Mass and count: syntax or semantics?

Doetjes, J.S.; Arregui, A.; Cremers, C.

Mass and count: syntax or semantics?

Jenny Doetjes

Count nouns and mass nouns have a different distribution.[1] Count nouns can be pluralized, the bare noun form is a plural, they can be combined with *one* and *another*, and they can be counted without the intervention of a measure word (henceforth classifier). Mass nouns cannot be pluralized, the bare noun form is a singular, they are incompatible with *one* and *another*, and they need insertion of a classifier if combined with a cardinal numeral. By 'classifier' I mean elements such as *litre*, *piece* and *head* in *head of cattle*. The differences are illustrated in (1):

(1) a. *Count terms:* cup*s*, another cup, two cups
b. *Mass terms*: gold(#*s*), #another gold, #two gold(s), two pieces of gold

It is argued by many linguists that the distributional differences have a semantic source. According to Bunt (1985) and Landman (1989) mass terms differ from count terms in that they do not have a structure with minimal parts. They have homogeneous reference, which means that any two parts of N_{mass} together are also N_{mass} ('cumulativity') and any subpart of N_{mass} is also N_{mass} ('divisivity').

In this paper I will argue that an item that behaves syntactically as if it is mass (thus, on a par with *gold*) can have minimal parts. The existence of such 'count mass nouns' forces us to reconsider the mass/count distinction. First a distinction is made between objects that are syntactically mass, which is expressed through lack of the singular-plural opposition, and objects that are semantically mass, which means that they lack minimal parts. I will investigate in section 3 how the class of count

[1] I would like to thank Ana Arregui, Lisa Cheng, Gennaro Chierchia, Crit Cremers, Marcel den Dikken, Teun Hoekstra, Rint Sybesma and the audience of the Meaning on the HIL round table meeting for comments and discussion.

mass nouns can be accounted for, and will tentatively analyze them as mass groups (cf. Landman 1989 for the notion of group), in which the minimal parts have a different status, and are therefore not accessible for Number. If such an account is possible, the parallel between semantic structure and syntactic structure can be maintained, while doing justice to the class of count mass nouns.

The structure of this paper is as follows. In section 1, I will comment on the mass/count distinction in general, and on mass-to-count and count-to-mass shifting processes. In section 2, I will show that there is linguistic evidence in favour of the idea that there are semantically count nouns that syntactically behave as if they are mass. The evidence for this comes in the first place from Mandarin Chinese, which is a so-called classifier language. In this language all nouns have the distribution of mass nouns in non-classifier languages. It has been argued by different people that all nouns in this language are mass (see for instance Sharvy 1978 and Sybesma 1992). I will argue that in Chinese there is linguistic – which means non-ontological – evidence that the mass/count distinction plays a role. Further evidence for count mass nouns comes from *furniture* nouns. I will argue that *furniture* nouns are similar to the Chinese count nouns. In section 3 I will motivate that count mass nouns might be seen as mass groups. Finally I will discuss and reject on empirical grounds the proposal of Sharvy (1978), according to which it is possible to analyze all English nouns as mass nouns, on a par with Mandarin Chinese, by assuming a classifier deletion operation.

1. About the mass-count distinction

1.1. Minimal parts

The basic difference between mass and count nouns seems to be that count terms provide us with a criterion for counting, whereas mass terms do not. Descriptively, there seems to be a relation between the presence of Number morphology and the possibility of not having a classifier in the context of a cardinal numeral (cf. for instance Greenberg 1972).

We can only add Number morphology if we know how to partition; the Number morphology itself does not tell us how the partitioning should be made. One could say that Number signals the presence of a partitioning that is already present in the denotation of the noun, and hence it can only be combined with count nouns, which provide minimal parts. The use of a singular or a plural implies that we know what we have a singularity or plurality of, and this information is provided by the count noun. This is why mass nouns, which lack minimal

parts in the domain of their denotation, cannot be understood in the context of singular or plural.

Classifiers are similar to Number in that they signal the presence of a partitioning. But classifiers usually contain more information than Number, and hence the information how to partition does not need to be present in the denotation of the noun. In that sense, the classifier not only signals but also introduces a partitioning, whereas Number only signals one. Because of the information they contain, classifiers can be combined with mass nouns, which lexically lack a partitioning. In the course of this paper, the status of classifiers will be refined.

Recently Bunt's (1985) no-minimal part hypothesis for mass nouns has been challenged by Chierchia (1995). According to Chierchia all nouns have minimal parts. The distributional differences between mass and count nouns arise from other facts:

> A mass noun is [...] generally interpreted either as a mereological whole of some kind; or else its extension is drawn from a domain of substances whose minimal parts are somehow more elusive than ordinary individuals. For example, the denotation of "change" can be taken to be some kind of substance whose minimal parts don't have the same identification criteria as coins. On this view, the minimal parts of mass nouns are surrounded by mystery and this is why we cannot count them. I propose instead that the extension of mass nouns (like *change*) is essentially the same as that of plurals (like *coins*). A mass nouns simply denotes a set of ordinary individuals *plus* all the pluralities of such individuals. For example, "change" denotes, roughly, single coins and all the possible sets or pluralities of coins. This view is an "atomistic" one: we are committed to claiming that for each mass noun there are minimal objects of that kind, just like for count nouns, even if the size of these minimal parts may be vague. The main difference between count and mass nouns thus comes to the following: while count nouns single out in the lexicon the relevant atoms or minimal parts (by making them the exclusive constituents of their extension), mass nouns do not.
>
> [Chierchia 1995:2]

In Chierchia's view, the syntactic differences between mass nouns and count nouns do not depend on the presence or absence of minimal parts. The minimal parts are always there. For Chierchia count nouns differ from mass nouns, not in that they have minimal parts in their extension, but in that the minimal parts are the only elements in their extension. A specific formulation of plural and cardinal count nouns prevents the mass

noun from being a plural or counted without intervention of a classifier. In the course of this paper it will become clear that in fact I do believe that for mass terms such as *change* the 'no minimal parts' hypothesis is false. However, I do not agree with Chierchia in assuming that all mass nouns have minimal parts and follow Bunt's idea that there must be clear linguistic evidence in favour of the existence of the minimal parts in order to assume that the minimal parts have a linguistic status. I will argue below that there exists a class of syntactic mass nouns, i.e. nouns that show the syntactic distribution of mass nouns, that do indeed have linguistically accessible minimal parts.

1.2. Shifts

Nouns can easily shift from count to mass senses and vice versa. This section focuses on count-to-mass and mass-to-count shifts, which show that a lexical distinction between mass and count nouns has to be made. The two types of shifts are different in the sense that count-to-mass shifts follow a regular pattern, while mass-to-count shifts are subject to many lexical restrictions. In both cases there are examples of nouns that resist shifting, which shows that it cannot be the case that either all mass nouns are derived through count-to-mass shift or all count nouns through mass-to-count shift.

In count-to-mass shifts, a major role is played by the "Universal Grinder" (this term is due to David Lewis) which turns a count noun in a mass noun. The idea that any count term can be used as a mass term given an appropriate context has been adopted by many authors [cf. for instance Pelletier 1975, Gleason 1965 and Hoepelman and Rohrer 1981]. An example illustrating this idea is given by Gleason 1965. A mother termite complains about her son and says:

(2) Johnny is very choosy about his food. He will eat book, but he won't touch shelf.

In this example a typical count noun is used as if it is mass, referring to the stuff a book or a shelf is made of. Pelletier argues that this shift can be made for any noun. The change is hard to make for nouns that do not have physical objects in their denotation, but according to Pelletier these nouns also can be passed through the universal grinder if we make them refer to physical objects. Pelletier illustrates this with the following statement: 'If numbers were physical objects, and if we were to put one into the grinder, there would be number all over the floor' [Pelletier 1975, p. 457]. This is of course true, but this has nothing to do with the meaning of the word *number*. Similar statements can be made about

nonsense terms as well: 'If porgels were physical objects, and if we were to put one into the grinder, there would be porgel all over the floor'. Pelletier adds the necessary meaning feature for grinding to the meaning of a noun that normally does not have that feature and then concludes that the noun can undergo a count-to-mass shift. The conclusion that all count nouns can undergo the count-to-mass shift, which Pelletier draws from his example, is false. We can only conclude that all nouns denoting physical objects can have a mass interpretation as well. By using a count noun as a mass term, one implies that this count noun denotes a physical object. Count terms that do not denote physical objects cannot undergo this shift. Some examples are *characteristic*, *mile* and *aspect*. We cannot put an aspect in the grinder and there cannot be aspect all over the floor, unless we assign explicitly a radically different meaning to the word *aspect*. In that case grinding is not even necessary in order to get a mass meaning. If someone creates a perfume called aspect, there can be aspect all over the floor in the absence of a corresponding count noun and grinding.

If not generally applicable, the process of shifting from a count meaning to a mass meaning is regular and predictable. Nouns that refer to physical objects can undergo a shift and instead of denoting an object they denote the stuff the object is made of. This process is fully productive, and hence there is no need to put the mass interpretation of count nouns (such as *chicken*) in the lexicon.

Shifts from mass to count are more complex. It is often possible to interpret a mass noun N_{mass} as a count term referring to *a type of* N_{mass}, *a serving of* N_{mass} or *a piece of* N_{mass} but these processes are not transparent.

Note for instance that having a *type* reading does not imply that a mass-to-count shift has taken place. An example of a mass *type* reading is given in (3):

(3) We verkopen dit hout al jaren
we sell this (type of) wood since years
'We have been selling this (type of) wood for years'

The word *hout* cannot be a count term in this *type of* reading, because it cannot be pluralized. In order to obtain the plural meaning, the complex form *houtsoorten* 'kinds of wood' is used, as is shown in (4):

(4) We hebben verschillende duurzame *houten/ houtsoorten
we have different durable woods/ kinds of woods

It is not the case that the mass noun *hout* cannot be used as a count noun at all. In *slaghout/ slaghouten* 'bat/ bats', lit. 'beat-wood(s)' the noun is count, as the existence of both singular and plural shows. Other words that resist the mass-to-count shift via the *type of* N_{mass} reading are *glas* 'glass', *zand* 'sand', *afval* 'waste' etc. This might be subject to some variation from speaker to speaker.

In other cases the *type of* N_{mass} reading does involve a mass-to-count shift and plural is available. An example is *wijn* 'wine':

(5) Bij dit gerecht kunnen verschillende wijnen geserveerd worden
with this dish can different wines served become
'One can serve different wines with this dish'

This illustrates that the availability of the count *type of* N_{mass} reading (at least in Dutch) is not free, but lexically determined. Other possibilities for interpreting N_{mass} as a count noun are *serving of* N_{mass} or *piece of* N_{mass}. Again, these processes are not predictable as is the count-to-mass shift discussed above. This is illustrated by the Dutch examples given in (6). They show three ways in which a mass noun can be used as a count noun. The count noun can be the same form that is used as mass noun (*wijn* 'wijn'), it can be a compound in which the noun is preceded by a specification of what the object is used for (*slaghout* 'bat') and it can be a diminutive form (*slaapje* 'nap'). Note that diminutives are always count nouns in Dutch. It is not the case that the compound and the diminutive are derived from the count noun, after mass-to-count shift has taken place. The diminutive and the compound can exist when there is no corresponding simple count noun as in (6a), (6d) and (6f). Moreover, there can be a difference in meaning between the diminutive or compound and the simple count noun, which also shows that they are directly derived from the mass noun. For instance, the mass noun *stof* 'dust' or 'fabric' gives the diminutive *stofje* 'dust-particle' and the count noun *stof* 'type of fabric'. The count noun *stof* cannot possibly be used for a dust particle.[2] In the leftmost column of (6) a mass noun given, in the middle column the corresponding count noun, with its plural ending between brackets, and in the rightmost column the diminutive form. Compounds are only added in case they are not derived from the simple count form:

2 As diminutives are quite productive in Dutch, it is possible to derive the diminutive *stofje* from the count noun *stof* as well. Thus *stofje* can also be a type of fabric, and has an affective flavour which the non-diminutive form lacks.

(6)

mass	**count (plural)**	**compound**	**diminutive**
hout *wood*	-	slaghout(en) *'hitwood', bat(s)*	houtje *piece of wood or stick*
bier *beer*	bier(en) *type(s) of beer*		biertje *serving of beer*
elastiek *elastic*	?elastiek(en) *piece(s) of elastic* *NOT: type of elastic*		elastiekje *piece of elastic*
boter *butter*	-		botertje *serving of butter*
stof *dust, stuff*	stof(fen) *type(s) of stuff, fabric*		stofje *dust-particle*
slaap *sleep (mass)*	-		slaapje *nap*
plastic *plastic*	plastic(s) *type(s) of plastic*		plasticje *any small piece of plastic*
ijzer *iron*	ijzer(s) *type(s) of iron*	strijkijzer(s)/ breekijzer(s) *flatiron(s)/ crowbar(s)*	ijzertje *small piece of iron*
wijn *wine*	wijn(en) *type(s) of wine*		wijntje *serving of wine, type of wine*
glas *glass*	glas (glazen) *piece of glass,*		glaasje *small piece of glass, a glass* *NOT: type of glass*
goud *gold*	-	-	

The examples in (6) show that the meaning of the derived count forms varies. Certain meanings show up frequently: *a piece* or *a serving of* N_{mass} and *a type of* N_{mass}. In general, the diminutive refers to a small *piece* or *serving of* N_{mass}, while the bare noun form refers to the *type of* N_{mass} reading. However, we cannot predict which forms are possible and which meanings are allowed. As I showed above, the count *type of* N_{mass} reading is not always available. In the *piece* or *object of* N_{mass} reading, we do not know what kind of object the count version of the mass noun refers to. *Een glas* or *een glaasje* 'a (piece of) glass' can be used for a drinking glass, the chimney of an oil-lamp or a spectacle-glass, but not for a glass vase or a fragment of broken glass. Next to the unpredictable meanings, there are several unpredictable gaps in the paradigm. The mass nouns *slaap* and *boter* must be diminutive in order to be count. Moreover, the form *botertje* 'serving of butter' will not be accepted by all Dutch speakers. The mass noun *goud* 'gold' lacks a count use for all speakers, apparently even for chemists, who often can use stuff names for molecules or atoms (as in *two coordinated waters*). The form *twee goud* 'two gold' is attested, and I will argue in section 5 that this might be a case of an empty classifier, so that the noun is still mass.[3]

The examples in (6) show that a lot of information has to be stored in the lexicon about possible and impossible count meanings. It is by no means possible to predict given a mass noun whether there is a count meaning and what this count meaning would be like. Hence we have to assume that shifting from mass-to-count is lexically restricted. The count-to-mass shift, on the contrary, seems to be a productive lexical process, applicable to all nouns referring to physical objects in an appropriate context. The shifting processes are very interesting from the point of view of the mass/count distinction, because they show that the distinction is real, and that the distinction is lexical. There must be, in the lexicon, mass nouns and count nouns, the latter providing a partitioning and the former not, unless shifting has applied. We cannot assume that all nouns are count, and that mass nouns are derived by count-to-mass shift through the grinder. This is so, because there are mass nouns that can never be used as count nouns. Examples are *hout* 'wood' and *goud* 'gold'. Moreover, there are mass nouns that correspond to a count noun which has the *type of* N_{mass} reading. These count nouns do not refer to physical objects and hence grinding is impossible. The opposite view would be that grinding does not exist, and that the mass noun is basic in pairs such as *chicken/ a chicken*. This view is difficult to maintain given nouns such

3 Thanks to Jeroen Kolnaar and Esther Vermeulen for providing me with chemists' jargon judgements.

as *characteristic*, *mile* and *aspect*, which do not correspond to a mass noun. In section 4 below, I will argue more extensively against this view, which has been defended by Sharvy [Sharvy 1978].

2. Traces of the mass/count distinction in Chinese

Mandarin Chinese is a so-called numeral classifier language. In languages such as Chinese all nouns behave syntactically as mass nouns. In the first place, there is no real plural morphology in Chinese. A bare singular form can be used both for a singular and for a plural:

(7) shu
book(s)

In the second place, when a Chinese noun is combined with a cardinal numeral, a classifier has to be inserted. This is shown in (8):

(8) san-*(BEN) shu
three CL_{volume} book

Mass nouns share these two properties. They are not marked for plural and a classifier-like item (*kilo*, *box*, *bottle*) has to be inserted when the noun is combined with a cardinal numeral. The view that all nouns in Chinese are mass nouns and that individuation is introduced by classifiers has been defended by Sharvy (1978). More recently Muromatsu (1995) has worked out this idea for Japanese. For Muromatsu there is no difference between mass and count nouns in the lexicon. Nouns become mass or count given the context in which they occur. There are two types of classifiers: individualizing classifiers and measure phrases. In the context of a measure phrase, or a non-individualizing classifier, nouns are mass. According to Muromatsu individualizing classifiers individuate a mass noun and they can do so because they add form to the unstructured mass. In fact, universally the individualizing classifiers are often associated to forms, as noted in Greenberg (1972). I will argue, however, that a lexical distinction between mass and count nouns has to be made in numeral classifier languages such as Chinese as well.[4]

[4] Cf. Chen and Sybesma (1996), who, on a par with Muromatsu (1995), make a distinction between individual classifiers and measure phrases (which they call 'massifiers'). Contrary to Muromatsu they assume that the individualization is present in the denotation of the noun, and this is the view that I will defend here.

Let us first reflect a little more on how minimal parts and number agreement interact in the context of 'real' count nouns in languages such as English and Dutch. The plural ending, for instance, indicates that we have more than one object. It does not give information about what can be considered to be an object, therefore we know that this information must somehow be present in the denotation of the count noun. In other words, we know the plurality of what we are talking about when we use a plural. Similarly, when we use *one N* or *another N* context, we know what units we have in mind. For instance, with *one cup* we mean a whole cup, not just an ear. We see that the count noun is found in a context where a partitioning has to be made, and where nothing except for the noun itself tells us how. In order to show that Chinese has count nouns, i.e. nouns with minimal parts in their denotation, we have to look at elements that provoke a partitioning, but that do not give information about how the partitioning has to be made.

The Chinese classifier *ge* 'Cl_{unit}' is in fact similar to the category Number in that it indicates the presence of a partitioning. Many individualizing classifiers contain information about how the partitioning should be made. For instance, the classifier *ben* 'Cl_{volume}' signals that a partitioning in volumes is made. Other classifiers give information about the shape of the object (*zhi* 'Cl_{branch}' indicates that the object is long and thin and it selects *bi* 'pen' and *jian* 'arrow'; *mian* '$Cl_{surface}$' selects nouns such as *qi* 'flag' and *jingzi* 'mirror'). The classifier *ge* does not convey such information. Therefore the partitioning can only be made on the basis of the denotation of the noun, or, as with mass nouns shifted to a count interpretation such as *a beer*, on the basis of convention or context.

The classifier *ge* tends to replace more specific classifiers. Next to (9a), where the classifier *ben* 'Cl_{volume}' is used, (9b) with *ge* 'Cl_{unit}' is possible:

(9) a. san-ben shu
three-Cl^{volume} book
b. san-ge shu
three-Cl^{unit} book
'three books'

It has been noted by Rygaloff [Rygaloff 1973, p. 73] that the classifier *ge*, though it is the most general and most frequent classifier, cannot be used with mass terms, unless these terms can also be conceived as count terms (e.g. *a fish* vs *fish*). This is a clear indication that semantically the

mass/count distinction, including shifting processes,[5] exists in Chinese as well and that Number marking is not a necessary consequence of the presence of a partitioning. The classifier *ge* does not give any information about the unit we are looking for. In this respect there is no difference between *ge* and Number morphology. Neither *ge* nor Number morphology conveys any information about the way partitioning should take place. The noun must contain the information telling us which unit to choose. Note that the argument I make goes only in one direction. If a noun can be combined with *ge* it must have a count structure, but I do not make an explicit claim about nouns that cannot be combined with *ge*. Take for instance the word *shu* 'book' which used to be incompatible with *ge*. There are two ways one can look at the change: on the one hand it could be the case that first *shu* was a mass noun, and because it became a count noun the classifier *ge* became possible. It is possible also that *ge* could be extended to be used with *shu* because *shu* had a count structure. The latter option has to be preferred given that there are other criteria of countness showing that certain nouns that cannot be combined with *ge* have count properties. The existence of a neutral individual classifier which is not associated to a specific form is not restricted to Chinese. For instance, in Kana, a numeral classifier language spoken in Nigeria, the most general classifier is *kà* which is originally the word for 'mother' and which is used with a great variety of nouns, including the ones corresponding to 'father', 'school', 'axe' and 'alligator' [cf. Ikoro 1994 for details about the Kana classifier system].

A similar argument for the existence of count nouns in Chinese can be made on the basis of another group of classifiers selecting count nouns. There exists a set of classifiers that Chao (1968) calls 'group measures', which are 'semantically [...] used for a group or collection of individuals'. Again, these classifiers do not contain an indication of how the domain of denotation has to be partitioned but do imply that there is a partitioning. This partitioning, again, must be present in the denotation of the noun. Examples of this type of classifier are *da* 'dozen', and *qun* 'crowd, flock'. Interestingly, when these are combined with the noun *ma* 'horse', the classifier *pi* (which for most speakers cannot be replaced by *ge*) is omitted:

[5] It is also possible to use *ge* in the context of the mass noun beer when a serving of beer is intended (Rint Sybesma, p.c.).

(10) a. yi da (*pi) bai-ma[6]
one dozen (Cl) white-horse
'a dozen of white horses'

b. yi qun (*pi) ma
one flock horse
'a flock of horses'

This shows that compatibility with *ge* is not a necessary property of count nouns in Chinese.

A further sign of the existence of a mass/count distinction in Chinese might be the distribution of the suffixes *-zi* and *-tou*. Rygaloff (1973:62) notes that the suffix *-zi* is a marker of non-compositionality for count nouns. This means that the affix is found on the stem of a count noun which is not part of a compound. So there is *fángzi* 'house' next to *píngfáng* 'bungalow' (litt. 'flat-house') and *yuánzi* 'garden' next to *gōngyuán* 'public garden'. In *fángzi* 'house' and *yuánzi* 'garden' the suffix is necessary, but with other nouns, such as *dāo(zi)* 'knife', it is optional. There are at least two counterexamples to the claim that we are dealing with a suffix that selects a count noun here, and these are *shāzi* 'sand' and *mòzi* 'foam' (Rint Sybesma p.c.). However, one could argue that these are count nouns in Chinese, and correspond to 'grain of sand' and 'bubble' respectively. The suffix might perhaps be analyzed as a diminutive marker (Rint Sybesma p.c.). If this analysis is correct the count properties of *-zi* could be related to the count properties of the diminutive suffix *-tje* (cf. (6) above). It is not implausible that a diminutive can only be combined with count terms because only count objects can have a size. Next to *-zi* there is another marker of non-compositionality, *-tou*, which is only used with mass nouns. We find *-tou* in *mùtou* 'wood' but not in the composed *sōngmù* 'fir-wood' [Rygaloff 1973, p. 62].

All nouns in Chinese have the syntactic distribution of mass nouns. On the basis of the evidence presented in this section a semantic distinction between two types of syntactic mass nouns can be made. Mass mass nouns do not provide us with a criterion for partitioning and count mass nouns do. In Chinese these two types of nouns reflect the mass/count distinction. The presence of a classifier does not necessarily indicate that there are no minimal parts present in the denotation of a noun.

[6] Without the adjective *bai* 'white', the sentence is not acceptable, whether the classifier is present or not. This might have to do with the tendency to avoid monosyllabic words, as Lisa Cheng pointed out to me.

3. Furniture nouns

In this section I will argue that the existence of count mass nouns is not restricted to classifier languages. There is evidence that certain mass nouns in non-classifier languages do provide us with linguistically significant minimal parts in the domain of their denotation, even if Number morphology does not have access to them. The argument is similar to the one used for the Chinese cases. If a classifier does not provide any information about how to partition, and the combination of that classifier and a given noun gives rise to an unambiguous partitioning, the information about this partitioning must be present in the noun. Classifiers such as *piece* are so general that we can assume that they give us no clue as to how to make a partitioning. These classifiers allow us to make an interesting distinction between two classes of mass nouns. In the context of certain mass nouns, the partitioning is arbitrary, whereas it is perfectly clear how the partitioning has to be made in the context of other mass nouns. Consider the examples in (11), in which the general classifier *piece* and the analogous Dutch *stuk* are combined with the mass noun *cheese/ kaas*:

(11) a. a piece of cheese
b. een stuk kaas

There are no real conditions on how the partitioning should be made. Therefore, the following statement is true:

(12) A piece of a piece of cheese is a piece of cheese

Many mass nouns pattern alike: *wood*, *glass*, *plastic*, etc. This inference cannot be made, however, for all mass nouns that can be combined with the classifier *piece*. Consider the examples in (13):

(13) a. een stuk vee/ meubilair/ bagage/ gereedschap
a piece cattle/ furniture/ luggage/ tool
b. a piece of furniture/ silverware

In the context of the nouns in (13) we know exactly and unambiguously what is meant by *a piece of N*, and instead of the inference in (12) we can make the inference in (14):

(14) A piece of a piece of furniture is NOT a piece of furniture

The leg of a chair is not a piece of furniture, though it is a piece of a piece of furniture. There is no big difference between singular and plural and very general classifiers. The word *piece* tells us that we have to subdivide in units. It does not say anything about what these units are. Similarly, Number signals a division in minimal parts, and does not give information about what these parts are.

The classifier *piece* differs from Chinese *ge* in that it can be combined with both mass mass nouns and count mass nouns. However, when used with a count mass noun, it brings to light that what counts as a 'piece' is given by the denotation of the noun. The classifier *piece* can be compared to the quantifier *some*. *Some* can be combined with both mass nouns and count nouns. In combination with a mass noun it refers to an arbitrary portion of N_{mass} and together with a count noun it refers to a minimal part. The different inferences one can make in the context of mass and count terms present a contrast that is similar to the one between (17) and (19):

(15) a. A part of some gold is some gold as well
b. A part of some cup is not some cup[7]

(15a) is similar to (12), and contains a mass noun, whereas (15b) is similar to (14) and contains a count noun. It has to be noted, though, that the quantifier *some* does not have access to the minimal parts of the *furniture*-nouns: *some furniture* is similar to *some gold*, or to *some cups*, where a plural is used. This shows that *some* only has access to minimal parts of the real count nouns, and not of the count mass nouns, and in that respect it differs from the classifier *piece*. This difference is not problematic, because there obviously is a difference between count nouns and count mass nouns.

The relation between countability and the classifier *stuk* in the context of *furniture*-nouns is strengthened by the following observation. The classifier *stuk* can be used to replace a null count noun in answering a question. In that case we find the form *stuks* 'piece+genitive' as is shown in (16):[8]

(16) Hoeveel boeken neem je mee? twee *stuks*/ **stukken*
how-many books take you with? two piece+**gen**/ pieces

---

7 Obviously, the inference is false if count-to-mass shift has taken place.

8 In Dutch, classifiers do not always take plural in the context of a cardinal (>1). There are several distinctions related to the presence or absence of plural on the classifier that are beyond the scope of this paper.

When in this same context a mass amount is questioned, only the plural form *stukken* is possible:

(17) Hoeveel kaas heb je gegeten? twee *stukken*/ **stuks*
how-much cheese have you eaten? two pieces/ piece+**gen**

Note also that there is a tendency to use the count form *stuks* when *furniture*-nouns are combined with cardinals:

(18) drie stuks/ #stukken vee, vijf stuks/ #?stukken bagage

The *furniture*-nouns are extensively discussed by Chierchia while defending the idea that mass nouns have minimal parts. I fully agree with him for these nouns, on the basis of the evidence presented in this section. However, there is a difference between these nouns and nouns such as *water*, *ice* and *mud*, in which it is at best unclear what the minimal parts are.

4. Mass groups

An important question is now why the mass count nouns have no access to count syntax (Number). This question could be answered in an uninteresting way, by stating that these words are marked in the lexicon as incompatible with Number. Instead I propose, tentatively, that we are dealing with the mass counterpart of a group. An example of a (count) group, as defined by Landman (1989) is the word *committee*. Even if we know that it refers to a plurality of persons, it cannot be used as a plural. Consider the examples in (19), due to Landman (1989):

(19) a. John and Bill are judges
b. #Committee A are judges

The sentence in (19b) is awkward, even if John and Bill are the two only members of the committee. This shows that a committee is not identical to the sum of its members. Instead, Landman postulates a 'consist of' relation between the committee and its members which makes (20) predictable and (19b) unexpected:

(20) Committee A consists of judges

This pattern is very similar to the one found for *furniture*-nouns as is shown in (21):

(21) a. The objects are chairs
b. #The furniture are/ is chairs
c. The furniture consists of chairs

The difference between *a committee* and *furniture* is that the former represents a count group, and the latter a mass group. Even if furniture consists of minimal parts, any set of these minimal parts falls into the denotation domain of *furniture*. If I take a chair that is part of my furniture and a table that is part of my friend's furniture, the object they form together is furniture. For *committee* this is different. If I take a member of committee A and a member of committee B, the two of them together do not necessarily form a committee.

If it is true that nouns such as *furniture* can be analyzed as mass groups, the minimal part hypothesis of mass nouns has to be reconsidered. The noun *furniture* consists of minimal parts, and hence we can determine that the smallest entity that can be considered to be *furniture* is a mass group with one member. This implies that divisivity does not hold, and thus that homogeneity is not a necessary property of mass nouns. I will leave this issue for further research.

An interesting question follows from this approach in connection to the Chinese examples. There are two possible sources for the difference between classifier languages and non-classifier languages. On the one hand it could be the case that in Chinese, the nouns refer to mass groups, and that henceforth the category plural cannot exist. On the other hand it could be the case that Chinese lacks a singular/plural opposition, and that therefore it only can have count nouns of the *furniture*-type. According to Peyraube (1995) the individual classifier arises in Pre-Medieval Chinese (2nd c. BC – 3rd c. AD), and might be due to the loss of the plural infix *-r-*. This is evidence for the second option.

5. Against Sharvy

Based on the assumption that all nouns in Chinese are mass nouns, Sharvy argues that it might be possible to consider all count nouns in English to be underlyingly mass as well. Such a view is evidently not in accordance with the findings in this paper. In this section I would like to give some independent empirical arguments against Sharvy's proposal.

Sharvy invites us to imagine a language English* with only mass nouns, which is similar to Chinese, but in which there are many possibilities of having empty classifiers. This language would seem to have count nouns, but in fact, the empty classifiers would be responsible for that illusion. He finishes his paper by suggesting that maybe English

is in fact English*, and does not have any count nouns. Without discussing Sharvy's argument in detail, I would like to focus on the status of the empty classifier, and conditions that allow us to have empty classifiers. Sharvy states that *beer* is never a count noun, because we can have count *beer* referring to a variety of different objects:

(22)	a.	Bring me three beers	(serving of beer)
	b.	Open three beers	(container of beer)
	c.	We tasted four Canadian beers	(brand of beer)
	d.	What are those barrels?	
		Three beers and two ales.	(barrel of beer)

Sharvy states that the form *beers* is formed by deleting the classifier, and by transposing the plural *s* of the classifier on the noun. It is clear that in some way or another one has to account for the variety of objects that can be referred to by a single mass nouns, but the question is whether this is best done by postulating an empty classifier present in the syntactic structure. I think this is not the case, for two reasons. The first draws back on the paradigm in (6). If the mass-to-count shift is provoked by insertion of an empty classifier in the syntax, we would not expect the strong lexical restrictions that we find. It is much more plausible to assume that the shift is made in the lexicon given the capricious pattern we find. As the data in (6) are Dutch, this may not be considered a conclusive argument against the claim that English might have no count nouns, but then, at least, Sharvy's comparison of Chinese and English cannot be extended to Dutch.

The second argument is based on the distribution of some clear cases of empty classifiers. For this I make grateful use of a query on Linguist List by David Gil in 1994. David Gil started his query with the observation that in a restaurant setting, classifiers are not always obligatory in some (dialects of) classifier languages. In Vietnamese, one can say things such as *two chicken, three beef* and *two coffee* etc. In Mandarin this appears not to be possible, but in Thai and Japanese it is. As this construction is found in real classifier languages, it is plausible that there is an empty classifier present that means something like *serving of*. Interestingly, in the same contexts we find cross-linguistically forms where the plural is left out, as became clear from Gil's query. In English it is possible to have *two rice*, *three beer* in the restaurant setting. In Dutch this is also possible: *twee bier* 'two beer', *drie cola* 'two cola' etc. Given that there is no plural marking on mass nouns that are preceded by a classifier, the absence of plural in these contexts seems to be an indication that in fact we are dealing with an empty classifier: *three (servings of) beer*, *rice* etc. This makes the plural agreement on the noun

beer in (22) very suspicious. Why would *three beer* mean only 'three servings of beer', if all examples are derived from an empty classifier? It is preferable to restrict the number of empty classifiers to those cases where the plural marking on the mass noun is absent. Next to the *serving of* N_{mass} examples that seem to be frequent in a restaurant setting cross linguistically, the chemist use of *twee goud* 'two gold' for 'two molecules of gold' mentioned in section 2 could be an example.

It seems more appropriate to view *two beers* as a form in which the plural marker indicates that a partitioning has to be made. As shown in section 2, the way of partitioning has to be lexically restricted, although there is a certain flexibility and quite some variety among speakers. This has to be expressed in some sense, but not, according to me, by inserting a whole array of empty classifiers in the syntactic structure.

6. Conclusions

In this paper I have argued in favour of the existence of nouns that have the syntactic distribution of mass nouns (no plural, necessity of classifiers in the context of cardinal count numerals) but do not have the semantic properties that are attributed to mass nouns in the literature. Next to the pure mass nouns, which do not provide us with a partitioning (although they can be understood as count in different ways by undergoing a mass-to-count shift), there are also count mass nouns, which do provide us with a cue of how to subdivide in an unambiguous way. I have tentatively argued that the count mass nouns have a different semantic structure than real count nouns and that they might be analyzed as mass groups. Finally, I have given some arguments against the point of view of Sharvy, who suggests that English count nouns might be derived from mass nouns by insertion of an empty classifier.

References

Bunt, H. (1985) *Mass terms and model-theoretic semantics*, Cambridge University Press, Cambridge, UK.
Chao, Y. R. (1968) *A grammar of spoken Chinese*, University of California Press, Berkeley, California.
Cheng, L. & R. Sybesma (1996) 'Classifiers and massifiers', ms. UC Irvine and Leiden University.
Chierchia, G. (1995) 'Plurality of Mass Nouns and the Notion of "Semantic Parameter"', ms. University of Milan.
Doetjes, J. (1996) 'French degree quantifiers and the syntax of mass and count', paper presented at the LSRL **26**.
Gleason, H.A. (1965) *Linguistics and English Grammar*, Holt, Rinehart and Winston, Inc. New York.
Greenberg, (1972) 'Numeral Classifiers and Substantival Number: Problems in the Genesis of a Linguistic Type', in *Stanford Working Papers on Language Universals **9***, 1-39. Reprinted in Adam Makkai *et al.* (eds) (1977) *Linguistics at the crossroads*, Liviana Editrice, Padova and Jupiter Press, Lake Bluff, Illinois, 276-300.
Ikoro, S. (1994) 'Numeral classifiers in Kana' in *Journal of African Languages and Linguistics **15***, 7-28.
Iljic, R. (1994) 'Quantification in Mandarin Chinese: two markers or plurality' in *Linguistics **32***, 91-116.
Landman, F. (1989) 'Groups, I' in *Linguistics and Philosophy **12***, 559-605.
Muromatsu, K. (1995) 'The Classifier as a Primitive: Individuation, Referability and Argumenthood' in *University of Maryland Working Papers in Linguistics **3***.
Pelletier, F. (1975) 'Non-Singular Reference: Some Preliminaries' in *Philosophia **5-4***, 451-465, reprinted in Pelletier (1979).
Pelletier, F. (ed.) (1979) *Mass terms: some philosophical problems*, Reidel, Dordrecht.
Peyraube, A. (1995) 'On the history of classifiers in archaic and medieval Chinese', paper presented at the Conference on the History of Chinese Syntax, Stanford University.
Rygaloff, A. (1973) *Grammaire élémentaire du chinois*, Presses Universitaires de France.
Sharvy, R. (1978) 'Maybe English has no count nouns: notes on Chinese semantics", in *Studies in Language **2-3***, 345-365.
Sybesma, R. (1992) *Causatives and Accomplishments. The case of Chinese* ba. HIL dissertation.

Ana Arregui
Crit Cremers (eds.)

Meaning on the HIL

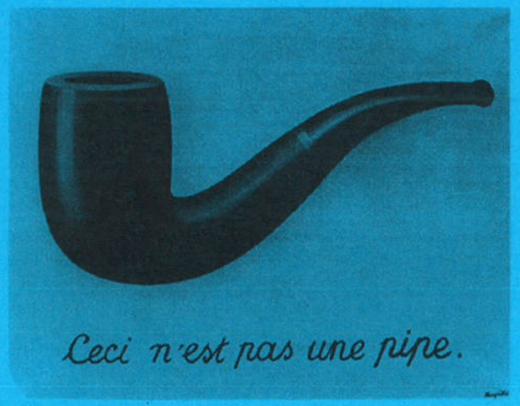
HIL Occasional Papers is a series of publications which reports on ongoing research by HIL staff and students. In principle, each issue centers around one of the research areas of the Holland Institute of Generative Linguistics (HIL). HIL offers a research and graduate training program in generative linguistics at Leiden University, the University of Amsterdam, and the Vrije Universiteit Amsterdam.

The six contributions to this first issue of *HIL Occasional Papers* cover a fair range of semantic problems. They deal with configurational semantics, the testability of meaning, the semantics of mass and count, formal compositionality, the structure of word meaning and the biology of semantic systems. The papers were selected from the Meaning on the HIL workshop held at Leiden University in May 1996.

Ana Arregui & Crit Cremers
(eds.)

Meaning on the HIL

HIL Occasional Papers 1



HOLLAND INSTITUTE OF GENERATIVE LINGUISTICS