

What Can Be Ground? Noun Type, Constructions, and the Universal Grinder

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Mass-Count Distinction

Introduction to the Universal Grinder

Experiment

Discussion

Background: The Mass-Count Distinction

What does it mean for a noun to be morphosyntactically mass or count?

Background: The Mass-Count Distinction

Count nouns (*dog, chair*):

- ▶ permit plural marking (*dogs, chairs*)
- ▶ modification by cardinal quantifiers (*one dog/chair*)
- ▶ may allow modification by determiners implicating plurality (*many dogs, several chairs*)

Background: The Mass-Count Distinction

Mass nouns (*sand, tar, water*):

- ▶ do not permit plural marking (**tars, *sands*)
- ▶ nor cardinal quantifiers or determiners implicating plurality except on kind interpretations (**one tar, *several sands*)
- ▶ may allow modification by *much* (*much sand*)

Current approaches

Mass or count is a property of nouns, not extensions.

- ▶ **Inherency** \Rightarrow Choice is *predetermined* by the nature of the entity named
- ▶ **Arbitrariness** \Rightarrow Choice is *not-predetermined*, though there may be some regularities or tendencies in lexicalization as mass or count

Current approaches

Two types of evidence used to support (versions of) the arbitrariness position:

- ▶ doublets:

As regards the semantic distinction: it seems that there is nothing in the referent of the terms that should make fruit mass and vegetable count, baklava mass and brownie count, rice mass and bean count.
(Pelletier 1991: 497)

- ▶ shiftability of noun meaning with respect to countability status (focus of this talk)

There is apple in the salad.

Introduction to the Universal Grinder

After the grenade has exploded in the enemy bunker, Rambo might enter and notice that the walls contain three different muds mixed with sm. soldier.
(Pelletier 1991: 497)

Universal grinder

*Consider the ‘Universal Grinder’, a device that takes in an object corresponding to the count term and spews out the finely ground matter of which it is made. A hat, for instance is fed into it and afterwards there is hat all over the floor. This is so despite the fact that there is another word we might have used (for example, **felt** or **straw**). So for any word one would wish to call a count term, there is a related mass term designating, roughly, the stuff of which it is made. (Pelletier 1991: 497)*

Universal grinder

- ▶ **Universal grinder hypothesis** \Rightarrow Every count noun can have a mass interpretation
 - (1) There is dog all over the highway.
 - (2) There is oil all over the highway.

Universal packager

- ▶ **Universal packager** \Rightarrow The 'inverse' operation, which results in count interpretations for typically mass nouns
- (3) Three beers please. [= three servings of beer]

Universal grinder and packager: Implications

Universal grinder and packager data are often taken as evidence for the arbitrariness of the mass-count distinction:

A noun's status is not tied to the lexical item itself but is necessarily computed at the NP level (Allan 1980, Bunt 1985).

Non-universality of universal grinder/packager

If the effects of the grinder and packager were truly universal, they should apply uniformly across all nouns, but these operations are *restricted*.

Non-universality of universal packager

The packager is restricted:

- ▶ Packaging largely occurs with nouns whose referents are already associated with conventionalized units of packaging

- (4) Three beers please. [= three cans of beer; ≠ three kinds of beer]

- (5) #Rices adorn the altar.

- (6) #I'll have a dirt here. (≠ I'll have a shovelful of dirt here)
(Filip 1999: 62)

Reason: Conventionalization plays a major role in its successful application.

Non-universality of universal grinder

The grinder is restricted:

- ▶ It is difficult to grind highly individual objects, especially artifacts (Chierchia 2010: 106):

(7) There is dog all over the highway.

(8) #There is mug/toaster on the table.

(9) #Would you care for some more pea? (Fillmore 1989: 49)

Non-universality of universal grinder

- ▶ *Measure Terms*: It is impossible to grind **du kilo* ('some kilo'), **de la catégorie* ('some category') and **du chapitre* ('some chapter') in French (Galmiche 1989: 68).

- ▶ *Domain Particular Restrictions*:

"The grinding function in English does not generally apply to the names of plants to derive the names of cooking oils, but it does apply to derive the names of oils and essences in perfume:

(10) ?We fried the chicken in safflower (olive, corn, etc.)

(11) The lotion contains lavender (ylang-ylang, jasmine, bergamot)" (Nunberg and Zaenen 1990: 389)

Non-universality of universal grinder

Ground interpretations are not observed in the expected syntactic contexts in Chinese (Cheng, Sybesma and Doetjes 2008):

- (12) a. qiáng-shang dōu shì gǒu.
wall-top all cop dog
There are dogs all over the wall.
NOT: There is dog all over the wall.
- b. qiáng-shang dōu shì gǒu-ròu.
wall-top all cop dog-flesh/meat
There is dog(meat) all over the wall.
- c. dì-shang dōu shì shuǐ.
floor-top all cop water
There is water all over the floor.

Non-universality of universal grinder

- ▶ The inability to grind cannot be attributed to the availability of classifiers
- ▶ Similar outcomes in other languages disposing of a bare singular, cf. Brazilian Portuguese (N. Silveira p.c.)

(13) Tem cachorro na estrada toda
have dog in-the road all
#There was dog all over the road.

Questions for study

- ▶ Are grinding restrictions tied to different noun classes?
- ▶ Are grinding restrictions tied to different constructions?

Experiment: Question 1

Question 1: Does grinding acceptability vary across natural noun classes?

Hypothesis 1: Nouns will systematically vary by class in acceptability when ground.

Low Acceptability	⇒	High Acceptability
Artifacts	vs.	Natural Kinds
Complex Artifacts	vs.	Simple Artifacts
Groups	vs.	Individuals

Experiment: Question 2

Question 2: Does grinding acceptability vary according to the nature of the situations depicted?

Hypothesis 2: Nouns will systematically vary in acceptability across situations.

Low Acceptability	⇒	High Acceptability
Obscure Situations	vs.	Conventional Situations

- (14) There was squirrel all over the road.
- (15) There was blueberry all over the road.

What constructions should be used in the experiment?

Grinding constructions are usually illustrated with 'paste' constructions (Borer p.c.):

- ▶ There is X all over the Y .
- ▶ There is X in the Y .
- ▶ A Y eats X .

Are we missing other grinding constructions?

Other constructions, such as comparative constructions, are purported to allow grinder interpretations:

- (16) Hire more car for less money.
- (17) Chevy Volt is more car than electric (ad, 2010)

These comparisons tacitly make reference to the number of properties a *car* has, for example, rather than the amount of 'stuff' of which that car is made.

Are we missing other grinding constructions?

Mass terms used in such comparative contexts show a similar interpretation.

(18) This brand is more whiskey than that one.

Here, the referent of *this brand* has more properties relevant to being 'whiskey' than the referent of *that one* does.

Conclusion: Such comparatives do not qualify as grinding constructions.

The constructions used in this study

In our experiment, we will restrict our attention to ‘paste’ constructions.

Experimental Design

- ▶ Ask subjects to rate the acceptability of nouns of various types in several grinding constructions.
- ▶ Each construction is presented in two instantiations to depict distinct situations (contexts).

Materials

210 total stimuli

7 noun types; 5 tokens of each

- ▶ **shape:** *tube, cylinder, sphere, cone, cube*
- ▶ **group terms:** *forest, bouquet, fleet, swarm, committee*
- ▶ **members of group terms:** *tree, flower, ship, bee, person*
- ▶ **simplex artifacts:** *hammer, towel, shirt, bucket, pencil*
- ▶ **complex artifacts:** *toaster, car, computer, violin, forklift*
- ▶ **animals:** *squirrel, snake, robin, butterfly, pig*
- ▶ **food stuff:** *steak, apple, cracker, yam, pea*

Materials

3 grinder constructions; 2 contexts each

There is	<i>NOUN</i>	all over the	floor highway
There is	<i>NOUN</i>	in the	bread concrete
A robot A termite	eats	<i>NOUN</i>	

Methods

295 subjects rated Universal Grinder sentences for *acceptability* using a 1 (*unacceptable*) – 7 (*acceptable*) value *Lickert scale*.

Each subject rated a counterbalanced set of 7 target sentences and 8 filler sentences in random order.

Judgments collected using Amazon Mechanical Turk.

Methods

Instructions:

For each sentence, please mark on a scale of (1) - (7) how acceptable you think it is. A rating of (1) means that you think the sentence is not an acceptable English sentence at all. A rating of (7) means that you think the sentence is a perfectly acceptable sentence in English. Rating in between these scores indicate a gradient interpretation of acceptability.

Presentation



progress

There is bucket all over the highway.

(Completely Unacceptable)

1	2	3	4	5	6	7
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(Completely Acceptable)

How acceptable is the above sentence?

Results: Overview

2065 total ratings collected.

Average time of 4.8 seconds per rating.

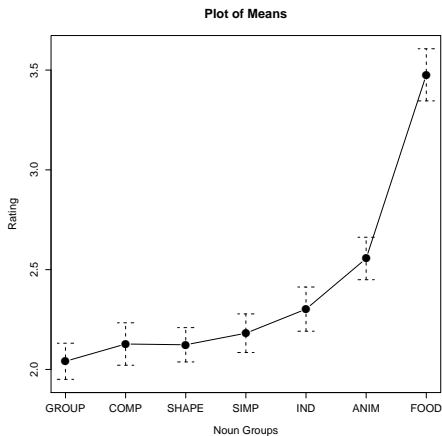
Average of 10 ratings per stimulus.

Results: Universal Grinder Sentences

Low average acceptability ratings for Universal Grinder sentences:

Type	Mean	SD	p < .05
Grinder	2.331	1.806	
Filler	5.679	1.848	*

Results: Noun Types



F: 19.99 on 7 and 1859 DF, p-value: $< 2.2e-16$

Results: Noun Types

Low to High Acceptability

{
group terms
complex artifacts
shape
simplex artifacts
individual group members
}

< animals < foodstuff

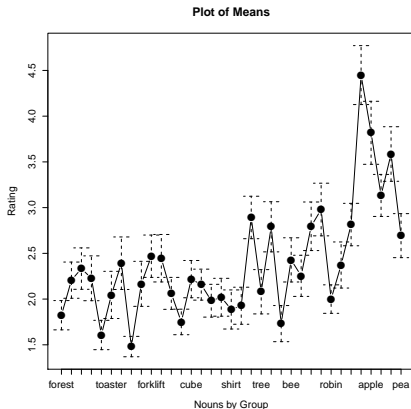
Results: Noun Types

Coefficient Estimates

Group	Coef	SE	Pr > t
Group	-0.21	0.06	***
Complex	-0.16	0.06	**
Shape	-0.16	0.06	**
Simple	-0.13	0.06	*
Individual	-0.06	0.06	
Animal	.08	0.06	
Food	.60	0.06	***

Results: Nouns

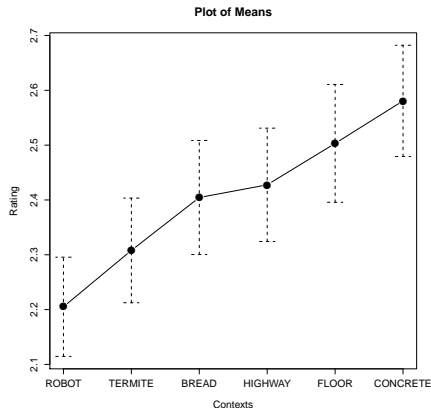
Significant across type variation differences



Levene's Test Df: 6 F: 11.454 Pr > F: 1.296e-12

Results: Context

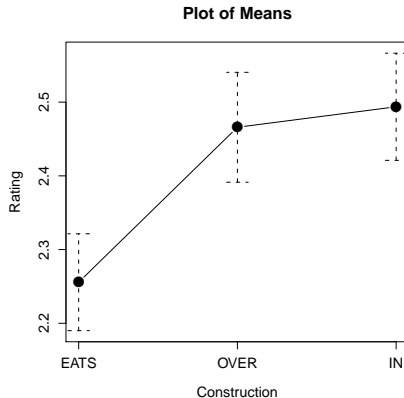
No significant effect of context



F-statistic: 1.504 on 6 and 1860 DF, p-value: 0.1728

Results: Constructions

No significant effect of construction



F-statistic: 2.221 on 3 and 1863 DF, p-value: 0.08377

Summary of Results

- ▶ Most noun types were rejected by our participants.
- ▶ But foodstuff and animals were more felicitous.
- ▶ There was not a significant effect of grinding constructions.

Significance of Results

- ▶ The higher acceptability of grinder sentences with foodstuff and animals may be due to their conventional associations:
 - ▶ dual life of food nouns as *natural entities* or *processed food stuff*
 - ▶ animals as *natural entities* or *their flesh*

Experimental results align with naturally occurring uses

Only mass nouns are attested in naturally occurring uses of grinding constructions/contexts.

Evidence: The results of a series of Google searches for instances of these constructions.

The question: What can fill the X position in 'paste' contexts:

- ▶ There is X all over the wall

Expectation: If grinding is allowed, then there should be attested examples where X is filled by a basically 'count' noun.

Experimental results align with naturally occurring uses

The results: The *X* position is overwhelmingly filled by nouns designating liquids/mush or granular aggregates—that is, prototypical mass nouns:

- ▶ There is *X* all over the wall
 - ▶ liquids/mush: *blood, water* (50%)
 - ▶ granular aggregates: *sugar, salt* (31%)
 - ▶ other: *meat, love* (19%)
 - ▶ No instances of true grinder readings

Thus these contexts have an affinity for ‘mass’ notions; but ...

Key Point: Positive evidence for speakers using grinding constructions to grind something is difficult to come by.

Conclusion

- ▶ The grinder is not universal.
- ▶ Noun referents may be ground, but the success of this operation is dependent on the noun type.
- ▶ These results argue against the arbitrariness approach to the mass-count distinction.

Thanks

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