Two Dutch *many*'s and the structure of pseudo-partitives*

E.G. Ruys, U.i.L.-OTS/UU

draft, June 2014

It is widely assumed, following Milsark (1974), that English *many* is ambiguous, its two instances differing both in their distribution and in their semantics. Russian has two overtly distinct instances of *many* (see Krasikova & Champollion 2011 and references cited there). In both cases, the syntactic difference appears to be that one variant is more adjectival, the other more determiner-like. Semantically the two variants give rise to a cardinal (weak) reading, and a proportional (strong) one.

This paper describes some of the syntactic distribution and of the semantics of two *many*'s in Dutch: *veel* and *vele*. As in English and Russian, one is more adjectival, the other less so. In other respects, however, their distribution crosscuts the English and Russian cases. *Veel* is a gradable adjective that combines with grammatical plurals and mass terms; *vele* behaves as a numeral and combines with plurals and measure nouns. The major empirical issue I will address is the distribution of *veel* and *vele* in pseudo-partitive constructions like *many liters (of) wine*. I will demonstrate that only the numeral *vele* can occur in this construction with the unmarked measure reading; adjectival *veel* gives rise to a marked reading in this construction. I will propose a semantics for pseudo-partitive constructions and semantic characterizations of *veel* and *vele* which explain these observations. I will ignore the less than straightforward cardinal/proportional distinction until the final section, which briefly compares the Dutch case with English and Russian. I will also disregard adverbial and nominal instances of *veel*, and concentrate on the pre-nominal variant.

1. Two Dutch *many*'s and prenominal inflection

Inflection on Dutch prenominal adjectives is determined by number, gender, and definiteness. Every slot in the paradigm receives an *-e* (schwa) ending, except for the singular neuter indefinite case, where the ending is -∅:

(1) a. $\text{een}_{\text{sg,Nt,indef}}$ mooi-∅ $\text{boek}_{\text{sg,Nt}}$
a nice book

b. $\text{het}_{\text{sg,Nt,def}}$ mooi-e $\text{boek}_{\text{sg,Nt}}$ / $\text{de}_{\text{sg,C,def}}$ mooi-e $\text{CD}_{\text{sg,C}}$ / $\text{een}_{\text{sg,C,indef}}$ mooi-e CD / $(\text{de}_{\text{pl,def}})_{\text{pl,indef}}$ mooi-e $\text{CDs}_{\text{pl,C}}$ / $\text{boeken}_{\text{pl,Nt}}$
(the) nice book(s) / (the/a) nice CD(s)

Booij (1992) describes these facts with lexical insertion rules that spell out [sg,Nt,indef] as -∅, with -e the elsewhere case. Schoorlemmer (2009) also has -e as the elsewhere case, and [sg,Nt] spelled out as -∅; the definite determiner blocks DP-internal agreement so also gives the -e. Menuzzi (1994) and Kester (1996) take the opposite approach: plural, common

* Thanks are due to Ora Matushansky and Joost Zwarts for helpful comments and suggestions.

gender, and definiteness each specify the presence of the -e, and -∅ appears when all three are absent.

Prenominal inflection is usually not optional, but *veel* ('many/much') is a well-known exception (the same pattern is found with *weinig*, 'few/little'):

(2) a. er zijn veel tegenvoorbeelden — $veel_{A}$
b. er zijn vel-e tegenvoorbeelden — $vele_{Nl}$
there are many counterexamples

Veel comes in two variants, an inflected form and an uninflected one. The uninflected form of (2a) occurs not only in the singular neuter indefinite environment, but also in the singular common indefinite and in the indefinite plural, where the -e is expected. In the singular neuter indefinite we expect the two variants to become homophonous, as the inflected variant would take a -∅ ending (however, I will argue below that the inflected form cannot appear in the singular). I will label the uninflected variant in (2a) as $veel_{A}$, and the inflected form of (2b) as $vele_{Nl}$ (for reasons explained below).

There are several additional distinguishing properties. Uninflected $veel_{A}$ cannot be preceded by a definite determiner or a possessive (I add an adjective to remind the reader of the expected inflection):

(3) a. de *veel / vele mooi-e boeken
the many nice books
b. Jans *veel / vele ernstig-e tekortkomingen
John's many serious vices

Kester (1996:107) suggests that *veel* in (2a) is a quantifier, whereas the inflected variant that occurs when it is preceded by a determiner has adjectival status (see also Broekhuis 2013:283). The assumption that $vele_{Nl}$ is an adjective explains why it can be preceded by a determiner, and why it must bear adjectival inflection. And the assumption that $veel_{A}$ is a quantifier will explain why it cannot be preceded by a determiner, although, as Kester admits, it does not explain why it does not inflect, since other quantifiers (*elk*(*e*) 'every', *ieder*(*e*) 'every', *enkel*(*e*) 'some') do. Kester also postulates a semantic distinction: $veel_{A}$ allows a collective reading, but $vele_{Nl}$ is always distributive. This will explain why only $veel_{A}$ can combine with mass nouns, as (4a) shows:[1]

[1] Kester (1996:108) also reports that $veel_{A}$ allows a collective reading in (i), but $vele_{Nl}$ does not; Broekhuis (2013:284) reports that the intuition is shared by "many speakers":

(i) deze tafel is zo extreem zwaar dat $veel_{A}$ / $vele_{Nl}$ mensen ‘em kunnen optillen
this table is so extremely heavy that many/many people can lift it

I do not share this intuition. I feel that the collective reading is marked for $vele_{Nl}$ but equally so for $veel_{A}$; I find both equally acceptable in (ii). I will leave this issue out of consideration below.

(4) a. veel$_{A}$ / *vele$_{Nl}$ lekker-e wijn$_{sg,C}$
much nice wine
b. veel lekker bier$_{sg,Nt}$
much nice beer

Since *vele*$_{Nl}$ cannot combine with a mass noun (hence cannot occur in the singular at all), singular neuter indefinite *veel* in (4b) must also be analyzed as *veel*$_{A}$, not as the ∅-inflected case of inflected *vele*$_{Nl}$.

The picture that emerges from the literature (also Haeseryn et al. 1997) is that uninflected *veel*$_{A}$ is a quantifier higher up in the DP, in complementary distribution with determiners and other quantifiers, and inflected *vele*$_{Nl}$ is a distributive adjective lower in the DP. In the next section I will argue that this description does not cover certain exceptions to the pattern in (4). I will argue that virtually the opposite theory is to be preferred: *veel*$_{A}$ is a gradable adjective; *vele*$_{Nl}$ is more akin to a numeral (hence the labels). Section 3 provides independent evidence for this classification. Section 4 presents an additional contrast: *veel*$_{A}$ does not combine with measure nouns, *vele*$_{Nl}$ does. This section discusses the syntax of Dutch pseudo-partitive constructions with measure nouns, and proposes a semantics for these constructions and for *veel*$_{A}$ and *vele*$_{Nl}$ that explains their distribution. Section 5 briefly returns to Russian and English.

2. Inflected *veel* with mass nouns

Whereas (4a) shows that inflected *vele*$_{Nl}$ is blocked in indefinites with mass nouns, we find the opposite pattern in definite DPs with mass nouns, where we do find an inflected form:

(5) a. overstelpt door het vele werk
overcome by the much work
b. vanwege het vele zand
due to the much sand
c. door de vele arbeid die er verricht is
because of the much labor that has been done
d. ondanks de vele paracetamol
despite the much acetaminophen

(6) a. het weinige zand dat dan er is
the little sand that there is
b. door de weinige tegenstand
due to the little resistance

(ii) in zijn dissertatie heeft Fred veel$_{A}$/vele$_{Nl}$ tegenvoorbeelden verzameld
in his dissertation Fred collected many/many counterexamples

These examples have at most a slightly marked flavor, while the inflected form in (4a) is completely excluded. These data cannot be explained if the description given in section 1 is correct. Then the variant that occurs in (5) can be neither *veel*$_{A}$, which supposedly does not inflect and does not cooccur with determiners, nor *vele*$_{Nl}$, which does not combine with mass nouns. There is no obvious way out: it is difficult to understand how the semantic incompatibility of *vele*$_{Nl}$ with mass nouns could be overcome by making the DP definite, or how the complementary distribution between *veel*$_{A}$ and the definite determiner could be abrogated in the context of a mass noun.

I propose a reversal of the relative positions of *veel*$_{A}$ and *vele*$_{Nl}$ in the DP. Inflected *vele*$_{Nl}$ is a vague numeral, on a par with *meerdere* 'several', *enkele* 'some', *ettelijke* 'many', *luttele* 'few', *verschillende* 'various'. Uninflected *veel*$_{A}$ is a gradable adjective. This will allow us to capture the data observed so far along the following lines.

To explain the distribution of *vele*$_{Nl}$, we can retain Kester's assumption that it does not combine with mass terms; I return to this in section 4. This blocks the inflected *vele*$_{Nl}$ in (4a). (7) shows that the other vague numerals in this class also do not combine with mass terms:

(7) a. meerdere mooi-e boeken$_{pl}$ / wijnen$_{pl}$ / *wijn$_{sg}$
several nice books / types of wine / wine

b. enkele mooi-e boeken$_{pl}$ / wijnen$_{pl}$ / *wijn$_{sg}$
some nice books/ types of wine / wine

c. een enkele mooi-e CD$_{C.sg}$ / wijn$_{C.sg}$
a single nice CD / wine
'a small number of nice CDs/types of wine'

d. een enkel mooi boek$_{Nt.sg}$ / bier$_{Nt.sg}$
a single nice book / beer
'a small number of nice books/brands of beer'

Even *een enkel*(*e*) in (7c)-(7d), which can appear with a grammatical singular (showing the -∅ ending with indefinite neuters in (7d)), nonetheless coerces mass terms to a non-mass reading (cf. English *many a wine*). We find the same, familiar, pattern with cardinal numerals, which can combine with mass nouns in the plural, and sometimes even in the singular, but always coerce a non-mass reading:

(8) a. drie mooi-e boeken$_{pl}$ / CDs$_{pl}$
three nice books/CDs

b. drie mooi-e wijnen$_{pl}$
three nice types of wine

c. drie wijn$_{sg}$ / bier$_{sg}$!
three serving portions of wine/beer, please

To explain the distribution of *veel*$_{A}$ I assume that it is not fully uninflected: it shows the -e ending but exclusively for the feature [+definite]. This explains why it appears to be in complementary distribution with the definite determiners in (3): *veel*$_{A}$ does appear in (3), but receives the -e ending and becomes indistinguishable from *vele*$_{Nl}$. It also explains why the inflected form can appear with mass terms, but only in the definite: both *veel* in (4a) and *vele* in (5) are *veel*$_{A}$.[2]

If *veel*$_{A}$ is an adjective, we must accept that not all adjectives show the full inflectional paradigm (but recall that the earlier assumption that *veel*$_{A}$ was a determiner or quantifier also did not explain why it does not inflect). This is not at all uncommon, however. Booij (1992) and Odijk (1992) discuss several classes of adjectives with an incomplete inflectional paradigm. Some adjectives never inflect, sometimes for phonological reasons. In other cases, the presence or absence of the -e ending reflects a semantic distinction. One often-discussed case (see also Stuurman 1989, Menuzzi 1994, Kester 1996), involves non-intersective adjectives modifying nouns denoting societal roles, as in (9):

(9) a. een groot keizer$_{C}$
a great emperor
b. een bekwaam arts$_{C}$
a competent physician

In this case, too, the -e ending reappears when the DP is definite (and also in the plural):

(10) a. de grot-e keizer$_{C}$
the great emperor
b. de bekwam-e arts$_{C}$
the competent physician

Independent evidence that the inflectional pattern I attribute to *veel*$_{A}$ is possible comes from the declinable cardinal *één* 'one'.

(11) a. één antwoord$_{Nt}$ / CD$_{C}$
one answer/CD
b. het én-e antwoord$_{Nt}$
the one answer
c. die én-e CD$_{C}$
that one CD

Like *veel*$_{A}$, *één* also has the -∅ ending in both the common and neuter singular indefinite (it does not occur in the plural), but -e appears in the definite (Booij 1992, Haeseryn et al. 1997).

[2] The prediction that the uninflected form can follow a determiner if it is indefinite cannot be tested: all indefinite determiners are ∅ except with singular count nouns, which do not combine with *veel*$_{A}$ or *vele*$_{Nl}$.

Menuzzi (1994) explains cases such as (9)/(10) by assuming that the adjective on the intended reading is merged higher than the functional head responsible for gender, but below Num and D, so that only the latter two can trigger agreement on the adjective. We could accommodate *veel*$_{\text{A}}$ by extending this analysis slightly so that *veel*$_{\text{A}}$ is generated higher than Num, but below D. Schoorlemmer (2009) does not discuss Dutch irregular adjectival inflection; the simplest extension seems to be that the vocabulary insertion rules for *veel*$_{\text{A}}$ spell out any specified value for gender or number as -∅, and the elsewhere -e appears when the definite determiner blocks DP-internal agreement. Yet another option is to adopt the spell out rules of Menuzzi (1994) and Kester (1996), and postulate that *veel*$_{\text{A}}$ only has [*u*def], not [*u*Num] and [*u*gender]. I conclude that what I propose can easily be accommodated in existing theories of (irregular) adjectival inflection in Dutch; as it is not the purpose of this paper to decide on the choice between these theories, I will leave the matter open.

3. *Veel*$_{\text{A}}$ as a gradable adjective

The preceding section yields one argument that *veel*$_{\text{A}}$ behaves (syntactically and semantically) as an adjective rather than a determiner: it can be preceded by a determiner (see (5)). This section presents some additional pieces of evidence.[3]

My reanalysis of *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$ partly solves a problem noted in the literature. As Broekhuis (2013) observes, if undeclined *veel*$_{\text{A}}$ is a determiner it is surprising that it can be modified with a degree modifier; and if declined *vele*$_{\text{Nl}}$ is an adjective, it is somewhat surprising that it cannot:

(12) a. nogal veel boeken — *veel*$_{\text{A}}$
rather many books

b. nogal veel wijn — *veel*$_{\text{A}}$
rather much wine

c. te veel boeken om mee te nemen — *veel*$_{\text{A}}$
too many books to bring along

(13) a. * nogal vele boeken — *vele*$_{\text{Nl}}$
rather many books

b. * te vele boeken om mee te nemen — *vele*$_{\text{Nl}}$
too many books to bring along

---

[3] I pass over the predicative use of *veel*, which also seems to support my reanalysis:

(i) a. dat is veel / *vele
that is much 'that's a lot'

b. dat is weinig / *weinige
that is little

Recall that on the traditional analysis undeclined *veel*$_{\text{A}}$ is a determiner which is not expected to occur in this position. But declined adjectival *vele*$_{\text{Nl}}$ is supposedly distributive so it should not predicate over a (mass) subject in the singular. On my analysis, *veel* in (ia) can be the undeclined adjectival non-distributive *veel*$_{\text{A}}$ that also occurs in (4a) and (5). I cannot address the restrictions on predicative *veel*$_{\text{A}}$ here, or why it appears to force the subject to be mass.

These data conform exactly to my proposal: undeclined *veel*$_{A}$ in (12) is a (relative) gradable adjective (see Kennedy & McNally 2005 for discussion of the licensing of degree modifiers); *vele*$_{Nl}$ in (13) is not a (gradable) adjective but a vague numeral that does not take a degree argument, so that like the other numerals in its class it does not allow a degree modifier:

(14) a. * nogal meerdere, ettelijke, luttele, enkele, verschillende boeken
rather several, many, few, some, various books

A somewhat problematic consequence is that we predict that a degree modifier should be allowed in combination with a declined form *vele*, when it is preceded by the definite article, as this could be the declined form of adjectival *veel*$_{A}$. Broekhuis (2013) presents data that contradict this (his judgment):

(15) * de heel/erg/vrij vele problemen
the very/very/rather many problems

I agree that these examples are marked, but not much more than those in (5) and (6), where the mass noun forces a declined form of *veel*$_{A}$. Furthermore, (16) shows that the examples improve with a mass noun:[4]

(16) a. ? het nogal vele onderhoud dat je er aan hebt
the rather much maintenance that it takes
b. ? het vrij vele en vette eten dat er geserveerd wordt
the rather much and fatty food that is served there
c. ? het nogal vele gebruik dat ik van de computer maak
the rather much use that I make of the computer

The acceptability of (16) cannot be explained under the traditional analysis of *veel*$_{A}$ and *vele*$_{Nl}$. The data suggest that the predictions of my analysis are on the right track, and that some additional constraint is responsible for the degraded status of (15). I do not have a firm proposal to explain (15), but in view of the contrast with (16) a processing confusion between *veel*$_{A}$ and *vele*$_{Nl}$ may be a relevant factor.[5]

Further semantic evidence that *veel*$_{A}$ behaves as a gradable adjective, rather than a determiner or quantifier, and *vele*$_{Nl}$ does not, comes from other types of modification that the

[4] The coordination of *veel*$_{A}$ with an adjective in (16b) also appears to confirm my analysis, but I have been unable to secure firm judgments that reliably support this pattern.

[5] I also find (15) better with *vrij*, slightly worse with *erg*, and yet worse with *heel*. This suggests that the problem lies in finding the correct agreement form for the adverb. *heel* strongly tends to show an -e ending in agreement with the adjective it modifies; the tendency is weaker with *erg* and *vrij* cannot agree. Perhaps the adverbs cannot select the proper form to agree with an inflected adjective that has an irregular inflection paradigm.

semantics of degree expressions makes available. Relative gradable adjectives allow modification that helps to specify the Comparison Class (see Bylinina 2013 for a recent overview of the literature). In (17a), *for an 8-year-old* indicates that Vera reads lengthy books compared to the books 8-year-olds generally read (see Solt 2011 for discussion of this subtype of Comparison Class PP's).

(17) a. Vera leest dikke boeken voor een kind van 8
Vera reads lengthy books for an 8-year-old
b. Vera leest veel boeken voor een kind van 8
Vera reads a lot of books for an 8-year-old
c. * Vera leest die / vele / drie / meerdere boeken voor een kind van 8
Vera reads those/many/3/several books for an 8-year-old

Likewise, (17b) indicates that the number of books Vera reads exceeds the expected number for 8-year-olds. This is exactly as expected if *veel*$_{\text{A}}$ is a gradable adjective, but not if it is a quantifier or determiner (Hackl 2000 treats English *many* as a gradable GQ determiner, type <d,<et,ett>>, but I am not aware of evidence that it functions syntactically as a determiner). (17c) shows that *vele*$_{\text{Nl}}$ patterns with determiners, quantifiers, cardinals and vague numerals in not allowing this type of modification; I take (17c) to entail at least that *vele*$_{\text{Nl}}$ is not a gradable adjective (it does not appear plausible that it should be a gradable but absolute adjective). The traditional analysis of *veel*$_{\text{A}}$ as a quantifier does not predict the well-formedness of (17b) (pace Hackl); because of the unfamiliar concept of a distributive adjective, it is impossible to tell what the traditional analysis would predict for *vele*$_{\text{Nl}}$ in (17c).

The scalarity of *veel*$_{\text{A}}$ is also reflected in its judge-dependence (see again Bylinina 2013). For instance, unlike *vele*$_{\text{Nl}}$ (and similar quantifiers and numerals) it licenses embedding under a 'subjective' attitude verb:

(18) a. ik vind dat Lisa veel werk verzet — *veel*$_{\text{A}}$
I feel that Lisa does much work
b. ik vind dat Lisa veel boeken leest — *veel*$_{\text{A}}$
I feel that Lisa reads many books
c. # ik vind dat Lisa vele / drie / alle / meerdere boeken leest — *vele*$_{\text{Nl}}$
I feel that Lisa reads many/3/all/several books

Finally, the gradable adjective *veel*$_{\text{A}}$ also occurs with the Nominal AIC construction in (19) analyzed by Fleisher (2008), with its typical flavor of "inappropriateness":

(19) a. dat is een dik boek om aan een eerstejaars-student voor te schrijven
that is a lengthy book to assign to a 1st-year student
'that book is so long that it is inappropriate to assign it to a 1st year student'

b. dat zijn veel$_{A}$ boeken om aan een eerstejaars-student voor te schrijven
that is a lot of books to assign to a 1st-year student
'those are so many books that it is inappropriate to assign them to a 1st year student'

c. # dat zijn *vele$_{Nl}$ / drie / meerdere boeken om aan een eerstejaars-student voor te schrijven
that are many/3/several books to assign to a 1st-year student
not: 'those are so many/3/several books that it is inappropriate to assign them to a 1st year student'

Fleisher argues that the infinitival relative clause in (19a) contributes a modal component to the calculation of the standard relative to which a book would count as lengthy. Again, *veel*$_{A}$ in (19b) patterns with other gradable adjectives. (19c) shows that (vague) numerals do not support such an interpretation (*vele*$_{Nl}$ is excluded independently because it does not appear in predicative position).

Returning briefly to the topic of the previous section, we can employ the distribution of comparison class PP's to confirm its findings:

(20) a. het vele werk dat Frank verzet voor een 80-jarige
the much work that Frank does for an 80-year-old

b. ? het vele bier voor een dinsdagmorgen
the much beer for a Tuesday morning

Since *vele*$_{Nl}$ does not license such PP's, *vele* in (20) must indeed be an inflected form of *veel*$_{A}$ in a definite DP, which is what I assumed above in order to explain that the inflected form can combine with a mass noun in the definite.

I conclude that both the syntax and the semantics of *veel*$_{A}$ supports the hypothesis that it is a gradable adjective. *Vele*$_{Nl}$ does not appear to be gradable and we have seen no evidence that it is an adjective; so far it patterns with vague numerals (we will see in the next section that it is not a determiner, and subsequently that it is probably not an adjective).

4. *Veel*, measure nouns, and pseudo-partitives

This section discusses the distribution of *veel*$_{A}$ and *vele*$_{Nl}$ in Dutch pseudo-partitive constructions, which have so far been overlooked in the literature on *veel*. I will begin by presenting some puzzling data that appear problematic for both analyses of *veel*$_{A}$ and *vele*$_{Nl}$ presented above. I will then briefly review the standard assumptions on the structure of Dutch pseudo-partitives. On the basis of this structure I will present a proposal that not only correctly derives the semantics of this construction, but also explains the distribution of *veel*$_{A}$ and *vele*$_{Nl}$. I will focus almost exclusively on pseudo-partitives with true measure nouns such as *liter* or *kilo*.

Dutch has two subclasses of measure nouns (Klooster 1972): those that show singular morphology even when preceded by a numeral larger than one, and those that show normal number morphology. The former class is instantiated by *liter* in (21):

(21) a. een$_{sg}$ liter$_{sg}$ wijn
a liter wine
b. drie liter$_{sg}$ wijn
three liters wine
c. # drie liters$_{pl}$ wijn
'three 1-liter units of wine'

When a measure noun of this type is pluralized in this context, as in (21c), it no longer yields a pure amount reading (see also Van Gestel 1986); I shall indicate the resulting reading with #. Now consider the pattern with *veel*/*vele*:

(22) a. * veel liter$_{sg}$ wijn *veel*$_{A}$
b. # veel liters$_{pl}$ wijn *veel*$_{A}$
'many one-liter units of wine'
c. * vele liter$_{sg}$ wijn *vele*$_{Nl}$
d. vele liters$_{pl}$ wijn *vele*$_{Nl}$
many liters of wine

We observe that *veel*$_{A}$ and *vele*$_{Nl}$ are unlike cardinal numerals in requiring plural marking on *liter*. We also observe that *veel*$_{A}$ does not allow the amount reading, but *vele*$_{Nl}$ does. The following data confirm that what occurs in the pseudo-partitive construction with the pure amount reading is indeed the numeral *vele*$_{Nl}$, not the gradable adjective *veel*$_{A}$:

(23) a. # hij heeft vele liters wijn gedronken voor een kind van acht
he has drunk many liters of wine for an eight-year-old
b. # ik vind dat hij vele liters wijn drinkt
I feel he drinks many liters of wine
c. * hij heeft erg vele liters wijn gedronken
he has drunk very many liters of wine

We find the same restriction with the second class of measure nouns (those that do show regular plural morphology), exemplified by *maand* 'month' in (24).

(24) a. Ik hoop op drie maanden vakantie volgend jaar
I'm hoping for three months of holiday next year
b. Ik hoop op vele maanden vakantie volgend jaar *vele*$_{Nl}$
I'm hoping for many months of holiday next year

c. # Ik hoop op veel maanden vakantie volgend jaar *veel*$_{A}$
I'm hoping for many one-month-long periods of holiday next year

Again, we see that *vele*$_{Nl}$ allows a pure amount reading in (24b), but *veel*$_{A}$ in (24c) does not.

How can these data be explained? The traditional analysis of *veel*$_{A}$ and *vele*$_{Nl}$ does not help to explain the data in (22) through (24). The supposed distributivity of *vele*$_{Nl}$ does not predict that it allows the amount reading in (22d) and (24b).[6] And the fact that *veel*$_{A}$ does not need to be distributive gives no clue as to why it does not allow a amount reading in (22d) and (24c). Note also that the mass/count distinction does not capture the pattern in (22)/(24): both *veel*$_{A}$ and *vele*$_{Nl}$ can operate in the count domain, and it is *veel*$_{A}$, the variant that can combine with mass nouns, that is blocked in the mass contexts (22b) and (24c). If anything, one would expect the reverse pattern.

At first glance, my analysis does not fare much better. On the positive side, the assimilation of *vele*$_{Nl}$ to the vague numerals remains intact:

(25) a. * meerdere / verscheidene / luttele liter$_{sg}$ wijn
b. meerdere / verscheidene / luttele liters$_{pl}$ wijn
several/various/few liters of wine

(26) is relevant for determining the position of *vele*$_{Nl}$ in the DP:

(26) a. de vele liters$_{pl}$ wijn die Jan gedronken heeft
the many liters of wine that John drank
b. de meerdere / verscheidene / luttele liters$_{pl}$ wijn die Jan gedronken heeft
the several/various/few liters of wine that John drank
c. de drie liter wijn die die Jan gedronken heeft
the three liters of wine that John drank
d. Jans vele/meerdere/drie liter(s) wijn
John's many/several/three liters of wine

In view of (22) and (23), what appears in (26a) must be *vele*$_{Nl}$, so we can conclude that *vele*$_{Nl}$ can be preceded by a determiner, hence is not a determiner itself. Instead, we must allow that, as a vague numeral, it can be preceded by a determiner, a property it has in common with the other (vague) numerals in (26b) and (26c). (26d) supports the same conclusion.

However, the contrast between the mass terms in (4), (7) and (8), and the measure nouns on their pure amount reading in (21), (22), (24) and (25b) appears as puzzling for my approach as it is for the traditional account. Why can *vele*$_{Nl}$, other vague numerals, and cardinals combine with these measure nouns, but not with mass terms? And what gives *veel*$_{A}$ the opposite distribution? The distribution of *veel*$_{A}$ is the most puzzling: it can combine with

6 As above (see footnote 1), I allow non-distributive readings for *vele*$_{Nl}$ in this context as well, for instance in *er werden vele liters water verzameld* 'many liters of water were collected'.

both singulars and plurals, and operate both in the mass domain and in the count domain -- how can we prevent it from combining with *liters* or *liters of water* (on the pure measure reading)?

We can already observe at this point that an explanation in terms of number marking will not work. We can describe the distribution of *vele*$_{\text{Nl}}$ (and other vague numerals, with the possible exception of *een enkele* 'a small number') by postulating that it combines only with grammatically plural NPs, but this description does not extend to the cardinals. Cardinals can combine both with grammatically singular nouns (notably with measure nouns in (21b) and also with some mass nouns in (8b)) and with nouns with plural marking, so the contrast between (21b) and (21c) cannot be due to the presence of the morphological plural as such. More importantly, restrictions on grammatical number marking cannot be used to describe the distribution of *veel*$_{\text{A}}$ in (22) and (24), as it can combine with both singulars (4a) and plurals (2a).

In the following three sections I will propose an explanation for these observations. I will start in section 4.1 by briefly reviewing the standard assumptions on the syntax of Dutch pseudo-partitive constructions. This section also presents the explanation I adopt for the number marking facts in (21) and (22). In section 4.2 I will propose a semantics for measure nouns that is compatible with this syntax, and which makes it possible to state semantic generalizations that govern the distribution of *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$ in (22), (23) and (24). In section 4.3, I will consider possible underlying motivations for these generalizations. Section 4.4 briefly considers how a non-standard syntactic analysis of Dutch pseudo-partitives could be made to explain the relevant data.

4.1 Constituency in the Dutch pseudo-partitive

In the literature on English pseudo-partitive constructions it is often assumed that *five meters* in *five meters of yarn* is the same measure phrase that appears in *five meters tall*, forming a constituent to the exclusion of the substance noun (*of*) *yarn*. For instance, Schwarzschild (2006) places *five meters* in the specifier of a QP dominating the NP headed by *yarn*. The standard assumption on the structure of Dutch pseudo-partitive constructions, however, which I will adopt, is that the measure noun (*meter*) takes the substance noun (*yarn*) as its complement, the two forming a constituent to the exclusion of the numeral (see, for instance, Van Gestel 1986, Vos 1999, Van Riemsdijk 1998; see Hankamer & Mikkelsen 2008 for a similar analysis of Danish). I will refer to this as the head-complement analysis, and to the alternative that treats *five meters* as a specifier, as the specifier analysis. I will briefly review some of the standard arguments for the head-complement analysis, present some additional arguments, and then outline the account I adopt for the number marking data in (21) and (22) above.

Van Gestel (1986) provides syntactic evidence that Dutch cardinal numerals are nouns that take a nominal complement (as had been argued for English by Jackendoff 1977), and he shows that this analysis also extends to pseudo-partitives: the measure noun heads its own DP

and takes the NP headed by the substance noun as a complement. One point of evidence is that gender on the DP is determined by the measure noun, not by the mass noun:[7]

(27) a. die$_{C}$ éne / halve / twee liter$_{C}$ water$_{Nt}$
that one/half/2 liter water
b. het$_{Nt}$ onsje$_{Nt}$ cocaïne$_{C}$
the metric.ounce-DIM cocaine
c. dat$_{Nt}$ jaar$_{Nt}$ vakantie$_{C}$
that year of holiday

Also, gender on the complementizer of a relative clause is determined by the measure noun:

(28) een liter$_{C}$ water$_{Nt}$ die$_{C}$ / *dat$_{Nt}$ we gedronken hebben
a liter water that we drank

Van Gestel explains this by assuming that *liter* selects too low an (extended) projection of N as its complement to allow adjunction of a relative clause, so the relative clause must be attached to the projection headed by *liter*. These data seem difficult to capture if *two liter*, etc., is syntactically a specifier or modifier.

An additional argument for the standard head-complement analysis starts from the observation that measure phrases headed by (singular) measure nouns, like other (singular count) NPs, cannot appear bare but require an indefinite article or numeral:

(29) Die tas weegt *(een/drie) kilo
that bag weighs a/three kilo

But observe that the numeral can and the indefinite article must be absent when the measure phrase appears inside a pseudo-partitive, in case the pseudo-partitive as a whole has another determiner:

(30) a. Jan's (drie) (*een) liter wijn
John's three/a liter wine
b. deze (drie) (*een) liter wijn
this three/a liter wine

It is clear that, even if we adopt the specifier analysis, we cannot assume that *John's* or *this* in (30) is part of the supposed measure phrase specifier (cf. **the bag weighs John's kilo/this kilo*, **John's meters tall*). And this is indeed blocked if the measure noun that heads the measure phrase specifier is taken to require (as in the semantics of Krifka 1990, discussed

[7] In fact, Van Gestel (1986:137) allows both genders with measure nouns; I and my informants find this quite impossible. The examples given here are mine.

below) a cardinal as an obligatory argument (with the indefinite article in (29) perhaps an optional variant of *one*), or on the semantics proposed in Schwarzschild (2006). However, this means that the supposed measure phrase specifier in (30) consist just of the noun *liter*, only optionally preceded by a numeral. It may lack the numeral, and must lack the article, which were obligatory in (29).[8] It is unclear on the specifier analysis why the numeral may be missing, and why the indefinite article cannot appear inside the measure phrase specifier in (30). On the structure adopted here, these data are unproblematic: the measure noun in (30) heads its own DP, which allows the same range of determiners as other similar DPs. The semantics proposed in section 4.2 will deal correctly with the definite determiners in (30).

The following observations also render the standard head-complement analysis more plausible than the specifier analysis:

(31) a. dat$_{Nt}$ éne / *één jaar$_{Nt}$ oponthoud$_{Nt}$
that one year delay
b. die$_{C}$ éne / ??één liter$_{C}$ wijn$_{C}$
that one liter wine
c. dat *éne / één jaar$_{Nt}$ lange oponthoud$_{Nt}$
that one year long delay

As shown above, the numeral *één* 'one' is inflected when it appears in a definite DP (see (11)). (31a) and (31b) show that this also obtains when it precedes a measure noun. This is unexpected if *éne jaar* / *éne liter* in these examples is a separate specifier. Observe, for instance, that the numeral *één* 'one' when it appears in a measure phrase modifying an attributive adjective does not agree for definiteness with the DP (see (31c)). These observations follow immediately on the analysis adopted here.

In addition, adopting the head-complement analysis will allow a unification of the pseudo-partitive construction under discussion here with the group noun and container noun constructions exemplified in (32) (see Vos 1999 for an overview):

(32) a. een groep toeristen
a group of tourists
b. een doos koekjes
a box of cookies

It is semantically implausible that *a group* or *a box* in these constructions should function as a measure phrase, at least on the reading where they entail the existence of an actual group or box. It follows that such nouns must be capable of taking a nominal complement, and providing it with case; this makes it more plausible that this also happens in pseudo-partitives. Observe furthermore that in previous stages of the language, the substance noun

[8] In view of (29) it is unlikely that (30) contains a covert *one*. Also, as Ora Matushansky p.c. points out, it would be puzzling why the covert cardinal would not reappear under focus: *not even a LITER$_{F}$ of water*.

was visibly marked genitive (Stoett 1923:102), as expected on the head-complement analysis (whereas in the *five meters tall* case, the measure phrase specifier would be marked genitive).

Thus far, I have argued that the measure noun *liter* and the substance noun *wijn* in pseudo-partitive *drie liter wijn* 'three liter wine' stand in a head-complement relation. In principle, this leaves open several options for the position of the numeral. Van Gestel (1986) argues that the same head-complement relation obtains here, an analysis I will adopt for the following two reasons. Firstly, because Ionin and Matushansky (2006) argue successfully that simplex numerals are nominal heads taking nominal complements; in a complex numeral DP such as *two hundred books*, *books* is the complement of *hundred*, and *hundred books* is the complement of *two*. They propose a corresponding semantics for cardinal numerals which facilitates a successful compositional treatment of complex cardinals. Secondly, because Matushansky and Ruys (2014) show that adopting this structure allows one to explain the puzzling pattern of number marking observed with measure nouns along the following lines. Recall that some measure nouns remain in the singular when combined with a numeral, other measure nouns are pluralized (Klooster 1972); this is illustrated again in (33):

(33) a. drie jaar$_{sg}$ vakantie
3 years of holidays
b. drie maanden$_{pl}$ vakantie
3 months of holidays

As I will explain in the next section, it is implausible that the plural marking on *maanden* 'months' in (33b) should reflect semantic pluralization, which does not occur in the mass domain. In addition, there is no relevant semantic distinction between *year* and *month* that could explain the contrast between (33a) and (33b) (see Klooster 1972 for some discussion). Note also that a plural form *jaren* does exist for *jaar* 'year', which is used for instance when preceded by *vele*$_{Nl}$ and other vague numerals. Matushansky and Ruys conclude that pluralizing measure nouns like *maand* bear a syntactic feature [ind] (for "individuation") that causes them to Agree with a probing cardinal numeral, triggering plural marking, while other measure nouns like *jaar* and *liter* lack this feature. This is a plausible analysis only in case the cardinal numeral is a head that can probe into its complement and Agree with the measure noun. We can now assume that the vague numerals, including *vele*$_{Nl}$, are also complement-taking heads, but are different in that they probe for some feature that all measure nouns share (say, N). This will describe the number data in (21), (22), (24), (25) and (33): the vague numerals in (22d), (24b) and (25b) enter into an Agree relation with the measure nouns and cause them to be marked plural; the cardinal Agrees with the measure nouns in (24a) and

(33b), but not with the measure nouns in (21b) and (33a).[9] See Matushansky and Ruys for further discussion.[10]

This analysis warrants an additional conclusion. If *vele*$_{Nl}$ in (22d) indeed probes the measure noun and fixes its number feature, it becomes unlikely that *vele*$_{Nl}$ is a regular adjective. I am not aware of other adjectives that value φ-features on the nouns they modify; there are certainly no adjectives that can be inserted before *liter* in (21a) or (21b) that will render the measure noun plural. I conclude at this point that the limited evidence available suggests that *vele*$_{Nl}$ is probably not a determiner (see (26)), nor an adjective, but indeed a (vague) numeral.

The analysis also entails that we cannot use grammatical number marking in (22) to detect the semantic number of the measure nouns. Whether or not we can use semantic number as the distinguishing property that allows *vele*$_{Nl}$ but not *veel*$_{A}$ in pseudo-partitives will therefore have to be decided by other, semantic considerations, which the next section will provide.

I feel that one can conclude with a fair amount of confidence that the head-complement analysis for measure nouns and substance nouns in Dutch pseudo-partitives is correct, and with some confidence that the same holds for numerals and the NPs they combine with. I will argue in the next section that these assumptions can form the basis for an analysis of the semantics of these constructions that supports an explanation for the contrast between *veel*$_{A}$ and *vele*$_{Nl}$ in (22).

4.2. A semantics for Dutch pseudo-partitives

The syntactic analysis we have adopted for pseudo-partitives places restrictions on the kind of semantics we can adopt. It seems to me that the proposal in Schwarzschild and Wilkinson (2002) and Schwarzschild (2006), according to which the measure phrase *three liters* in *three liters* (*of*) *wine* denotes a predicate over intervals, cannot be employed if *liters wine* forms a constituent to the exclusion of *three*. Another option is the analysis in Krifka (1990), who builds up *200 liters of wine* as shown in (34) (see also Chierchia 1998a):

(34) liter ~> λnλPλx[P(x) ∧ **liter'**(x) = n]
two hundred ~> 200
two hundred liter(s) ~> λPλx[P(x) ∧ **liter'**(x) = 200]
two hundred liter(s) (of) wine ~> λx[**wine'**(x) ∧ **liter'**(x) = 200]

This analysis also combines *liter* first with *200*, and then with *wine*, but this can easily be repaired by inverting the order of the arguments of *liter*. Also, I cannot exclude that an analysis like this can be made to explain the contrast between *veel*$_{A}$ and *vele*$_{Nl}$; see section

[9] For reasons explained below, *veel*$_{A}$ in (22b) can only combine with a predicate that has undergone semantic pluralization, giving rise to the number marking and the non-measure reading.
[10] Note that the plural in (22d) is not the plural of abundance discussed for Dutch in Ruys (in prep.); there is no abundance effect in (22d), or in its variant *luttele liters wijn* 'very few liters of wine'.

4.4 below. Nonetheless, there are reasons not to adopt this treatment. One reason is that it is not compatible with the independently motivated semantics of cardinals from Ionin and Matushansky (2006). In addition, I have adopted the analysis that makes the numeral a head that takes the (measure) noun as a complement. Now if one takes the numeral as an obligatory argument of *liter*, it would be hard to understand why the numeral, and not the measure noun, projects when the two combine. More importantly, the treatment in (34) entails the obligatory presence of a (cardinal) numeral. I have argued on the basis of (29) and (30) that this is problematic: pseudo-partitives can appear with just a determiner, and no cardinal.

We can allow pseudo-partitives to appear without a cardinal and combine directly with a determiner through a slight modification of the denotation of *liter*:

(35) liter ~> λPλx[P(x) ∧ **liter'**(x) = 1]
liter wine ~> λx[**wine'**(x) ∧ **liter'**(x) = 1]

On this analysis, *liter* only takes the substance noun *wine* as a complement, yielding a (mass) predicate that applies to units of wine of one liter. This predicate can combine with a determiner in the usual way. The next question is how we combine *liters of wine* with a cardinal to obtain *three liters of wine*, if *three* is not an argument of *liter*.

The most common treatment of cardinal numerals is as cardinality predicates: the cardinal combines with a semantically pluralized predicate and selects only those plural individuals that have the correct cardinality. However, this will not work without modification in the present case: if Link's (1983) standard operation of semantic pluralization were to apply to *liters of wine*, this would yield the set of all individual sums of one-liter portions of wine (not necessarily measuring multiple liters, since the original individuals may overlap materially). *Three*, as usually defined, would select from these all three-membered i-sums, not just the three-liter sized ones.[11] To fix this, one would either need to define semantic pluralization in such a way that it only constructs i-sums of non-overlapping individuals, or define the cardinal so that it only selects plural individuals whose members do not materially overlap. Both solutions, though inelegant, as they are mandated only by the need to allow pluralization in the mass domain, are possible, but have the disadvantage that they no longer distinguish (36a) from (36b), since in (36a) we would also be dealing with an individual sum of three 1-liter units (see also footnote 11):

(36) a. drie liter water
three liters of water

[11] Such a reading is (marginally) available when we force the non-measure reading of *liter* by making it grammatically plural in combination with a numeral. Suppose we have a container containing 1.5 liters of water, from which we can drain the bottom 1 liter, or siphon off the top 1 liter. I cannot extract *twee liter water* from the container, but there are (marginally) *twee liters water* that I can extract, and if I do, *alle twee de liters water* ('both liters of water') have been extracted.

b. drie liters water
three 1-liter units of water

We can avoid the complications that would arise from semantic pluralization of *liters of water*, and the problem raised by (36), by adopting the semantics for cardinals proposed by Ionin and Matushansky (2006). In this framework the non-overlap condition is independently required, and cardinals combine with a semantic singular, as appears to be the case here.[12] We can then construct *two hundred liters of wine* as follows (starting from (35)):

(37) hundred ~> $\lambda Q \lambda x \exists Y[\ \text{PART}_N(x,Y) \wedge |Y| = 100 \wedge \forall y \in Y Q(y)\ ]$
hundred liter wine ~> $\lambda x \exists Y[\ \text{PART}_N(x,Y) \wedge |Y| = 100 \wedge \forall y \in Y[\mathbf{wine'}(y) \wedge \mathbf{liter'}(y) = 1]\ ]$
two ~> $\lambda Q \lambda x \exists Y[\ \text{PART}_N(x,Y) \wedge |Y| = 2 \wedge \forall y \in Y Q(y)\ ]$
two hundred liter wine ~> $\lambda x \exists Y[\ \text{PART}_N(x,Y) \wedge |Y| = 2 \wedge \forall y \in Y \exists Y[\ \text{PART}_N(y,Y) \wedge |Y| = 100 \wedge \forall y \in Y[\mathbf{wine'}(y) \wedge \mathbf{liter'}(y) = 1]\ ]\ ]$

The partitioning operator can be defined as in (38) (with $\leq$ generalizing over the mass and count domains):

(38) $\text{PART}_N(x,Y) := \forall y,y' \in Y[y \neq y' \rightarrow \neg \exists z[z \leq y \wedge z \leq y']] \wedge \forall y \in Y[y \leq x] \wedge \forall v[v \leq x \rightarrow \exists y \in Y[v \leq y\ ]]$

To say that an individual x partitions into a set Y is to say that Y consists of non-overlapping individuals that together make up x. By (37), the predicate denoted by *two hundred liters of wine* is true of those individuals that can be partitioned into a set of two individuals, each of which can be partitioned into a set of 100 individuals, each of which is one liter of wine. If John buys one such individual, he buys two hundred liters of wine.

Numerals combine with count nouns in the same way in Ionin and Matushansky's (2006) approach, except that partitioning then functions in the count domain. In *two books*, *two* as defined in (37) combines with semantically singular *books*, which denotes the set of book atoms, and yields a predicate that applies to plural individuals that consist of two books.

Now observe that predicates such as *two hundred liters of wine* or *two books* have the special property that they can be true only of individuals which do not stand in the proper part-of relation to each other. In this, they differ from predicates such as *wine* or

[12] Recall that Matushansky and Ruys (2014) argue that the number marking on measure nouns is an effect of agreement, so we can assume that the phrases *liter wine* in (21b) and *liters wine* in (22d) do not differ semantically: neither has undergone semantic pluralization.

There is some independent evidence that *liters wijn* 'liters of wine' cannot undergo semantic pluralization: it cannot occur as a regular bare plural. The non-measure "liter-units" reading apart, *liters wijn* in (i) only has a reading as a plural of abundance (cf. Ruys in prep.):

(i) Jan dronk liters wine
'J. drank excessively many liters of wine'

(semantically plural) *books*, which can be true of (plural) individuals that contain each other. *Two hundred liters of wine* or *two books* cannot apply to x and y if x is a proper part of y, for the simple reason that these predicates apply to individuals that are all the same size (as measured by the measure function by which they are constructed): if x is two hundred liters of wine and is a proper part of y, then y must measure more than two hundred liters. Krifka (1990) calls such a predicate a Quantized Predicate (or a *degree*, as it can be used for measuring).

We can now describe the distribution of *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$ and their kin. Consider again the data in (39) and (40):

(39) a. veel wijn — *veel*$_{\text{A}}$
much wine

b. veel boeken — *veel*$_{\text{A}}$
many books

c. # veel liters wijn — *veel*$_{\text{A}}$
many liter-units of wine

(40) a. # vele / meerdere / drie wijn(en) — *vele*$_{\text{Nl}}$
many/several/three types of wine/serving portions of wine

b. vele / meerdere / drie boeken — *vele*$_{\text{Nl}}$
many / several / three books

c. vele / meerdere / drie liter(s) wijn — *vele*$_{\text{Nl}}$
many / several / three liters of wine

We need to rule out the measure reading with *veel*$_{\text{A}}$ in (39c) and the mass reading with numerals in (40a). I propose the generalizations in (41), for which I will be considering possible underlying causes in the next section:

(41) a. Adjectival *veel*$_{\text{A}}$ cannot combine with a Quantized Predicate
b. Vague numerals and cardinals can only combine with Quantized Predicates

A mass noun does not denote a Quantized Predicate, so that (41) allows (39a) but blocks the mass reading in (40a).[13] For the b.-cases we assume, as is standard, that an NP that denotes a predicate over (count) atoms can optionally undergo semantic pluralization, presumably caused by a functional head Num in its extended projection (Ritter 1991). As a result, *boeken* 'books' can either be semantically singular, so that it is allowed in (40b), since a predicate over (count) atoms is a Quantized Predicate, or semantically plural (the result of semantic pluralization), so that it is allowed in (39b), as a pluralized predicate is not Quantized. Recall that morphological number is not a reliable guide to semantic number here; in particular, we see plural marking on semantically singular *boeken* 'books' in (40b) because Agree with the probing numeral or cardinal triggers plural marking on the noun (see the discussion of

[13] This remains true if we assume that mass nouns are semantically plural (cf. footnote 15).

Matushansky and Ruys 2014 in section 4.1). In (39b), morphological plural on *boeken* is presumably triggered by the Num head in the same way. As for the pseudo-partitives, *liter* (on its pure measure reading) takes a mass noun to create a Quantized Predicate (as shown in (37)), which can then be input to a numeral or cardinal in (40c) (creating another Quantized Predicate, allowing Ionin and Matushansky's composition of complex cardinals), but cannot be input to *veel*$_{\text{A}}$ in (39c). Again, number marking in (40c) does not reflect semantic pluralization, and indeed occurs only with a subset of measure nouns and numerals (see above).

As for the non-measure readings observed: we can assume for (21c) that it contains not a true measure noun but a container noun *liter* referring to actual liter units (bottles), which has the relevant feature [individuation] that makes it Agree with the cardinal, triggering plural marking (see Matushansky and Ruys 2014). For (22b) (=(39c)) it appears safe to assume that Num here has applied the semantic pluralization necessary to obey (41a); since Num requires a set of (count) atoms this in turn coerces the same container noun reading (and Num triggers plural morphology); likewise for (24c).

Let us briefly consider some additional cases with slightly different properties:

(42) a. # veel liters knikkers *veel*$_{\text{A}}$
many one-liter units of marbles
b. vele liters knikkers *vele*$_{\text{Nl}}$
many liters of marbles
c. * veel honderden/duizenden/miljoenen mensen *veel*$_{\text{A}}$
d. vele honderden/duizenden/miljoenen mensen *vele*$_{\text{Nl}}$
many hundreds/thousands/millions of people

We observe again that *vele*$_{\text{Nl}}$ combines with a quantized predicate, and *veel*$_{\text{A}}$ does not. The measure reading is blocked in (42a) because *liters of marbles* is quantized. It could become unquantized only by undergoing semantic pluralization but this operation only applies to sets of atoms (the substance noun *knikkers* 'marbles' on the other hand presumably is the result of semantic pluralization applying to *knikker* 'marble'). Likewise, *honderden mensen* 'hundreds of people' is quantized (and cannot undergo pluralization, as must be assumed independently under the Ionin and Matushansky treatment of cardinals), hence can be input to numerals such as *vele*$_{\text{Nl}}$ (or to *three*), but not to *veel*$_{\text{A}}$.[14]

Note finally that an alternative explanation of the distribution of *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$ in pseudo-partitives in terms of semantic number does not seem plausible. Postulating that *vele*$_{\text{Nl}}$, the other vague numerals, and cardinal numerals require semantically plural complements would correctly prevent *vele*$_{\text{Nl}}$ etc. from combining with mass nouns but also, incorrectly, from appearing in pseudo-partitives, unless we modify the pluralization operation

[14] I leave open the question whether *hundreds* etc. here is a cardinal or some sort of measure noun, as suggested by English *hundreds **of** people*. That *hundred* etc. cannot undergo regular pluralization is confirmed by examples like *John read hundreds of books*, which only have a plural of abundance reading.

to add an non-overlap requirement, as discussed above. Also, it is at odds with Ionin and Matushansky's (2006) claim that cardinals combine with semantic singulars, so we would need to give up their compositional analysis of complex cardinals. Describing the distribution of *veel*$_{\text{A}}$ by restricting it to semantic singulars is even harder. To block (39c) one must then postulate that *liter wine* is obligatorily plural; it is not clear how this could be derived, and in view of (40c) it is again incompatible with Ionin and Matushansky's (2006) treatment of cardinals.[15]

4.3. Motivating the semantic constraints

In this section I will propose a semantics for *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$, from which I will attempt to derive underlying motivations for the constraints in (41). The basic idea is that counting (with a cardinal or vague numeral) only makes sense for objects of the same quantity, and assessing relative quantity (with a gradable adjective) only for objects of different quantities.

I have proposed that *veel*$_{\text{A}}$ is not a determiner or a quantifier, but a gradable adjective. This makes available the following motivation for (41a). I largely follow Krasikova & Champollion's (2011) treatment of Russian *mnogie* 'many' as a gradable adjective (see also Hackl 2009), but I will gloss over many details irrelevant to the motivation of (41a). Let *veel*$_{\text{A}}$ denote a function from individuals to degrees, which assigns to every individual its degree of 'manyness', or its amount. Compare this to the denotation of *tall* (see Kennedy 1999 for this, and discussion of related treatments of gradable adjectives):

(43) veel$_{\text{A}}$ ~> λx.**amount**(x)

(44) tall ~> λx.**height**(x)

In case x is a plural individual, I assume that **amount** simply returns the number of atoms in x. If x is a mass, the dimension measured depends on the kind and may also be judge-dependent (but the measure function must be monotonic, see Schwarzschild 2002). A discussion of the source of the 'scale function' exceeds the scope of this paper; for our examples we can assume that the amount of a unit of wine is determined by its volume (in Solt 2014, the relevant function is provided by a functional head Meas whose value is context-dependent; see also Schwarzschild 2006 for discussion).

In the positive, the adjective *tall* or *veel*$_{\text{A}}$ combines with an abstract POS morpheme, which places the degree of height/amount yielded by the adjective above the standard height/amount. Since I am only dealing with attributive *veel*$_{\text{A}}$, POS in (45) also takes care of combining the result with the denotation of the noun:

[15] A treatment in terms of semantic number is possible if we adopt Chierchia's (1998a, 1998b) assumption that mass terms are semantic plurals (or general number). We can then postulate that *veel*$_{\text{A}}$ combines only with plurals (which includes mass nouns, and excludes measure phrases on the reasonable assumption that these cannot be pluralized), and *vele*$_{\text{Nl}}$ only with singulars (which excludes mass nouns). This is actually close to the proposal I put forward here; but observe that the account still lacks an explanation (which section 4.3 will provide) for why *veel*$_{\text{A}}$ cannot combine with singulars.

(45) POS_{attr} ~> $\lambda A \lambda N \lambda x[N(x) \wedge A(x) > \textbf{std}(\lambda x{:}N(x).A(x))(C)]$

The standard of height/amount is calculated by a function **std**. Apart from the measure function for which the standard is calculated, this function also takes into account a contextually determined comparison class C; we can think of the comparison class PP's discussed in section 3 as (partly) determining C. Finally, the function takes into account the noun set that the adjective modifies (a tall man exceeds a different standard than a tall tower); this is built directly into attributive POS by restricting the domain of the measure function (as in Krasikova & Champollion 2011).

We obtain the following derivation for *veel mannen* 'many men':

(46) POS_{attr} *veel*$_A$ ~> $\lambda N \lambda x[N(x) \wedge \textbf{amount}(x) > std(\lambda x{:}N(x).\textbf{amount}(x))(C)]$
NUM_{pl} ~> $\lambda P \lambda x[*P(x) \wedge |x|>1\ ]$
NUM_{pl} mannen ~> $\lambda x[\ \textbf{*man'}(x) \wedge |x|>1\ ]$
POS_{attr} *veel*$_A$ NUM_{pl} mannen ~> $\lambda x[\textbf{*man'}(x) \wedge |x|>1 \wedge \textbf{amount}(x) >$ $std(\lambda x{:}\ \textbf{*man'}(x) \wedge |x|>1.\textbf{amount}(x))(C)]$

This yields a predicate over those plural individuals of men whose cardinality exceeds the standard for the cardinality of plural individuals of men, taking into account the context (for instance, *for a Tuesday afternoon*).

The intuition I want to pursue as a motivation for why *veel*$_A$ does not combine with Quantized Predicates is that it makes no sense to predicate of an individual that it is relatively big among individuals that are all equally big. Imagine the **std** function when it applies to *veel*$_A$ and *mannen* (or *tall* and *man*) as taking all plural individuals that consist of men and ordering them by cardinality (or taking all men and ordering them by height). For this range it then calculates the standard cardinality (height) by means of some statistical concepts (median and median absolute deviation, according to Solt 2011). Now consider what would happen in (39c), where *veel*$_A$ combines with the Quantized Predicate *liter wine*:

(47) # POS_{attr} *veel*$_A$ liter wijn ~> $\lambda x[\textbf{wine'}(x) \wedge \textbf{liter'}(x)=1 \wedge \textbf{amount}(x) >$ $\textbf{std}(\lambda x{:}\ \textbf{wine'}(x) \wedge \textbf{liter'}(x)=1\ .\textbf{amount}(x))(C)]$

The contribution of *veel*$_A$ here is trivial by necessity. **Std** ranks all units of one liter of wine by volume, and calculates a standard volume among these (carefully, if vacuously, taking the context into account). Whatever the details of this procedure, we always either end up with the same predicate over 1-liter units of wine that the adjective modifies (if one liter exceeds the standard), or with the empty predicate (if one liter does not exceed the standard). Assuming that the standard is the median, the latter case obtains. I submit that the triviality of modifying Quantized Predicates by *veel*$_A$ explains why it is unacceptable.[16, 17]

16 I assume that the contribution of the context variable C cannot render the adjective non-trivial, in that it can restrict **std** to consider only a subset of the noun set (*many men for a Tuesday afternoon* calculates the standard

I will have less of interest to say about (41b). We have a little more leeway in how we deal with *vele*$_{Nl}$; since we have seen that it patterns with numerals, the obvious treatment is along the lines of the treatment of cardinals that I adopt from Ionin and Matushansky (2006) (I give the translation for *meerdere* 'several' for comparison):

(48) *vele*$_{Nl}$ ~> $\lambda Q \lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| > n \wedge \forall y \in Y Q(y)\ ]$

(49) meerdere~> $\lambda Q \lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| > 1 \wedge \forall y \in Y Q(y)\ ]$

When this *vele*$_{Nl}$ combines with *liter wine*, the result is not trivial (cf. (40c)):

(50) vele$_{Nl}$ liters wijn ~> $\lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| > n \wedge \forall y \in Y[\mathbf{wine'}(y) \wedge \mathbf{liter'}(y) = 1\ ]]$

(50) predicates over individuals that can be partitioned into many (>*n*, *n* contextually determined) parts, each of which is a liter of wine; combining *vele*$_{Nl}$ as defined in (48) with a singular count noun also gives a reasonable result.

Turning to the constraint in (41b): as we assimilate *vele*$_{Nl}$ with numerals, preventing it from combining with mass nouns reduces to the problem of preventing numerals from doing so. Here is one simple solution. The translations we get for (40a) are:

(51) a. # vele$_{Nl}$ wijn ~> $\lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| > n \wedge \forall y \in Y[\mathbf{wine'}(y)\ ]]$

b. # meerdere wijn ~> $\lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| > 1 \wedge \forall y \in Y[\mathbf{wine'}(y)\ ]]$

c. # drie wijn ~> $\lambda x \exists Y[\ \text{PARTN}(x,Y) \wedge |Y| = 3 \wedge \forall y \in Y[\mathbf{wine'}(y)\ ]]$

Obviously, to predicate over a unit of wine that it consists of many (more than one, three) units of wine without stating the size of these units does not provide more information than predicating simply that it consists of wine, so that the numeral is superfluous. See Chierchia (1998a), (1998b), Ionin and Matushansky (2006) for discussion and references.

The other half of (41b) involves preventing numerals from combining with a plural. Ionin and Matushansky (2006) do so by stipulating that (cardinal) numerals must select a set of atoms. If a numeral could combine with a plural, this would give rise to a somewhat absurd systematic and unresolvable ambiguity whereby *three books*, *several books*, and *many books* could have a reading of 'at least six books', 'at least four books', and 'at least twice the contextually determined n'; but I am not sure if this observation will serve to explain the restriction, so I will settle for stipulating (41b) or adopting Ionin and Matushansky's stipulation (or one of the less plausible alternatives to (41b) discussed earlier).

---

on the basis of pluralities of men that appear on Tuesday afternoons), but cannot make **std** ignore the contribution of the noun set.

17 As this result partly depends on the contribution of POS it is conceivable, depending on the degree to which (41a) directly results from the considerationsn laid out here, or has become a lexicalized restriction on *veel*$_{A}$, that some modified forms of *veel*$_{A}$ could escape the restriction. I must leave an investigation of this option for another occasion.

4.4. Measure phrase alternatives

My account of the contrast between *veel*$_{A}$ and *vele*$_{Nl}$ depends on the (standard) right-branching syntax I assume for Dutch pseudo-partitive constructions. I want to briefly consider the question what kind of explanation could be devised if one assumes the analysis that takes the measure phrase *three liters* as a specifier in the extended protection of *wine*.

Assume that *liter* has the semantics in (34) from Krifka (1990): it combines first with a cardinal and then with the head (substance) noun. As pointed out by Schwarzschild (2002), this creates an immediate problem for the cases under discussion, such as *many liters of water*, where the measure noun does not combine with a cardinal but with a vague numeral which does not denote a number. Unlike Schwarzschild, I believe there is a workable solution: allow *many* to undergo QR as shown in (52a), which could then be interpreted as in (52b) (cf. Kennedy 2012).

(52) a. $[_{IP1}\ \text{many}_i\ [_{IP2}$ John drank t_i liters of wine]]

b. many ~> $\lambda I.\max(\lambda m.I(m)) > n$

IP_1 ~> $\lambda I.\max(\lambda m.I(m)) > n\ (\lambda m.\exists x[\mathbf{liter'}(m)(\mathbf{wine'})(x) \wedge \mathbf{drank'}(\mathbf{John},x)])$

$\equiv \max(\lambda m.\exists x[\mathbf{liter'}(m)(\mathbf{wine'})(x) \wedge \mathbf{drank'}(\mathbf{John},x)]) > n$

It would be difficult to find independent evidence for QR taking place in these constructions. Indeed, one needs to appeal to the (unexplained) Heim/Kennedy generalization (Heim 2000) to prevent *many* from raising across other quantificational expressions, as the scope inversion this would result in is not attested. Also, movement of *many* in (52a) violates the Left Branch Constraint (cf. Kennedy & Merchant 2000). Nonetheless, for the sake of discussion let us adopt the QR solution, without which a specifier analysis along the lines of Krifka (1990) must be abandoned immediately.

With this solution in place, we can indeed employ the distinctions I have proposed between *veel*$_{A}$ and *vele*$_{Nl}$ to explain why only the latter can appear in pseudo-partitives. One option is to postulate that vague numerals can undergo QR but adjectives cannot, perhaps because they are more operator-like. Postulating a corresponding type distinction, which treats *vele*$_{Nl}$ as shown in (52b) above but *veel*$_{A}$ as a predicate (type <e,t> or <et,et>) will also prevent *veel*$_{A}$ from being interpretable in this construction. However, I am not sure how principled these explanations are. For instance, Solt (2014) treats both English *much* and *many* as gradable adjectives that undergo QR, and both would support an analysis along the lines of (52); the problem of blocking *veel*$_{A}$ in pseudo-partitives while allowing it with count nouns then reappears. I conclude that the categorial and semantic distinctions I have claimed exist between *veel*$_{A}$ and *vele*$_{Nl}$ can support a technical solution for their distribution under the

specifier analysis of measure phrases in pseudo-partitives, but the question whether such a solution can be given a principled basis must be left for further research.[18]

5. Comparison with Russian and English

I conclude with a brief comparison with two other languages in the hope that future research may successfully address the cross-linguistic variation observed, for which I have no account. There is a considerable body of work on the many readings of English *many*, and closely related work on Russian. Setting aside the issue of reverse proportional and related readings (Westerståhl 1985), English has been argued to have two instances of *many*. One behaves syntactically as an adjective (in that it can appear below a determiner) and is allowed in *there*-insertion contexts. It has a weak, intersective reading: (53a) states that the number of errors in your reasoning is high, not a high proportion of the total number of errors. Its semantics can be described as that of a cardinality predicate. The other *many* is disallowed in *there*-insertion contexts, but allowed as the subject of an individual-level predicate. It has a strong, proportional reading: (53b) states that the intelligent ones make up a large proportion of the theoretical physicists. It can be described as a strong GQ Determiner.

(53) a. there are many errors in your reasoning
b. many theoretical physicists are intelligent

Early discussions are in Milsark (1974) and Partee (1989); see Partee (2012) for a literature review and further references. More recent work discusses two instances of *many* in Russian: *mnogie* and *mnogo* (Babko-Malaya 1998). *Mnogie* is syntactically more like an adjective in that it shows adjectival agreement; *mnogo* does not. They also differ along the cardinal/proportional parameter but surprisingly, it is adjectival *mnogie* that has the proportional reading, whereas *mnogo* has a cardinal reading. Krasikova & Champollion (2011) describe the proportional reading for *mnogie* as resulting from a degree adjectival interpretation, where proportionality relative to the size of the noun set is mediated by the standard-setting function, as in (46) above.

Considering Dutch *veel* from this perspective creates a less clear picture. At first glance, Dutch is like Russian: adjectival $veel_{\mathrm{A}}$ in (54a) gives a proportional reading, whereas I feel that this reading is dispreferred for non-adjectival $vele_{\mathrm{Nl}}$ in (54b).

(54) a. veel natuurkundigen zijn intelligent $veel_{\mathrm{A}}$
b. ?? vele natuurkundigen zijn intelligent $vele_{\mathrm{Nl}}$
many physicists are intelligent

[18] Since it is not clear to me how Schwarzschild (2002, 2006) and Schwarzschild and Wilkinson (2002) deal with the internal composition of measure phrases, which they treat as predicates over intervals, I cannot assess whether they could accommodate $veel_{\mathrm{A}}$ and $vele_{\mathrm{Nl}}$.

Since I have proposed roughly the same semantics for *veel*$_{A}$ that Krasikova & Champollion (2011) propose for adjectival *mnogie*, this is what we expect: (54a) is proportional (the cardinality of the noun set 'physicists' is taken into account) because the cardinality of the noun set helps **std** set the standard for **amount**. Also, the semantics I tentatively proposed for *vele*$_{Nl}$ in (48) gives the cardinal reading observed in (55a):

(55) a. de orkaan liet vele slachtoffers achter *vele*$_{Nl}$
b. de orkaan liet veel slachtoffers achter *veel*$_{A}$
the hurricane left behind many victims

However, both Dutch *many's* are allowed in the *there*-insertion context in (2), and a cardinal reading seems perfectly acceptable for *veel*$_{A}$ in (2a) and in (55b). I do not have a firm proposal for dealing with this option; one possibility is that the standard for **amount** in (55b) takes into account not only the cardinalities of actual plural individuals of victims, but also cardinalities of victims in other possible worlds/contexts. But whatever the explanation, the data show that Dutch must be given a different treatment than Russian *mnogie*, which cannot appear in a context like (55) without triggering a marked reading. Also, Russian uses the non-adjectival *mnogo* for both measure nouns and mass nouns:

(56) a. mnogo viná
much wine-gen
b. # mnogie vína
many-nom.pl wine-nom-pl 'many kinds of wine'
c. mnogo litrov viná
many liter-gen.pl wine-gen
d. # mnogie litry viná
many liter-pl wine-gen.sg 'many 1-liter units of wine'

The following table summarizes the distribution of *many's* in this three-language samplet (for historical reasons I use D to label non-adjectival instances):

	mass __ *wine*	pseudo-partitive __ *liter wine*	count __*books*	
			proportional	cardinal
En	much	many$_{?}$	many$_{D}$	many$_{A}$
Ru	mnogo$_{D}$	mnogo$_{D}$	mnogie$_{A}$	mnogo$_{D}$
Du	*veel*$_{A}$	*vele*$_{Nl/D}$	*veel*$_{A}$	*vele*$_{Nl/D}$ *veel*$_{A}$

6. Conclusion

I have proposed that Dutch uninflected *veel* is a relative gradable adjective (which inflects only for definiteness), and inflected *veel* is a vague numeral. This explains where (un)inflected forms appear in the DP and which forms allow degree modification, and leads to an effective semantic characterization that also supports a natural account for which forms combine with mass nouns, measure nouns, and plurals. More work is required to obtain reliable data on the proportional/cardinal distinction, and to address the issue of cross-linguistic variation.

References

Babko-Malaya, Olga. 1998. Context-dependent quantifiers restricted by focus. In *Proceedings of the Workshop on Focus*, ed. by Elena E. Benedicto, Maribel Romero and Satoshi Tomioka. *UMass Working Papers in Linguistics 21*, 1-18. Amherst, Massachusetts: GLSA.

Booij, Geert. 1992. Congruentie in Nederlandse NPs. *Spektator* 21-2, 119-135.

Broekhuis, Hans. 2013. *Syntax of Dutch: Adjectives and Adjective Phrases*. Amsterdam: Amsterdam University Press.

Bylinina, Lisa. 2013. *The grammar of standards.* Doctoral dissertation, Utrecht University.

Chierchia, Gennaro. 1998a. Plurality of mass nouns and the notion of "semantic parameter". In *Events and Grammar*, ed. by S. Rothstein, 53-103. Dordrecht: Kluwer.

Chierchia, Gennaro. 1998b. Reference to kinds across languages. *Natural Language Semantics* 6:339-405.

Fleisher, Nicholas A. 2008. *Adjectives and Infinitives in Composition*. Doctoral dissertation, UC Berkeley.

van Gestel, Frank. 1986. *X-bar Grammar: Attribution and Predication in Dutch*. Doctoral dissertation, Utrecht University.

Hackl, Martin. 2000. *Comparative Quantifiers*. Doctoral dissertation, MIT.

Hackl, Martin. 2009. On the grammar and processing of proportional quantifiers: *Most* versus *more than half*. *Natural Language Semantics* 17.1:63-98.

Haeseryn, Walter, Kirsten Romijn, Guido Geerts, Jacobus de Rooij, and Maarten C. van den Toorn. 1987. *Algemene Nederlandse Spraakkunst (ANS)*. Groningen/Leuven: Wolters-Noordhoff/Wolters.

Hankamer, Jorge, and Line Hove Mikkelsen. 2008. Definiteness marking and the structure of Danish pseudopartitives. *Journal of Linguistics* 44:317-346.

Heim, Irene. 2000. Degree operators and scope. In *Proceedings of Semantics and Linguistic Theory (SALT) 10*, ed. by Brendan Jackson and Tanya Matthews, 40-64. Ithaca, New York: CLC Publications, Department of Linguistics, Cornell University.

Ionin, Tania, and Ora Matushansky. 2006. The composition of complex cardinals. *Journal of Semantics* 23:315-360.

Jackendoff, Ray. 1977. *X-bar Syntax: a Study of Phrase Structure*. Cambridge, Mass.: MIT Press.

Kennedy, Christopher. 1999. *Projecting the adjective. The syntax and semantics of gradability and comparison*. New York: Garland.

Kennedy, Christopher. 2012. A scalar semantics for scalar readings of number words. Ms., University of Chicago.

Kennedy, Christopher, and Jason Merchant. 2000. Attributive comparative deletion. *Natural Language & Linguistic Theory* 19:89-146.

Kester, Ellen Petra. 1996. The Nature of Adjectival Inflection, Doctoral dissertation, UiL OTS.

Klooster, Wim. 1972. *The Structure Underlying Measure Phrase Sentences*. Dordrecht: Reidel.

Krasikova, Svetlana, and Lucas Champollion. 2011. Two *many* modifiers? Paper presented at *Workshop on Modification (with and without modifiers)*, Madrid, December 15-16, 2011.

Krifka, Manfred. 1990. Four thousand ships passed through the lock: Object-induced measure functions on events. *Linguistics and Philosophy* 13:487-520.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice theoretical approach. In *Meaning, use, and the interpretation of language*, ed. by Rainer Bauerle, Christoph Schwarze and Arnim von Stechow, 302-323. Berlin: de Gruyter.

Matushansky, Ora, and E.G. Ruys. 2014. *On the syntax of measure*. Paper presented at TiN-dag, Utrecht, February 1, 2014.

Menuzzi, Sandro. 1994. Adjectival positions inside DP. In *Linguistics in the Netherlands 1994*, ed. by R. Bok-Bennema and C. Cremers, 127-138. Amsterdam: John Benjamins.

Milsark, Gary. 1974. Existential Sentences in English, Doctoral dissertation, MIT. Bloomington, Indiana: Indiana University Linguistics Club.

Odijk, J. 1992. Uninflected adjectives in Dutch. In *Linguistics in the Netherlands 1992*, ed. by R. Bok-Bennema and R. van Hout, 197-208. Amsterdam: John Benjamins.

Partee, Barbara. 1989. Many quantifiers. In *Proceedings of the 5th Eastern States Conference on Linguistics*, ed. by Joyce Powers and Kenneth de Jong. Columbus, Ohio: Ohio State University.

Partee, Barbara. 2012. *Cardinal and proportional readings of quantifiers: MANY, MNOGO, MNOGIE*. Paper presented at Workshop on Slavic Linguistics, Bar-Ilan University, March 21, 2012.

van Riemsdijk, Henk. 1998. Categorial feature magnetism: The endocentricity and distribution of projections. *Journal of Comparative Germanic Linguistics* 2:1-48.

Ritter, Elisabeth. 1991. Two functional categories in noun phrases: Evidence from Modern Hebrew. In *Perspectives on Phrase Structure*. *Syntax and Semantics*, 37-62. New York: Academic Press.

Schoorlemmer, Erik. 2009. Agreement, dominance and doubling: the morphosyntax of DP, Doctoral dissertation, Leiden University. Utrecht: LOT Publications.

Schwarzschild, Roger. 2002. The grammar of measurement. In *Proceedings of SALT XII*, ed. by Aaron Lawson. Ithaca, NY: Cornell University.

Schwarzschild, Roger. 2006. The role of dimensions in the syntax of noun phrases. *Syntax* 9:67-110.

Schwarzschild, Roger, and Karina Wilkinson. 2002. Quantifiers in comparatives: a semantics of degree based on intervals. *Natural Language Semantics* 10:1-41.

Solt, Stephanie. 2011. Notes on the comparison class. In *Proceedings of the 2009 International Conference on Vagueness in Communication*, ed. by Rick Nouwen, Robert van Rooij, Uli Sauerland and Hans-Christian Schmitz, 189-206. Berlin: Springer-Verlag.

Solt, Stephanie. 2014. Q-Adjectives and the Semantics of Quantity. *Journal of Semantics*.

Stuurman, Frits. 1989. Van X-bar structuren voor NPs naar deflectie bij prenominale adjectieven in het Nederlands. *Gramma* 13-3, 161-185.

Stoett, F.A. 1923[3]. *Middelnederlandsche spraakkunst*; *syntaxis*. 's Gravenhage: Martinus Nijhoff.

Vos, Riet. 1999. A Grammar of Partitive Constructions, Doctoral dissertation, Tilburg University.

Westerståhl, Dag. 1985. Determiners and context sets. In Generalized Quantifiers in Natural Language, ed. by Johan van Benthem and Alice ter Meulen, 45-71. Dordrecht: Foris.