Count-mass nouns, inherent number and the unmasking of an imposter

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0. Major claims

- Count-mass nouns like *furniture* are only mass by association, not true mass nouns.
- They look like mass nouns due to an inherent specification for semantic plurality.
- Similarities with *pluralia tantum* nouns in English stem from the same mechanism.
- Count-mass nouns are less relevant to the debate about what it means to be 'mass' than previously thought.

1. Introduction

In English and (some) other languages (Dutch, Doetjes 1997 de Belder *to appear*, Purépecha, Vázquez-Rojas 2012), the count/mass distinction is not really a bipartite distinction, but rather tripartite. There are count nouns (1), mass nouns (2) and nouns that seem to fall in between (3). Following Doetjes (1997), I will call these count-mass nouns.

(1) a. There is **a duck** in the water. (count)
b. **The boxes** cluttered up the attic.

(2) a. There is **water** flooding through the ceiling. (mass)
b. **The mud** shifted, and we got bogged down.

(3) a. **The furniture** was delivered promptly to my home. (count-mass)
b. The handlers unloaded **the luggage** from the aircraft.

Mass nouns differ from count nouns in the familiar ways, lacking the ability to be counted (4), combine with plural morphology (5) and combine with mass quantifiers (6):

(4) a. There are three ducks in the pond. (count)
b. *There are three muds on the ground. (mass)

(5) a. I saw tiles falling from the ceiling. (count)
b. *I saw waters flooding through the ceiling. (mass)

(6) a. There are many/*much dogs in the park. (count)
b. There is *many/much sand left to be moved. (mass)

Count-mass nouns in English uncontroversially pattern with mass nouns in this respect:

(7) a. *There are three furniture(s) left in the store. (count-mass)
b. *There are three luggage(s) left on the carousel.

(8) a. *I donated furnitures to the store.
b. *I got my mails from the post office.

(9) a. There isn't much/*many furniture left at home.
b. There isn't much/*many luggage left to be accounted for.

2. 2. Count-mass nouns form a separate class from mass nouns

On the basis of sentences (7-9), there doesn't seem to be much suggestion that we need to treat nouns like *furniture* any differently from mass nouns. But, under various tests, we find that they don't always pattern with mass nouns.

They differ from mass nouns on intuitions of divisiveness. Compare the intuitions about the mass noun in (10a) versus the count-mass noun in (10b) below (from Doetjes 1997):

(10) a. A piece of a piece of cheese is a piece of cheese.
b. A piece of a piece of furniture is NOT a piece of furniture.

Also, they differ from mass nouns in that they do not undergo mass to count shifts (Bale & Barner 2009):

(11) John went to the bar and bought three beers. (mass)

(12) *John went to the store and bought three furnitures. (count-mass)

Not only do count-mass nouns not fully adhere to the properties of mass nouns, in many cases count-mass nouns explicitly pattern with count nouns and not mass nouns:

Schwarzschild (2009) shows that count-mass nouns combine happily with *stubbornly distributive predicates,* patterning with count nouns but crucially not mass nouns:

(13) a. The boxes are small and square. (count)
b. The ducks are large.

(14) a. #The water is large. (mass)
b. #The sand is round.

(15) a. The furniture is large. (count-mass)
b. The mail is small and square.

⇨ We similarly see count-mass nouns patterning with count nouns and not mass nouns in comparative contexts (Bale & Barner 2009). Comparatives used with count nouns and count-mass nouns are based on number (16,17), but mass nouns require judgements based on some measurement (volume, length, etc), and do not allow for number (18):

(16) John has more ducks than I do. (count)
✔ if John has three ducks and I have one.
✘ if John has two 6kg ducks and I have three 1kg ducks.

(17) John has more furniture than I do. (count-mass)
✔ if John has three pieces and I have one.
✘ if John has one grand piano and I have three small barstools.

(18) John has more water than I do. (mass)
✔ if John has six litres of water and I have two litres.
✘ if John has six 1 litre bottles of water and I have one 10 litre bottle.

In Dutch, we see morphological evidence too. Classifiers can replace a null count noun when answering a question, in which case the form is *stuks* (piece+GEN), and not *stukken* (piece+PL):

(19) A: Hoeveel boeken neem je mee? (Dutch)
how.many books take you with
'How many books are you taking?'

B: Twee stuks/*stukken.
two piece.GEN/piece.PL
'Two (books).'

If a mass noun is questioned, we get the opposite:

(20) A: Hoeveel kaas heb je gegeten?
how.much cheese have you eaten
'How much cheese did you eat?'
B: Twee stukken/*stuks
two piece.PL/piece.GEN
'Two pieces.'

Note that when Dutch count-mass nouns combine with a classifier, they tend to use the genitive form, rather than the plural form:

(21) drie stuks/*stukken vee
three piece.GEN/piece.PL cattle
'Three head of cattle.'

If we compare all the properties of mass vs count vs count-mass nouns in English and Dutch[1], we see that with respect to grammatical properties (the top four rows in the table), count-mass nouns pattern with mass nouns. With respect to semantic properties (bottom four rows), count-mass nouns pattern with count nouns.

(22)

Property	**Mass nouns**	**Count-mass nouns**	**Count-nouns**
Combine with plural morphology?	✘	✘	✔
Countable?	✘	✘	✔
Count-quantifiers?	✘	✘	✔
Mass-quantifiers?	✔	✔	✘
Count-divisive?	✔	✘	✘
Stubbornly distributive predicates?	✘	✔	✔
Comparison by number?	✘	✔	✔
Comparison by measurement?	✔	✘	✘

3. Further evidence that count-mass aren't mass

3.1. Comparative constructions

Data from comparatives further suggests that count-mass nouns are a different class than true mass nouns.

Bhatt (2012) shows that there are three different positions where *more* can appear in English comparatives with mass nouns:

(23) a. John bought three *more* gallons of oil than the sedan.
b. John bought three gallons *more* oil than the sedan.
c. John bought three gallons of oil *more* than the sedan.

Schematically we can represent this as follows:

(24) John bought three (❶MORE) gallons (❷MORE) of oil (❸MORE) than me.

Not previously noted, to my knowledge, is that count-mass nouns have a more restricted paradigm. Position ❷, where *more* intervenes between the measure phrase and the count-mass noun is unavailable:

[1] Ignoring for the time being the morphology on the Dutch *stuks* vs *stukken.*

(24) a. Karl sold three *more* pieces of furniture than Mike.
b. *Karl sold three pieces *more* furniture than Mike.
c. Karl sold three pieces of furniture *more* than Mike.

⇨ Count-mass nouns have a more local relationship with their classifier than true mass nouns.

It is notable that the classifiers used for count-mass nouns are semantically vacuous, unlike those that can be used for true mass nouns.

4. Pluralia tantum versus count-mass nouns

Looking at *pluralia tantum* nouns, we can see that they share properties with count-mass nouns.

Pluralia tantum nouns are nouns which are invariably plural, in English both in nominal morphology and verbal agreement:[2]

(25) The scissors are lying on the table.
⇨ Fine in a situation where just one pair of scissors lies on the table.

In the following, I list the similarities between count-mass nouns and *pluralia tantum.*

Similarity #1 - Pluralia tantum (in English) generally can't be counted without a classifier:[3]

(26) a. *I took five jeans on holiday.
b. I took five pairs of jeans on holiday.

(27) a. *There are thirteen scissors on the table.
b. There are thirteen pairs of scissors on the table.

(28) a. *I need three glasses so I'm covered for any weather situation.
b. I need three pairs of glasses so I'm covered for any weather situation.

Pluralia tantum being unable to be counted regularly is not unattested cross-linguistically. For instance, Finnish (Hurford 2003) and Russian (Pesetsky 2012) both use special 'collective' numerals instead of regular numerals for counting *pluralia tantum*. Bosnian (Aida Talić p.c.) uses adjectival numerals.

[2] Acquaviva (2008) shows other properties of *pluralia tantum* not considered here.

[3] Note that not all dialects of English are alike in this respect, with some speakers able to count *pluralia tantum*. These dialects presumably have a grammar like Dutch, where *pluralia tantum* can be counted, but count-mass nouns can't be; see below in (29).

It should be pointed out that this is not a universal property. Dutch, for instance, happily counts *pluralia tantum* with regular numerals (Beata Moskal p.c.) shown below, as does French (Eric Mathieu p.c.):

(29) De wetenschappers onderzochten de twee hersenen.
the researchers investigated the two brains
'The investigators investigated the two brains.'

Similarity #2 - Pluralia tantum classifiers are semantically vacuous

In much the same way as count-mass classifiers, the classifiers used to count *pluralia tantum* are semantically vacuous, and do not add anything to the meaning of the noun phrase as a whole.

Common ones in English are *pair* and *set* (non-exhaustive).

(30) a. A pair of jeans/glasses/shorts.
b. A new set of wheels.

Similarity #3 - Pluralia tantum show similar locality effects with their classifiers

Looking at the paradigm of *pluralia tantum* nouns with comparisons, we see that they too disallow *more* to intervene between the noun and the classifier:

(31) a. Karl sold three *more* pairs of jeans than Mike.
b. *Karl sold three pairs *more* jeans than Mike.
c. Karl sold three pairs of jeans *more* than Mike.

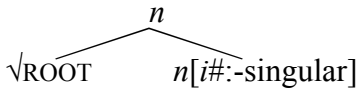
(32) a. Karl broke five more pairs of scissors than Mike.
b. *Karl broke five pairs more scissors than Mike.
c. Karl broke five pairs of scissors more than Mike.

5. The representation and role of inherent number

I propose that count-mass nouns have a specification for semantic plurality, but do not have a specification for morphological marking.

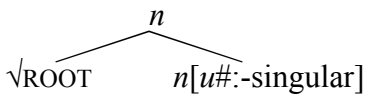
We can represent this as count-mass nouns necessarily combining with a n^0 that carries a semantically interpretable feature [*i*F:-singular] (see Kramer 2013 for the idea that inherent features are stored on category defining heads, and Smith 2012 on *i*F vs *u*F).

(33)



Similarly, we can model *pluralia tantum* as the root combining with a morphological (*u*F) feature that is valued plural:

(34)



⇨ I propose that the inherent number features located on n^0 are responsible for the above similarities between *pluralia tantum* nouns are count-mass nouns.

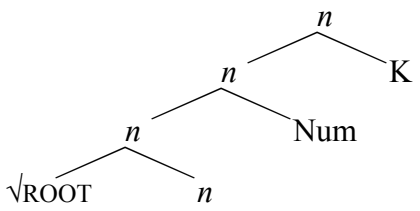
- In short, the idea is that if a noun has an inherent specification for number, then the features of NumP cannot be hosted by that same noun.
- Inherent number essentially freezes a particular noun for a number specification.
- If NumP is merged with additional number features then they must be hosted on a different lexical item.
- Classifiers, for *pluralia tantum* and count-mass nouns are then dummy elements inserted solely to host the features of NumP. That is, they essentially realize Num^0.

5.1. The problem of inherent number

Under normal circumstances, the root of a noun will combine with the case features and number features that are introduced in the extended NP (see e.g. Ritter 1991), either by head movement in the syntax, or by lowering of the relevant features (see Embick & Noyer 2001).

We end up with the following complex head for noun phrases, see e.g. Moskal (2013), *i.a*:

(35)



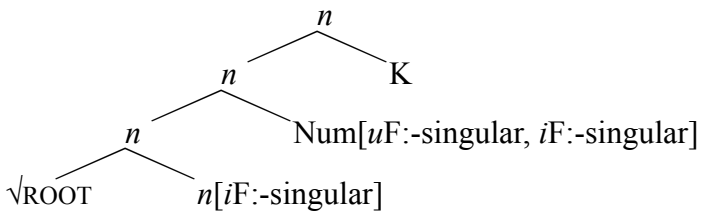
Number features are hosted by Num, and case features on K.
However, in count-mass nouns, information about number is already on *n*.

I propose the generalization in (36):

(36) Num^0 cannot be realized on the same lexical item as an inherent number specification.

Assuming for the sake of concreteness that the complex head in (35) is formed by head movement in the syntax[4], then the following configuration for a count-mass noun will be illicit according to (36) if all is spelled out on the same lexical item.

(37)



In order to allow the derivation to converge, two options present themselves.[5]
1. Delete Num to get rid of the offending features.
2. Realize Num on a different lexical item.

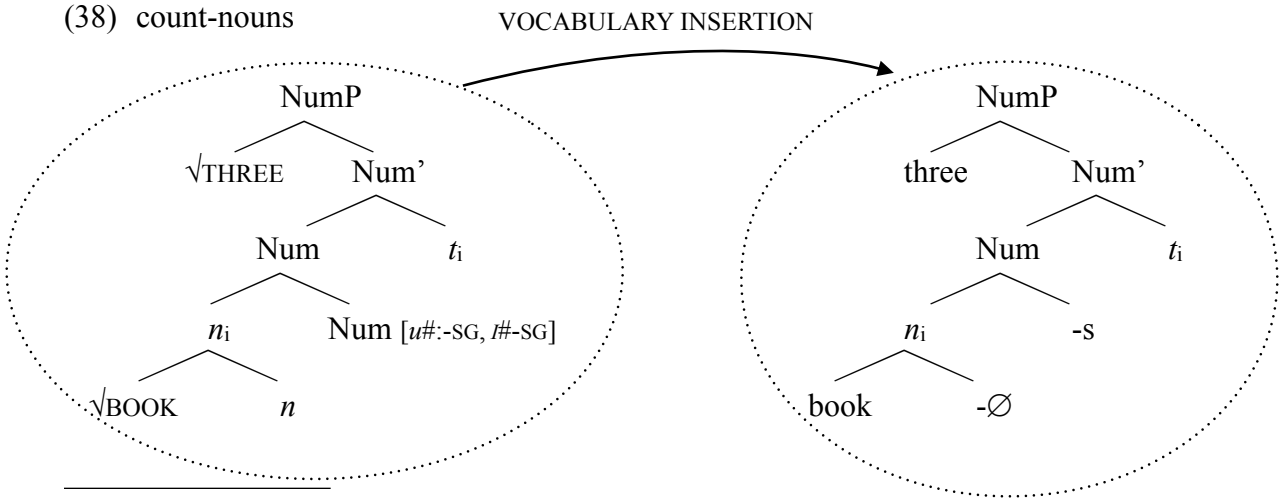
In the first option, Num is simply deleted from the derivation, or not merged at all (the crucial point being that it isn't there at the end). The count-mass noun is then spelled out with default singular morphology, and triggers singular agreement by way of default.

5.2. Realization on a different lexical item

- The features of Num are realized on a different lexical item if it is necessary for a given structure to have a NumP (option 2)
- This is seen in counting contexts, assuming with Watanabe (2010) that numerals are introduced in the specifier of NumP.

Partial structures of counting contexts

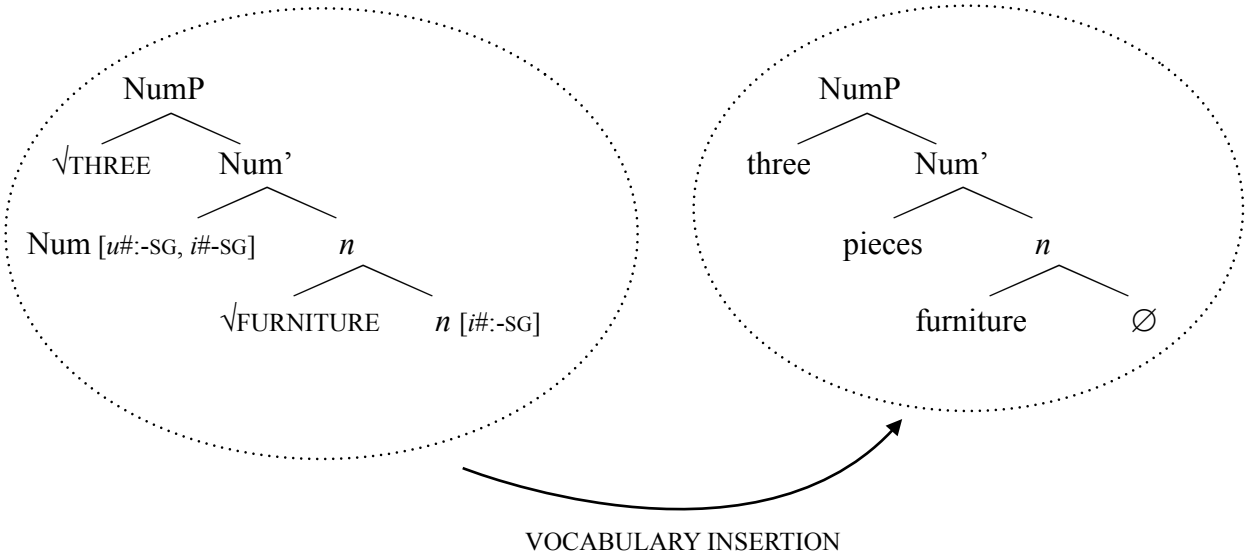
(38) count-nouns



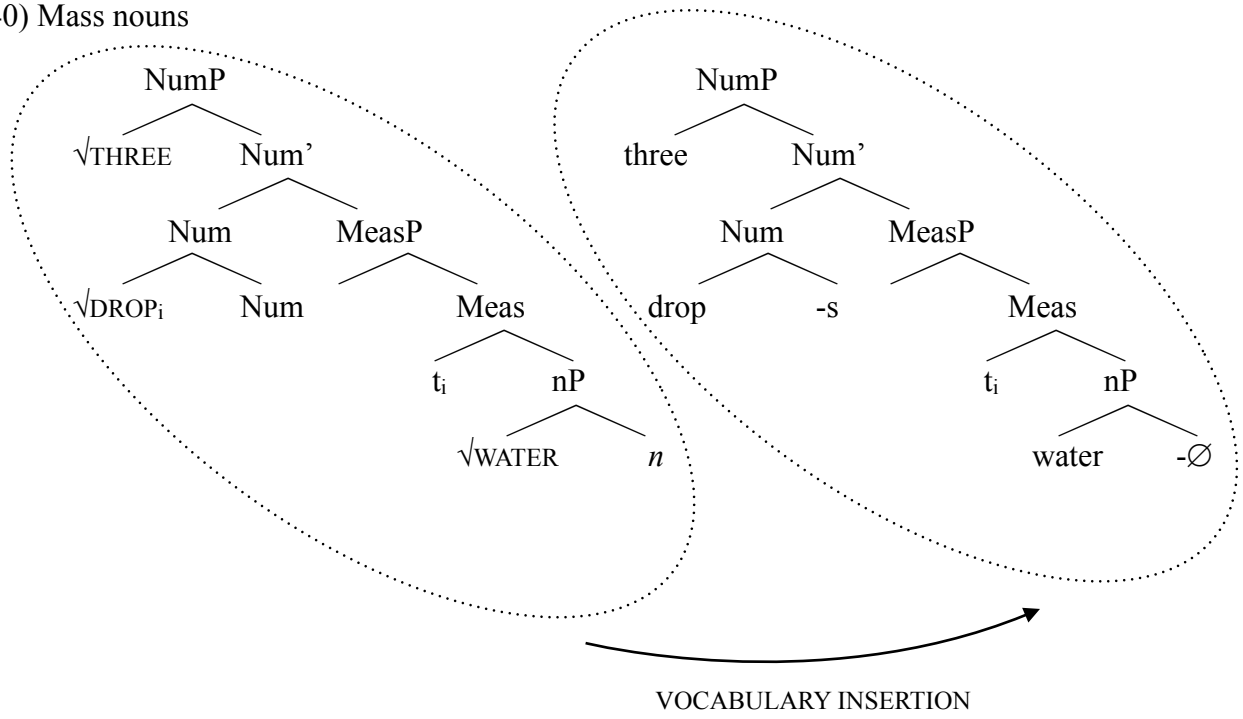
[4] Not too much rests on head movement, and the same facts can be equally achieved through a lowering mechanism along the lines of Embick & Noyer (2001).

[5] A third option, to delete the number features on *n* is theoretically possible, though presumably ruled out with inherent properties of items more likely to be retained under competition with non-inherent properties. A well known case of this is inherent case taking priority over structurally assigned case (see for instance ZMT 1985).

(39) Count-mass nouns



(40) Mass nouns



5.2. Quantifiers

The present approach allows us to treat quantifier selection as a case of allomorphy of the quantifiers.

Note that *much* and *many* seem to have the same meaning, as do *few* and *little* (see e.g. Higginbotham 1994, Solt *to appear*).

(41) [MANY] = more than a contextually determined amount of x
[FEW] = less than a contextually determined amount of x

Note that the determining factor in deciding which quantifier is selected cannot be divisibility, since that would incorrectly group count-mass nouns together with count nouns.

However, on the current approach, we do not need to say anything about quantifiers linking together classes of nouns under a coherent semantic class.

We can treat the quantifier difference in terms of allomorphy. *Many* will be the surface form of the quantifier when the noun that it combines with has a *morphological* specification for plural (the feature being [*u*F:-singular]).

⇨ Count-mass nouns lack a morphological specification for number, as do mass nouns.
⇨ Count plurals combine with Num, which has the feature [-singular] on it.

Note that this means that [0singular] ≠ [-singular], *i.e.* a negatively specified feature is not the same as the absence of that feature.
⇨ See also Harbour (2010) who argues that this is necessary within the realm of number features.

Thus, we can write the following VI rules for the quantifiers in English:

(42) √MANY ⇔ many / __ [$_{u\text{F}}$ -singular]
√FEW ⇔ few / __ [$_{u\text{F}}$ -singular]
√MANY ⇔ much (elsewhere)
√FEW ⇔ little (elsewhere)

To see how this works. Consider the following:

(43) a. I didn't see [[MANY] dogs].
⇨ MANY is spelled out as *many,* since it combines with *dogs*, which has [*u*F:-singular]
b. I didn't drink [[MANY] water].
⇨ MANY is spelled out as *much* per the elsewhere rule in (42), since there is no [*u*F:-singular] feature on *water*.
c. I didn't buy [[MANY] furniture].
⇨ MANY is spelled out as *much,* since although *furniture* is [*i*F:-singular], it contains no morphological (*u*F) specification. The elsewhere condition applies.

Pluralia tantum are correctly predicted to go with count quantifiers, since [*u*F:-singular] is inherent.

5.3. Implications for the mass/count distinction

Count-mass nouns have been much discussed in recent literature. One prominent approach to the count-mass distinction follows Borer (2005) in assuming that noun roots constitute undivided matter, which is portioned out semantically by the presence of a DivP.

Thus, their extension should be undivided portions of matter, contrary to fact.

Bale & Barner (2009) present a solution to this problem, working within the context of a theory that assumes undivided noun roots, proposing that all noun roots must combine with a count or mass functional head.

- The count head creates division to an undivided root.
- The mass head is an identity function which maps an undivided root to itself.

With respect to count-mass nouns, they argue that these roots are inherently divided (like the current approach). Being inherently divided, Bale & Barner *stipulate that they do not combine with the count head, since the count head can only combine with undivided roots (they fall outside the domain of the function)*. Their failure to occur with 'count-syntax' is a result of that being determined by the count head.

⇨ On the current approach, count-mass nouns are mass *by association,* that is, they show properties of being mass without sharing any defining property of masshood (i.e. there share no feature/head with mass nouns).

There is another potential mismatch, where a noun is grammatically plural but semantically mass:

- In English there are a few words like *suds* and *mashed potatoes* that seem to be mass nouns semantically, though they show clear plural morphology, and control plural agreement (see Acquaviva 2008 for discussion).
- In Telugu (ongoing fieldwork) there are some mass nouns like *niLLu* and *paLLu* which are grammatically plural but are interpreted *without* division (for more examples, see Krishnamurti & Gwynn 1985).

(44) niiLLu unnaaji
water be.PL.NON-MASC
'There is water.'

(45) #niiLLu pe̲d̲d̲agaa unnaaji
water large be.PL.NON-MASC
'The water is large.'

These data preliminarily suggest the following:

- We need to recognize the need to separate the surface properties of some nouns from their interpreted properties (this isn't really a new suggestion, but it isn't widely discussed to my knowledge in the mass/count literature).
- It may be necessary to define a feature that gives mass semantics, rather than relying on the root not combining with anything.

The latter point is of much current interest to work on the mass/count distinction, which claims that mass interpretation is simply the bare interpretation of a root and nothing extra.

6. Conclusion

- In addition to the semantic properties that distinguish them from mass nouns (that they are divided) we have seen syntactic data that suggests count-mass nouns form a separate class.
- Count-mass nouns share various properties with *pluralia tantum*.
- The surface mass properties of count-mass nouns arise independently as a result of their inherent number specification.
- The above calls into question the relevance of count-mass nouns for the question of what it means to be mass.

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Selected references (a full list can be provided upon request)

Bale, A. and Barner, D. (2009). The interpretation of functional heads: Using comparatives to explore the mass/count distinction. *Journal of Semantics 26,* 217-252.

Borer, H. (2005). In name only. *Structuring sense volume 1*. Oxford: Oxford University Press.

Chierchia, G. (1998). Plurality of mass nouns and the notion of semantic parameter. In *Rothstein, S. (ed.), Events and grammar*. Dordrecht: Kluwer.

Chierchia, G. (2010). Mass nouns, vagueness and semantic variation. *Synthese 174,* 99-149.

Doetjes, J. (1997). Mass and count: syntax or semantics? *Proceedings of meaning on the HIL,* 34-52.

Harbour, D. (2011). Valence and atomic number. *Linguistic Inquiry 42(1)*, 561-594.

Kramer, R. (2013). Gender in Amharic: A morphosyntactic approach to natural and grammatical gender. http://www9.georgetown.edu/faculty/rtk8/Gender%20in%20Amharic.pdf

Moskal, B. (2013). A case study in nominal suppletion. Paper presented at GLOW 36, Lund.

Pesetsky, D. (2012). Russian case morphology and the syntactic categories. Available at Lingbuzz - http://ling.auf.net/lingbuzz/001120

Schwarzschild, R. (2009). Stubborn distributivity, multiparticipant nouns and the count/mass distinction. *Proceedings of NELS 39.*

Smith, P. W. (2012). Collective (dis)agreement: On a 3/4 pattern of British English collective NPs. *Proceedings of ConSOLE XX.*

Vazquez-Rojas, V. (2012). *The syntax and semantics of Purépecha noun phrases and the mass/count distinction.* Doctoral dissertation, NYU.