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RESEARCH

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

Eddy G. Ruys
UiL-OTS, Utrecht University, NL
e.g.ruys@uu.nl

This article discusses the syntax and semantics of Dutch pseudo-partitive constructions with measure nouns, such as *drie liter water* 'three liters of water'. The major empirical puzzle is the distribution of two Dutch instances of *many*/*much*: *veel* and *vele*. Unlike earlier proposals, I analyze *veel* as a gradable adjective, and *vele* as a numeral. It turns out that in pseudo-partitives with pure measure readings, only *vele* can freely occur (*veel liters water* only allows a marked "liter-bottle" reading). This is puzzling, because *veel* is otherwise allowed both with mass and count terms, and both in the singular and in the plural. I adopt the more-or-less standard right-branching syntax for Dutch pseudo-partitives (providing some new arguments for its correctness), and propose a semantics for measure nouns which, in combination with Ionin & Matushansky's semantics for cardinals, correctly characterizes these constructions and explains where pure measure readings occur. I then show that my analysis correctly derives the behavior of *veel* and *vele* in these constructions, given their characterization as a gradable adjective and a numeral.

Keywords: pseudo-partitive; many; scalarity; measure nouns

1 Introduction

Dutch has two instances of *many/much*: inflected *vele* and exceptionally uninflected *veel*, which differ in several respects, both syntactically and semantically. Central to the present article is the novel observation that only *vele* can normally combine with measure nouns in pseudo-partitive constructions. Consider the data in (1) and (2):

(1) a. veel boeken *veel*
many books

b. veel wijn *veel*
much wine

c. #veel liters wijn *veel*
many liters wine
'many one-liter-units of wine'

(2) a. vele boeken *vele*
many books

b. *vele wijn *vele*
many wine

c. vele liters wijn *vele*
many liters wine
'many liters of wine'

The uninflected variant *veel* in (1) can combine both with count nouns and with mass nouns, but in combination with a measure noun in the pseudo-partitive construction (1c) it does not allow a normal measure reading. (1c) cannot refer to many liters of wine, but only to many discrete one-liter units (e.g., bottles) of wine. The inflected variant *vele*, on the other hand, which can combine with count nouns but not with mass nouns, does allow a normal measure reading for (2c).

The goal of this article is to argue for a particular syntactic and semantic analysis of Dutch pseudo-partitive constructions which, in combination with the semantic and syntactic characterization of *veel* and *vele* that I will propose, yields an explanation for the pattern illustrated in (1) and (2). Although some of the evidence for my analysis of *veel* and *vele* depends on data involving pseudo-partitives, and vice versa, I will try to separate out the issues as follows. In section 2 I describe the major differences between *veel* and *vele*. I discuss their distribution, and conclude that *veel* is most plausibly characterized as an adjective, whereas *vele* patterns like a vague numeral. I also observe some semantic differences between the two elements, demonstrating that *veel* is gradable, but *vele* is not. In section 3, I turn to the Dutch pseudo-partitive construction. I adopt the standard right-branching analysis of Dutch pseudo-partitives, and provide some novel evidence in its favor. I then argue for a corresponding semantic analysis of pseudo-partitives which, in section 3.3, I combine with the semantic characterization of *veel* and *vele* provided earlier to arrive at an explanation of the data in (1) and (2). Section 4 briefly discusses how *veel* and *vele* behave with respect to the proportional/cardinal distinction, comparing them with the multiple instances of *many* in Russian and English discussed elsewhere.[1]

2 Two Dutch *many*'s

2.1 Two Dutch many's and prenominal inflection

Inflection on Dutch prenominal elements 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 *-Ø*, as shown in table 1.[2]

	Indefinite		**Definite**	
	Neuter	**Common**	**Neuter**	**Common**
singular	een mooi-Ø boek a nice book	een mooi-e film a nice film	het mooi-e boek the nice book	de mooi-e film the nice film
plural	mooi-e boeken nice books	mooi-e films nice films	de mooi-e boeken the nice books	de mooi-e films the nice films

Table 1: Regular inflection on Dutch prenominal elements.

[1] Throughout, I will disregard adverbial and nominal instances of *veel*, illustrated in (i) and (ii) below, and concentrate on the pre-nominal variant. See Doetjes (1997) for extensive discussion.

(i) Ik ben veel in Amsterdam geweest.
I am much in Amsterdam been
'I have visited Amsterdam a lot'

(ii) Ik heb met veel rekening gehouden.
I have with much account held
'I have taken much into account'

[2] The situation in table 1 is sometimes described as involving strong inflection (showing distinctions for gender and number) in the indefinite, versus weak inflection (showing the –e ending everywhere) in the definite. The same patttern is found in other Germanic languages; e.g., Swedish and Danish also have strong inflection on adjectives (showing three different endings for number and gender) in the indefinite, and weak inflection in the definite; see Schoorlemmer (2009) for recent discussion. The situation in German is rather different, in that both definite and indefinite contexts can lead to stronger and weaker inflection on the adjective, depending on the inflectional richness visible on the preceding determiner.

Booij (1992) describes these facts with lexical insertion rules that spell out [sg,Nt,indef] as -Ø, with *-e* the elsewhere case. Schoorlemmer (2009) also has *-e* as the elsewhere case, and [sg,Nt] spelled out as -Ø; the definite determiner blocks DP-internal agreement so also gives the *-e*. Menuzzi (1994) and Kester (1996) take the opposite approach: plural number, common gender, and definiteness each specify the presence of the *-e*, and -Ø appears when all three are absent.

For prenominal elements that inflect, inflection is not optional. However, there are two variants of *veel* ('many/much'), one of which shows inflection and one of which does not (a similar pattern is found with *weinig*, 'few/little') (I add an adjective to remind the reader of the expected inflection):[3]

(3)	a.	Er	zijn	veel	interessant-e	tegenvoorbeelden$_{pl}$.	*veel*$_{A}$
	b.	Er	zijn	vel-e	interessant-e	tegenvoorbeelden$_{pl}$.	*vele*$_{Nl}$
		there	are	many	interesting	counterexamples	
	c.	Er	is	veel	lekker-e	wijn$_{sg,C}$.	*veel*$_{A}$
		there	is	much	nice	wine	

An uninflected form is expected only in the singular neuter indefinite environment. (3a) shows that one also appears in the indefinite plural, alongside the expected form with an *-e* ending in (3b). An uninflected form also unexpectedly appears in the singular common indefinite, as shown in (3c) (the singular in fact blocks the inflected variant, as discussed below).

There is no obvious semantic difference between (3a) and (3b), although (3b) is often described as being more formal. As will become clear, however, we are not dealing with a single lexical item whose inflection is optional or conditioned by the local syntactic context. We will see instead that there are two lexical items with significant semantic differences. For instance, as discussed in section 2.3 below, the uninflected variant is gradable, the inflected variant is not. Also, while both elements allow a cardinal reading, only the uninflected one naturally allows a proportional reading (see section 4). My discussion of the distribution of the two variants will lead to the conclusion that the uninflected variant of (3a) behaves more as an adjective, and the inflected variant of (3b) as a numeral; for this reason, I will label them as *veel*$_{A}$ and *vele*$_{Nl}$, respectively. I will retain this notation even when arguing, in section 2.2 below, that there is one context where *veel*$_{A}$ does inflect.

The existing literature observes a few additional distinguishing properties. Uninflected *veel*$_{A}$ cannot be preceded by a definite determiner or a possessive:

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

Kester (1996: 107) suggests that the uninflected form *veel*, which cannot be preceded by a determiner, is a quantifier, whereas the inflected form, which can, has adjectival status (see also Broekhuis 2013: 283). The assumption that inflected *vele*$_{Nl}$ is an adjective would indeed explain why it can be preceded by a determiner in (4), and why it must bear adjectival inflection. And the assumption that *veel*$_{A}$ is syntactically a quantifier with

[3] The apparent difference in stem vowels in *veel* and *vele* in (3) is merely orthographical.

a distribution similar to that of *elke* 'every', etc., will explain why it cannot be preceded by a determiner in (4). However, as Kester admits, taking uninflected *veel*$_{A}$ to be a quantifier does not explain why it does not inflect, since other quantifiers (*elk*(*e*) 'every', *ieder*(*e*) 'every') do.

Kester also postulates a semantic distinction: *veel*$_{A}$ allows a collective reading, but *vele*$_{Nl}$ is always distributive. This serves to explain why only *veel*$_{A}$ can combine with mass nouns, as (5a) shows:[4]

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

b. veel$_{A}$ lekker-Ø bier$_{sg,Nt}$
much nice beer

It bears repeating, however, that the distinction between *veel*$_{A}$ and *vele*$_{Nl}$ goes beyond the mass/count distinction observed with English *much/many*: *veel*$_{A}$ occurs both with count and with mass terms (but not with measure nouns), and there are further distinctions, notably with regard to gradability, as we will see. Note, incidentally, that given the incompatibility of *vele*$_{Nl}$ with mass nouns, the form *veel* in (5b) cannot be analyzed as an instance of *vele*$_{Nl}$ bearing the -Ø inflection triggered by the singular neuter indefinite environment; it can only be analyzed as *veel*$_{A}$. Being incompatible with mass nouns, *vele*$_{Nl}$ is banned from singular environments, so it never bears the -Ø inflection.

To summarize, the picture that emerges from the literature (also Haeseryn et al. 1997) is that uninflected *veel*$_{A}$ is a quantifier of the *every*-category 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 show that this description does not cover certain exceptions to the pattern in (5). I will argue that virtually the opposite theory is to be preferred: *veel*$_{A}$ is most likely a gradable adjective; *vele*$_{Nl}$ is more akin to a numeral (hence the labels). Section 2.3 provides evidence for the gradability of *veel*$_{A}$.

2.2 Inflected *veel*$_{A}$ with mass nouns

While (5a) shows that inflected *vele*$_{Nl}$ is blocked with mass nouns in indefinites, we seem to observe the opposite pattern in definite DPs with mass nouns, where we do find an inflected form:

(6) a. overstelpt door het vele / *veel werk
overcome by the much work

b. vanwege het vele / *veel zand
due-to the much sand

[4] 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 people it can lift
'this table is so extremely heavy that many people can lift it'

I do not share this intuition. I feel that the intended collective reading in (i) is marked with *vele*$_{Nl}$ but equally so with *veel*$_{A}$; I find both equally acceptable in (ii). I will leave this issue out of consideration below.

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

c. door de vele / *veel arbeid die er verricht is
because of the much labor that there done is
'because of the large amount of work that has been done'

d. ondanks de vele / *veel paracetamol
despite the much acetaminophen

(7) a. het weinige / *weinig zand dat er dan is
the little sand that there PRT is

b. door de weinige / *weinig tegenstand
due-to the little resistance

These definite DPs have at most a slightly marked flavor with the inflected form, whereas the inflected form is completely excluded in the indefinite counterpart (5a). These data cannot be explained if the description given in the literature (see section 2.1) is correct. Then the variant that occurs in (6) can be neither "quantificational" $veel_{A}$, which supposedly does not inflect and does not cooccur with determiners, nor "adjectival" $vele_{Nl}$, 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 virtual 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', which also inflect.[5] Uninflected $veel_{A}$ is not a quantifier or a determiner, but – presumably – an adjective (or possibly also a numeral). This will allow us to capture the data observed so far along the following lines.

To explain how the inflected form *vele*, which did not combine with a mass term in (5a), can combine with a mass term in (6), I diagnose *vele* in (6) as an instance of $veel_{A}$, not $vele_{Nl}$ (for independent evidence, see the discussion surrounding (23) in section 2.3 below). This diagnosis is possible, since we are now assuming that $veel_{A}$ is not a determiner or a quantifier but an adjective: this allows it to cooccur with the determiner in (6). Diagnosing *vele* in (6) as an instance of $veel_{A}$ requires, of course that we assume that $veel_{A}$ is not fully uninflected: it shows the *-e* ending, but exclusively for the feature [+definite]. This explains why it appeared to be in complementary distribution with the definite determiner and the possessive in (4): $veel_{A}$ does appear in (4), but receives the *-e* ending and becomes indistinguishable from $vele_{Nl}$. In this manner, we explain why the inflected form can appear with mass terms, but only in the definite: $veel_{A}$ combines with mass terms, and appears as *veel* in the indefinite (5a) and as *vele* in the definite (6).[6]

If $veel_{A}$ is to be 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 (8):

[5] An anonymous reviewer points out that *vele* appears exceptional as a vague numeral in that it is not paucal. However, $vele_{Nl}$ is not unique in this respect, witness Dutch *ettelijke* 'many, numerous'.

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

(8) 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):

(9) 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'.

(10) a. één antwoord$_{Nt}$ / vraag$_{C}$
one answer / question

b. het én-e antwoord$_{Nt}$
the one answer

c. die én-e vraag$_{C}$
that one question

Like *veel*$_{A}$, *één* also has the *-Ø* 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).

Menuzzi (1994) explains cases such as (8)/(9) 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*$_{A}$ by extending this analysis slightly so that *veel*$_{A}$ 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*$_{A}$ spell out any specified value for gender or number as *-Ø*, 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*$_{A}$ only has [*u*def], not [*u*Num] and [*u*gender]. I conclude that what I propose can readily 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.

Turning now to *vele*$_{Nl}$, nothing as yet forces us to abandon its customary analysis as an adjective, but we will encounter several indications later on that it is best characterized as a vague numeral. In order to describe the data seen so far, I retain Kester's assumption that *vele*$_{Nl}$ does not combine with mass terms; I return to the cause of this in section 3.3. This blocks the inflected *vele*$_{Nl}$ in (5a). (11) shows that the other vague numerals in this class also do not combine with mass terms:

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

b. enkele mooi-e boeken$_{pl}$ / wijnen$_{pl}$ / *wijn$_{sg}$
several nice books / wines '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 (11c)-(11d), which can appear with a grammatical singular (showing the -Ø ending with indefinite neuters in (11d)), nonetheless coerces mass terms to a non-mass reading (cf. English *many a wine*).[7] 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:

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

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

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

By reanalyzing *vele*$_{Nl}$ as a numeral, rather than an adjective, we retain the traditional prediction that it can be preceded by a determiner. However, the simple evidence that it can which we presented in (4a) is no longer reliable, since on our present assumptions *vele* in (4a) could potentially be analysed as an inflected case of *veel*$_{A}$, triggered by the definite. Instead, we can employ the fact, discussed more fully in section 3 below, that only *vele*$_{Nl}$ normally combines with measure nouns. Consider (13):

(13) a. de vele liters$_{pl}$ wijn die Jan gedronken heeft
the many liters wine that J. drunk has
'the many liters of wine that John drank'

b. de meerdere / verscheidene / luttele liters$_{pl}$ wijn die Jan
the several / various / few liters wine that J.
gedronken heeft
drunk has
'the several / various / few liters of wine that John drank'

c. de drie liter wijn die Jan gedronken heeft
the three liter wine that J. drunk has
'the three liters of wine that John drank'

d. Jans vele / meerdere / drie liter(s) wijn
J.'s many / several / three liter(s) wine
'John's many / several / three liters of wine'

Since the pure measure reading is allowed here, what appears in (13a) must be *vele*$_{Nl}$, so we can conclude that *vele*$_{Nl}$ can be preceded by a determiner, hence is not itself a determiner. Instead, as a vague numeral it can be preceded by a determiner, a property it has in common with the other (vague) numerals in (13b) and (13c). (13d) supports the same conclusion.

Table 2 summarizes the inflectional properties I attribute to *veel*$_{A}$ and *vele*$_{Nl}$.

[7] As discussed in Hoeksema (2005), its negative counterpart *geen enkel(e)* has recently begun to extend to other uses, including mass, but *een enkel(e)* has not.

		Indefinite		Definite	
		Neuter	**Common**	**Neuter**	**Common**
singular (mass)	*veel*$_{A}$	veel-∅ zand much sand	veel-∅ arbeid much work	het vel-e zand the much sand	de vel-e arbeid the much work
	vele$_{Nl}$	*	*	*	*
plural (count)	*veel*$_{A}$	veel-∅ boeken many books	veel-∅ films many films	de vel-e boeken the many books	de vel-e films the many films
	vele$_{Nl}$	vel-e boeken many books	vel-e films many films	de vel-e boeken the many books	de vel-e films the many films

Table 2: Inflection on *veel*$_{A}$ and *vele*$_{Nl}$.

See section 2.4 below for a summary of the evidence provided both here and in subsequent sections in favor of analysing *veel*$_{A}$ as an adjective and *vele*$_{Nl}$ as a numeral.

2.3 Veel$_{A}$ *as a gradable adjective*

The preceding section yields one argument that *veel*$_{A}$ behaves as an adjective rather than a determiner: it can be preceded by a determiner (see (6)).[8] This section presents evidence that the adjective is gradable.

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

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

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

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

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

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

These data conform exactly to my proposal: undeclined *veel*$_{A}$ in (14) is a (relative) gradable adjective (see Kennedy & McNally 2005 for discussion of the licensing of degree

[8] 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*$_{A}$ is a determiner which is not expected to occur in this position. But declined adjectival *vele*$_{Nl}$ 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*$_{A}$ that also occurs in (5a) and (6). I cannot address the restrictions on predicative *veel*$_{A}$ here, or why it appears to force the subject to be mass.

modifiers); *vele*$_{Nl}$ in (15) 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:

(16) *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):

(17) *de heel vele problemen
the very many problems

However, as an anonymous reviewer observes, there are unexplained and idiosyncratic differences here among degree modifiers. While I agree with Broekhuis' judgment in (17), I find (18a) less marked and (18b) even better (both are judged ungrammatical by Broekhuis; I agree that these examples are marked, but not much more than those in (6) and (7), where the mass noun forces a declined form of *veel*$_{A}$). Furthermore, (18c), provided by the anonymous reviewer, is completely well-formed.

(18) a. ??de erg vele problemen
the very many problems

b. ?de vrij vele problemen
the fairly many problems

c. de zeer vele problemen
the very many problems

In addition, (19) shows that the examples improve with a mass noun:[9]

(19) a. ?het nogal vele onderhoud dat je er aan hebt
the rather much maintenance that you there PART have
'the rather large amount of maintenance that it takes'

b. ?het vrij vele en vette eten dat er geserveerd wordt
the fairly much and fatty food that there served is-PASS
'the fairly plentiful and greasy food that is served there'

c. ?het nogal vele gebruik dat ik maak van de computer
the rather much use that I make of the computer

The acceptability of (19) 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 (17). I do not have a firm proposal to explain (17), but in view of the contrast with (18) and (19) a processing confusion between *veel*$_{A}$ and *vele*$_{Nl}$ may be a relevant factor.[10]

[9] The coordination of *veel*$_{A}$ with an adjective in (19b) also appears to confirm my analysis, but I have been unable to secure firm judgments that reliably support this pattern.

[10] The contrasts among degree modifiers observed suggest 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* and *zeer* cannot agree. Perhaps the agreeing adverbs cannot select the proper form to agree with an inflected adjective that has an irregular inflection paradigm.

Thus far, I have provided one test – in (14) – for the gradability of *veel*$_{A}$. Unfortunately, two other common tests for scalarity cannot readily be used to distinguish *veel*$_{A}$ and *vele*$_{Nl}$: for some reason, neither variant allows a measure phrase, and one cannot easily tell from which variant the suppletive comparative and superlative forms derive. However, recent research on other types of modification made available by the semantics of degree expressions provides us with additional evidence that *veel*$_{A}$ is gradable, and *vele*$_{Nl}$ is not.

First, relative gradable adjectives allow modification that helps to specify the Comparison Class (see Bylinina 2013 for a recent overview of the literature). In (20a), *for an 8-year-old* indicates that Vera reads books that are lengthy compared to the books 8-year-olds generally read (see Solt 2011 for discussion of this subtype of Comparison Class PP's).

(20) a. Vera leest dikke boeken voor een kind van 8.
Vera reads lengthy books for a child of 8
'Vera reads lengthy books for an 8-year-old'

b. Vera leest veel boeken voor een kind van 8.
Vera reads many books for a child of 8
'Vera reads a lot of books for an 8-year-old'

c. *Vera leest vele boeken voor een kind van 8.
Vera reads many books for a child of 8

d. *Vera leest die/drie/meerdere boeken voor een kind van 8.
Vera reads those/3/several books for a child of 8

Likewise, (20b) indicates that the number of books Vera reads exceeds the expected number for 8-year-olds. This is exactly as expected if *veel*$_{A}$ is gradable. It also provides a modicum of evidence that *veel*$_{A}$ is an adjective, not a quantifier or a determiner, which are not ususally treated as gradable (an exception is Hackl 2000, who 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). (20c) and (20d) show that *vele*$_{Nl}$ patterns with determiners, quantifiers, cardinals and vague numerals in not allowing this type of modification; I take (20c) to entail at least that *vele*$_{Nl}$ is not a gradable adjective (it does not appear plausible that it should be a gradable but absolute adjective). The traditional analysis of *veel*$_{A}$ as a quantifier does not predict the well-formedness of (20b); because of the unfamiliar concept of a distributive adjective, it is impossible to tell what the traditional analysis would predict for *vele*$_{Nl}$ in (20c).

The scalarity of *veel*$_{A}$ is also reflected in its judge-dependence (see Sæbø 2009 and again Bylinina 2013). Unlike *vele*$_{Nl}$ (and similar quantifiers and numerals) *veel*$_{A}$ may appear embedded under a 'subjective' attitude verb. Sæbø observes that, next to predicates of personal taste and certain modal verbs, this context allows dimensional adjectives, a fact he attributes to the presence of a judge parameter introduced by the covert POS morpheme that accompanies such an adjective in the positive. Hence, we can explain the acceptability of (21a) and (21b) by analyzing *veel*$_{A}$ as a gradable adjective, accompanied by a POS morpheme, as proposed in section 3.3 below.

(21) a. Ik vind dat Lisa veel werk verzet. *veel*$_{A}$
I find that Lisa much work moves
'I feel that Lisa does a lot of work'

b. Ik vind dat Lisa veel boeken leest. *veel*$_{A}$
I find that Lisa many books reads
'I feel that Lisa reads a lot of books'

c. #Ik vind dat Lisa vele/drie/alle/meerdere boeken leest. *vele*$_{Nl}$
I find that Lisa many/3/all/several books reads
'I feel that Lisa reads many/3/all/several books'

Finally, the gradable adjective *veel*$_{A}$ also occurs with the Nominal AIC construction in (22) analyzed by Fleisher (2008), with its typical flavor of "inappropriateness":

(22) a. Dat is een dik boek om aan een eerstejaars- student voor
that is a long book COMP to a 1st-year student PRT
te schrijven.
to assign
'that's a long book to assign to a 1st-year student' i.e., '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
that are many books COMP to a 1st-year student PRT
te schrijven.
to assign
'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-
that are many/3/several books COMP to a 1st-year
student voor te schrijven.
student PRT to assign
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 (22a) contributes a modal component to the calculation of the standard relative to which a book would count as lengthy. Again, *veel*$_{A}$ in (22b) patterns with other gradable adjectives. (22c) shows that (vague) numerals do not support such an interpretation (*vele*$_{Nl}$ is excluded independently because it does not appear in a predicative position).

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

(23) 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 dinsdag morgen
the much beer for a Tuesday morning

Since *vele*$_{Nl}$ does not license such PP's, *vele* in (23) 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.

2.4 Intermediate summary

We have established in section 2.3 that *veel*$_{A}$ is gradable. This would have been surprising given the traditional lexical categorization of *veel*$_{A}$ as a quantifier in the category of *iedere* 'every' or as a determiner, since such elements are usually not gradable. Hence, the presumed category of *veel*$_{A}$ might have cast doubt on our contention that it is gradable; this

problem has been removed in section 2.2, where we have argued that mass-compatible gradable *veel*$_{A}$ can occur to the right of a determiner (see the data in (6) and (23)), hence is plausibly an adjective, for which gradability is unsurprising. We have provided no further evidence that *veel*$_{A}$ is an adjective rather than some other category with a similar distribution in the DP; however, categorizing it as, e.g., a vague numeral would again render its gradability exceptional, as well as its compatibility with mass terms, so I will tentatively maintain that *veel*$_{A}$ is an adjective. This is not crucial here: my explanation of the pseudo-partitive data that are central to this article will depend on the gradability of *veel*$_{A}$, not on its syntactic category.

An anonymous reviewer presents one argument that suggests that, at least in one respect, *veel*$_{A}$ behaves more like a numeral that an adjective. It is commonly assumed (see, e.g., Haeseryn et al. 1997) that noun-pronominalization with Dutch "quantitative" *er* 'there' can occur with numerals, but not with adjectives, as (24) shows:

(24) a. Ik heb er drie gezien.
I have there three seen
'I've seen three'

b. *Ik heb er mooie gezien.
I have there nice seen
'I've seen nice ones'

(25) a. Ik heb er veel$_{A}$ / vele$_{Nl}$ gezien.
I have there many seen
'I've seen many'

b. Ik heb er wel betere gezien.
I have there PRT better seen
'I've seen better ones'

If so, the acceptability of *veel*$_{A}$ in (25a) would indicate that it is more like a numeral. However, the ban on adjectives in this construction is not absolute, witness cases like (25b). I conclude that the argument is inconclusive (while noting that, if correct, the argument would also contradict the traditional categorization of *veel*$_{A}$ as a quantifier or determiner), and I will leave the matter for future research.

Turning to the category of *vele*$_{Nl}$, we have seen that it, too, can follow a determiner (see (13)), hence is not itself a determiner or quantifier. While I have no positive evidence that it is not a (non-gradable) adjective, it patterns consistently with other (vague) numerals: it can follow a determiner; it does not allow degree modifiers or other indicators of gradability (see section 2.3); it is incompatible with mass terms (see (5a)); and it combines with measure nouns (see section 3 below). I will also argue in section 3.1 that *vele*$_{Nl}$ acts as a probe for agreement inside the DP, behavior which it shares with other numerals but which sets it apart from adjectives. The syntactic categorization of *vele*$_{Nl}$ is not crucial for my purposes here, but we will see that attributing to *vele*$_{Nl}$ a semantics similar to that of other numerals will allow us to describe its compatibility with measure nouns in pseudo-partitives.

3 *Veel* and *vele*, measure nouns, and pseudo-partitives

This section discusses the distribution of *veel*$_{A}$ and *vele*$_{Nl}$ in Dutch pseudo-partitive constructions, which has so far been overlooked in the literature. I will begin by presenting some puzzling data that appear problematic for both my analysis of *veel*$_{A}$ and *vele*$_{Nl}$, and

for the traditional analysis. 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 the 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 when preceded by a numeral larger than one, and those that show normal number morphology.[11] The former class is instantiated by *liter* in (26):

(26) a. een$_{sg}$ liter$_{sg}$ wijn
a liter wine
'a liter of wine' *AMOUNT*

b. drie liter$_{sg}$ wijn
three liter wine
'three liters of wine' *AMOUNT*

c. #drie liters$_{pl}$ wijn
three liters wine
'three one-liter units of wine' *UNIT*

When a measure noun of this class is pluralized in this context, as in (26c), it no longer yields a pure amount reading (see also Van Gestel 1986): unlike (26b), (26c) does not simply refer to three liters of wine, but can only refer to three individuated one-liter units (e.g., liter bottles) of wine; I shall indicate this reading with #, and add the labels UNIT or AMOUNT to the glosses. Now consider the pattern with *veel/vele*:

(27) a. *veel liter$_{sg}$ wijn *veel*$_{A}$
many liter wine

b. #veel liters$_{pl}$ wijn *veel*$_{A}$
many liters wine
'many one-liter units of wine' *UNIT*

c. *vele liter$_{sg}$ wijn *vele*$_{Nl}$
many liter wine

d. vele liters$_{pl}$ wijn *vele*$_{Nl}$
many liters wine
'many liters of wine' *AMOUNT*

We observe that *veel*$_{A}$ and *vele*$_{Nl}$ differ from cardinal numerals in that they require plural marking on *liter* (see Doetjes 1997: 190ff). We also observe that *veel*$_{A}$ does not allow the pure amount reading, but *vele*$_{Nl}$ does. The following data confirm that the form *vele* that occurs in the pseudo-partitive construction with the pure amount reading is indeed the numeral *vele*$_{Nl}$, not some exceptionally inflected instance of the gradable adjective *veel*$_{A}$. The form *vele* in (28), which allows the pure amount reading, is incompatible with the gradability modifiers discussed in section 2.3, indicating that is it indeed *vele*$_{Nl}$, not *veel*$_{A}$. Replacing *vele*$_{Nl}$ with *veel*$_{A}$ in (29) allows the gradability modifiers but blocks the pure amount reading. (Note that the #-signs in (28) reflect unacceptability because of the gradability modifiers; the # in (29) signals the unit-not-amount reading, as before.)

[11] For similar data from other Germanic languages, see e.g. Delsing (1993: 204); Kinn (2001); Hankamer & Mikkelsen (2008); Grestenberger (2015), and references cited there.

(28) a. #Hij heeft vele liters wijn gedronken voor een kind van acht. *vele*$_{Nl}$
he has many liters wine drunk for a child of 8
'he has drunk many liters of wine for an eight-year-old' *AMOUNT*

b. #Ik vind dat hij vele liters wijn drinkt. *vele*$_{Nl}$
I find that he many liters wine drinks
'I feel he drinks many liters of wine' *AMOUNT*

c. *Hij heeft erg vele liters wijn gedronken. *vele*$_{Nl}$
he has very many liters wine drunk
'he has drunk very many liters of wine' *AMOUNT*

(29) a. #Hij heeft veel liters wijn gedronken voor een kind van acht. *veel*$_{A}$
he has many liters wine drunk for a child of 8
'he has drunk many one-liter units of wine for an eight-year-old' *UNIT*

b. #Ik vind dat hij veel liters wijn drinkt. *veel*$_{A}$
I find that he many liters wine drinks
'I feel that he drinks many one-liter units of wine' *UNIT*

c. #Hij heeft erg veel liters wijn gedronken. *veel*$_{A}$
he has very many liters wine drunk
'he has drunk very many one-liter units of wine' *UNIT*

The second class of measure nouns (those that do show regular plural morphology) is exemplified by *maand* 'month' in (30). We find the same restriction here: *vele*$_{Nl}$ in (30b) allows a pure amount reading (many months of holiday, not necessarily in contiguous one-month periods), *veel*$_{A}$ in (30c) does not (many one-month periods, e.g. calendar months, of holiday).

(30) a. Ik hoop op drie maanden vakantie volgend jaar.
I hope for three months holiday next year
'I'm hoping for three months of holiday next year' *AMOUNT*

b. Ik hoop op vele maanden vakantie volgend jaar. *vele*$_{Nl}$
I hope for many months holiday next year
'I'm hoping for many months of holiday next year' *AMOUNT*

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

In conclusion, *vele*$_{Nl}$ allows a pure amount reading with measure nouns, but *veel*$_{A}$ 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 (27) through (30). The supposed distributivity of *vele*$_{Nl}$ does not predict that it allows the amount reading in (27d) and (30b).[12] And the only semantic property attributed to *veel*$_{A}$, that it does not need to be distributive, gives no clue as to why it does not allow an amount reading in (27b) and (30c). Note also that the mass/count distinction does not capture the pattern in (27)/(30): 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 (27b) and (30c), which could be argued to be mass contexts. If anything, one would expect the reverse pattern.

[12] As above (see footnote 4), 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'.

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, as the other vague numerals also force the plural morphology and allow a pure measure reading:

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

However, the contrast between the mass terms in (5), (11) and (12), and the measure nouns on their pure amount reading in (26), (27), (30) and (31b) 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 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 wine* (on the pure measure reading)?

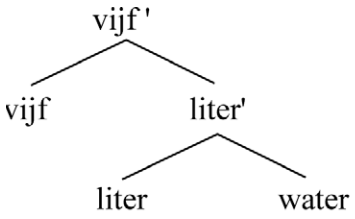
We can already observe at this point that an explanation in terms of number marking will not work. We could describe the distribution of *vele*$_{Nl}$ (and other vague numerals, with the possible exception of *een enkele* 'a small number') by postulating that it combines only with grammatically plural NPs, but this description does not extend to the cardinals. Cardinals can combine both with grammatically singular nouns (notably with measure nouns in (26b) and also with some mass nouns in (12c)) and with nouns with plural marking, so the contrast between (26b) and (26c) 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*$_{A}$ in (27) and (30), as it can combine with both grammatical singulars (5a) and plurals (3a).

In the following three sections I will propose an explanation for these observations. I will start in section 3.1 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 (26) and (27). In section 3.2 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*$_{A}$ and *vele*$_{Nl}$ in (27) – (30). In section 3.3, I will consider possible underlying motivations for these generalizations. Section 3.4 briefly considers how far a non-standard syntactic analysis of Dutch pseudo-partitives could go toward explaining the relevant data.

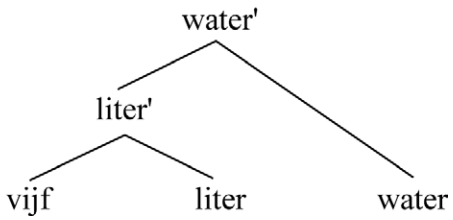
3.1 Constituency in the Dutch pseudo-partitive

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; Van Riemsdijk 1998; Vos 1999; 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. The head-complement analysis and the specifier analysis are schematically illustrated for *vijf liter water* 'five liters (of) water' in (32a) and (32b), respectively.

(32) a.



b.



I will briefly review some of the standard arguments for the head-complement analysis of Dutch pseudo-partitives, present some additional arguments, and then outline the account I adopt for the number marking data in (26) and (27) 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:[13]

(33) a. die$_{C}$ éne / halve / twee liter$_{C}$ water$_{Nt}$
that one / half / 2 liter water
'that 1/half/2 liter(s) of water'

b. het$_{Nt}$ onsje$_{Nt}$ cocaïne$_{C}$
the metric.ounce-DIM cocaine
'the little ounce of cocaine'

c. dat$_{Nt}$ jaar$_{Nt}$ vakantie$_{C}$
that year holiday
'that year of holiday'

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

(34) een liter$_{C}$ water$_{Nt}$ die$_{C}$ / *dat$_{Nt}$ we gedronken hebben
a liter water that we drunk have
'a liter of water that we drank'

Van Gestel explains this by assuming that *liter* selects too low an (extended) projection of N as its complement for it to allow adjunction of a relative clause, so the relative clause must be attached to the projection headed by *liter*. These data are 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:

(35) die tas weegt *(een/drie) kilo
that bag weighs a/three kilo
'that bag weighs a kilo/3 kilos'

But observe that the numeral may 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:

[13] In fact, Van Gestel (1986: 137) allows both genders on the article; I and my informants find this quite impossible; Frank van Gestel (p.c.) concurs. The examples given here are mine.

(36) a. Jan's (*een) (drie) liter wijn
J.'s a three liter wine
'John's liter/John's 3 liters of wine'

b. deze (*een) (drie) liter wijn
this a three liter wine
'this liter/these 3 liters of wine'

Now suppose that we adopt the specifier analysis. We cannot assume that *John's* or *this* in (36) 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 below) a cardinal as an obligatory argument (with the indefinite article in (35) perhaps an optional variant of *one*), or on the semantics proposed in Schwarzschild (2006). However, this means that the supposed measure phrase specifier in (36) consist just of the noun *liter*, only optionally preceded by a numeral. 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 (36), unlike in (35). On the structure adopted here, these data are unproblematic: the measure noun *liter* in (36) heads its own DP, which allows the same range of determiners as other similar DPs: a possessive or demonstrative in complementary distribution with the article, optionally followed by a numeral. The semantics proposed in section 3.2 will deal correctly with the definite determiners in (36).

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

(37) a. dat_{Nt} éne / *één jaar_{Nt} $\text{oponthoud}_{\text{Nt}}$
that one year delay
'that one year of delay'

b. die_{C} éne / ??één liter_{C} wijn_{C}
that one liter wine
'that one liter of wine'

c. dat *éne / één jaar_{Nt} lange $\text{oponthoud}_{\text{Nt}}$
that one year long delay

As shown in (10) above, the numeral *één* 'one' is inflected when it appears in a definite DP. (37a) and (37b) show that this also obtains when the numeral precedes a measure noun. This is unexpected if *éne* is embedded in a separate measure phrase specifier *éne jaar / éne liter*. 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 (37c)). 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 (38) (see Vos 1999 for an overview):

(38) a. een groep toeristen
a group tourists
'a group of tourists'

b. een doos koekjes
a box cookies
'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. Note furthermore that in previous stages of the language, the substance noun following a container or measure noun 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 *water* in pseudo-partitive *vijf liter water* 'five liters water' 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, as illustrated in (32a) above, 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 cardinal, and other measure nouns are pluralized (Klooster 1972); this is illustrated again in (39):

(39) a. drie jaar$_{sg}$ vakantie
three year vacation
'3 years of holidays'

b. drie maanden$_{pl}$ vakantie
three months vacation
'3 months of holidays'

As I will argue in the next section, it is implausible that the plural marking on *maanden* 'months' in (39b) 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 (39a) and (39b) (see Klooster 1972 for some discussion).[14] Matushansky and Ruys (2014) conclude that number marking in these cases is a purely syntactic agreement phenomenon: 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.[15] 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.

Given this treatment of number marking, 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), causing all of them to pluralize. This will describe the number data in (26), (27), (30), (31) and (39): the vague numerals in (27d), (30b) and (31b) enter into an Agree relation with the measure nouns and cause

[14] It is in this regard that the Dutch situation differs from Viennese German (as discussed in Grestenberger 2015), where, on some container nouns, the presence of number marking correlates with the container reading. Unfortunately, Grestenberger (2015) was not available to me during the writing of this article, and a proper comparison must await another occasion.

[15] Note that a plural form *jaren* does exist for *jaar* 'year', which is used for instance when it is preceded by *vele*$_{Nl}$ and other vague numerals.

them to be marked plural; the cardinal Agrees with the measure nouns in (30a) and (39b), but not with the measure nouns in (26b) and (39a).[16] See Matushansky and Ruys (2014) for further discussion.[17]

This analysis warrants an additional conclusion. If *vele*$_{Nl}$ in (27d) 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 surely no adjectives that can be inserted before *liter* in (26a) or (26b) that will render the measure noun plural. This confirms my assessment in section 2.4 above that the limited evidence available suggests that *vele*$_{Nl}$ is not a determiner, nor an adjective, but indeed a (vague) numeral.

The analysis also entails that we cannot use grammatical number marking in (27) 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 (27).

3.2 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 (40) (see also Chierchia 1998a):

(40) 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*. I cannot exclude that an analysis like this can be made to explain the contrast between *veel*$_{A}$ and *vele*$_{Nl}$; see section 3.4 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 (40) entails the obligatory presence of a (cardinal) numeral. I have argued on the basis

[16] As to (27b), for reasons explained in section 3.2 below *veel*$_{A}$ can only combine with a predicate that has undergone semantic pluralization, presumably via an intervening Num head, which gives rise to the number marking and the non-measure reading.

[17] Note that the plural in (27d) is not the plural of abundance referred to as the "emphatic" use in Hoeksema (2006); there is no abundance effect in (27d), or in its variant *luttele liters wijn* 'very few liters of wine'.

of (36) that this is problematic: pseudo-partitives can appear with just a determiner, and no cardinal.[18]

We can allow pseudo-partitives to appear without a cardinal and to combine directly with a determiner through a slight modification of the denotation of *liter* (cf. Lasersohn 2011: 1144):

(41) liter $\rightsquigarrow \lambda P \lambda x[\ P(x) \wedge \mathbf{liter'}(x) = 1\ ]$
liter wine $\rightsquigarrow \lambda x[\ \mathbf{wine'}(x) \wedge \mathbf{liter'}(x) = 1\ ]$

On this analysis, *liter* only takes the substance noun *wine* as a complement, yielding a (mass) predicate that applies to portions of wine of one liter. This predicate can combine with a determiner in the usual way. This explains (36). 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: a 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 portions may overlap materially). *Three*, as usually defined, would select from these all three-membered i-sums, not just the three-liter sized ones.[19] 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 (42a) from (42b), since in (42a) we would also be dealing with an individual sum of three 1-liter units (see also footnote 19):

(42) a. drie liter water
three liter water
'three liters of water' *AMOUNT*

b. drie liters water
three liters water
'three 1-liter units of water' *UNIT*

We can avoid the complications that would arise from semantic pluralization of *liters of water*, and the problem raised by (42), by adopting the semantics for cardinals proposed by Ionin and Matushansky (2006). In this framework the non-overlap condition is inde-

[18] There is one additional plausibility argument against the analysis in (40): if *liter* requires a number as an argument, combining it with *vele* as in (27d) is problematic since *vele* does not denote a number (likewise for the other vague numerals; see (31b)). This problem could be solved by applying QR to *vele*, along the lines of (59) below; but I am not aware of evidence in favor of this operation applying here.

[19] 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.

pendently required, and cardinals combine with a semantic singular, as appears to be the case here.[20] We can then construct *two hundred liters of wine* as follows (starting from (41)):

(43) hundred $\rightsquigarrow \lambda Q \lambda x \exists Y[\textsc{partn}(x,Y) \wedge |Y| = 100 \wedge \forall y \in Y Q(y)]$
hundred liter wine $\rightsquigarrow \lambda x \exists Y[\textsc{partn}(x,Y) \wedge |Y| = 100 \wedge \forall y \in Y[\textbf{wine'}(y) \wedge \textbf{liter'}(y) = 1]]$
two $\rightsquigarrow \lambda Q \lambda x \exists Y[\textsc{partn}(x,Y) \wedge |Y| = 2 \wedge \forall y \in Y Q(y)]$
two hundred liter wine $\rightsquigarrow \lambda x \exists Y[\textsc{partn}(x,Y) \wedge |Y| = 2 \wedge \forall y \in Y \exists Y$
$[\textsc{partn}(y,Y) \wedge |Y| = 100 \wedge \forall y \in Y[\textbf{wine'}(y) \wedge \textbf{liter'}(y) = 1]]]$

The partitioning operator can be defined as in (44) (I use $\leq$ to generalize over the part-of operators for the mass and count domains):

(44) $\textsc{partn}(x,Y) := \forall y,y' \in Y[y \neq y' \rightarrow \neg \exists z[z \leq y \wedge z \leq y']] \wedge \forall x'[\, x \leq x' \leftrightarrow$
$\forall y \in Y[y \leq x']]$

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 (43), 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 (43) combines with semantically singular *books*, which denotes the set of book atoms, and the combination yields a predicate that applies to plural individuals that consist of two books, i.e., that can be partitioned into a size-two set of non-overlapping individuals each of which is a book atom.[21]

Now observe that predicates such as *two hundred liters of wine* or *two books* have the special property that the individuals they can be true of cannot stand in the proper part-of relation to each other. In this, they differ from predicates such as *wine* or (semantically plural) *books*, which can be true of (plural) individuals some of which properly contain others. *Two hundred liters of wine* or *two books* cannot apply to both 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 are now in a position to describe the distribution of *veel*$_{\text{A}}$ and *vele*$_{\text{Nl}}$ and their kin. Consider again the data in (45) and (46):

[20] 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 (26b) and *liters wine* in (27d) 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:

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

[21] Ionin and Matushansky assume, then, that plural marking on *books* in *two books* is also an agreement phenomenon, as proposed earlier by e.g. Krifka (1995), an assumption we have adopted here. Following Matushansky and Ruys (2014), it is caused by the probing numeral Agreeing with the [Ind] feature on *book*.

(45) a. veel wijn *veel*$_{A}$
much wine

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

c. *veel liter wijn *veel*$_{A}$
many liter wine

d. #veel liters wijn *veel*$_{A}$
many liters wine
'many liter-units of wine' *UNIT*

(46) a. #vele / meerdere / drie wijn(en) *vele*$_{Nl}$
many / several / three wine(s)
'many/several/three types of wine/serving portions of wine'

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

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

We need to block the mass reading with *vele*$_{Nl}$ and other (vague) numerals in (46a), while allowing it with *veel*$_{A}$ in (45a). We need to allow both *veel*$_{A}$ and *vele*$_{Nl}$ with count nouns in (45b) and (46b). And we need to block the measure reading with *veel*$_{A}$ in (45c) and (45d), while allowing it with *vele*$_{Nl}$ and other (vague) numerals in (46c). I propose the generalizations in (47), for which I will be considering possible underlying causes in the next section:

(47) a. Adjectival *veel*$_{A}$ 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 the constraints in (47) allow (45a) but block the mass reading in (46a).[22] For the count nouns in (45b)/(46b) we assume, as is standard, that an NP that denotes a predicate over (count) atoms can optionally undergo semantic pluralization, presumably triggered by a functional head Num in its extended projection (Ritter 1991). As a result, *boeken* 'books' can either be semantically singular, so that it can combine with a (vague) numeral in (46b), since a predicate over (count) atoms is a quantized predicate, or it can be semantically plural (the result of semantic pluralization), so that it can combine with *veel*$_{A}$ in (45b), since 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 (46b) because Agree with the probing numeral or cardinal triggers plural marking on the noun (see the discussion of Matushansky and Ruys 2014 in section 3.1). In (45b), morphological plural on *boeken* is presumably triggered by the semantically pluralizing Num head in the same way.

Turning now to the pseudo-partitives, *liter* (on its pure measure reading) takes a mass noun to create a quantized predicate (as shown in (41)), which can therefore be input to a numeral or cardinal in (46c). This in turn creates another quantized predicate, allowing Ionin and Matushansky's composition of complex cardinals as in (43). Again, number marking in (46c) does not reflect semantic pluralization, and indeed occurs only with a

[22] This remains true if one assumes that mass nouns are semantically plural (cf. footnote 24).

subset of measure nouns and numerals (see above). But the same quantized predicate *liter wijn* cannot be input to $veel_A$ in (45c) or (45d), because of constraint (47a).

As for the non-measure readings observed: we can assume for (26c) *drie liters wijn* 'three one-liter units of wine' that it contains not a true measure noun but a container noun *liter* referring to actual liter units (e.g., bottles), which has the relevant feature [Ind] that makes it Agree with the cardinal, triggering plural marking (see Matushansky and Ruys 2014). For (45d) (=(27b)) it appears safe to assume that Num here has applied the semantic pluralization necessary to obtain a non-quantized predicate in conformity with (47a); since Num requires a set of (count) atoms this in turn coerces the same container noun reading (and Num triggers plural morphology); likewise for (30c). As for (45c), no interpretation is possible: we have seen that the pure measure reading is blocked by (47a); the non-measure, liter-unit reading is blocked because it would yield the required non-quantized predicate only after semantic pluralization via Num; but this would have caused morphological pluralization, as in (45d).

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

(48) a. #veel liters knikkers — $veel_A$
many liters marbles
'many one-liter units of marbles' — *UNIT*

b. vele liters knikkers — $vele_{Nl}$
many liters marbles
'many liters of marbles' — *AMOUNT*

c. *veel honderden/duizenden/miljoenen mensen — $veel_A$

d. vele honderden/duizenden/miljoenen mensen — $vele_{Nl}$
many hundreds/thousands/millions people
'many hundreds/thousands/millions of people'

We observe again that $vele_{Nl}$ combines with a quantized predicate, and $veel_A$ does not. The measure reading is blocked in (48a) because *liters of marbles* is quantized. It could become unquantized only by undergoing semantic pluralization but this operation only applies to sets of atoms, coercing the liter-unit reading (the substance noun *knikkers* 'marbles' on the other hand presumably is the result of semantic pluralization applying to *knikker* 'marble'). Likewise, semantically singular *honderden mensen* 'hundreds of people' (lit. 'hundreds people') is quantized (and, I assume, cannot undergo semantic pluralization), hence can be input to numerals such as $vele_{Nl}$ (or to *three*), but not to $veel_A$.[23]

Note finally that an alternative explanation of the distribution of $veel_A$ and $vele_{Nl}$ in pseudo-partitives in terms of semantic number does not seem plausible. Postulating that $vele_{Nl}$, the other vague numerals, and cardinal numerals require semantically plural complements would correctly prevent them from combining with mass nouns but also, incorrectly, from appearing in pseudo-partitives, unless we modify the pluralization operation to add a 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

[23] That *hundred* etc. cannot undergo regular semantic pluralization by Num is confirmed by examples like *Jan las honderden boeken* 'John read hundreds of books' only having a plural of abundance reading. The same holds for regular cardinals, witness the fact that we cannot pluralize *three books* into *three books* (or **threes books*) for it to refer to a multiple of three books. *Honderd* 'hundred' etc. here behave exactly like measure nouns such as *liter*, which allow pluralization on their pure measure reading but only into a plural of abundance; the same is suggested by English *hundreds **of** people*. Note incidentally that (48d), or *slechts enkele honderden mensen*, 'merely some hundreds people' does not have a plural of abundance reading, confirming what we have argued throughout, namely that the plural marking on *honderd* here is triggered by Agree with $vele_{Nl}$, not by pluralization.

would need to give up their compositional analysis of complex cardinals. Describing the distribution of $veel_A$ by restricting it to semantic singulars is even harder. To block (45d) one must then postulate that *liter wine* is obligatorily plural; it is not clear how this could be derived, and in view of (46c) it is again incompatible with Ionin and Matushansky's (2006) treatment of cardinals.[24]

3.3 Motivating the semantic constraints

In this section I will propose a semantics for $veel_A$ and $vele_{Nl}$, from which I will attempt to derive underlying motivations for the constraints in (47). 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 among objects of different quantities.

I have argued that $veel_A$ is gradable, presumably a gradable adjective. This makes available the following motivation for (47a). 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 (47a). Let $veel_A$ 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):

(49) $\text{veel}_A \rightsquigarrow \lambda x.\textbf{amount}(x)$

(50) $\text{tall} \rightsquigarrow \lambda x.\textbf{height}(x)$

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 portion of wine is determined by its volume (in Solt 2015, 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 $veel_A$ 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 $veel_A$, POS in (51) also takes care of combining the result with the denotation of the noun:

(51) $\text{POS}_{attr} \rightsquigarrow \lambda A \lambda N \lambda x[N(x) \wedge A(x) > \textbf{std}(\lambda x{:}N(x).A(x))(C)]$

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 2.3 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).

[24] A treatment in terms of semantic number is possible if we adopt Chierchia's (1998a; b) assumption that mass terms are semantic plurals (or general number). We can then postulate that $veel_A$ combines only with semantic plurals (which includes mass nouns, and excludes measure phrases on the reasonable assumption that these cannot be pluralized), and $vele_{Nl}$ only with singulars (which excludes mass nouns). This is actually close to the proposal I put forward here; but observe that this account still lacks an explanation (which I will provide in section 3.3) for why $veel_A$ cannot combine with singulars.

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

(52) POS_{attr} $veel_A$ ⇝ $\lambda N \lambda x[N(x) \wedge \mathbf{amount}(x) > std(\lambda x{:}N(x).\mathbf{amount}(x))(C)]$
NUM_{pl} ⇝ $\lambda P \lambda x[{}^*P(x) \wedge |x| > 1\ ]$
NUM_{pl} mannen ⇝ $\lambda x[\ {}^*\mathbf{man'}(x) \wedge |x| > 1\ ]$
POS_{attr} $veel_A$ NUM_{pl} mannen ⇝ $\lambda x[{}^*\mathbf{man'}(x) \wedge |x| > 1 \wedge \mathbf{amount}(x) > std(\lambda x{:}\ {}^*\mathbf{man'}(x) \wedge |x| > 1.\mathbf{amount}(x))(C)]$

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. Consider the **std** function as it applies to *veel*$_A$ and *mannen* (or *tall* and *man*): it takes all plural individuals that consist of men and orders them by cardinality (or takes all men and orders 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 (45c), where *veel*$_A$ combines with the quantized predicate *liter wine*:

(53) liter wijn ⇝ $\lambda x[\ \mathbf{wine'}(x) \wedge \mathbf{liter'}(x) = 1\ ]$
POS_{attr} $veel_A$ ⇝ $\lambda N \lambda x[N(x) \wedge \mathbf{amount}(x) > std(\lambda x{:}N(x).\mathbf{amount}(x))(C)]$
#POS_{attr} $veel_A$ liter wijn ⇝ $\lambda x[\mathbf{wine'}(x) \wedge \mathbf{liter'}(x) = 1 \wedge \mathbf{amount}(x) > \mathbf{std}(\lambda x{:}\ \mathbf{wine'}(x) \wedge \mathbf{liter'}(x) = 1.\mathbf{amount}(x))(C)]$

The contribution of *POS veel*$_A$ here is trivial by necessity. **Std** ranks all portions of one liter of wine by volume, and calculates a standard volume among these (carefully, if vacuously, taking the context into account). We then obtain the set of liters of wine whose volume exceeds this standard. Whatever the details of this procedure, the result is trivial: either we always end up with the same set of 1-liter portions of wine that we started with (if one liter exceeds the standard), or we always obtain the empty predicate (if one liter does not exceed the standard). Assuming that the standard is the median, the latter case obtains.[25] I submit that the triviality of modifying quantized predicates by *veel*$_A$ explains why it is unacceptable.

The discussion so far has focused on the unmodified adjective *veel*$_A$, so the semantics I have provided involves a role for the covert POS morpheme. This is not to say that POS is crucial in explaining the ban on *veel*$_A$ co-occurring with measure phrases; but with other instances of Deg, the calculation will be different. Consider, e.g., *te* 'too' in (54):[26]

(54)	*Jan	dronk	te	veel	liter	wijn.	*veel*$_A$
	Jan	drank	too	many	liter	wine	

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

[26] One might argue that (54) and (45c) are ruled out independently because *liter wijn* is arguably a 'derived count noun' in the singular, hence requires an (indefinite) article. But the examples are still ruled out when an article is added: *Jan dronk een veel(e) liter wijn* 'J. drank a many liter wine', confirming the need for the constraint in (47a).

The pure amount reading is excluded with *te veel*$_{A}$ 'too many' as well. We can understand why by considering that, based on our semantics for *veel*$_{A}$, the sentence would assert, roughly, that the most voluminous liter of wine that John drank was more voluminous than the liters of wine he drank in any permissible world (see, e.g., Meier 2003; von Stechow et al. 2004 for details), which is vacuously false.[27] A similar reasoning can explain why the (suppletive) comparative of *veel*$_{A}$ is blocked. Likewise for *#Jan dronk (een) erg veel(e) liter wijn* 'John drank (a) very many liter wine', which would assert that John drank a liter of wine that was very voluminous.[28] A full derivation of such cases must await another occasion; what unites them and the POS case we have discussed in detail, it would appear, is that they involve some sort of predication (relatively large, too large, etc.) over the volume of a liter, which will generally turn out to be vacuous.[29]

I will have less of interest to say about (47b). 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):

(55) $\text{vele}_{Nl} \quad \rightsquigarrow \quad \lambda Q \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| > n \wedge \forall y \in Y Q(y)\ ]$

(56) $\text{meerdere} \quad \rightsquigarrow \quad \lambda Q \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| > 1 \wedge \forall y \in Y Q(y)\ ]$

When this *vele*$_{Nl}$ combines with *liter wine*, the result is not trivial (cf. (46c)):

(57) vele_{Nl} liters wijn $\rightsquigarrow \quad \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| > n \wedge \forall y \in Y[\textbf{wine'}(y) \wedge \textbf{liter'}(y) = 1\ ]]$

(57) 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 (55) with a semantically singular count noun also gives a reasonable result.

Turning to the constraint in (47b): as we assimilate *vele*$_{Nl}$ with numerals, preventing it from combining with mass nouns reduces to the problem of preventing all numerals, including cardinals, from doing so. Here is one simple solution. The translations we get for (46a) are:

(58) a. $\#\text{vele}_{Nl}$ wijn $\rightsquigarrow \quad \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| > n \wedge \forall y \in Y[\textbf{wine'}(y)\ ]]$
b. #meerdere wijn $\rightsquigarrow \quad \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| > 1 \wedge \forall y \in Y[\textbf{wine'}(y)\ ]]$
c. #drie wijn $\rightsquigarrow \quad \lambda x \exists Y[\ \textsc{partn}(x,Y) \wedge |Y| = 3 \wedge \forall y \in Y[\textbf{wine'}(y)\ ]]$

[27] Depending on technical details, perhaps it is true in one marginal case, namely if there was no permissible world where John drank a liter of wine. But saying that the liter he did drink was too large would be a pragmatically odd way of stating this, perhaps because it would implicate that a smaller liter would have been ok.

[28] A special case is *hoeveel* 'how.many'. It appears to be composed of *hoe* 'how' and the uninflected *veel*$_{A}$ (as we expect, since the uninflected variant is gradable). If so, it would constitute a counterexample to generalization (47a), since unlike *veel*$_{A}$ it does combine with measure nouns to create a pure measure reading in *hoeveel liter wijn* 'how many liters of wine'. However, it rather appears that *hoeveel* is not composed of either *veel*$_{A}$ or *vele*$_{Nl}$, since it combines with all three categories under discussion: mass nouns, count nouns, and measure nouns. That *hoeveel* in *hoeveel liter wijn* is not decomposable is confirmed by the fact that *hoe* 'how' actually cannot combine with regular adjectives in an attributive position, only in a predicative position: **hoe grote meisjes* 'how big girls' vs. √*hoe groot zijn de meisjes* 'how big are the girls'. I will leave the proper analysis of *hoeveel* for future research.

[29] In each of these cases, pluralizing *liter* will render the example well-formed, but only on the liter-unit reading, and the explanation is as before. Semantic pluralization with Num (triggering morphological plural) is possible for a container-noun 'liter', and will render *liters wijn* not quantized: we can then meaningfully predicate of these plural individuals of multiple liter-bottles that they are too large, relatively large, etc.

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

The remaining cases of (47b) involve preventing numerals from combining with a semantic 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 number of books'; but I am not sure if this observation will serve to explain the restriction, so I will settle for stipulating (47b) or adopting Ionin and Matushansky's stipulation.

3.4 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 have provided evidence for this analysis in section 3.1 above. Nevertheless, I briefly want to consider the question what kind of explanation could be devised if one assumes the analysis that takes the measure phrase *five liters* as a specifier in the extended protection of *wine*, as shown schematically in (32b).

Assume then that *liter* has the semantics in (40) 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 wine*, 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: following Solt (2015), allow *many* to undergo QR as shown in (59a), which could then be interpreted as in (59b) (cf. Kennedy 2012).

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

b. $\text{many} \rightsquigarrow \lambda I[\max(\lambda m.I(m)) > n\ ]$

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

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

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 (59a) 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.[30]

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 way is to postulate that adjectives cannot undergo QR but vague numerals can, perhaps

[30] An anonymous reviewer correctly points out that an analysis analogous to (59) will more easily allow one to derive a downward monotone reading for *weinig(e)*, 'few, little'; clearly, an analysis on a par with the treatment of $vele_{Nl}$ in (55) does not lead to a monotone decreasing reading. Pending further research, however, it is my initial impression that the inflected form *weinige*, the apparent counterpart of $vele_{Nl}$, tends to have a monotone decreasing reading by itself less easily than *weinig*, suggesting that (55) would be a better treatment than (59). Whether *weinig(e)* must indeed be treated exactly on a par with *veel/vele*, as the literature suggests, is a question I must leave for future research.

because they are more operator-like. Postulating a corresponding type distinction, which treats $vele_{Nl}$ as shown in (59b) 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 (2015) treats both English *much* and *many* as gradable adjectives (predicates over sets of degrees) that undergo QR, which would support an analysis along the lines of (59); 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.[31]

4 Comparison with Russian and English

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 languages, 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. To conclude this article I want to provide a brief comparison of these Russian and English elements with $veel_{A}$ and $vele_{Nl}$, 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: (60a) 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: (60b) states that the intelligent ones make up a large proportion of the theoretical physicists. It can be described as a strong GQ Determiner.

(60) 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 (52) above.

Considering Dutch *veel* from this perspective creates a less clear picture. At first glance, Dutch is like Russian: adjectival $veel_{A}$ in (61a) gives a proportional reading, whereas I feel

[31] 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 $veel_{A}$ and $vele_{Nl}$.

that this reading is dispreferred for non-adjectival $vele_{Nl}$ in (61b); likewise for the other vague numerals (*meerdere* 'several', etc.).

(61) a. Veel natuurkundigen zijn intelligent. $veel_A$
b. ??Vele natuurkundigen zijn intelligent. $vele_{Nl}$
many physicists are intelligent

Since I have proposed roughly the same semantics for $veel_A$ that Krasikova & Champollion (2011) propose for adjectival *mnogie*, this is what we expect: (61a) 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 (55) gives the cardinal reading observed in (62a):

(62) a. De orkaan liet vele slachtoffers achter. $vele_{Nl}$
b. De orkaan liet veel slachtoffers achter. $veel_A$
the hurricane left many victims behind

However, both Dutch *many's* are allowed in the *there*-insertion context in (3), and a cardinal reading seems perfectly acceptable for $veel_A$ in (3a) and in (62b). I do not have a firm proposal for dealing with this option; one possibility is that the standard for **amount** in (62b) 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 (62) without triggering a marked reading. Also, Russian uses the non-adjectival *mnogo* for both measure nouns and mass nouns:

(63) *Russian*
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
'many liters of wine'
d. #mnogie litry viná
many liter.PL wine-GEN.SG
'many 1-liter units of wine'

Table 3 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	$veel_A$	$vele_{Nl/D}$	$veel_A$	$vele_{Nl/D}$ $veel_A$

Table 3: *Many* in three languages.

5 Conclusion

I have proposed that Dutch uninflected *veel* is a relative gradable adjective (which inflects only for definiteness), and inflected *vele* 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. I have defended the right-branching analysis of Dutch pseudo-partitives and offered a compositional semantics for this construction that supports a natural account of which forms of *veel/vele* combine with mass nouns, measure nouns, and plurals. More work is required to obtain reliable data on the proportional/ cardinal distinction, and to address issues of cross-linguistic variation, which are receiving increasing attention.

Abbreviations

ATTR = attributive, C = common gender, COMP = complementizer, D = determiner, DIM = diminutive, GEN = genitive, Nl = numeral, NOM = nominative, Nt = neuter gender, PRT = particle, SG = singular, PL = plural

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Competing Interests

The author has no competing interests to declare.

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