Semantic change in the history of the English countability system

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Introduction

Countability:

The way refer to countable things

One table, four chairs, five #(pieces of) furniture

a.k.a. count—mass distinction

Research questions:

To what extent has countability in English developed over time?

Main claim

Countability has not really changed since Old English.

Outline

Background

Countability/the count—mass distinction in Present Day English
Formal accounts

Data

Countability in Old, Middle, and Modern English: the rise of classifiers

Analysis

Classifiers are not really needed
Classifiers arose to specify units

Discussion

Possible alternatives: From classifier to number marking language

Conclusion

A stable countability system

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Background

Ten properties of the count—mass distinction in English (Chierchia 1998).

1. Availability of plural morphology	dogs; #muds
2. Distribution of numeral determiners	one chair; #one dirt
3. Obligatoriness of classifier and measure phrases for combining with numerals.	#one item of chair; one pile of dirt
4. Some determiners occur only with count nouns	many coins; #many steel(s)
5. Some determiners occur only with mass nouns	#how much Euro; how much gold
6. Some determiners occur only with plurals and mass nouns	all children; all denim
7. Some determiners are unrestricted (neutral)	my coin(s); my gold
8. Independence of the distinction from the structure of matter	shoes; footwear
9. A (predominantly) count noun can be made mass	There is rabbit in the stew.
10. A (predominantly) mass noun can be made count	The nurse drew three bloods.

Background

Count nouns and mass nouns

dog	mud
chair	sand
coin	dirt
Euro	rice
child	offspring
shoe	footwear
rabbit	wildlife
nurse	staff
piano	equipment
bottle	glass
computer	merchandise
book	packaging
spider	fauna
tool	mail
plate	dishware
fork	cutlery
ear	clothing
phone	electricity
cup	blood

Background

Formally accounting for countability.

Various competing/complimentary theories (e.g. Krifka, 1989; Chierchia,1998, 2010; Rothstein, 2010; Landman, 2011; Pelleiter, 2012)

Some claims:

English numericals
- Denote numerals (e.g. Krifka, 1989)
- Are adjectives (e.g. Chierchia, 1998)

Classifiers
- Make mass nouns countable (e.g. Krifka, 1989)

Quantifiers
- for count nouns measure cardinality (e.g. Krifka, 1989)
- for mass nouns are contextually specified (e.g. Chiercha 1998)

Background

Count nouns and mass nouns differ denotationally

Krifka (1989): count, N/NM: ⟦cow⟧ = λn.λx.COW(x)∧NU(COW')(x) = n
mass, N: ⟦gold⟧ = **gold'**

Chierchia (1998): count, ⟨e, t⟩: ⟦cow⟧ = $\lambda x.cow_w(x)$
mass, ⟨s, e⟩: ⟦gold⟧ = λx.gold(x)

Rothstein (2010): count, ⟨e × k, t⟩: ⟦cow⟧ = $\lambda x.COW_k(x)$
mass, ⟨e, t⟩: ⟦gold⟧ = λx.GOLD(x)

Landman (2011): count: ⟦cow⟧ = ⟨COW, COW⟩
mass: ⟦gold⟧ = ⟨*GOLD, *GOLD⟩

Pelletier (2012): Nouns have count and/or mass senses—e.g. gold
⟦chocolate⟧ = [$\text{chocolate.candies}_{[+COUNT]}$,
$\text{chocolate.substance}_{[+MASS]}$, …]

Background

Implications for classifier languages

Japanese: all nouns are counted with classifiers

a. inu go-*(hiki)
dog five-$CL_{small.animal}$
`five dogs'

b. kamu itsu-*(tsu)
furniture five-$CL_{general}$
`five pieces of furniture'

c. yūbinbutsu go-*(bu)
mail five-$CL_{printed.material}$
`five pieces of mail'

d. mizu go-*(hon)
water five-CL_{bottle}
`five bottles of water'

All nouns are assumed to require classifiers for counting

Chierchia (2010):
Nouns: ⟨s, e⟩
Classifiers: ⟨⟨s, e⟩, ⟨e, t⟩⟩
Numericals: ⟨⟨e, t⟩, ⟨e, t⟩⟩

As predicates, ⟨s, ⟨e , t⟩⟩, nouns differ w.r.t. countability via (unstably-)atomic reference

Background

Implications of classifier analyses (Chierchia 1998)

Because nouns denote kinds, we should expect

a generalized classifier system
a lack of obligatory plural morphology
a lack of definite and indefinite article

This is bourn out in Mandarin, Japanese, etc.

Background

Summary

Countability is generally discussed in terms of the English count—mass distinction.

Many different environments can distinguish a noun as count or mass.

Various analyses of count and mass nouns as different types

Classifier languages often assume all nouns are the same type

This entails a lack of obligatory plural morphology and determiners

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Data

Erbach (in prep) A first look at the history of countability in English

The OED as a corpus (Allan, 2011)

Research questions:

When did different countability environments enter English?

When did relevant senses enter English?

To what extent have they demarcated countability over time?

Data

Erbach (in prep) A first look at the history of countability in English

Table 3: Countability indicators

Environment	**Form** Germanic	OE	ME	ModE
Unit Denumerators				
a(n)		*an*	*a(n)*	*a(n)*
Fuzzy Denumerators				
few(er)	*	*feoo*	*few*	*few*
whon ('few')		*hwon*	*whon*	
fele ('much'/'many')	**felu*	*fela*	*fela*	
many	*	*mænig*	*many*	*many*
several			*severall*	*several*
dozen(s)			*dozeine*	*dozen*
hundred(s)		*hundred(on/u)*	*hundred(s)*	*hundred(s)*
thousand(s)	**þūsundi*	*þusend*	*thousand*	*thousand*
million(s)			*million*	*million*
{*bi-/tri-/quadri-*}*llion*				*billion*
Other Denumerators				
bo ('both')	**bo-*	*bo*		
both			*both*	*both*
each	*	*ælc*	*eah*	*each*
ilk/ilka/ilkane) (Scots)			*illc (an)*	ilk/ilka/ilkane
every		*æfric*	*every*	*every*
these	**þai-se*	*ðés*	*these*	*these*
those		*ðás*	*those*	those
tho/thae (Northern/Scots)		*ðá*	*tho*	*thae*
Mass Environments				
mickle ('much', Northern)	*	*mycel*	*micel*	*mickle*
much			*much*	*much*
little	*	*litel*	*little*	*little*
less	*	*laessa*	*less*	*less*

Data

Erbach (in prep) A first look at the history of countability in English

Table 4: Senses of countability indicators

Environment	**Quantity of senses**								
	OE			**ME**			**ModE**		
	C	M	I	C	M	I	C	M	I
Unit Denumerators									
a(n)									
Fuzzy Denumerators									
few(er)	8				1		2		
whon (‘few’)	1					2			
fele (‘much’/‘many’)									
many	8			10			11		
several				3		8	13	1	16
dozen(s)				1		2	2		1
hundred(s)	4		1	1			4		3
thousand(s)	7			1			1		
million(s)									
{*bi-/tri-/quadri-*}*llion*									
Other Denumerators									
bo (‘both’)									
both	1			18			2		
each	6			1			3		
ilk/ilka/ilkane) (Scots)				5					
every	2			14			4		
these	4			4			2		
those	2			5			5		
tho/thae (Northern/Scots)	6						2		
Mass Environments									
mickle (‘much’, Northern)	2	6		1	1	2	1		1
much				4	19	2	1	6	2
little	3	18	13		5	4	2		5
less	2	13		1	1			3	1

Data

Erbach (in prep) A first look at the history of countability in English

It looks as though the count—mass distinction has been relatively stable over time.

Many environments have existed since Old English

Many environments have had count/mass bias since Old English

Next step

Analyze example sentences for countability

Compare to countability of the relevant definition for consistency

Future work

Larger corpus study of these environments and all nouns in the history of English

Data

Continuous development of *many* and *much* (Marckwardt 2019)

Many, developed from *monig*, which generally occurred with plural nouns

Much, developed from *mycel,* which generally occurred with singular nouns

Evidence: a number of OE texts

> Anglo-Saxon Chronicle, Ohtere and Wulfstan, Beowulf, Maldon, Trinity Holmes, Generydes, Life of St. Editha, Seven Sages, Alfred's Orosius, Bede, Alfred, Boethius, Aelfric, Homily on St.-Gregor

(7) Đā wæs on morgen mīne gefræge
Then was on morning as.I.have.heard.said

ymb þā gif healle gūðrinc monig. (Beowulf, 837-38)
around the gift hall warrior many

(8) næfre swā mango gesceafta, ond swā micla, ond swa fægra
never so much dispensation, and so many, and so fairly

Claim: The PDE distribution of many and much seems to reflect a continuation and development of OE uses

Data

Countability via the indefinite article in Middle and Modern English grammars (Tichy 2021)

Early grammars of English seem to distinguish count and mass nouns

> Count nouns get glosses with the indefinite article—e.g. *anus, a narce*—mass nouns don't.

Evidence: 50 prominent dictionaries and grammars from 1400-2000

> e.g. The Treatise of Walter de Biblesworth, French-English word-list Nominale Sive Verbale, Metrical Vocabulary and Names of the Parts of the Human Body, A Latin and English Vocabulary, etc.

Eventually, more attention and environments distinguish count and mass nouns are noted

Claim: The PDE count—mass distinction developed, in part, due to the development and distribution of the indefinite article

Previous research

Few and rarely used classifiers in Old English (Toyota 2009)

Evidence: counting constructions in the Helsinki corpus

Nim	anne	sester	wines	&
take.IMP.SG.	one.ACC.SG	sester.ACC.SG	wine.GEN.SG	and
twegen	wæteres			
two.ACC.SG	water.GEN.SG			

'Take one sester of wine and two sesters of water.' (*Quadrupedibus* 151)

Before 1350	1350-1500	1500-1700	1700-1900	Total
1 (5.0%)	7 (35.0%)	9 (45.0%)	3 (15.0%)	20 (100%)
sester;	an ear of;	a block of;	an article of;	
	a grain of;	a blade of;	a bit of;	
	a loaf of;	a bunch of,	a drop of;	
	a piece of;	a cake of;		
	a sheet of;	a cut of;		
	a slice of;	a lot of;		
	a strip of;	a speck of;		
		a stick of;		
		a suit of;		

The appearance of classifiers in the Helsinki corpus (Toyota 2009)

Claim: Old English nouns were treated more uniformly;
not really distinguished as count or mass (Toyota 2009)

Data: summary

Countability has changed a bit, but probably not very much since Old English.

A bit of change

Classifiers were few and rarely used in Old English (Toyota 2009)

Several did not enter English until Modern English

But not very much

Many and *much* show consistent development since Old English (Marckwardt 2019)

Countability developed with the indefinite article (Tichy 2021) [~Old English]

Most environments have existed in similar form since (before) English

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Analysis

Classifiers developed in English for disambiguation

Nouns can have count and/or mass senses (Pelletier 2012).

Determiners, quantifiers, etc. measure cardinality or otherwise.

Classifiers are not needed for count senses

Classifiers count mass senses nouns

Analysis

Nouns can have count and/or mass senses (Pelletier 2012).

Assuming the $\text{COUNT}_k(x)$ operation from Rothstein, (2010):

king as it refers to a person is count

$[\![\text{king}]\!] = \lambda x.{}^{*}king_k(x)$

wine as it refers to the liquid is mass

$[\![\text{wine}]\!] = \lambda x.wine(x)$

wine as it refers to a contained amount is count

$[\![\text{wine}]\!] = \lambda x.unit.of.wine_k(x)$

Analysis

Determiners, quantifiers, etc. have always been sensitive to countability

many measures for cardinality:

$[\![\text{many}]\!] = \lambda P.\lambda x.\ \mu_{\text{card}}(P(x)) > n_c$

much measures contextually:

$[\![\text{much}]\!] = \lambda P.\lambda x.\ \mu_c(P(x)) > n_c$

surface area, volume, weight, etc.

Composition is a matter of pragmatics:

Manner: speakers are required to be clear and orderly in order to avoid ambiguity and obscurity (Grice 1975)

many muds and *much king* are unclear and therefore avoided

Analysis

English doesn’t need classifiers for counting

Numericals have an adjectival form:

⟦three⟧ = λP.λx. $\boldsymbol{\mu}_{\text{card}}$(P(x)) = 3

Counting constructions:

⟦three kings⟧ = λx. $\boldsymbol{\mu}_{\text{card}}$(**king*$_{\text{k}}$(x)) = 3

⟦three wines⟧ = λx. $\boldsymbol{\mu}_{\text{card}}$(**unit.of.wine*$_{\text{k}}$(x)) = 3

Analysis

Classifiers allow for specification of portion

Containers have an adjectival form, ⟨⟨e, t⟩, ⟨e, t⟩⟩.

⟦sester⟧ = λP.λx. P(x) ∧ *sester*$_k$(*contents*(x))

Counting constructions are ⟨e, t⟩.

⟦sester of wine⟧ = λx.*wine*(x) ∧ *sester*$_k$(*contents*(x))

No restriction to mass senses is necessary,

We can count cups of beans

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Discussion

The proposed analysis

Accounts for the relative stability of the countability system

Quantifiers (*much*, *many*) have always shown count/mass bias

Accounts for the lack of classifiers in Old English

The only counted nouns have countable denotations

Accounts for the development of classifiers

To overtly specify units
To count units of uncountable things e.g. seawater

Discussion

The proposed analysis

Can explain a loss of count senses of substance nouns

We developed classifiers to specify portions,

It became pragmatically necessary to do so

We stopped using count senses of substance nouns

Discussion

Possible alternative

Old English as a [null-]classifier language (Toyota 2009) following Chierchia (2010):

Nouns: ⟨s, e⟩

Classifiers: ⟨⟨s, e⟩, ⟨e, t⟩⟩

Numericals: ⟨⟨e, t⟩, ⟨e, t⟩⟩

As predicates, ⟨s, ⟨e , t⟩⟩, nouns differ w.r.t. countability via (unstably-)atomic reference

Discussion

Old English as a [null-]classifier language

We should also expect (Chierchia 1998)

a lack of obligatory plural morphology
a lack of definite and indefinite article

However Old English had

obligatory plural morphology
a definite article and an indefinite article

Discussion

The evolution of number marking and classifier languages

Could either be headed to/from the other?

It seems unlikely English would develop a generalized classifier system.

It seems unlikely Japanese would loose its generalized classifier system

Where did the Kurdish (Indo-European) classifier system come from? (see Wiese & Maling 2005)

Optional classifiers; usable with count nouns

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Conclusion

There has not been much change in English countability

The majority of countability environments have been relatively stable over time

Old English did not exhibit many of the major characteristics of classifier languages

Classifiers may have developed to overtly specify units.

Future Work

Examine countability classes across the history of English

Rather than just count and mass, Present Day English has several classes of nouns

This depends on which countability environments they occur in.

Acceptability judgments: (Allan 1980)

Morphosyntax	*car*	*oak*	*cattle*	*Himalayas*	*scissors*	*mankind*	*admiration*	*equipment*
N ... *them*	+	+	+	+	+	+		
a(n) N	+	+		+		+	+	
all N.SG	+		+	+	+			
about 50 N.PL	+	+	+		?			
many N	+	+						

(1) Cars are not a great transportation solution because they cost a lot.

(2) Sarah bought John a car.

(3) #All car should be cleaned today.

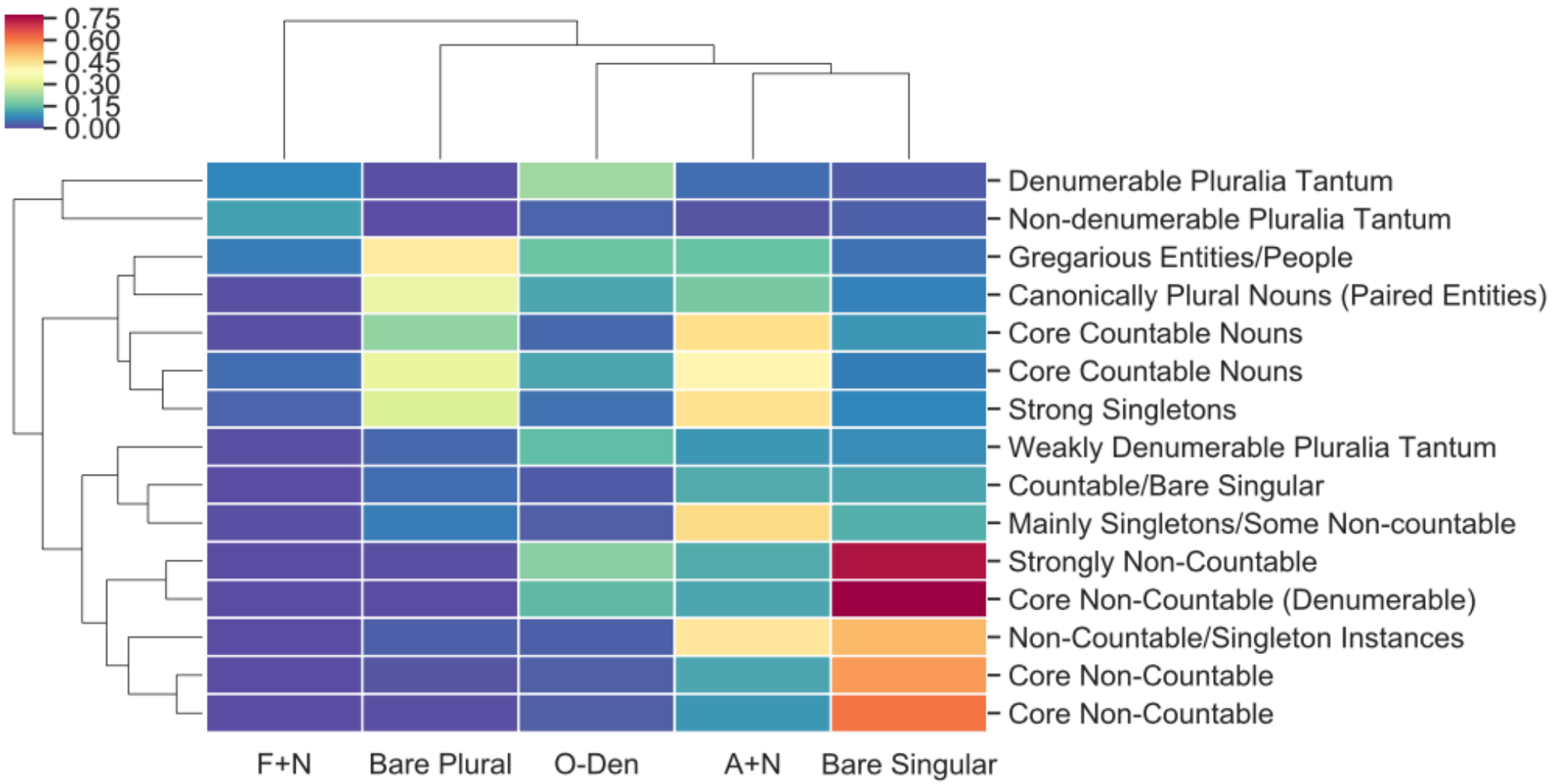
(4) About 50 cars were caught in the traffic jam.

(5) Many cars are not properly maintained.

Future Work

Examine countability classes across the history of English

Corpus study of the Corpus of Contemporary American English (COCA) (Grimm & Wahling 2021)



Heatmap of noun clusters' distributional tendencies across countability environments (Grimm & Wahlang 2021)

Thank you!

Any questions?

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