

THE LEXICAL SEMANTICS OF ENGLISH COUNT AND MASS NOUNS

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The systematic connection between English mass and count nouns has long been known. Those working within lexical semantics have frequently cited such systematic connections as instances which are susceptible of treatment by so-called *lexical rules* (Leech 1981), *lexical inference rules* (Ostler and Atkins 1991), or *subtype coercion* (Pustejovsky 1995). This paper has three aims: to present the principal morphological and semantic properties of the mass count distinction; to formulate, in terms of lexical (inference) rules, the empirical generalizations pertinent to systematic connection between English mass and count nouns; and to show how such rules fit with a syntactic and semantic theory of English common noun phrases.

1 The Mass Count Distinction in English

In English, the distinction between mass nouns and count nouns has clear morpho-syntactic criteria. First and foremost, English count nouns admit a morphological contrast between singular and plural; mass nouns do not, being almost always singular. For example, *advice* is a mass noun (**advices*), whereas *suggestion* is a count noun (*suggestions*). Correlated with this are several other criteria: cardinal numerals and quasi-cardinal numerals (e.g., *several*) modify count nouns, never mass nouns. For example, *two drinks* is acceptable, since *drink* is a count noun; but *two milks* is not, since *milk* is a mass noun. Moreover, *little* and *much* modify mass nouns, never count nouns; whereas *few* and *many* modify count nouns, never mass nouns. Mass nouns do not tolerate the indefinite article (**an advice*), whereas singular count nouns do (*a suggestion*). The pronoun *one* may serve as the antecedent of count nouns, not of mass nouns.

- (1.1) Mary gave Jill advice and John gave her some/*one too.
(1.2) Mary gave Jill a suggestion and John gave her one too.

MORPHO-SYNTACTIC CRITERIA:	MASS NOUN	COUNT NOUN
modified by cardinal numerals	-	+
modified by quasi-cardinal numerals	-	+
modified by indefinite article	-	+
modified by <i>many</i> and <i>few</i>	-	+
modified by <i>much</i> and <i>less</i>	+	-
SG/PL contrast	-	+
<i>one</i> antecedent	-	+

While the generalizations underpinning the morpho-syntactic criteria just given have never been questioned, nonetheless they have been ignored by semanticists interested in the semantics of mass nouns: for example, Bunt (1985), Eschenbach (1992), Jackendoff (1991), Link (1983), Lønning (1987), ter Meulen (1981), Ojeda (1993), Roeper (1983), to mention only a few. Instead, semanticists have tried to distinguish English mass and count nouns on the basis of what they denote. Two criteria have been invoked – namely, cumulativity of reference and divisivity of reference – in spite of the fact that these criteria have long been recognized as utterly inadequate. Quine (1960: p. 91) observed that, if a mass term such as *water* is true of each of two items, then it is true of the two items taken together; and he dubbed this semantical property of mass terms ‘cumulative reference’. This characterization, while apt, does not, however, distinguish mass

nouns from count nouns; for, cumulativity of reference also holds of plural count nouns. Just as it is the case that “if the animals in this camp are horses and the animals in that camp are horses, then the animals in the two camps are horses”; so it is the case that “if **a** is water and **b** is water then **a** and **b** together are water (Link 1991)”. (Also, see Bunt 1985: p. 19.)

The second criterion, that of the divisivity of reference, suggested by Cheng (1973: pp. 286-287), states that any part of something denoted by a mass noun is denoted by the same mass noun. However, this criterion is belied by two classes of words. On the one hand, there is a large class of words which pattern morpho-syntactically with mass nouns, yet their denotations have parts which do not fall within the same noun’s denotation. On the other hand, there is a large class of words which pattern morpho-syntactically with count nouns, yet their denotations have parts which also fall within the same noun’s denotation.

The first set of facts had been pointed out by Quine, even before the criterion itself had been first suggested, let alone come into vogue. “. . . there are parts of water, sugar, and furniture too small to count as water, sugar, furniture. Moreover, what is too small to count as furniture is not too small to count as water or sugar; so the limitation needed cannot be worked into any general adaptation of ‘is’ or ‘is a part of’, but must be left rather as the separate reference-dividing business of the several mass terms (Quine 1960: p. 99)”. Indeed, minimal pairs such as the following make it abundantly clear that divisivity of reference incorrect:

COUNT NOUNS	MASS NOUNS
suitcases	luggage
shoes	footwear
vehicles	traffic
guests	company
laughs	laughter
leaves	foliage
animals	wildlife
cannons	artillery

The second class of words include the following: *stone, rock, ash, string, cord, rope, and tile*. These nouns behave both as mass nouns and as count nouns. But even in their guise as count nouns, they satisfy the criterion of the divisivity of reference. Suppose, for example, one has an eight foot rope. Cutting it in half, one can be said to obtain two ropes of four feet each. And cutting each of these ropes in half again, one thereby obtains four ropes of two feet each.

The mistake of semanticists is to have confounded what it is for the denotation of a noun to be **specified** as having no minimal parts and what it is for the denotation of a noun to be **unspecified** for whether or not it has minimal parts. Semanticists have uniformly opted for specification, whereas the facts call for non-specification.

The view advocated here is that of non-specification. In the next section, I shall set out the widely recognized morphological and syntactic facts pertaining to common nouns and the noun phrases comprising them and set out an account of the morphology and syntax which honors a treatment of mass nouns in terms of non-specification.

2 The Phrasal Syntax and Semantics of the Mass-Count Distinction

It is useful, to begin with, to recognize that English nouns fall into four classes: pronouns, proper names, mass nouns, and count nouns. These four classes are easily distinguished on the basis of two criteria: first, whether or not the noun in question occurs equally freely in the singular and in the plural; and second, whether or not the noun in question tolerates the full range of determiner. On the one hand, proper names and pronouns do not tolerate determiners, though admittedly the definite article occurs in some proper

names; while mass nouns and count nouns do. On the other hand, pronouns and count nouns evince the alternation between singular and plural, even if the alternation is sometimes not morphologically realized, as is the case with many nouns for wildlife (e.g., *sheep*, *deer*), whereas proper names and mass nouns do not evince such an alternation.

	occurs with a determiner	admits the contrast of singular and plural
proper name	–	–
pronoun	–	+
mass noun	+	–
count noun	+	+

Common nouns, that is, mass nouns and count nouns, are distinguished by the lexical features $\pm CT$, which are assigned to common nouns in their lexical entries. These features serve to constrain the free assignment of the morpho-syntactic features of $\pm PL$. To begin with, any noun with the feature $+CT$ must be assigned exactly one of the features, $\pm PL$; and any noun with the feature $-CT$ must be assigned the feature $-PL$. The assignment of the features $\pm PL$ conforms to certain restrictions. One restriction is lexical. Some nouns have their grammatical number specified lexically. Thus, for example, *police*, which is a count noun, has the feature $+PL$ specified in its lexical entry.¹ Plural mass nouns² all have the feature $+PL$ specified in their lexical entries.

The other restrictions are syntactic. The first is the well-known fact that there is agreement between the grammatical number of determiners and the grammatical number of the nouns they modify. Thus, *this desk*, *that oil*, and *those odds* are acceptable, whereas *these desk*, *that oils*, and *that odds* are not. Another restriction is that inflected verbs agree in grammatical number with their subjects.

- (2.1) This student is usually meticulous.
- (2.2) *This student are usually meticulous.
- (3.1) This oil is viscous.
- (3.2) *This oil are viscous.
- (4.1) *Those earnings is insignificant.
- (4.2) Those earnings are insignificant.

Standard treatments of feature can accommodate these two restrictions: the features of a count noun are assigned to its first dominating noun phrase node (i.e., its maximal projection) and the features assigned to a determiner must be consistent with the features of its first dominating noun phrase node.

It is also true that a conjoined noun phrase is plural, even if its conjuncts are singular.

- (5.1) John and Mary are leaving.
- (5.2) *John and Mary is leaving.
- (6.1) The wiring and the piping are in the storeroom.
- (6.2) *The wiring and the piping is in the storeroom.

This can be handled by a simple rule: the feature of a conjoined noun phrase is the sum of the features of the conjuncts, where the sum of xPL_i is $-PL$ if $i = 1$ and $+PL$ otherwise (where x ranges over $+$ and $-$ and i enumerates the i^{th} conjunct in the conjunction).³

¹This specification is to be distinguished from phonological specifications pertaining to the phonological realization of the features $\pm PL$. For example, 'mouse' in the plural is realized as 'mice'; 'deer' in the plural is still realized as 'deer'; and 'means' in the singular is still realized as 'means'; etc.

²Here, I have in mind such words as *earnings*, *dregs*, *groceries*, *remains*, and *odds*.

³Usages appearing to resist these restrictions are well known, being thoroughly documented in the more complete descriptive grammars of English such as Jespersen 1909 v. 2, ch. 3 and Quirk *et al* 1985 Ch. 10.34 ff. For a discussion of these usages in connection with the stated restrictions, see Gillon 1992.

The pairs of features $\pm CT$ and $\pm PL$ impose semantic conditions. To make clear what these conditions are, I shall turn to the introduction of a few mereological and set theoretic concepts. Let an object formed from one or more members of a given background set be an aggregate. For example, let the background set have exactly three distinct elements: a , b , and c . Then, exactly seven aggregates can be formed from its elements: a , b , c , ab , ac , bc , and abc .

If a , b , and c are concrete particulars, then so are ab , ac , bc , and abc . In addition, each concrete particular can be seen as a minimal aggregate. In other words, the concrete individual a can be seen as an aggregate a , the smallest aggregate which can be formed from a . Not all aggregates have atomic constituents. Those which do are also known as pluralities. The set of desks in a room can form an aggregate whose atomic constituents are precisely the desks in the room: the aggregate in question here is a scattered object (cp., Indonesia is a scattered object.) The entire volume of space in a room forms an aggregate, but it has no atomic parts.

A plurality is not the same as a collective, or a group: a plurality is nothing more than the sum of its atomic constituents, whereas a collective is more than the sum of its atomic constituents. The constituency of a collective can change without the collective changing. As is well known, not only can the members of a collective come and go with the collective remaining intact, but the very same people may make up two distinct collectives. What is crucial to collectives is that they are subject to constituting conditions which determine how the members of the collective constitute the collective of which they are members; whereas pluralities do not have such constituting conditions. Indeed, as Simons (1987: ch. 4.4) has pointed out, a plurality can be seen as the limiting case of a collective: a plurality is a collective without conditions governing its constitution.

The set of aggregates accruing to the formation of aggregates from elements of a background set has the algebraic structure of a complete join semi-lattice with a unit and without a zero. The relation of being a sub-aggregate is a partial ordering on the set of all aggregates formed from the background set. The elements of the background set are the minimal aggregates in the set of all aggregates; while the aggregate formed from all of the background set's elements is the unique maximal aggregate, that is, the greatest aggregate or unit aggregate.

In addition, an aggregation is defined to be a set of aggregates with the requirements that their join yield the greatest aggregate (that is, the unit aggregate) and that it be minimal, in the sense that, no aggregate in the set is a proper sub-aggregate of any other aggregate in the set.

When a noun has the feature $+CT$, its denotation is the set whose members are all and only those minimal aggregates of which the noun is true. In other words, it is the largest subset of the domain of discourse such that the noun is true of each element in the set. The noun 'desk' is a count noun, hence it has the feature $+CT$. Its denotation is the set of all desks in the universe of discourse. When a noun has the feature $-CT$, its denotation is the set whose sole member is the greatest aggregate of which the noun is true. The noun 'machinery' is a mass noun, hence it has the feature $-CT$, so its denotation is the set whose sole element is the greatest aggregate of machinery formed from the universe of discourse.

It is well-known that demonstrative noun phrases, quantified noun phrases, and interrogative noun phrases in English exhibit different patterns: interrogative noun phrases form overtly discontinuous structures (i.e., move at S-structure), while demonstrative and quantified noun phrases do not; quantified noun phrases exhibit different scope-like interpretations, while demonstrative noun phrases do not⁴. It is not surprising, then, that these different kinds of noun phrases are sensitive to the features $\pm PL$ in different ways.

The denotation of a demonstrative noun phrase is the denotation of its \bar{N} , modulo any further restriction imposed on it by its determiner. Now every noun phrase has grammatical number. The semantic import for a demonstrative noun phrase of singular grammatical number is that its denotation be one, while that of plural grammatical number is that its denotation may be one or greater.

It might be asked why the cardinality of a plural demonstrative noun phrases might be allowed to be one. Are there cases where the grammatical number is plural but the denotation is one? Yes, plural mass

⁴More precisely, singular quantified noun phrases exhibit different scope-like interpretations, while singular demonstrative noun phrases do not. There are cases where plural demonstrative noun phrases and interrogative noun phrases exhibit scope-like interpretations.

nouns have a denotation of one, but have the grammatical number of plural. Second, if the cardinality of a plural noun phrase were required to be greater than one, then the following sentences would not be true.

- (7.1) These men (Mark Twain and Samuel Clemens) are the same man.
- (7.2) The numbers 2^2 and $\sqrt{16}$ are identical.

I now turn from the semantics of demonstrative noun phrases to how they are evaluated with respect to the predicates of which they are arguments. A predicate is evaluated, not with respect to the denotation of a demonstrative noun phrase which is its argument, but with respect to the elements in an aggregation constructed from the demonstrative noun phrase's denotation, where the choice of aggregation is determined by one's knowledge of the world and one's context. Such flexibility accounts for why it is that, when different piles of leaves are touching different bundles of wires, the following sentences (due to Lauri Carlson) are true.

- (8.1) These leaves are touching those wires.
- (8.2) This foliage is touching that wiring.

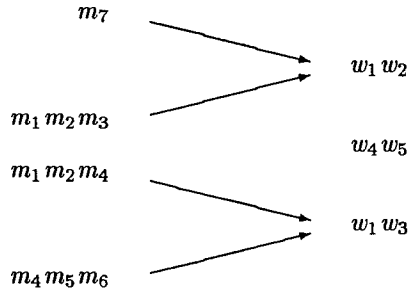
In the first case, there is a way of assembling the individual leaves into aggregates of leaves and the individual wires into aggregates of wires such that each aggregate of leaves, that is, each pile of leaves, is touching some aggregate of wires, that is some bundle of wires, and each aggregate of wires is being touched by some pile of leaves. In the second case, there is a way of breaking up the largest aggregate of foliage into sub-aggregates of foliage and the largest aggregate of wiring into sub-aggregates of wiring such that each sub-aggregate of foliage, that is, each pile of foliage, is touching some sub-aggregate of wiring, that is, some bundle of wiring, and each sub-aggregate of wiring is being touched by some sub-aggregate of foliage.

Having stated and illustrated the principles governing plural demonstrative noun phrases, I turn to those governing plural quantified noun phrases. As always, a denotation is associated with a count noun, namely, the largest subset of the domain of discourse of each of whose members the noun is true. But the quantifier is restricted, not to the count noun's denotation, but to an aggregation built from that denotation. The choice of aggregation is partially constrained by the features $\pm PL$. If the feature assigned to the noun phrase node of the quantified noun phrase is $+PL$, then the choice of the aggregation is unconstrained; but if it is $-PL$, then the choice is constrained to the least aggregation, that is, the set of all the minimal aggregates of the count noun's denotation – which is, of course, just the count noun's denotation. Notice that this is analogous to the constraint imposed by these features on the denotation of demonstrative noun phrases. Next, if the quantifier is universal, then the predicate must be true of each aggregate in the aggregation to which the quantifier is restricted; and, if it is existential, then the predicate must be true of at least one aggregate in the aggregation to which the quantifier is restricted.

To see how the principles work, consider this sentence with plural quantified noun phrases.

- (9) All men in the room endorsed some women.

Suppose the denotation of 'men' is $\mathbf{m}_1, \mathbf{m}_2, \mathbf{m}_3, \mathbf{m}_4, \mathbf{m}_5, \mathbf{m}_6,$ and \mathbf{m}_7 the denotation of 'women' is $\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3, \mathbf{w}_4,$ and \mathbf{w}_5 . Suppose further that the men form committees of various sizes (including committees of one), say, $m_7, m_1 m_2 m_3, m_1 m_2 m_4,$ and $m_4 m_5 m_6,$ and that the women too form committees, say, $w_1 w_2, w_4 w_5,$ and $w_1 w_3$. Finally, suppose that there is an endorsement of the female committees by the male committees, as depicted below.



The situation certainly renders the sentence in (3) true and that it is so can be derived by any rule which assigns clausal scope to quantified noun phrases. Thus, the quantified noun phrases in the sentence in (9) can be assigned the scopal configuration shown in (10).

$$(10) \quad [_{NP} \text{ All men }]_x [_{NP} \text{ some women }]_y [_{S} [_{NP} x] [_{VP} \text{ endorsed } [_{NP} y]]]]$$

Next, the following two sets are aggregations formed from the denotation of ‘men’ and ‘women’ respectively.

$$(11.1) \quad \{m_7, m_1 m_2 m_3, m_1 m_2 m_4, m_4 m_5 m_6\}$$

$$(11.2) \quad \{w_1 w_2, w_4 w_5, w_1 w_3\}$$

Finally, each aggregate in (11.1) bears the relation of endorsing to some aggregate in (11.2).

Quantified count noun phrases range over elements in the aggregation formed from elements in the denotation of the noun phrase’s count noun. Quantified mass noun phrases also range over elements in the aggregation formed from the denotation of the noun phrase’s mass noun, which is the greatest aggregate in the domain of discourse of which the mass noun is true. In many cases, the choice of aggregation is virtually arbitrary.

$$(12.1) \quad \text{All water is wet.}$$

$$(12.2) \quad \text{All information is valuable.}$$

In other cases, the choice is constrained by common knowledge.

$$(13.1) \quad \text{Some footwear in this store sells for under thirty dollars.}$$

$$(13.2) \quad \text{All ammunition found by the police was fifty caliber.}$$

$$(13.3) \quad \text{No livestock in this pasture weighs more than one hundred kilograms.}$$

3 The Empirical Generalizations

For sometime, lexical semanticists have been aware of words which satisfy both the mass criteria and the count criteria. Adhering to standard linguistic usage, I shall refer to this correlation as conversion, leaving open whether or not this phenomenon is to be further analyzed as so-called *zero derivation*. Moreover, I accept the suggestion of the term that the correlation has a directionality to it, though I am aware of the fact, pointed out by Leech (1981: pp. 224-225), that what the directionality should be is not always clear.

To my knowledge, no systematic investigation of mass count alternation in English has been carried out, though remarks of individual instances abound and observations of some sub-regularities have been made (for example, Ostler and Atkins 1991). My purpose here is to pull together the observations which have been made and expand the empirical base so as to arrive at a preliminary formulation of the regularity or regularities involved.

I divide this discussion into two parts, as suggested by the term conversion. I look first at conversion of mass nouns to count nouns and then at the conversion of count nouns to mass.

3.1 Conversion from Mass Noun to Count Noun

As remarked above, a mass noun is unspecified as to whether or not its denotation has minimal parts. Its conversion to a count noun requires that its denotation must be such that it has minimal parts, or atoms. In the case of a mass noun for concrete things or stuff, its count noun version has as its denotation either units of what the mass noun denotes, or kinds of what it denotes. Here are some well-known examples: *coffee*, *tea*, *beer*, *hamburger*, *cheese*, and *wheat*.

The conversion of these nouns to count nouns can fall under any of several types. The most commonly recognized one is that of kinds. This conversion appears with such nouns as *bread*s, *cheese*s, *clay*s, *coffee*s, *salt*s, *mineral*s, *oil*s, *tea*s, and *wheat*s. Another common conversion is to that of units. Thus, *chocolate*s, *beer*s, and *hamburger*s may denote servings of the denotation of the underlying mass noun.

- (14.1) Only two coffees are sold in this store: Ethiopian and Costa Rican.
- (14.2) Would you care for a coffee?

But servings are not the only kind of unit. Surely a unit, different from that of a serving, is invoked in the case of *weight*. Particularly revealing here are the mass nouns of *pizza* and *cake* where two units are possible, one corresponding to a serving and the other corresponding to a unit of fabrication. The former requires the use of a partitive expression, *a slice of pizza* and *a piece of cake*, whereas the latter accrues to the count noun conversions of *pizza* and *cake*.

- (15.1) Did you order pizza?
- (15.2) I ordered a pizza, not a slice of pizza.

It would be a mistake to think that units, or servings, and kinds are the only atoms available to mass nouns undergoing conversion to count nouns. Let us begin with mass nouns denoting emotions. Indeed, *emotion* is a mass noun which converts to a count noun with the correlated shift in meaning of kinds of emotion. Not all words for emotions have a count noun counterpart. For example, *anger*, *disgust*, *grief*, *astonishment*, and *esteem* do not. But many do: for example, *joy*, *embarrassment*, *delight*, *sorrow*, *disappointment*, *anxiety*, *dislike*, *love*, *like*, and *care*.

- (16.1) Carol feels intense anxiety before every dinner party she gives.
- (16.2) Carol has two anxieties: her job and her children.

The conversions here all denote THAT WHICH GIVES RISE TO THE EMOTION. Indeed, this conversion is true of many mass nouns denoting mental states in general, such as, *surprise*, *wonder*, *admiration*, *pleasure*, *worry*, *aspiration*, *ambition*, and *desire*.

- (17.1) Bill does not have much desire to continue working.
- (17.2) Bill has but one desire: to continue working.

One interesting case is *fear*, which, as a count noun, denotes both *kinds of fear* and *objects of fear*.

Another sort of conversion is illustrated by mass nouns denoting *virtues*. Of course *virtues* denotes kinds of virtue. And of course many virtues are one of a kind: *honesty*, *bravery*, *courage*, *chastity*, *sincerity*, *gratitude*, and *fidelity*. Still, some mass nouns for virtues are susceptible of conversion, namely, *loyalty* and *allegiance*. As count nouns, they denote those things to which one is loyal and those things to which one owes allegiance.

- (18.1) How much loyalty does Dan have to his friends?
- (18.2) How many loyalties does Dan have?

Still another sort of conversion is one which was alluded to above in connection with *fear*. Mass nouns, through conversion, can give rise to count nouns denoting instances of the denotation of the mass noun: *complexity*, *detail*, *discrepancy*, *error*, *effort* (instances of the exercise of work), *action*, *activity*, *exposure*, *thought*, and *shortage*.

- (19.1) Elizabeth made many efforts to contact her lawyer.
- (19.2) How much effort is required to lift this weight?

Summarizing, then, we conclude that mass nouns, under conversion, give rise to count nouns with a limited variety of shifts in denotation. They include, but may not be confined to, the following: TO BE A

KIND OF, TO BE AN INSTANCE OF, TO BE A UNIT OF, and TO BE A SOURCE OF. This can be formalized as follows

1. $|C_c(N_m)| = \{x: \text{ is a kind of } |(N_m)|\}$
2. $|C_c(N_m)| = \{x: \text{ is an instance of } |(N_m)|\}$
3. $|C_c(N_m)| = \{x: \text{ is a unit of } |(N_m)|\}$
4. $|C_c(N_m)| = \{x: \text{ is a source of } |(N_m)|\}$

(where ' N_m ' denotes a mass noun, ' C_c ' denotes the morphological operation of conversion from a mass noun to a count noun, and '| |' denotes the interpretation function).

Moreover, there is evidence that the choice of interpretation is relativized to context. Consider the first sentence:

- (20.0) I sold you two coffees.
- (20.1) I sold you two kinds of coffee.
- (20.2) I sold you two cups of coffee.

The sense of the sentence in (20.0) as found in the paraphrase in (20.1) would be appropriate to the situation in which a sales clerk at a store which sells only coffee beans is explaining to a customer why a sales receipt shows two different prices. The second sense, as found in the paraphrase in (20.2), would be salient in the situation in which a waiter at a restaurant is explaining to a customer why the price of a cup of coffee is found twice on a bill.

3.2 Conversion from Count Nouns to Mass Nouns

The semantic requirement imposed on a count noun in its conversion to a mass noun means that its denotation be the largest aggregate, or mereological sum, of the parts of each atom of the denotation of the count noun, where what constitutes a relevant part may, and typically does, vary from count noun to count noun.

Ostler and Atkins (1991) point out two sub-regularities exemplifying this shift. Common nouns for animals which humans eat can be used to denote the largest aggregate of those parts considered suitable for human consumption. They include nouns such as *duck*, *chicken*, *turkey*, and *lamb* – to mention just a few. (Cp. Ostler and Atkins 1991: p. 89.)

Common nouns for plants which humans eat can be used to denote the largest aggregate of those parts considered suitable for human consumption. Among these are such words as *potato*, *turnip*, *carrot*, and *rutabaga*. (Cp. Ostler and Atkins 1991: p. 91.)

Other sub-regularities include the case where common nouns for trees can be used to denote the largest aggregate of those parts considered useful for human use in construction), namely the wood, obtained from them. Examples include *oak*, *maple*, *birch*, *cedar* – and many, many, others.

Leech (1981: p. 216) mentions two examples which do not fall in any of the sub-regularities mentioned so far: *an area of table* and *an inch of cigarette*. Indeed, these two examples are instances of still another sub-regularity, namely, common count nouns for products can be used to denote parts which contribute to the enlargement or enhancement of the product. This is exhibited in such expressions as the following:

- (21.1) Bill got a lot of house for \$100,000.
- (21.2) How much floor did you lay today?

Finally, there are many cases where the shift in meaning is almost imperceptible. These are words which were mentioned earlier: *stone*, *rock*, *ash*, *string*, *cord*, *rope*, and *tile*. What is it that differentiates their mass from their count uses? It is nothing more than whether or not one the denotation must be atomic.⁵

Summarizing, then, we conclude that count nouns, under conversion, give rise to mass nouns with the following shift of sense: the denotation of the mass noun is the largest aggregate of the parts of the elements

⁵However, see Wierzbicka 1988 ch. 10 for interesting subtleties.

comprising the denotation of the count noun, where what constitutes a part is relative to the kind of object denoted by the count noun. Thus, in the case of animals and plants, the parts are the edible portions; in the case of trees, the parts are the portions of wood; and in the case of stones, rocks, ropes, wires, and so forth, the parts are pieces. This can be formalized as follows (where ' N_c ' denotes a count noun, ' C_m ' denotes the morphological operation of conversion from a count noun to a mass noun, ' π ' is a function which associates with an object its parts⁶ and ' $| \cdot |$ ' denotes the interpretation function).

$$|C_m(N_c)| = \{x: \exists y(\pi(y), \text{ for some } y \in |(N_c)|)\}$$

4 Conclusion

Above, I presented a semantic, syntactic, and morphological account of the mass count distinction and I have shown how that account can be extended to accommodate the fact that mass nouns can be converted into count nouns and count nouns into mass nouns, with concomitant shifts in the meanings of the nouns. The account presented postulates the pair of morphological features $\pm CT$, which are assumed to be assigned uniquely to the lexical entries for English common nouns. At the same time, however, I have postulated lexical rules whereby mass nouns are converted to count nouns and count nouns are converted to mass nouns.

The question arises: are lexical rules for the conversion of mass nouns to count nouns and count nouns to mass nouns, on the one hand, and the assignment of the features $\pm CT$, on the other, redundant with respect to one another? The answer, I believe, is no. And the reason for this answer can be seen by considering the need for this redundancy in the case of conversion of proper names to common nouns.

It is well-known that proper names can undergo lexical conversion to become common nouns. For example, proper names for companies become common nouns denoting their products.

- (22.1) Reed bought every Compaq in the store.
- (22.2) Some BMW was involved in the traffic accident.

Family names become common nouns denoting those in the family of that name.

- (23.1) Each Jenner at the wedding had a sarcastic remark to make.
- (23.2) No Romanow ever turns down a free ticket.

Personal names can be converted into common nouns with the concomitant shift in meaning to denote the set of people who have the proper names in question as a proper name. Thus, *Tom*, as a common noun, denotes the set of people who have *Tom* as a proper name.

- (24.1) The Fred I am speaking of is different from the Fred you were speaking of.
- (24.2) How many Mary's are there in this room?

And finally, complete personal names of people well-known to the speakers become common nouns denoting those people sharing contextually salient properties with the person denoted by the personal name (Clark and Gerrig 1983).

- (25.1) Eric is a veritable Napoleon.
- (25.2) George did a Willie Nelson.

Proper names are constantly being added to English; and once added, they are subject to such conversions. These conversions are clearly productive, a fact borne out for the last type given by the experiments of Clark and Gerrig (1983). At the same time, it is equally clear that productive conversions of this sort can give rise to lexicalizations (Bauer 1983: ch. 3.2.3). Here, I have in mind such common nouns as *kleenex*, *band-aid*, *hoover*, and *xerox*, which clearly derive from proper names. Such lexicalizations require lexical entries of their own. Thus, it is clear that, to accommodate the nonce usage of proper names as common nouns, conversion rules, with concomitant semantics, are required, and that to accommodate the fact that some proper names become lexicalized as common nouns, requires that they be given special lexical entries.

⁶It must be stressed here that the notion of part here is not the mereological notion of part, which is a transitive, asymmetric relation, but the natural language notion of part, which is not, in general, transitive. See Cruse (1986: ch. 7.1) for discussion.

The situation is not dissimilar for the division within common nouns between mass nouns and count nouns: on the one hand, nonce formations which give rise to the conversion from mass to count or count to mass requires that these conversion rules have a concomitant semantics; on the other hand, the very notion of conversion does not stand without an initial specification of membership in one lexical class or the other.

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