in the totals row. In the ambiguous as well as the unambiguous counts, there may also be small discrepancies between the sum of the individual meanings and the figure in the totals row, due to rounding effects. And for the same reason, the sum of the total number of unambiguous and ambiguous instances in a time slot is sometimes more than 100%.

taken together, given the problems in ordering them. Moreover, in these graphs the ambiguous instances have been integrated by classifying them according to the most (inter)subjective (in terms of our (inter)subjectification logic) among their alternative readings (we call this a “progressive” count).<sup>17</sup>

In the tables as well as in the figures, PDDW and PDDS are presented separately (see Section 2), which inevitably results in them appearing as two successive stages (in the statistical analysis too, it was inevitable to treat them as such). This should obviously be handled with care. It can be argued that spoken language is “more progressive” than written language; hence it may, tentatively, be taken to predict a further stage in the language’s evolution (see Nuyts 2013 for more elaborate argumentation to this effect). This assumption also underlies PDDS following PDDW in the tables and figures. Still, PDDW and PDDS are much more closely related than PDDW and END. Moreover, there are no doubt differences between written and spoken language which have nothing to do with the “progressive nature” of the latter. We will have to keep these reservations in mind in our interpretation of the PDD facts.

INSERT TABLES 1 TO 3

INSERT FIGURES 1 TO 3

<DO SO IN THIS ORDER: TABLE 1 – FIGURE 1; TABLE 2 – FIGURE 2; TABLE 3 – FIGURE 3>

## 5.2 Global patterns in the meaning evolution

Our data show that the three modals have quite a different “history”, and hardly behave as a real, homogeneous paradigm.

On the one hand, *kunnen* is a much “younger” modal than *mogen* and *moeten*. It is the only modal whose original main verbal use is still clearly present in the older stages, even with traces until END.<sup>18</sup> Until END, it exclusively features dynamic modal meanings, which are low on the subjectification scale. Its more subjective modal meanings, DEO and EPI, only start to emerge in END, and its only intersubjective meaning, DIR, does not emerge until PDD. Moreover, all of these more subjective and intersubjective meanings remain infrequent today and they predominantly appear in ambiguous instances as the “most (I)S” meaning, which suggests that they are still unstable as meanings of the modal and largely emerge as conversational implicatures

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<sup>17</sup> We could have given “conservative” graphs as well, which classify the ambiguous instances according to their least (inter)subjective reading (see Nuyts 2007; Byloo and Nuyts 2011, in preparation for such graphs). Some of the modals’ meanings only appear in the progressive graphs, which is why we give the latter here. But, as far as the overall tendencies are concerned, the conservative picture hardly differs from the progressive one. To the extent that there are relevant differences, we mention them in the discussion.

<sup>18</sup> For examples of this meaning and the other meanings mentioned below, see Section 3.

from “lower” (i.e. less (inter)subjective) meanings.

By contrast, *mogen* and *moeten*, from OD and EMD onwards, feature a range of meanings from more objective via more subjective to intersubjective ones.<sup>19</sup> Possibly, *moeten* has acquired only one extra meaning, i.e. EVI, which emerges in END and remains marginal until today. But given its very low frequency, it cannot be excluded that it already existed before END and just happens to be missing in our older data. *Mogen* has even lost some of its EMD meanings. It lost its most “objective” meaning, DYN-INH, which is not surprising in an (inter)subjectification logic. But, less obviously, also its most subjective meaning, EPI, which was marginally present in EMD and END, has disappeared in PDD. What is particularly remarkable is the fairly wide range of intersubjective uses, which – as a set, and DIR in particular – are very prominent from OD/EMD onward in *mogen* as well as *moeten*. Moreover, at least in *mogen*, most of the more subjective and intersubjective meanings and uses that have survived are currently stable ones. This is clear from the fact that, for some meanings since END and for others since PDD, they occur most frequently in unambiguous instances and in ambiguous instances as the “least (I)S” meaning (i.e., as the source for more (inter)subjective meanings through conversational implicature), and they occur relatively infrequently in ambiguous instances as the “most (I)S” meaning (the only exception is VOL). (See below on the quite different ambiguity pattern in *moeten*.)

In line with our observations about the “age” of the modals, *kunnen* has developed hardly any “idiomatic” uses so far – i.e. it shows no signs of “fossilization” – while our diachronic data for *mogen* and *moeten* show an increasing number of instances occurring in fixed expressions or phrases. Examples are: *Ik moet zeggen/toegeven/etc. dat ...* ‘I should say/admit/etc. that ...’, or *Joost mag het weten* ‘Who knows’ (lit. ‘Joost may know it’), or *Ik mag er niet aan denken* ‘I don’t want to think about it’ (lit. ‘I may not think about it’). (Some of these idiomatic uses are included in the category ‘other’ in Tables 2 and 3 but most of them are included in the various meaning categories because their meaning is still recognizable, as in (3b) and (4b)).

On the other hand, *kunnen* and *mogen* differ quite fundamentally from *moeten* in their developmental pattern. To see this, we first have to address the observation that in EMD, *moeten* and *mogen*, but not *kunnen*, show a clear “bend” in their evolution (see Figures 1 to 3). In this period, the two modals take up a relatively low share of dynamic uses and a relatively high share of intersubjective uses and of DIR in particular, as compared to OD and END. Upon closer inspection, however, this bend appears to be largely due to the composition of our EMD data. Unlike in the other periods, about half of the EMD material consists of administrative texts (see Section 2). These

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<sup>19</sup> The situation in OD has to be handled with care, of course, given the (very) small number of instances, especially of *moeten*, from only two texts.

predominantly involve “directive” text types such as contracts, rules and decrees, and deeds, which are likely to attract more directive expressions than “average” language use. And indeed, they contain a disproportionately high number of directive uses of the modals, as compared to the nonadministrative EMD material. This skews the evolutionary picture in the tables and graphs for *moeten* and *mogen*, which both display a directive use in EMD, but not for *kunnen*, which does not yet have a directive use in this period. Tables 4 and 5 present the EMD frequency data for *mogen* and *moeten* in the nonadministrative material, while Figures 4 and 5 present the modified evolutionary picture, again with a progressive count (we do not offer a new table and figure for *kunnen* since they hardly differ from the EMD data in Table 1 and Figure 1). In these revised figures, the “bend” is entirely gone in *mogen* and strongly reduced in *moeten* (with a conservative count, it is almost entirely gone in *moeten* as well, actually).

INSERT TABLES 4 AND 5

INSERT FIGURES 4 AND 5

<DO SO IN THIS ORDER: TABLE 4 – FIGURE 4; TABLE 5 – FIGURE 5>

Especially when we take these adjusted counts into consideration, both *kunnen* and *mogen* turn out to match the traditional assumptions about (inter)subjectification, even in our current, more rigid interpretation of these processes as presented in Section 4. As the above discussion already suggests, *kunnen* in particular appears as a prototypical example of (inter)subjectification (see Nuyts 2007 for a more elaborate discussion). It shows a very gradual developmental pattern, involving a decreasing importance of the least subjective meanings (‘know’, which even disappears in PDD, and DYN-INH) and an increasing importance (DYN-IMP) and a further acquisition and growth (DYN-SIT, DEO and EPI) of successively more subjective meanings (though DEO and EPI appear more or less simultaneously) and ultimately also of an intersubjective meaning (DIR). The ambiguity data are largely in accordance with this evolution (assuming that stable meanings are signaled by a relatively frequent occurrence in unambiguous instances and as the ‘least (I)S’ meaning in ambiguous instances, and that instable meanings are signaled by a relatively frequent occurrence as the ‘most (I)S’ meaning in ambiguous instances; see Section 5.1). In PDD, the most objective meanings are stable but the most subjective and intersubjective ones are not. Individual meanings show a gradual diachronic evolution toward greater stability (this evolution is particularly clear in DYN-IMP and DYN-SIT). And within each period, there is a very gradual evolution from more stable to more unstable meanings which nicely follows the cline from relatively more objective to relatively more (inter)subjective. This interpretation of the frequency data is confirmed by the SRC:  $\rho = .42 (\pm .06)$  for the progressive count in Figure 1 ( $\rho = .41 (\pm .06)$  for the conservative count). This

indicates a relatively strong positive correlation between degree of (inter)subjectification and time.<sup>20</sup>

Except for the fact that its development occurs much earlier, the situation is fairly comparable for *mogen*. The three dynamic meanings systematically lose ground over time – DYN-INH even disappears – and the group of more subjective and intersubjective meanings, which have all been present at least since EMD, gains ground. The pattern of *mogen* is not as “flawless” as that of *kunnen*, though. It is mainly intersubjective DIR which gains ground, and massively so. Relatively subjective DEO evolves more slowly, highly subjective EPI even disappears, and the other intersubjective uses develop only marginally. The ambiguity data are again in line with this pattern. They suggest that most meanings are currently stable (VOL is an exception). But there is clearly an evolution in terms of stability: in OD/EMD, the dynamic meanings were already stable, but not yet the more subjective and the intersubjective ones (probably not even DIR, see Table 4).<sup>21</sup> These (inter)subjective meanings have stabilized gradually – the currently most frequent ones (DEO and DIR) in PDD, the others in END. The SRC, too, shows a clear positive correlation between degree of (inter)subjectification and time. This is even the case if we include the administrative texts in EMD:  $\rho = .39 (\pm .06)$  for the progressive count (see Figure 2;  $\rho = .47 (\pm .05)$  for the conservative count). The correlation is even stronger if the administrative EMD instances are excluded:  $\rho = .47 (\pm .06)$  for the progressive count ( $\rho = .59 (\pm .05)$  for the conservative count).<sup>22</sup>

*Moeten*, by contrast, does not show a clear developmental pattern at all. Its share of more objective dynamic modal categories does not diminish over time. Among the more subjective meanings, DEO gains ground, but not spectacularly so, and EVI (possibly, see above) only emerges in END, and does not gain ground toward PDD. The intersubjective categories, as a whole, even lose some ground: INT, a minor use, increases marginally; DIR, an important use, and COND, a very marginal use, remain stable (this is true for DIR if we exclude the EMD administrative instances). But VOL, a very prominent use in EMD (even more so in the nonadministrative than in the administrative texts),

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<sup>20</sup> The figures hardly differ if we omit the EMD administrative texts:  $\rho = .42 (\pm .06)$  for the progressive count and  $\rho = .40 (\pm .06)$  for the conservative count.

<sup>21</sup> The fact that *mogen* features a much larger share of unambiguous DIR instances in administrative texts (see Table 2) is due to the nature of the context: the ‘directive’ nature of many texts in this category enforces the dir reading. Hence, it cannot be considered a sign of the inherent stability of the meaning category.

<sup>22</sup> As mentioned before, our reanalysis of VOL, INT and DIR as intersubjective categories rather than as deontic ones means that the evolution in *mogen* in our analysis is to a considerable extent a matter of intersubjectification, while traditional analyses would predominantly consider it a matter of subjectification. Even from the latter perspective, however, the evolution in *mogen* (as well as in *kunnen*) would appear to fit the (inter)subjectification logic.

decreases substantially toward PDD. This lack of a clear developmental pattern is confirmed by the SRC: the correlation between time and degree of (inter)subjectivity is zero to (very) weakly negative. If we include the EMD administrative data,  $\rho = -.24 (\pm .06)$  for both the progressive and the conservative count. If we omit the EMD administrative data,  $\rho = -.09 (\pm .07)$  for the progressive count, but  $\rho = -.04 (\pm .07)$  for the conservative count, i.e. there is no statistical significance in the latter. In other words, if there is any change at all, *moeten* actually gets less (inter)subjective over time. This is not what we expect in light of a traditional view of the processes of (inter)subjectification.<sup>23</sup>

Interestingly, this lack of a clear evolutionary pattern in *moeten* does not correlate with high stability in the meanings – on the contrary, at least if we can rely again on the ambiguity data. In PDD, the overall number of ambiguous instances of *moeten* is nearly identical to that of *kunnen*, in which the emerging more subjective and intersubjective meanings and uses are still very unstable, and it is much higher than that of *mogen*, which predominantly displays stable meanings in PDD. In the earlier stages, the overall ambiguity rate in *moeten* is comparable to that in *mogen* (in both the administrative and nonadministrative data), which then showed instability in most subjective and intersubjective meanings and certainly in the most frequent ones, and it is much higher than that in *kunnen*, which in the earlier stages predominantly featured fairly stable dynamic modal meanings. There is also no clear evolutionary trend in the ambiguity patterns for the individual meanings. Apparently, *moeten* is in continuous semantic flux, yet without it involving a clear “teleological” pattern of the kind predicted by the (inter)subjectification hypothesis and present in *kunnen* and *mogen*.

### 5.3 Specific meaning evolutions

Let us have a closer look at the relative frequency of specific meaning combinations in the ambiguous instances in our data. As indicated in Sections 2 and 5.1, this may offer information about the diachronic relations between meanings. Obviously, not all instances of ambiguity are necessarily significant in this regard;<sup>24</sup> however, if a specific combination occurs frequently, it is quite likely not accidental and may signal a developmental relationship between the participating meanings.

Tables 6 to 8 show the share (in percentages, rounded off) of combinations of any two meanings in ambiguous instances of respectively *kunnen*, *mogen*, and *moeten* relative to the total number of instances of each modal in the relevant period, as indicated in the top row. To simplify the

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<sup>23</sup> Again, this observation would, fundamentally, not change in the traditional concept of VOL, INT and DIR as deontic or, at least, qualificational notions.

<sup>24</sup> Ambiguity may be purely accidental (e.g. due to an unclear context) and thus not involve a “bridging context” for the change from one meaning to another.

frequency data somewhat,<sup>25</sup> ambiguous instances with three or four alternative meanings have been “split up” and included in each of the “binary” meaning combinations that they comprise (hence, the frequencies listed here do not always correspond to those in the “most/least (I)S” columns in Tables 1 to 3). In a few cases, this simplification distorts the actual picture somewhat, since triple or quadruple ambiguity is clearly not the same as double ambiguity. We will mention such cases when relevant in the discussion below. Tables 6 to 8 should obviously be interpreted in light of the information about the temporal order of appearance of the meanings in the ambiguous combinations, to the extent that it can be inferred from Tables 1 to 3. As was the case for the latter tables, we should be very careful with the data for OD, given the small number of instances from only two short texts for that period.

#### INSERT TABLES 6 TO 8

The data tentatively suggest the patterns of evolution in the schemes or “semantic maps” (see van der Auwera and Plungian 1998) in (16)–(18). The meanings in square brackets in (16) and (17) no longer occur in our PDD data. These schemes represent the potential “logical” order in the meaning evolution, but, specifically for parallel evolutions (i.e. the “vertical dimension” in the schemes), not necessarily the temporal order. As discussed in Section 5.2, Table 1 provides clear evidence that, in *kunnen*, the temporal order perfectly corresponds to, first, a gradual climb up the qualificational hierarchy in (13) (representing increasing subjectivity; DEO and EPI appear more or less simultaneously though) and, then, the development of an intersubjective use. For *mogen*, Table 2 suggests a global temporal order from more objective to more (inter)subjective meanings. But our data do not allow us to say anything specific about the temporal order of emergence of the different (inter)subjective meanings, since they all occur already in OD/EMD. For *moeten*, Table 3 allows no conclusions regarding the temporal order of emergence of the different meanings at all. For the sake of clarity, the schemes in (16) to (18) simplify the facts in the following way. Meanings typically combine with several other meanings in ambiguity patterns. Sometimes, a few of these combinations are quite prominent but, most of the time, one of them dominates more or less clearly. If so, the schemes only render the most dominant combination.

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<sup>25</sup> See Nuyts (2007, 133), Byloo and Nuyts (2011, 47), and Byloo and Nuyts (in preparation) for more comprehensive discussions of the specific meaning combinations in ambiguous instances.



from the latter to the former (see Table 1). In *mogen* and *moeten*, all these meanings already exist in OD/EMD. But at least, we have no counterevidence to the order predicted by the subjectification hypothesis.

As for the origins of EPI/EVI, contrary to what is traditionally assumed (for instance by Traugott 2006; but see van der Auwera and Plungian 1998), we have no indication whatsoever in our data of any direct developmental relationship with DEO. There is not a single case of ambiguity between DEO and EPI/EVI (at least not in our definition of DEO, which excludes DIR). On the contrary, the admittedly very limited data for *kunnen* and *mogen* suggest that the most likely source for EPI is DYN-SIT and the limited data for *moeten* at least do not contradict that EVI also originates in DYN-SIT. And while EVI in *moeten* and EPI in *mogen* do seem to have emerged later than DEO, DEO and EPI in *kunnen* have emerged more or less simultaneously. Example (20) offers a typical bridging context, again featuring *kunnen*: it is impossible to determine whether the live reporter refers to a potential in the situation (DYN-SIT) or expresses his estimate of the likelihood of the SoA (EPI).

- (20) *Inmiddels zou 't ook wel eens zilver kunnen gaan worden als 't tempo nog iets omhoog kan.* (PDDS)  
'In the mean time it could/might become a silver medal if they can increase the tempo.'

VOL shows ties with both DYN-IMP and DEO, but the former is clearly stronger in *mogen* and the latter in *moeten*. In (17) and (18), we have only indicated the strongest links. Sentence (21), from a play, illustrates the co-presence of the readings VOL and DYN-IMP in *mogen* (the translation makes the two possible readings explicit). Sentence (22) illustrates the co-presence of VOL and DEO in *moeten*: it can mean either that Hermannus considers it morally necessary or that he wants it to happen.

- (21) *Maer me dunckt ick heb de klock daer al thien ghetelt. 'k Mach de vent nu voort wachten, en hooren wat raet hy me gheeft.* (END)  
'But I think I counted ten beats on the clock. I can/want to go to the guy now and hear what advice he gives me.'
- (22) *Hermannus hadde ooc ghepreect, de roomsche keercke (die hij hiet de hoere van Babilon) moeste nu in Nederlandt vallen.* (END)  
'Hermannus had also preached that the Roman Church (which he called the whore of Babylon) in the Netherlands should fall now.'

Our data do not allow us to determine the temporal order of emergence of the meanings. So the direction of the arrows in the schemes is tentative, conforming

to (our interpretation of) the (inter)subjectification hypothesis.

In general, DIR seems quite strongly connected with DYN-IMP, more strongly than with DEO, although it is traditionally considered to be part of the latter category (see Section 3). A typical bridging case, featuring *mogen*, is given in (23): the sentence may express either that the circumstances make it possible for the speaker to ask God for support or that she has permission from God to ask him for support.

- (12) *En wetstu nit dat ic mach uerbidden den uader dat hi mi sende meer dan tuelef legien uan inglen?* (EMD)  
'Don't you know that I can/may ask the Lord [God] to send me more than twelve legions of angels?'

For *kunnen*, one might argue that the frequency of DEO/DIR ambiguity is not much lower than that of DYN-IMP/DIR ambiguity. Yet, ambiguity only between DEO and DIR actually only covers 1% of the (PDDS) instances. All other instances feature triple ambiguity: 4% DYN-IMP/DEO/DIR (in PDDS and PDDW) and 1% DYN-SIT/DEO/DIR (in PDDW). This fact, together with the relatively strong presence of "pure" DYN-IMP/DIR ambiguity – as compared to the low general frequency of DIR – strongly suggests that DYN-IMP is the main source for DIR. In *mogen* as well, the frequency of DEO/DIR does not seem to be much lower than that of DYN-IMP/DIR. Yet, DEO/DIR cases are predominantly found in PDD and especially PDDS; in this period, DIR is not only extremely frequent in general and predominantly stable but DEO has also become more important than DYN-IMP. Hence, DEO/DIR combinations are much more likely to occur. In earlier stages, however, when DIR and DEO were not stable yet, the frequency of DYN-IMP/DIR is much higher than that of DEO/DIR, and the former combinations take up a much higher share of the DIR cases than in PDD. Note also that the ambiguity data in Tables 2 and 4 tentatively suggest that DIR and DEO emerged more or less simultaneously in *mogen*, which also makes a causal relationship between the two meanings less likely. Therefore, we are inclined to assume that, in *mogen* too, DYN-IMP is the predominant source for DIR. In *moeten*, finally, DIR shows strong ties not only with DYN-IMP and DEO but also with DYN-SIT. Yet, DYN-IMP/DIR is the dominant combination once more.<sup>26</sup> Concerning the temporal order, we again have empirical evidence only for the path from DYN-IMP to DIR in *kunnen*. But we have no counterevidence to this order, which is the one expected in the (inter)subjectification hypothesis, in the two other modals.

For INT and COND in *moeten* and for COND and CONC in *mogen*, finally,

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<sup>26</sup> All of this is, of course, extra evidence in favor of the view that DEO and DIR are separate categories (see Sections 3 and 4).

our ambiguity data are too limited to allow any real conclusions. In *moeten*, the fact that COND appears to predate EVI suggests a dynamic meaning, and most likely DYN-IMP, as a source (incidentally, this meaning is also the only one with which COND combines in ambiguous instances). A similar scenario is not implausible for CONC and COND in *mogen*: again, the very limited ambiguity data do not contradict this; and it also makes sense purely semantically, in terms of the logical connection between the meanings. For INT in *moeten*, however, it is really difficult to make any kind of claim regarding its origins on the basis of our data. So we have not included it in the scheme in (18).

In general, although our analysis is often based on the absence of counterevidence or on very limited empirical observations and tentative conclusions, the semantic evolution in the three modals seems to correspond to our present interpretation of the traditional (inter)subjectification hypothesis. This is apparently even true for *moeten* – even if, at macro level, this modal does not show a clear evolutionary pattern (cf. Section 5.2). What strikes the eye, however, is the fact that meaning developments are often not linear. For one, though the schemes in (16) to (18) nearly always show only one source for the various meanings, the ambiguity facts suggest that, often, additional meanings may play a secondary role in the emergence of new meanings. Furthermore, many evolutions, especially those resulting in the most subjective and the intersubjective meanings, seem to show a parallel development. There is one specific meaning, i.e. DYN-IMP, that serves as the common basis for these meanings. This even seems to apply to DEO and EPI/EVI, contrary to what has often been suggested in the literature.

## 6. Conclusions

Our diachronic analysis of the three Dutch core modals has produced some interesting results and has provided some food for further thought, given our current understanding of the processes of subjectification and intersubjectification.

First of all, the semantic evolution of *kunnen* and *mogen* accords with our specific interpretation of the (inter)subjectification logic. *Kunnen* in particular is a prototypical example of these processes. It is a (relatively) young modal which, within the time band covered by our data, clearly shows an evolution from more objective to gradually more subjective meanings, and ultimately also to an intersubjective meaning. *Mogen* is a much older modal. Most of its evolutions toward subjective and intersubjective meanings started before our oldest available data. Still, its overall evolution since OD/EMD appears compatible with the (inter)subjectification logic. It shows a gradual reduction and loss of its most objective meanings and an increasing “specialization” in the meanings or uses “highest” in the (inter)subjectification hierarchy, i.e. the intersubjective ones and particularly the directive one. It would be interesting to see whether this is a

common evolutionary pattern in older modals.

*Moeten*, however, does not match the (inter)subjectification logic at all. It is also an “old” modal in which the more subjective and the intersubjective meanings emerged before our earliest written records and we have no indications that the emergence and early evolution of its individual meanings would not fit the (inter)subjectification logic. But there does not appear to be any clear direction in its further evolution. Unlike *mogen*, for instance, it does not show any tendency toward “specialization” in one or a few highly (inter)subjective meanings. One might speculate that the modal is taking a pause in its (inter)subjectification process. Yet, the ambiguity data suggest that it is not “at rest” at all: its meanings appear to be in a constant flux. It is entirely unclear to us how one can explain these facts and what they imply for the (inter)subjectification hypothesis.

In general, the Dutch modals turn out not to behave in a uniform way: they show quite different diachronic profiles. This fact goes beyond traditional (inter)subjectification assumptions. And it goes against the widespread view that the modals are a clearly profiled and coherent set of forms. We are not aware of any earlier observations to this effect. Hence, assessing the import of this result will have to await further research on other languages and/or systems of forms.

Finally, as far as the individual meaning evolutions are concerned, we have not found anything incompatible with classical views of (inter)subjectification. But our data do add some possible nuances to “simple” views of these processes. Most notably, they suggest that semantic evolutions are often not linear. Even if they predominantly emerge from one other meaning, new meanings can actually have secondary sources. Furthermore, evolutions often appear to happen in parallel, with one specific meaning serving as the source for several others.

To conclude, we hope that this study has shown that a comprehensive empirical diachronic analysis of a “functional” system of forms (rather than a single form) can offer an interesting additional perspective on the processes of (inter)subjectification. Of course, more studies of this type are needed before we can start drawing more general conclusions regarding the “(inter)subjectification properties” of groups of forms.

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