The Role of Inherent Number in the Mass/Count Distinction

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Abstract

In this paper I analyse the effect that inherent number plays in the mass/count distinction. I show that in two classes of nouns, a noun that looks either mass or count, can be made to look like the other category by virtue of having an inherent number specification which is resolved in idiosyncratic ways by the language. Firstly, I show that this is the case for fake mass nouns like *furniture* in English, that are traditionally argued to be mass nouns by virtue of their morphosyntactic behaviour, which is clearly mass. However, they show the semantics of count nouns. I argue that they are divided like count nouns, but their mass morphosyntax results from them having an inherent semantic plurality, which English idiosyncratically resolves to make them look like mass nouns. Secondly, I show the converse situation arises in Telugu, where there are nouns with the semantics of mass nouns but the morphosyntax of count nouns. The same explanation is appealed to; the plural mass nouns in Telugu contain an inherent morphological plurality, which interacts with quantifier allomorphy in such a way to make them look like count nouns.

1 Introduction

1.1 Mass versus count: A general overview

The mass/count distinction divides nouns that can be counted, and those that resist counting. It is very much an open question whether all languages have a mass/count distinction, however, in some languages the differences between the two nouns are quite striking. The first, extremely salient, difference between the two categories is that count nouns like *owls* can directly combine with numerals, whereas mass nouns like *water* cannot. Instead, they must combine with some kind of measure phrase, which in turn combines with the numeral.

(1) a. There are three owls on the branch.

b. *There are three waters on the floor.

c. There are three *drops of* water on the floor.

A further difference concerns number morphology. In English, count nouns are able to combine with plural morphology, however mass nouns cannot:[1]

(2) a. There are crumbs on the floor.

b. *There is waters on the floor.

Finally, we sometimes see differences in quantifiers. In English, this is reflected in differences with combination with *many* versus *much*, and *few* versus *little*. Count

[1]This sentence is actually grammatical, however only on a reading where *water* has been shifted to a count reading. Not all languages disallow mass nouns to combine with plural morphology, as we will see in Telugu below, see also Tsoulas (2007), Wiltschko (2008).

nouns, but not mass nouns combine with *many* and *few*, whereas mass nouns, but not count nouns combine with *much* and *little*:

(3) a. There are many/*much ducks in the pond.

b. There is *many/much sand left to be moved.

c. There are few/*little questions left to answer.

d. There is *few/little water left to drink.

It should be noted that having quantifiers that are apparently selective for mass versus count is not a prerequisite for there being a mass/count distinction in some language. Dutch, for instance uses the same quantifier *veel* 'many/much' to cover both mass nouns and count nouns, thus the distinction between *many* and *much* is neutralized:

(4) Ik heb veel boeken/water gekocht.
I have many/much books/water bought
'I bought many books/much water.'

Despite there being no difference in the quantifier, there is still a mass/count distinction in Dutch, since *boeken* 'books' can combine with numerals, but *water* 'water' cannot:

(5) a. Ik heb drie boeken gekocht.
I have three books bought
'I bought three books.'

b. *Ik heb drie waters gekocht.
I have three waters bought
INTENDED: 'I bought three waters.'

There are also differences between the two classes which seem to relate to the way that the two classes of nouns are interpreted. Count nouns have been argued to be interpreted as if they are individuated, in the sense that we have a clear intuition as to what counts as a minimal unit of a count noun. Mass nouns on the other hand have been claimed to lack this interpretation, and be interpreted as unindividuated 'stuff' (Bale & Barner 2009). One test is with *stubbornly distributive predicates* which have been shown to combine with count nouns, but not mass nouns (Schwarzschild 2011). These are predicates like *large, small* and *round*, which must be true of each individual unit in a group. For instance, in the sentence *the boxes are large*, this sentence is only judged as felicitous if each individual box is large, and not if there are many small boxes that make up one large pile. In (6), we see that there is a difference between mass nouns and count nouns in how they combine with stubbornly distributive predicates.

(6) a. The boxes are large/round/square.

b. # The water is large/round/square.

Another test which shows this interpretation difference is to do with comparison sentences. Bale & Barner (2009) show that when count nouns are compared, comparison is done by the number of individual entities under discussion. Thus, (7a) is true if the number of individual owls that Chris saw is larger than the number of individual owls that Mark saw, irrespective of how big each owl was. For mass nouns on the other hand, comparison is done by overall volume of the noun, and not by number. Therefore in (7b), this sentence is only true if the overall volume of milk that Chris drank is larger than the volume that Mark drank. Here, individual

entities do not play a role, so the sentence is false even if Mark drank three single liter bottles of milk, but Chris drank one 5 liter bottle of milk, since the overall volume of milk stands at five liters for Chris, but only three for Mark; the number of individual portions of milk plays no role in the interpretation.

(7) a. Chris saw more owls than Mark.

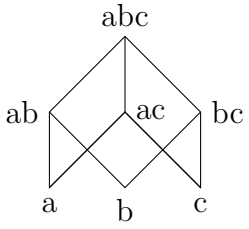
b. Chris drank more milk than Mark.

1.2 Mass versus count

Various proposals have attempted to explain the mass/count distinction as mass nouns and count nouns being fundamentally different. Here I briefly discuss some of the attempts, however the literature is too large to give a full overview here.

With regards to interpretation, mass nouns and count nouns differ in terms of whether the noun is interpreted with an idea of what constitutes a minimal part. The mass/count distinctionis often explained in terms of individuated denotations for count nouns, and non-individuated ones for mass nouns. These differences can be modeled in terms of semi-lattices (Link 1983). Lattices represent individuals and the groups that they form. For example, a noun like *the boys*, where there are three boys, consists of the individual boys, the 'atoms' *a, b* and *c*, and the groups that can be formed of these *ab, bc, ac* and *abc*. This is represented on a lattice structure in the following way:

(8)



In such lattices, we can see the relationships between all the parts. The ones at the bottom, a,b and c are the minimal parts of the noun, and the groups are ab, bc, ac, and abc. Bale & Barner (2009) note that lattices can come in various types, but the ones that I will restrict attention to are individuated lattices, like in (8). Individuated lattices are ones where the members at the bottom of the lattice are individuals, defined in the following way (Bale & Barner 2009:237):

(9) Definition of 'individual': an aggregate z is an individual for a set of aggregates X iff z is a minimal part for X and for all aggregates y $\leqslant$ X, either (i) z $\leqslant$ y or (ii) there is no w $\leqslant$ z, such that w $\leqslant$ y.

Importantly, these lattices make minimal parts available to the grammar for operations that require them. I assume that distributive operations, as well as counting all require access to these minimal parts. Count nouns will have the interpretation in (8).

The other type of lattice that will be relevant to us will be what Bale & Barner (2009) call *continuous semi-lattices*. The crucial aspect of these lattices is that there are no minimal parts; at no point in the lattice can one define an element that is not itself made up of other elements. They are essentially groups all the way down, and at no point do they make minimal parts available to the operations of the grammar that needs them. These lattices I will assume are the interpretation of mass nouns.

There is an important difference between the current paper, and the proposals in Chierchia (1998, 2010), who assumes that all lattices are individuated, but that with mass nouns the minimal parts of vaguely defined. For the current work, it is important that mass and count nouns differ in that only count nouns have an atomic domain.

1.2.1 Flexible roots: Mass and Count defined syntactically

Much research into the mass/count distinction has recently centered on the idea that nouns are not inherently specified to be either mass or count, coupled with an additional ability to coerce nouns from one class into the other, but rather that nouns begin life unspecified for being either mass or count, and they are turned either mass or count depending on the syntactic environment in which they find themselves. I will term this approach the *flexible roots approach*. Such research is guided by the observation that most nouns, at least in languages like English can be either mass or count depending on their surrounding context. Consider a noun like *urchin* for instance. In (10) below, *urchin* is easily identifiable as a count noun since it combines with the indefinite article *an*. In (11) however, the absence of an article, coupled with the absence of plural morphology and the presence of the quantifier *much* allows us to identify that *urchin* is being used as a mass noun, and not count.

(10) The crafty sea otter plucked an urchin from the sea floor.

(11) The greedy sea otter ate too much urchin, so needed to sleep.

The fact that this can happen to virtually any noun in English and other languages (though perhaps not Chinese, Cheng et al. 2008) has led to a spate of recent

proposals arguing that the mass/count distinction is created syntactically, and that nouns are not inherently mass or count. For instance, a prototypical mass noun like *water* can easily be shifted into a count context:

(12) I bought three waters.

Central to this approach is the notion that nominal roots, without any functional head to create division, denote 'undivided stuff'. That is, the denotation of the noun *cat* is not the set of individual cats, but rather everything that could plausibly fall under being described as 'cat' - cat meat, individual cats and pluralities of cats. Furthermore, the second central tenet of this approach is that this is all that mass nouns constitute - they are undivided denotations; denotations which do not contain atomic entities of the noun in question. Therefore, in (11) above, the mass noun *urchin* denotes something that if divided, will still qualify as urchin.

This view, originally proposed by Borer (2005), and modified in Bale & Barner (2009) (see also de Belder to appear holds at its core the idea that roots are unspecified for being either mass or count, and that masshood and counthood is created by syntactic context.

The idea in brief states that roots at their most basic level denote undivided material and that masshood is just a reflection of this, i.e. that the extension of a mass noun like *sand* is simply an undivided quantity of sand. Being count, by contrast results from the division of the 'material' that the root originally denotes. The division operation creates minimal parts - parts that can't be divided any further and still truthfully satisfy the predicate. These minimal parts are used as the basis for counting, and make it possible for comparison by number instead of overall volume,

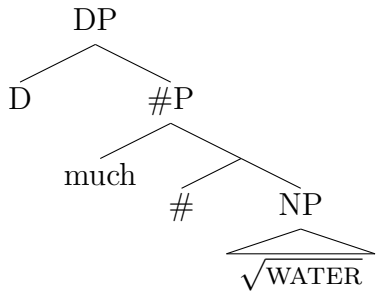
since groups of distinct individuals can be created and compared.

1.2.2 Borer (2005)

Borer (2005) argues in essence that masshood is the absence of counthood. Roots, as mentioned, are unspecified for being either mass or count. Where this is created is through the presence or absence of a syntactic functional head that creates division, Cl(assifier)P. ClP takes the undivided material that is denoted by the root, and gives a divided output. Importantly at this point, is that roots are mass to begin with, and the absence of any dividing structure will yield a mass noun:

Borer gives the structure of mass nouns as the following:[2]

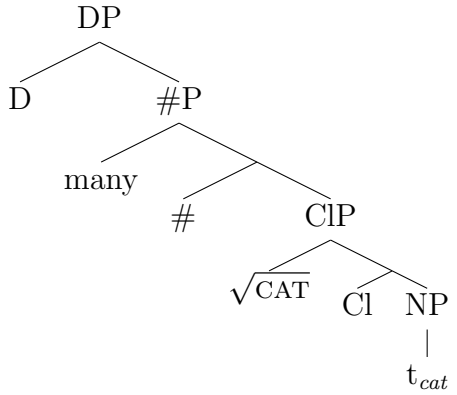
(13)



Count nouns are treated differently. Count interpretation, as noted is obtained through the merging of dividing structure, ClP, into the syntax. In the following, we can see the extra layer of complexity that exists in count nouns:

[2]In the diagram, *much* is there to highlight the fact that the structure is mass, and doesn't play any role greater than that here, see also *many* in (14).

(14)



In the tree, $\sqrt{\text{CAT}}$ moves up to Spec,ClP. Borer proposes that this is the case in languages like English, where count nouns can be distinguished from mass nouns on the basis of being able to bear number morphology. For Borer, plural inflection is the "realization of an abstract feature which assigns range to the open value that heads a classifier phrase." Crucially in this proposal, plural inflection is only possible when there is a ClP in the tree. Therefore, plural inflection entails being a count noun.[3]

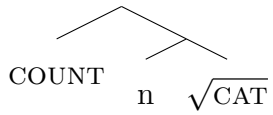
The presence or absence of ClP can be detected in different ways. In English and languages like it, it is spelled out as plural morphology. In languages like Chinese where there is no number morphology, it gets spelled out as a classifier.The argument for treating classifiers as the equivalent of plural morphology is that in languages like Chinese, it is necessary to use a classifier in order to count the noun, whilst in English, plural morphology is necessary. Treating both of these things as the spellout of the Cl allows Borer to have a uniform syntax for different languages as well as explaining why it is overwhelmingly, with few exceptions, the case that classifiers and plural morphology are in complementary distribution across languages.

[3]Generally, but not in case a language freely allows mass nouns to combine with plural morphology, as is the case in Halkomelem Salish (Wiltschko 2008) for instance.

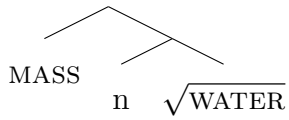
1.2.3 Bale & Barner (2009)

Bale & Barner (2009) offer a related proposal to capture the mass/count distinction, but do so in a way that masshood is not simply the absence of dividing structure in the phrase. Their approach builds on the idea that masshood is simply the default meaning of a nominal root, and that count interpretation comes about through syntactically created division. Recall that for Borer there is in essence only one bit of functional structure relevant for the mass/count distinction, ClP. Nouns that occur in a syntax without ClP are mass, and nouns that combine with ClP are count. Bale & Barner (2009) propose instead that there are two functional heads, COUNT and MASS that are relevant, with each head contributing a different semantic operation.[4] Thus, the structures that are involved in their approach are as follows, with (15) giving a count noun, and (16) giving a mass noun:

(15)



(16)



According to Bale & Barner (henceforth B&B), COUNT is the head that is responsible for division. Nominal roots still have mass denotations in the absence of anything to divide them. The COUNT head performs this role, and is a semantic

[4] COUNT and MASS are my labels for their functional heads.

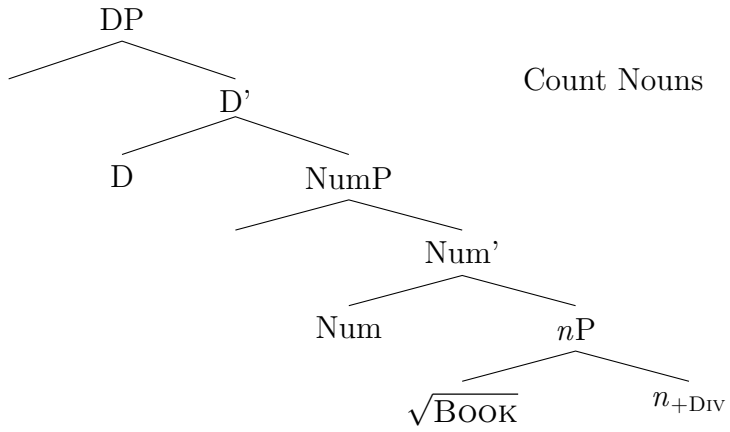
function from unindividuated semilattices into individuated ones (see above). Thus, the COUNT head, when applied to a nominal root, will always yield an output where the semantic denotation of the noun in question contains minimal, atomic parts. In other words, the reason why count nouns are semantically divided is because COUNT ensures that their denotation will have minimal parts in it. Mass nouns on the other hand do not contain individuated semilattices. Unlike Borer, who proposed that this happens when nothing is done, B&B still argue for the existence of a MASS head. However, MASS is simply an identity function. Thus, the input to MASS is also the output; when an undivided noun root combines with MASS, then the result is still a denotation without minimal parts.

In B&B's system, COUNT is essentially a gateway to count syntax; it creates the minimal parts needed for combination with NumP (where numerals and plural morphology are introduced), as well as serving as the selectional property of quantifiers. Quantifiers that go with count nouns select for COUNT, whilst mass quantifiers select for MASS.

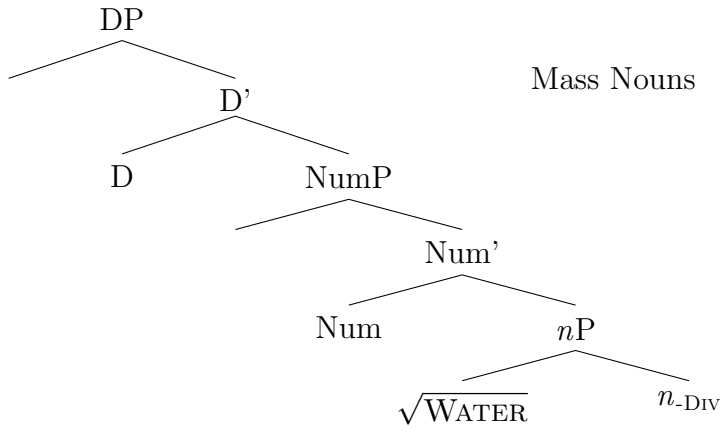
I will broadly adopt the approach of Bale & Barner here, however with one key modification. I will assume that the individuating functional heads MASS and COUNT are distinct 'flavors' of n. That is, the dividing, or identity functions that Bale & Barner identify are not separate functional heads in their own right, but rather properties of category defining nodes. I will annotate these as $n_{+\text{DIV}}$ and $n_{\text{-DIV}}$ respectively. The reasons for placing these functions on n will become clearer in section 2.3.1. For now, I assume that the structure of count nouns and mass nouns are as follows. Note that the structure of nouns differs only in which type of n is

selected:[5]

(17)



(18)



[5]I differ from Borer (2005) in assuming that there is number information potentially in mass nouns. That NumP can project in mass nouns is rare, but does arise in languages that allow for plural mass nouns, such as Greek (Tsoulas 2007) and Halkomelem Salish (Wiltschko 2008), see section 3.2.2 for further discussion.

2 'Fake' mass nouns in English

The first set of atypical mass nouns are fake mass nouns in English. Recall from above that count nouns in English differ from mass nouns in that they can combine directly with numerals, can combine with plural morphology, and appear with count quantifiers like *many* and *few*, as opposed to *much* and *little*.

2.1 Fake-mass nouns are atypical mass nouns

In this section I show that fake-mass nouns, like *furniture*, whilst they seem to be mass nouns since they have the classic surface characteristics of mass nouns, in fact have a semantic interpretation more in line with count nouns as they seem to show a divided individuated interpretation.

2.1.1 The morphosyntax of fake mass nouns

Fake-mass nouns seem at first glance to be uncontroversially mass nouns. They do not combine with numerals without the aid of some measure phrase like *piece* or *bit*.

(19) * I brought three furniture(s)/mail(s)/luggage(s).
(20) I brought three *pieces of* furniture/mail/luggage.

Furthermore, as shown in (21), they do not take plural morphology. These nouns are in fact more stubborn than other mass nouns, in that they appear to firmly resist plural morphology in all circumstances. Bale & Barner (2009) show that they cannot shift into a count reading to take plural morphology (22a), as mass nouns in English generally do (22b):

(21) * There are furnitures/mails/luggages left to be delivered.

(22) a. * I bought three furnitures for your new place.
b. I bought three beers for us at the bar.

Finally, fake-mass nouns appear with mass, but not count quantifiers:

(23) a. There isn't *many/much furniture/mail/luggage left to be delivered.
b. There is *few/little furniture/mail/luggage left.

2.1.2 The interpretation of fake mass nouns

However, despite the fact that these nouns seem to have all the surface properties of being mass, when looking at the interpretation of these nouns, they seem to be interpreted as if they are individuated. Doetjes (1997) gives the following pair of sentences, which show that a true mass noun like *cheese* can be continuously divided, and still be considered *cheese*, yet the same is not true of a fake-mass noun like *furniture*, suggesting that we have intuitions about minimality in fake mass nouns:

(24) 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.

Schwarzschild (2011) shows that fake-mass nouns do not pattern with true mass nouns in terms of their ability to combine with stubbornly distributive predicates. Recall from the discussion of (6) above that these predicates are such that they must obligatorily distribute to individual entities, and not be true of an overall collection. Mass nouns do not felicitously combine with these predicates, ostensibly because they are interpreted without the minimal parts necessary for these predicates to

distribute. However, as can be seen below, fake-mass nouns quite happily combine with stubbornly distributive predicates, patterning in this respect with count nouns, but crucially not with true mass nouns:

(25) a. The furniture is large.
b. The mail is round.
c. The luggage is small.

Finally, with respect to the semantics, Bale & Barner (2009) show that these nouns are interpreted in comparison contexts in the same way as count nouns, but not in the way that mass nouns are; they are compared by number of entities and not size or volume etc. Therefore, in (26), the sentence is felicitous if it is the case that Chris bought three small barstools and Mark one grand piano, but not vice versa. Therefore, it is the number of individual pieces of furniture that are relevant for comparison, not the overall volume of furniture that was bought, since grand pianos are far larger than barstools.

(26) Chris bought more furniture than Mark.

These nouns show variable properties between being count (individuated) and mass (surface properties), which naturally causes problems for any theory which bases the distinction between count nouns and mass nouns on (lack of) individuation, e.g. Link (1983). In the flexible roots approach, where the mass/count distinction is syntactically created; all roots are underspecified for mass or count and that count nouns are created through merger with the root of functional structure that creates individuation. Yet, fake-mass nouns clearly cause a problem for this, because if

there is a strict correlation between surface properties and lack of individuation, count-mass nouns are unexplained.

In response to this problem, Bale & Barner (2009) propose that the mass/count distinction is not characterized by the presence or absence of structure, but simply the presence or absence of division. Bale & Barner claim that fake-mass nouns can only combine with MASS, but crucially not COUNT, since they are inherently individuated. This renders them unable to combine with COUNT, since they are already divided andCOUNT can only combine with *undivided* roots. Since fake-mass nouns are individuated as a lexical property, they show the same interpretation as a count noun, even though they have mass structure.

2.2 The effect of inherent number

If, as claimed by the approaches of Bale & Barner (see also de Belder to appear), that fake-mass nouns are really underlyingly the same as true mass nouns, differing only in that they are divided as an inherent property, then we would expect them to have the same properties as mass nouns with respect to their surface behavior. This, however, is not the case. Bale & Barner note that fake-mass nouns are far more resistant with respect to mass to count shifts than mass nouns. In English, it is fairly easy to make a true mass noun like *water* and *beer* into a count noun, such as in (27a) and (27b) below. However, fake-mass nouns rigidly refuse to undergo such shifts, (27c):

(27) a. Mike was so thirsty he drank three waters one after another.
b. Mike drank so many beers at the party, I didn't think he'd see the end.

c. * Mike didn't know what to do with so many furnitures.

Bale & Barner say that the reason that mass to count shifts are not possible with fake-mass nouns, is simply because they lie outside the domain of the dividing function. Their interpretation is already one of being individuated, and since COUNT is a function from unindividuated structures to individuated ones, then fake-mass nouns are unable to combine with it, and hence are restricted to only appearing with MASS.

The differences however seem to lie deeper than which syntactic head certain roots can combine with. The observation which I wish to note here is that fake-mass nouns appear to share a more local relation with their measure phrases than true mass nouns do. Bhatt (2012) shows that in English, when making comparisons, there are three positions in the sentence that *more* can occupy. *More* can appear between the numeral and the measure phrase (28a), between the measure phrase and the noun (28b) and between the noun and the standard of comparison (28c). These positions are represented schematically in (29):

(28) a. Mike bought three *more* gallons of oil than Sam.
b. Mike bought three gallons *more* oil than Sam.
c. Mike bought three gallons of oil *more* than Sam.

(29) Mike bought three (❶ more) gallons (❷ more) (of) oil (❸ more) than Sam.

However, when we look at fake-mass nouns, we see that position ❷ is unavailable, and *more* is unable to interrupt between the measure phrase and the noun. The other positions for *more* are fine, as shown:

(30) a. Mike bought three *more* pieces of furniture than Sam.

b. * Mike bought three pieces *more* furniture than Sam.
c. Mike bought three pieces of furniture *more* than Sam.

The fact that position ❷ is unavailable with fake-mass nouns hints that they may have a different syntax than true mass nouns. Interestingly, in this respect, fake-mass nouns behave in much the same way as *pluralia tantum* nouns, which in many dialects of English require the use of a measure phrase in order for them to combine with numerals (31). In comparison contexts, we find again that position ❷ is unavailable (32):

(31) Mike packed three *(pairs of) trousers to take on holiday.

(32) a. Mike bought three *more* pairs of trousers than Sam.
b. * Mike bought three pairs *more* trousers than Sam.
c. Mike bought three pairs of trousers *more* than Sam.

As it happens, the similarities between fake-mass nouns and pluralia tantum nouns do not stop there. As mentioned above, both fake-mass nouns and pluralia tantum nouns require some form of measure phrase in order for them to properly combine with numerals. This is also of course true of true mass nouns; however, an important difference that sets apart true mass nouns from the other two classes is that the measure phrases used for true mass nouns are semantically meaningful, whereas with fake-mass nouns and *pluralia tantum* nouns the measure phrases seem to be semantically vacuous. Fake-mass measure phrases are general terms like *bit, piece* and *item*, and, as pointed out in Doetjes (1997), these measure phrases "[...] such as piece are so general that we can assume that they give us no clue as to how to make a partitioning." *Pluralia tantum* measure phrases are items like *pair*, as in *a pair of trousers, a pair of scissors*, and *set - a set of wheels*.

Measure phrases for true mass nouns however do have a genuine semantic import. They contribute information about the size and the shape of the quantity of the mass noun that is being described. To see that they have a genuine semantic import, there are notable differences between *a splash of milk* and *a drop of milk*. Similarly, there is a true difference between *a mound of sand* and a *a grain of sand*. These differences of shape and size are not present with the measure phrases of fake-mass nouns - *a piece of furniture* is the same as *an item of furniture*.

2.3 Count-mass nouns are imposters, masquerading as mass nouns

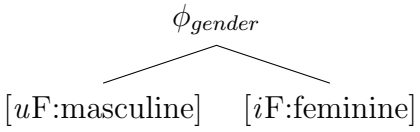
The similarities between fake-mass nouns and *pluralia tantum* seem worthy of being taken seriously, and here I propose that the reason that they act the same way is that these properties are the result of each noun having an inherent number specification. I will show how having an inherent number specification in English prevents a noun from combining with non-inherent number. The result of this is that certain nouns can be made to look like mass nouns, even though they are not really. Throughout this section, I will show that all the properties that make fake-mass nouns look as though they are mass on the surface are misleading. The fact that they cannot combine with numerals without measure phrases, do not take plural morphology and go with apparently mass quantifiers, all arise independently, from the effect of inherent number.

2.3.1 Background assumptions

I propose that fake-mass nouns in English are not mass nouns, but rather that they are roots that are inherently individuated, and inherently specified to be semantically plural. That is, they have an individuated interpretation consisting of individuals and groups of individuals. It is important that they are individuated, since it is with this that they are able to combine with stubbornly distributive predicates and have comparison done by number. Also of note is that the plurality of fake mass nouns is only semantic, since as shown, they never appear with plural morphology nor control plural agreement. Here I adopt the approach of Author (2012, In progress) to features, whereby the semantic value and a morphological value of a feature can diverge.

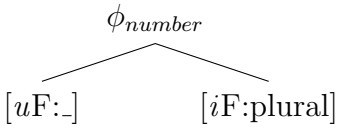
Smith argues from numerous cases of mismatches between the morphology and semantics of a lexical item that features are composed of two halves, a morphologically interpretable uF and a semantically interpretable iF. Thus, the 'value' of a feature, say number, is actually the more accurately thought of as the values of its separate halves. Though there is a tendency for the values to line up, one can identify numerous cases where there is a disconnect between the two (see also Wechsler & Zlatić 2000). Thus, in a noun with grammatical gender, we represent the morphological value on the uF and its semantics on the iF. So, in a noun like Russian 'vrač', 'doctor' which is grammatically masculine but can have a feminine referent, we have the following gender feature, when the doctor is a female:

(33)



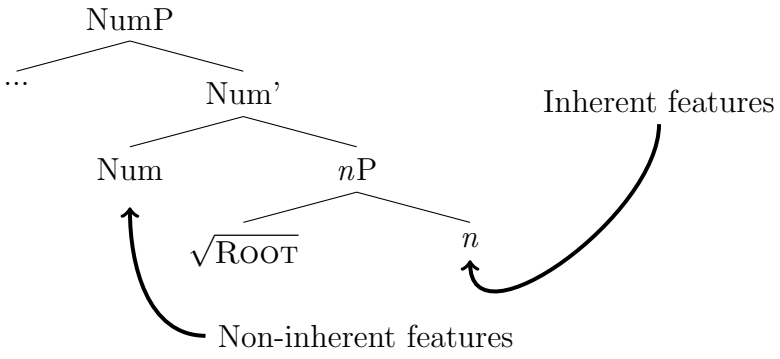
Fake mass nouns, since they are analyzed here as being inherently semantically plural, are analyzed here as having the following inherent number feature:

(34)



Following Kihm (2005), Harbour (2007), Acquaviva (2008b), Kramer (2009, 2014), I assume that there is a disconnect between where inherent and non-inherent information is introduced in the structure. Specifically, following Acquaviva (2008b), I will assume that inherent features on nouns are located on n, not on the root itself *contra, e.g,* Embick & Halle (2005). Non-inherent features are introduced higher in the structure, in dedicated functional heads (see e.g. Ritter 1991).

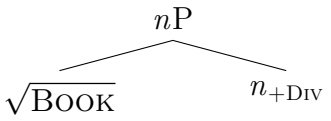
(35)



I will further assume that the flexible roots approach is broadly correct, that roots are, in the usual case, unspecified for being either mass or count, and that this distinction is created in the syntax. I make two important modifications that I make

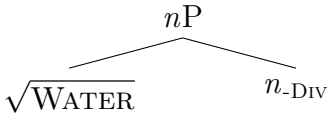
to the flexible roots approach. Firstly, I assume that the dividing and non-dividing heads are not separate heads in the structure, but in fact different flavors of n; that is, the dividing or identity functions are located on the category defining node. I annotate this as $n_{+\text{DIV}}$ and $n_{\text{-DIV}}$ respectively.

(36)



Count Nouns

(37)

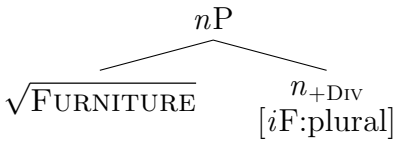


Mass Nouns

The second modification to Bale & Barner's approach that I will make is that the distinction between mass versus count quantifiers is not related to the $n_{+\text{DIV}}$ and $n_{\text{-DIV}}$. Whereas Bale & Barner propose that the quantifier difference is related to MASS and COUNT, in that count quantifers surface when they combine with a structure containing COUNT. Mass quantifiers on the other hand arise when they combine with a structure containing MASS. For reasons that will become apparent below, I move away from this proposal, and argue that the relevant factor is morphological number.

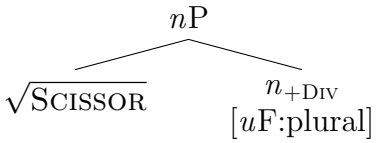
Since inherent features are located on category defining nodes, and there are different flavours of n which differ according to division, we are left with the following, as way of summary. Fake mass nouns have the following structure low in the DP, where the root has combined with $n_{+\text{DIV}}$ and an inherent semantic plural feature.

(38)



We can explain *pluralia tantum* nouns in a similar way.They combine with $n_{+\text{DIV}}$, but their inherent number feature is morphological, [*u*F:plural]:

(39)



One might question why the number feature in such instances needs to go on the category defining node, rather than simply on the root. *pluralia tantum* nouns give us a way to test between the two approaches. If the inherent information were exclusively on the root then we expect that inherent information is inexorably connected to the root, such that whenever the root appears, so does the inherent information. If the inherent information is however located on the category defining node, then we expect that if for some reason the root is prevented from appearing with the category defining node, then the inherent information should disappear. As it happens, inherent plurality can disappear in complex word formation in English:[6]

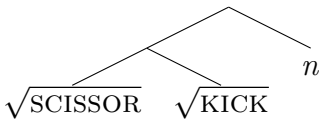
(40) a. The goal was scored by a magnificent scissor-kick (*scissors-kick)

[6]The plurality doesn't have to disappear. For instance *jeans-pocket* seems perfectly fine (?*jean-pocket*), as does *glasses-maker* (a person who makes glasses). However, this only shows that the category defining node can be used in compound formation, leading to the preservation of the inherent information. What is important to bear in mind though, is that the examples in (40) shows that inherent information can be lost, which is unexpected on the view that inherent information is inexorably carried by the root.

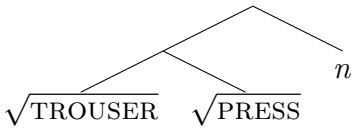
b. Every hotel room used to have a trouser-press (*trousers-press)

I assume that the compound structures of the above are the following, crucially lacking a category defining node for the *pluralia tantum* root:

(41)



(42)



2.3.2 The effect of inherent number

Fake mass nouns are known to resist combination with plural morphology, far more so than regular mass nouns in English. Their resistance to plural morphology is to such an extent that they do not undergo mass to count shifts, which we would otherwise expect if they were regular mass nouns. In the present analysis, the inability of fake mass nouns to undergo mass to count shifts receives a somewhat deceptive explanation; they are never mass nouns to begin with. However, an apparently larger problem results, in that they have the inner structure of count nouns since they combine with $n_{+\text{DIV}}$. Since they have the inner structure of count nouns, what is it that prevents them from acting like count nouns?

The answer to this question, I propose, comes from the fact that inherent number traps roots low in the structure. In the usual case, with regular count nouns, the root, category defining node and number features are all spelled out on the same lexical item. Since features of lexical items are distributed over different nodes, in order for them to be realized together post-syntactically, they must combine with

the root either by head-movement upwards of the root, or post-syntactic lowering (Embick & Noyer 2001). Assuming that this movement is driven by the need for the [root + n] complex to combine with number information, in case there is *already* number information, then there is nothing that further drives this movement, and so there is no motivation for [root + n] to move up to Num^0. Descriptively, this gives us the following situation:

(43) Num^0 cannot be realized on a lexical item that has an inherent number specification.

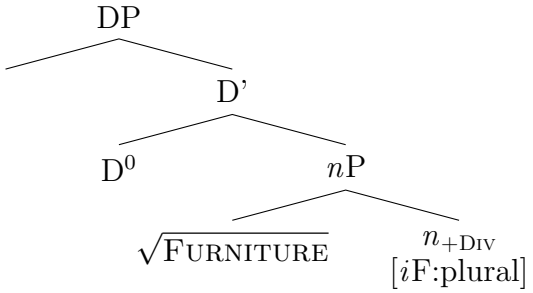
There are then two strategies open at this point. Either, (i) NumP doesn't merge into the structure, and the derivation proceeds without it. Or, (ii) NumP does merge into the structure; in this case, it cannot combine with [root + n].

Focusing our attention to option (i) for the time being, this has the consequence that no further number features are able to be added to fake mass nouns or *pluralia tantum* nouns, since they wouldn't have a host without movement of the noun up to NumP. Thus, the only number information that is there is inherent number information. Non-inherent number information will not be present, given that NumP is where non-inherent number information is located. For fake mass nouns, this is a fairly striking consequence: it results in fake mass nouns not being able to co-occur with plural morphology. iFs are not interpreted by the morphological component and so for all intents and purposes, there is no number feature for the morphology to realise.[7] In the absence of any morphological number specification, I assume that they are spelled out with the unmarked value of the missing features, which for mor-

[7]See Author (In progress) for extensive discussion.

phological number is singular (Bale et al. 2011). The structure of a fake mass noun like *the furniture* is thus as follows:

(44)



With *pluralia tantum* nouns, the picture is a little bit more complicated but largely the same. Since no non-inherent number will be able to be realized on the same lexical item, this means that *pluralia tantum* nouns will only carry their (inherent) morphology. The question is, what happens with their interpretation. The nouns will be divided, since they combine with $n_{+\text{DIV}}$, however, they are predicted to not be able to receive any number iFs. As with fake mass nouns, I propose that the missing information is filled in with the unmarked value. Since it is semantic information that is missing in this instance, not morphological information, it is the semantically unmarked value, which is plural (see Bale et al. 2011). Thus, *pluralia tantum* nouns are interpreted in the same way as plural nouns. Note that this does not entail that *pluralia tantum* nouns will not be able to refer to singular entities, which is transparently not the case, as seen in (45) below. However, plural semantics does not exclude reference to singularities, as shown in (46) (Bale et al. 2011, Sauerland 2008).

(45) These scissors are the ones that cut me. (pointing to a single pair)

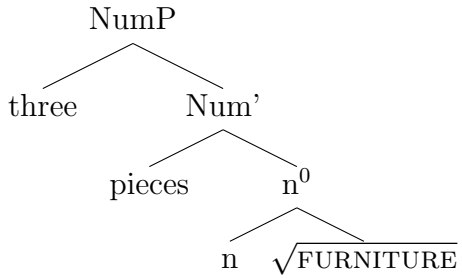
(46) If you have children, please raise your hand.

2.3.3 When NumP is present

Now I turn to option (ii) given above, when the structure necessitates that NumP is projected into the structure. We again predict that fake mass nouns and *pluralia tantum* nouns should pattern together very closely. Though fake-mass nouns do not combine with NumP on the same lexical item, there are configurations when they do combine with NumP. One of those instances is when they combine with a numeral, following Watanabe (2010) who proposes that numerals are introduced in the specifier of NumP. Count nouns, when they combine with a numeral, move to NumP and host the number features that are located on Num^0. Fake-mass nouns however, are not able to do so due to their inherent number, and in order to provide the number features of Num^0 with a host, I propose that a dummy lexical element is inserted. This is akin to dummy-do insertion in English, where *do* is inserted to host the tense features of the auxiliary when it is unable to combine with the verb.

Therefore, in the fake-mass structure that undergoes vocabulary insertion below, *piece* is inserted to provide a placeholder for the features on Num^0, that otherwise could not be hosted:

(47)



The dummy lexical element I assume to be the measure phrases of fake-mass nouns like *bit, piece* etc. Since they are dummy elements, this explains why they do not contribute much in the way of semantics, being only placeholders to support features, not inserted to give extra information. Therefore, they are made to look like true mass nouns since they must combine with an apparent measure phrase in order to be counted, however unlike true measure phrases the ones that go with fake-mass nouns are not there to provide division, but are only there to host number features. Finally, we can explain why position ❷ is unavailable with count-mass nouns.

(48) a. Mike bought three *more* pieces of furniture than Sam.
b. * Mike bought three pieces *more* furniture than Sam.
c. Mike bought three pieces of furniture *more* than Sam.

(49) Mike bought three (❶ more) pieces (❷ more) (of) furniture (❸ more) than Sam.

If we assume that in the configurations in (28), *more* can either right attach to the numeral, MeasureP or the noun, then we get three positions. However, since there is no MeasureP in (30), then position ❷ is never a possibility to begin with. Note that this also explains why position ❷ is unavailable with *pluralia tantum*; there is no measure phrase for *more* to attach to in the first place rather *pair* and *set* etc are dummy elements there to host Num^0.

2.4 What about quantifiers?

Finally, I turn to the issue of quantifiers. Recall that fake mass nouns undeniably combine with apparent mass quantifiers like *much* and *little* and not with count quantifiers like *many* and *few*. If count-mass nouns are to be analyzed as only

looking like mass nouns, and not really mass nouns at all, as is the claim here, then the fact that these nouns go with mass quantifiers remains to be explained.

The flexible roots approach links quantifier selection to structure; count quantifiers can merge into structure containing the dividing head, whilst mass nouns can merge into structure containing no dividing head. Linking quantifiers to structure in this manner makes intuitive sense, however, it necessarily means that all nouns that combine with mass quantifiers also combine with mass heads, with the same going for count nouns.[8] In the version of the flexible roots approach that I am proposing, this explanation is not possible. Since I am proposing that fake mass nouns combine with $n_{+\text{Div}}$, the functional head that creates division, if we link quantifier choice to division, we would expect fake mass nouns to pattern with count, but not mass nouns, contrary to fact.

Here I propose that apparent mass versus count quantifier selection is in fact allomorphy that is sensitive to the morphological number status of a noun. What we are dealing with is allomorphy: both mass and count quantifiers are allomorphs of the same underlying quantifiers, with the count variant conditioned by morphological plurality and the mass variant being the elsewhere case. Specifically, I propose the following. In English, there are two (relevant) underlying quantifiers MUCH and LITTLE which merge with the noun. They undergo agreement with the noun that they quantify over and agree with the noun's number feature. That quantifiers can undergo agreement with the noun is known from *e.g.* Italian, where the quantifier

[8]Another prediction, made by both Borer and by Bale & Barner is that there ought to be no instance of a non-individuated noun combining with a count quantifier. This prediction turns out to be wrong, as will be shown in section 3, and will be discussed there.

that translates as *many* differs in form depending on the gender and number of the noun it combines with (*molti* versus *molte*).

Thus, I assume that the quantifiers carry a *u*F number feature that is unvalued, and undergoes agreement with the head noun in order to receive one. If this agreement ends up with the quantifier having a plural number feature, MUCH is spelt out as *many* and LITTLE is spelt out as *few*. However, if the noun that is agreed with is not morphologically plural, then the elsewhere rules contained within (89) below are used, and MUCH is spelt out as *much*, and LITTLE as *little*.

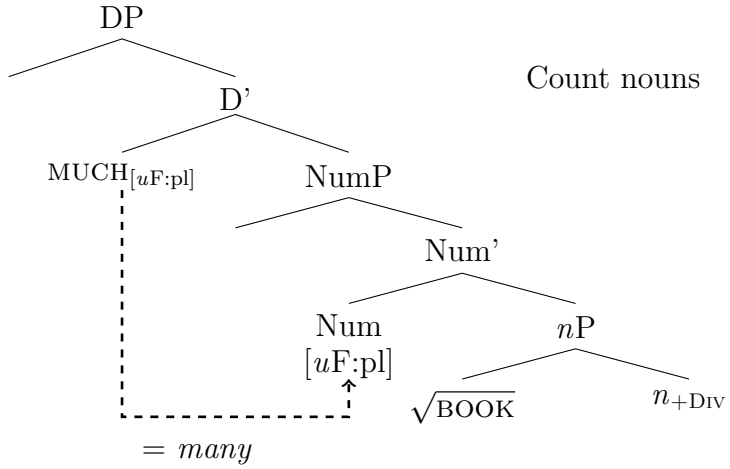
(50) $\sqrt{\text{MUCH}}$, [*u*F:-singular] $\Leftrightarrow$ many
$\sqrt{\text{LITTLE}}$, [*u*F:-singular] $\Leftrightarrow$ few
$\sqrt{\text{MUCH}} \Leftrightarrow$ much
$\sqrt{\text{LITTLE}} \Leftrightarrow$ little

In this manner, count nouns will always combine with *many*, since MUCH will get a plural value for its *u*F number feature from the noun. However, both fake mass nouns and mass nouns, by virtue of lacking a number specification, will not donate any value to the quantifer. Thus, the quantifier will be spelled out as *much*.[9] Derivations are given below. In (51), the quantifier receives a *u*F value form the plural features on Num^0, resulting in count nouns valuing their quantifier *u*F:plural. The same result happens with *pluralia tantum* nouns in (54), although the value comes from the inherent number of $\text{n}_{+\text{Div}}$. Both of these result in *many* spelling out MUCH, according to (50). In both (52) and (53), there is no *u*F number feature in the

[9]The agreement must only target the *u*F number value of the head noun, otherwise it could result in fake mass nouns being able to combine with *many*, contrary to fact. In order to ensure this, I assume that the feature on the quantifier is not specified to look for a value on the *i*F of the noun, see Author (In progress) for details.

derivation for the quantifer to agree with. Thus, the *u*F on the quantifier remains unvalued, and is spelled out as *much*, per the VI rules in (50).

(51)



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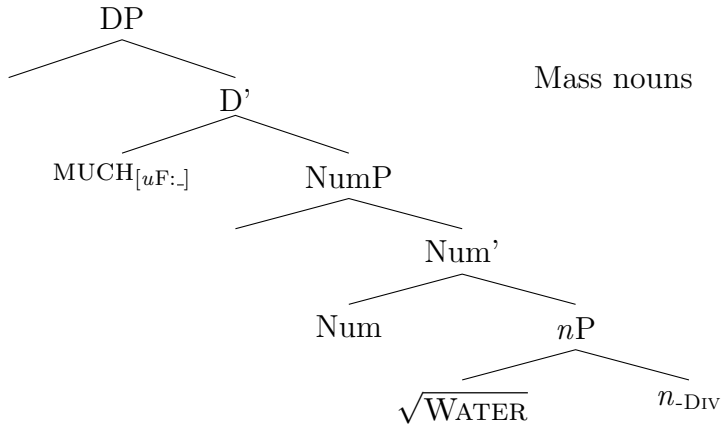

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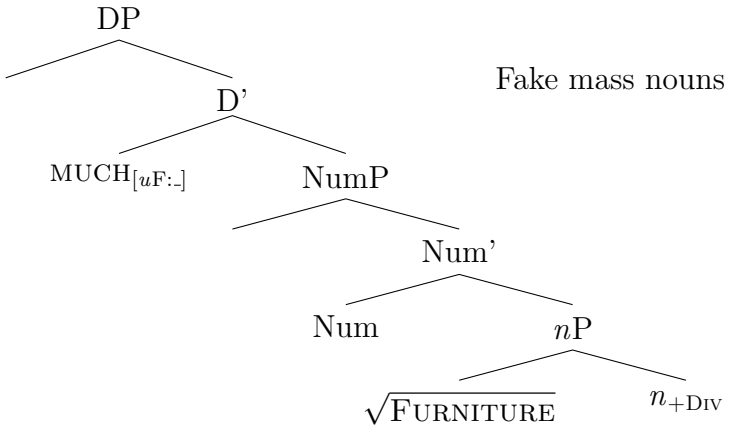

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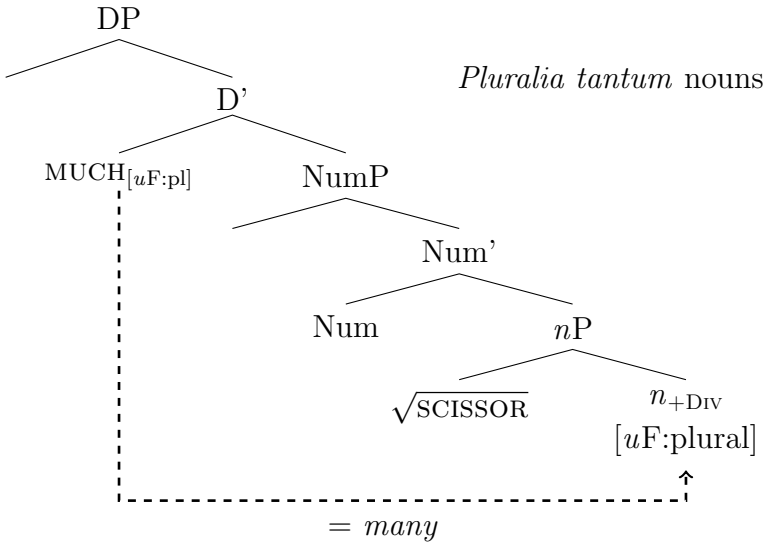


2.5 Interim Summary

In this section I have shown that fake mass nouns are not mass nouns in any traditional sense, but rather are made to look as though they are mass nouns in the way that English resolves inherent number. Thus, I drew a close comparison to *pluralia tantum* nouns, and showed that various properties that are shared between fake mass

and *pluralia tantum* nouns result from both of these classes having inherent number. Importantly, a lot of the explanation was based on the result of a mismatch in number features. Fake mass nouns had a specification for semantic plurality, but could not get one for morphological number; *pluralia tantum* nouns had a specification for morphological plurality but did not receive any semantic number specification. In the next section I show that this general idea helps us understand another class of atypical mass nouns in Telugu. There I show that the current account of the flexible roots approach is to be preferred, since it helps account for something not predicted in the other accounts, namely the existence of (semantically) mass nouns that have count (morphosyntactic) properties.

3 Non-countable count nouns in Telugu

In this section I show that Telugu (Dravidian) has nouns with count morphosyntax, but mass semantics. It is the opposite state of affairs to fake mass nouns described above, which have mass morphosyntax but count semantics. The data in this section, unless noted otherwise come from novel fieldwork on Telugu. Further information can be found in Krishnamurti & Gwynn (1985) who note that Telugu has plural mass nouns, but without providing a clear exposition of their properties.

3.1 The mass/count distinction in Telugu

In this section I outline the fact that Telugu does have a mass/count distinction in the language, and that there are a clear set of diagnostics for distinguishing between

count nouns and mass nouns. Telugu is not therefore a language like Yudja (Lima 2014)[10] which does not make a mass/count distinction.

3.1.1 The morphosyntax of the mass/count distinction in Telugu

The first fact of note is that Telugu has a regular singular/plural distinction, that is shown in obligatory nominal and verbal morphology, as well as being reflected in the pronominal system. To show the nominal and verbal morphology, consider the following pair of sentences. In (55), we see that *kukka* 'dog' is present in the sentence without any number marking, and is used in a singular sense, shown by the presence of 3.NM.SG morphology on the verb. In contrast, in (56), we see that *kukka* now appears with the plural suffix *-lu*, in addition to triggering 3.NM.PL agreement on the verb.[11]

(55) kukka ṭinn-a-ḍi
dog eat-PAST-3.NM.SG
'A dog ate.'

(56) kukka-lu ṭinn-aa-ji
dog-PL eat-PAST-3.NM.PL
'Dogs ate.'

Number morphology is obligatory for all nouns (aside from mass nouns as we'll see), and does not become optional through inanimacy, as shown in (57) and (58) below:

[10]See also Wiltshko (2012) on Halkomelem Salish and Blackfoot

[11]In (55) and (56), and what follows, NM indicates non-masculine gender agreement.

(57) oka niiLLa susaa table paina un-ḍi/*unn-aa-ji
a water bottle table on be-3.NM.SG/be-PRES-3.NM.PL
'A water bottle is on the table.'

(58) renDu niiLLa siisaa-lu table paina unn-aa-ji/*un-ḍi
two water bottle-PL table on be-PRES-3.NM.PL/be-3.NM.SG
'Two bottles of water are on the table.'

As shown in (59), where the noun *isuka* 'sand' Telugu does not allow mass nouns to combine with the plural morpheme.

(59) * aa abbaaji isuka-lu ṭavvu-ṭunn-aa-Du
the boy sand-PL dig-PROG-PRES-3.NONMASC.SG
INTENDED: 'The boy is digging sands.'

Count nouns in Telugu freely combine with numerals, in a manner much akin to English. Again, plural morphology on the noun is obligatory (for numbers two and above), and count nouns in Telugu do not require some measure/classifier phrase to combine with the noun in order for them to counted. This is shown in (60) below:

(60) Raaǰu muuDu aratipanD-lu ṭinn-aa-Du
Raaju three banana-PL eat-PAST-3.MASC.SG
'Raaju ate three bananas.'

Mass nouns on the other hand are not able to combine directly with numerals, (61) and require a measure phrase in order to do so.

(61) * Raaǰu renDu isuka-lu konn-aa-Du
Raaju two sand-PL dig-PAST-3.MASC.SG
INTENDED: 'Raaju dug two (piles of) sand(s).'

A final morphosyntactic diagnostic that we can use to identify the mass/count distinction in Telugu is through the quantifiers that translate in English to *few* and

little. Telugu also has a difference like this, although with only a single quantifier. Unlike English, there is no difference between *many* and *much* in Telugu; both are expressed using the word *čaala* as shown below in (62). However, there is an equivalent to the difference between *few* and *little* in Telugu, with the former expressed by *konni*, (63) and the latter by *končam(u)*, (64):

(62) a. raaǰu čaala aratipanD-lu t̪inn-aa-Du
Raaju a.lot.of banana-PL ate-PAST-3.M.SG
'Raju ate many bananas.'

b. raaǰu čaala annam t̪inn-aa-Du
raaju a.lot.of rice eat-PAST-3.M.SG
'Raju ate a lot of rice.'

(63) Raaǰu konni/*koncčam aratipanD-lu t̪inn-aa-Du
Raaju few/*little banana-PL eat-PAST-3.MASC.SG
'Raaju ate few bananas.'

(64) neenu končamu/konni uppu t̪inn-aa-nu
I littlefew salt eat-PAST-1.SG
'I ate little salt.'

3.1.2 The semantic distinctions between mass nouns and count nouns in Telugu

Changing track to the semantic side, Telugu again patterns with English in a couple of diagnostics. The diagnostics that will be discussed are the ability to combine with *stubbornly distributive predicates*, see Schwarzschild (2011), and standard of comparison, as discussed by Bale & Barner (2009).

Recall that Schwarzschild (2011) shows that count nouns differ from mass nouns in their ability to combine with predicates such as *large, round* and *long* in that

count nouns can happily combine with these predicates, but mass nouns cannot.

Telugu also has a class of predicates that show this property. In the sentences below, I show this with the adjective *peḏḏagaa*, which combines with count nouns such as *aratipanDlu* 'bananas', but not mass nouns like *veṇḍi* 'silver', (65). By way of contrast, an adjective that does not obligatorily distribute, like *baruvugaa* happily combines with both count and mass nouns, (66), as in English.

(65) a. aratipanD-lu peḏḏa-gaa unn-aa-ji
banana-PL big-GA be-PRES-3.NM.PL
'The bananas are large.'

b. # veṇḍi peḏḏa-gaa un-ḍi
silver large-GA be-3.NM.SG
INTENDED: 'The silver is large.'

(66) a. aratipanD-lu baruvu-gaa unn-aa-ji
banana-PL heavy-GA be-PRES-3.NM.PL
'The bananas are heavy.'

b. veṇḍi baruvu-gaa un-ḍi
silver heavy-GA be-3.NM.SG
'The silver is heavy.'

Telugu thus shows an identical distribution of stubbornly distributive predicates to English; there exists in Telugu (as in many languages - see Maldonado 2012) a set of predicates which must obligatorily distribute down to atomic entities, and these predicates happily combine with count nouns in Telugu, but not mass nouns.

Moving on to a second semantic diagnostic, Telugu also distinguishes count nouns from mass nouns with respect to comparison contexts. Count nouns are compared by number of individuals entities and not any volume measurement, whereas mass nouns

are compared with respect to the total volume of the mass noun, and the number of distinct individual quantities is irrelevant. Telugu also shows this pattern. Count nouns in Telugu are compared by number whereas mass nouns are compared by volume. The relevant sentences are given below. (67) is true when the number of bananas that Raju ate is larger than the number of bananas that Raani ate, whereas (68) is true where the overall quantity of oil is relevant, and not individual quantities, for instance bottles.

(67) raaǰu raani kanna ekkuva aratipanD-lu t̪inn-aa-Du
raaju raani COMP more banana-PL eat-PAST-3.M.SG
'Raju ate more bananas than Raani.'

(68) raaǰu raani kanna ekkuva nuune konn-aa-Du
raaju raani COMP more oil buy-PAST-3.M.SG
'Raju bought more oil than Raani.'

The preceeding discussion has established that there is a mass/count distinction in Telugu, and that it shares many properties with English. There are other properties relevant to the mass/count distinction in English that have not been discussed here. I leave investigation of these properties for future study, but the above discussion has established the existence of the mass/count distinction in Telugu, and now I move the discussion on to a small class of mass nouns that have plural morphology on them.

3.2 Milk and water: Plural mass nouns in Telugu

In section 3.1 the absence of plural morphology on a noun was used as a diagnostic of that noun being a mass noun. However, as has been noted in various places this does

not hold without exception; cross-linguistically there are a small number of languages where plural morphology can appear on mass nouns. These will be discussed in section 3.2.2, but first I introduce the facts from Telugu, before discussing them in a wider context.

3.2.1 Milk and Water

As mentioned in section 3.1, an incompatibility with plural morphology is one of the hallmarks of the mass/count distinction in Telugu. However, as noted in Krishnamurti & Gwynn (1985), there are a small class of mass nouns in Telugu that occur with plural morphology. I focus my attention throughout this paper on two nouns, *niiLLu* 'water' and *paalu* 'milk', though it should be pointed out that the class of these nouns is larger than just two, and they are not limited to liquid mass nouns, see Krishnamurti & Gwynn (1985) for more details.[12] Consider the following sentences. Note that the forms do not just look as though they are plural by virtue of ending in *-lu*, but they also trigger plural morphology on the verb that they agree with, and not singular morphology.

(69) nii-LLu unn-aa-ji
water-PL be-PRES-3PL
'There is water.'

(70) * nii-LLu und̠i
water-PL be-3.NONMASC.SG
INTENDED: 'There is water.'

[12]I focus my attention to these nouns since they were the nouns that were easiest to elicit from my consultant. The other nouns listed in the grammar are *wadLu* 'paddy', *pesalu* 'green gram' and *kandulu* 'red gram'

(71) paa-lu table miiḍa padd-aa-ji
milk-PL table on spill-PAST-3.PL
'Milk spilled on the table.'

Interestingly, even though these nouns are prototypically mass in English, in Telugu they appear to show (at least a subset of) count properties. For instance, we see that they combine with the count quantifier *konni*, and not *končam*:

(72) aa abbaaji konni nii-LLu ṭaag-ees-ṭun-aa-Du
the boy few water-PL drink-EMPH-PROG-PRES-3.MASC.PL
'The boy is drinking some water.'

(73) * končam nii-LLu
little water-PL
INTENDED: 'Little water.'

One might suppose that it is expected that these nouns would appear with the count quantifier, since they exhibit plural morphology. For theories of the mass/count distinction like that espoused in Borer (2005), plural morphology is only possible if the noun root combines with the count syntax. Thus one may suppose that these nouns are simply count nouns in Telugu. However, it is not so clear that these nouns are count nouns since they do not exhibit the full range of count-properties, for instance, they are not countable without the aid of some measure phrase:

(74) Raaǰu renDu *(kap-lu) nii-LLu ṭaag-ææ-Du
Raaju two cup-PL water-PL drink-PAST-3.MASC.PL
'Raaju drank two (cups of) water.'

In addition to not being countable, these nouns also show the hallmark properties of having non-divided extensions and so being regular mass nouns. For instance, they do not combine felicitously with stubbornly distributive predicates, as shown in the following:

(75) # nii-LLu peḏḏagaa unn-aa-ji
water-PL big-GA be-PRES-3PL
'The water is large.'

Furthermore, they do not combine with quantifiers that require division, such as *prati* 'every':

(76) * aa abbaaji praṯi niiLLu ṯaag-ees-ṯun-aa-Du
the boy every water-PL drink-EMPH-PROG-PRES-3.MASC.SG
INTENDED 'The boy is drinking every water.'

Finally, as is the case with mass nouns, comparison is done by volume, crucially not by number. In the following situation where (77) is true is a situation where Raaju used one 5 liter bottle of milk and Raani used three 1 liter bottles. Thus, the overall volume of milk used by Raaju was larger than that used by Raani, even though Raani used more individual portions of milk. It is *not* true if Raaju used three 1 liter bottles of milk and Raani used one 5 liter bottle, where the number of individual portions of milk used by Raaju is greater than the number used by Raani.

(77) Raaǰu Raani kanna ekkuva paa-lu vaaD-ææ-Du
Raaju Raani COMPR more milk-PL use-PAST-3.MASC.SG
'Raaju used more milk than Raani.'

3.2.2 Plural mass nouns: A cross-linguistic picture

As was mentioned earlier it is not unheard of for mass nouns to occur with plural morphology. English for instance has a productive process of coercing a mass noun into count usage, which then allows a noun that usually occurs as a mass noun to be a count noun. However, this is not strictly a case where a mass noun is used with plural morphology, since the mass noun is in essence count.

A second way that mass nouns occur with plural morphology is when they have some kind of abundance reading. This is shown in the following example from Halkomelem Salish (Wiltschko 2008).

(78) tsel kw'éts-lexw te/ye shweláthetel
1SG.S see-TRANS-3O DET/DET.PL fog.PL
'I've seen a lot of fog.'

The same pattern is seen in Greek (Tsoulas 2007), where the use of the plural suffix on the mass noun gives rise to the reading that a lot of the noun was involved:

(79) Trexoun nera apo to tavani
drip-3RD-PL water-PL-NEUT-NOM from the ceiling-NEUT-SG
Water is dripping from the ceiling.

Tsoulas notes that these nouns come with an abundance reading, in that the quantity of water denoting by *tavani* in (79) is more than one would otherwise expect. Tsoulas gives the following dialogue to illustrate this point:

(80) SPEAKER A: Afise o gianis anihto to lastiho ke gemise i avli nera
(Giannis left the hose on and the yard was full of waters)
SPEAKER B: Min ipervalis fofo mu, de gemisame nera, na ligo nero# nera etrekse.
(Dont exagereate fofo, it wasnt full of waters, just a little water/# waters dripped out of the hose)

There is another type of example whereby plural morphology appears on what otherwise looks like a mass noun. Consider the following data from Ojibwe, from Mathieu (2012):

(81)	a.	maandaamin	'corn'	maandaamin-ag	'corn-PL'
	b.	semma	'tobacco'	semaa-g	'tobacco-PL'
	c.	mikwam	'ice'	mikwam-iig	'ice-PL'
	d.	azhashki	'mud'	azhashki-in	'mud-PL'
	e.	aasaakamig	'moss'	aasaakamig-oon	'moss-PL'

All of the nouns in (81) are protoypically mass nouns, but they appear to freely combine with plural morphology. Number in Ojibwe is not derivational, as Wiltschko (2008) claims to be the case for Halkomelem Salish. Mathieu also shows that the plural forms do not come with abundance reading that is present in similar nouns from Halkomelem Salish. What they come with is in fact an individuated reading. Thus, they are akin to mass to count shifts, like *three waters* in English. However, the process is slightly different, since in Ojibwe it results from a singulative operation. Their individuation is shown by the fact that they can combine with numerals, as well as distributive quantifiers like *gakina* 'every':

(82) a. bezhig azhashki
one mud
'One chunk of mud.'

b. niizh azhashki-n
two mud.PL.IN
'Two chunks of mud.'

c. gakina azhashki
every mud
'every piece of mud.'

It might be tempting to wonder whether *niiLLu* and *paalu* fall into either of these classes of plural mass noun. However, these nouns are certainly not of the former type, since my consultant states that the *niiLLu* and *paalu* are able to be used when only a little amount of milk and water is intended. Also, in the following situations,

an abundance use of the mass noun would render the sentence infelicitous, however the sentences are fine:

(83) Raaǰu t̪ana coffee-lo paa-lu poos-ææ-Du
Raaju his coffee-in milk-PL pour-PAST-3.MASC.SG
'Raaju put milk in his coffee.'

(84) Raaǰu čet-la-ki nii-LLu poos-ææ-Du
Raaju plant-PL-DAT water-PL pour-PAST-3.MASC.SG
'Raaju gave the plants water.'

Neither are these two nouns the result of a singulative shift, since, they do not come with an individuated interpretation (see the above discussion).

To summarize, the following facts of *niiLLu* and *paalu* are relevant for the discussion at hand:

1. They are nouns which we can consider prototypically mass in many languages.
2. In Telugu, they appear with the plural suffix *-lu*, as well as triggering plural agreement on the verb; they are clearly identifiable as being plural, see (69), (70) and (71).
3. They appear with the *count* quantifier *konni*, but not the mass quantifier *končam*, (72) vs (73).
4. They are not countable without the use of a measure phrase, see (74).
5. They show evidence of having non-divided extensions.
   (a) They do not combine with *pra*t̪*i*, see (76).

(b) They do not combine felicitously with stubbornly distributive predicates, (75)

(c) Comparison is done by volume, and not number, (77).

Properties 2 and 3 point towards the nouns being count nouns in Telugu, whilst properties 4 and 5 point towards them being mass nouns. Clearly, we face a bit of an impasse if we want to classify these nouns as being either a count noun or a mass noun, since they simultaneously exhibit properties of being both. In addition to posing the problem of classification for Telugu, these nouns also raise various theoretical issues that pertain to how the mass/count distinction is created. I turn to these issues in the next section, before pursuing an alternative explaination in section 3.3.

3.2.3 Issues that Telugu raises for theories of the mass/count distinction

Since *niiLLu* and *paalu* in Telugu are clearly plural nouns, in Borer's system it *must* be the case that they occur in a count structure like (14), since plural inflection comes about through ClP. Since ClP is in the structure, we would expect that the denotation of *niiLLu* and *paalu* is like any other count noun, with division. However, as shown by the discussion above, *niiLLu* and *paalu* do not show any sign of being divided; recall that these nouns are not countable, do not combine with *praṭi*, do not combine felicitously with stubbornly distributive predicates, nor do they allow for comparison by number, only by volume. They are practically the definition of an undivided noun if we take all of these properties to be indicative of division.

Now, one could argue that ClP is not present with *niiLLu* and *paalu*, and that the

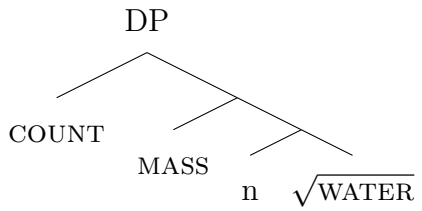
plural morphology is a decoy. Supposing that the plurality on the noun is inherent to the root, and not regular plural inflection that comes about through the syntactic structure, then it is possible in principle to maintain the view that *niiLLu* and *paalu* occur without ClP. However, there is an additional problem in that the presence of the count structure with *niiLLu* and *paalu* is also shown by the quantifier selection. Recall that some quantifiers are sensitive to whether the nouns they quantify over is mass or count; *many* for instance will only go with count nouns. Borer treats this in terms of phrasal selection; because the mass/count distinction is created syntactically, and not through lexical properties, then quantifier sensitivity to the mass/count distinction must also be a sensitivity to syntactic environment. Borer says that *much* is a mass quantifier because it selects a phrasal complement that is mass; i.e. it does not have ClP. *Many* on the other hand is a count quantifier because the *many* selects for a phrasal complement that contains ClP. Applied to *niiLLu* and *paalu* the problem that arises is the fact that *konni* surfaces with *niiLLu* and *paalu*, but *končam* doesn't, showing that ClP *must* must be in the structure; in Borer's system it is not possible for *konni* to come about through any inherent factors.

Bale & Barner (2009) offer a different view of the syntactic creation of mass versus count. Their approach avoids some of the problems of Borer's, since plural morphology is allowed to coexist with mass nouns. Unlike Borer's approach, plural morphology is not strictly tied to count nouns.

Since B&B have two functional heads, one for creating counthood and one for creating masshood, it is in principle possible for both to co-occur on the same noun. However, there are two problems with this. Firstly, supposing that the two heads

could co-occur, it seems reasonable to assume that COUNT would be the uppermost head for *niiLLu* and *paalu*, since this would be the one most local to the quantifier for means of selection. In order to prevent mass quantifiers from occurring with *niiLLu* and *paalu*, it is necessary to rule out optionality if two heads coexist, therefore it seems reasonable to assume that the highest head wins, as is standard with things like agreement.[13] Thus, the surface behaviour of the nouns leads us to expect the following:

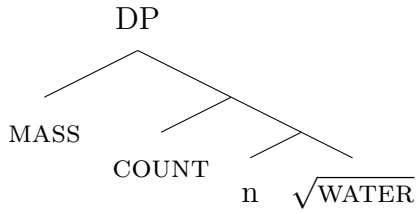
(85)



However, supposing that this were possible, when this gets interpreted by the semantics, we still expect a divided reading, since COUNT will always yield an individuated interpretation to what it applies to. In fact, the problem is more general; since MASS is an identity function, then whenever COUNT is in the structure we will still get division. Even if the order of COUNT and MASS were reversed, as in (86) then MASS will map an individuated semi-lattice to itself. No matter what we do, with MASS being an identity function, anything with COUNT will yield division.

[13]This problem is circumvented if quantifier selection is done with reference to whichever head is closest to the root. However, this strikes me as *ad hoc* and unmotivated. In addition, the problem with COUNT and MASS co-occuring in a meaningful way will remain.

(86)



Two options present themselves at this point. The first option would be to define MASS in such a way such that MASS destroys division, and is a function that maps any type of lattice to an unindividuated semilattice. However, this then would give an apparent paradox in that the semantics would suggest that (86) is the correct structure, since MASS would need to be apply after COUNT, whilst the morphology suggests that (85). Furthermore, moving outside of Telugu, this approach would then fail to account for count-mass nouns in English, which would then be expected to be unindividuated, contrary to fact, see Doetjes (1997), Bale & Barner (2009) and section 2 for discussion.

3.2.4 Summary

The existing accounts of the flexible roots approach face two major problems. Firstly, a problem that is limited to Borer (2005) and doesn't affect B&B too much is that plural inflection in Borer's system entails that ClP, the head that creates division is there. This means that *any* noun that is marked as plural must be divided. We have already seen that there are cases where there are plural mass nouns in other languages, and here it seems that the plural inflection does play a role. In the singulative systems, plural inflection is regular plural inflection (though division is done elsewhere). In the languages where a plurality of mass nouns gives rise

to an abundance reading, it's fairly intutive that plrual marking has created some division, even though it may be vague, since it has apparently served to introduce some standard amount that can be compared to. However, this is not the case in Telugu; there is no evidence that any kind of division at all has been created. Therefore, there is serious doubt that ClP is in the structure at all.

A second issue that affects both of these approaches comes from linking quantifier selection to the presence of a head in the structure. For both Borer and B&B, the fact that *niiLLu* and *paalu* both combine with *konni* entails that the head that creates division must be in the syntax. Thus, when it gets interpreted we expect a divided interpretation, which doesn't happen. The problem seems to be that both approaches are too coarse in tying count quantifiers strictly to divisibility. An approach that is to prove satisfactory needs to at least include the following two components. Firstly, MASS and COUNT need to be able to combine in a meaningful way; and secondly, COUNT needs to be in the structure whilst only being relevant for the morphosyntax, and not semantics. In the next section I move towards an account which can handle this.

3.3 Towards a solution

In this section I outline of how *niiLLu* and *paalu* can be reconciled with the flexible roots approach. We have seen that one of the main problems for Borer and B&B's approaches is that, for both, the dividing head must be in combination with *niiLLu* and *paalu*, and hence means that the noun must be interpreted as having minimal parts. What I will begin to outline in this section is a way of allowing whatever it

is that creates division to be present on the noun, but only relevant for the morphosyntax and not having any import into the semantics. Thus, we see why CNPs behave as though they are semantically plural, whilst the morphology treats them as singular: those are the features that are sent to each interface.

The split feature approach advocated for here however provides a new way of looking at things. Representing features in this manner allows for differences between how the morphology sees some item and how the semantics sees it. Its relevance for the matter at hand, where we need a noun to be morphologically count but semantically mass, is clear, and I now return to *niiLLu* and *paalu* in Telugu to move towards an analysis of these plural mass nouns. I make crucial use of this approach, which is a welcome result, since it shows that the quirky properties of two classes of atypical mass nouns, in English and Telugu, result from the same phenomena, an inherent number specification carried on one half of a number feature, the differences between the languages coming from which half.

3.3.1 A feature split approach to *niiLLu* and *paalu*

The first thing of note is that Telugu fills a hole in the typology predicted in the section 2. There it is argued that count-mass nouns – nouns like *furniture* and *mail* in English – are not really mass nouns at all, but rather are made to *look* mass by virtue of being semantically plural, but lacking in a morphological specification for number. This meant that they were essentially count nouns in terms of their semantic behavior, but mass nouns in terms of their morphological behavior. We then predict that the converse mismatch is then possible: that there exist a set

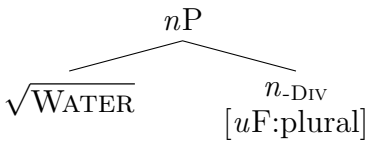
of nouns that are semantically mass yet morphologically count. This is apparently unattested in English[14] but stands as a prediction made by the approach where the surface and semantic behavior of mass and count can diverge. Telugu seems to fill in this typological prediction with *niiLLu* and *paalu*, as shown in the following table, with the grey shading indicating mismatches.

(87)

	Semantics		
		+Count	**+Mass**
Morphology	**+Count**	Regular count noun	*niiLLu* and *paalu*
	+Mass	Count-mass nouns	Regular mass noun

I propose that we understand Telugu in the following way. The plural specification on *niiLLu* and *paalu* is not regular plural inflection like it is with a count noun, but rather arises because they are inherently *morphologically* plural. Recall that I assume that inherent features are located on category defining nodes, therefore $\sqrt{\text{WATER}}$ must combine with an n that carries [uF:plural]. Importantly, since these nouns are *not* individuated, they must combine with $n_{\text{-DIV}}$. Note that there is no semantic contribution of the plural feature; *niiLLu* and *paalu* are not semantically plural but only morphologically. Since they combine with [uF:-singular], they appear with the plural suffix.

(88)



Since the nouns combine with $n_{\text{-DIV}}$, their interpretation is like that of mass nouns,

[14]To the best of my knowledge, though *suds*, as pointed out by Acquaviva (2008a) stands as a possible candidate.

without division. Therefore, we expect that they cannot combine with stubbornly distributive predicates, will not be compared by number (and so must be compared by volume), and cannot form a good basis for counting (hence they don't combine with numerals). Furthermore, since the inherent number feature is morphological, we expect to see plurality represented in terms of a plural suffix on the noun.

However, we still must explain the facts about quantifiers. Recall that the biggest problem for the approaches of B&B and Borer (2005) was that the presence of an apparently count quantifier necessarily entailed the presence of a syntax that produces semantic division. A central argument of section 2 is that the fact that English count-mass nouns appear with apparent mass quantifiers does not entail the fact that they appear with the functional head that prevents division (i.e. MASS). Apparent selection of quantifiers for masshood and counthood was treated as allomorphy of the quantifier MUCH, which has the allomorphs *much* and *many*. I again assume that the quantifier agrees with its noun in terms of number, and takes the *u*F value of the noun. Quantifiers are therefore valued as either singular, plural or without number. The allomorph of the quantifier in English is determined by the following Vocabulary Insertion (VI) rules, operative in English. In short, *many* only appears when the noun that it appears with is morphologically plural (the same as with *few*):

(89) $\sqrt{\text{MUCH}}$, [*u*F:-singular] ⇔ many
$\sqrt{\text{LITTLE}}$, [*u*F:-singular] ⇔ few
$\sqrt{\text{MUCH}}$ ⇔ much
$\sqrt{\text{LITTLE}}$ ⇔ little

We can also apply this same idea to Telugu to understand the quantifier facts, and see that the same pattern emerges; *končam* and *konni* are not separate quantifiers in

Telugu that are sensitive to the mass or count status of the nouns that they combine with, but rather they are allomorphs of a single quantifier FEW that are sensitive to the morphological number value of the noun that they combine with. I assume again that an agreement relation is established between the quantifier and the noun, and the quantifier contains a number feature that gets valued by the noun. Since *niiLLu* and *paalu* are valued as [*u*F:-singular], then we expect that they pattern with count nouns in terms of which quantifier they appear with due to the following VI rules for Telugu:

(90) $\sqrt{\text{KONNI}}$, [*u*F:-singular] ⇔ konni
$\sqrt{\text{KONNI}}$ ⇔ končam

With these VI rules, we can see why *niiLLu* and *paalu* behave the way that they do in Telugu. What makes them appear to be count nouns - the plural morphology and the fact that they combine with an apparently count quantifier - is really a result of them being inherently morphologically plural.

3.4 Conclusions

This section outlined the mass/count distinction in Telugu, and shown that it does have an mass/count distinction in the same manner that a language like English does. I have further shown that there are mass nouns, that are clearly semantically mass yet are morphologically plural, as well as controlling plural agreement. These nouns pose a problem for the theories of Borer (2005) and Bale & Barner (2009) since those approaches would predict that the nouns were divided, since plural morphology and the apparent selection for *konni* means that they should be in combination with a

head that creates division. That these nouns are interpreted as if they are not divided evidenced the need for a more fine grained analysis of the mass/count distinction, where a noun is able to show the surface properties of being count, but the semantic properties of being mass.

4 Conclusions

In this paper I have shown that the proposal that features are decomposed into two distinct halves gives us a new window into the nature of the mass/count distinction, specifically a new way of looking at the nature of nouns which seem to lie some way in between mass nouns and count nouns. In both English and Telugu, I showed that there are nouns have the morphosyntax of being either mass or count, but the semantics of the opposite value. For Telugu, we saw nouns that have the semantics of being mass nouns, but the morphosyntax that count nouns in the language have. The opposite case was seen in English, whereby nouns which have count semantics have the morphosyntax of mass nouns. The overarching conclusion that was drawn was that these janus like nouns result from having different specifications for their number feature. The relevant nouns in Telugu were inherently specified as being [uF:plural], but lacked a value for the iF part of the number feature. In English, fake mass nouns were analyzed as nouns which were inherently specified for [iF:plural], but did not receive a uF value for number.

This approach and especially the insight that quantifier selection in the mass/count realm is allomorphy, enables the flexible roots approach to handle not only the fake

mass nouns of English, which are well discussed in the literature, but also the Telugu data which are unpredicted on current approaches.

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