Towards a history of the English countability system

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Introduction

Underlying research question: (How) do countability systems evolve?

Toyota (2009): Old English as a classifier language

Evidence: OE did not differentiate between nouns in counting constructions—i.e. no classifiers in OE.

Marckwardt (2019): PDE countability in development since OE

Evidence: PDE distribution of *many* and *much* reflects OE distribution

Contention: Has it been drastic or gradual change in English?

What about other countability constructions?

Outline

Background
    Toyota (2009): Old English as a classifier language
    Marckwardt (2019): PDE countability in development since OE
    Exploring previous analyses (OE as a classifier language)

Data
    The development of the PDE countability system
    Object mass nouns & reference to kinds

Discussion
    Null classifiers vs. polysemy

Conclusion
    Old English as a number marking language

Background

Toyota (2009) Old English as a Classifier Language

Evidence of only one, rarely used classifier before 1350ᴄᴇ.

▸ "the distinction between mass and count is not strictly made" (p. 124)

▸ "earlier English can be considered a classifier language" (p. 124)

▸ earlier English speakers conceptualized he world in terms of substances, ImE/eModE speakers conceptualized the world in terms of objects

Toyota (2009) Old English as a Classifier Language

Evidence: counting constructions in the Helsinki corpus

(1)

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;		

Table 1: The appearance of classifiers in the Helsinki corpus (Toyota 2009).

Background

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

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

Much, developed from *mycel,* generally 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

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

(2) Ðā   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

(3) 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

Exploring previous analyses

Old English as a Classifier Language

No distinction between nouns (Toyota 2009)

But, some distinction is evident in classifier languages:

classifiers vs. massifiers (Cheng and Sybesma 1998, 1999)
countability sensitive modifiers & quantifiers (Sudo 2016)

Evidence from Marckwardt (2019) could be incorporated

Exploring previous analyses

Old English as a Classifier Language

CIL : substances :: NML : objects (Toyota 2009)

  cars, chairs, cutlery as substances?

But, speakers of CILs distinguish objects and substances along similar lines to speakers of NMLs (Imai & Gentner, 1997; Lucy & Gaskins 2003).
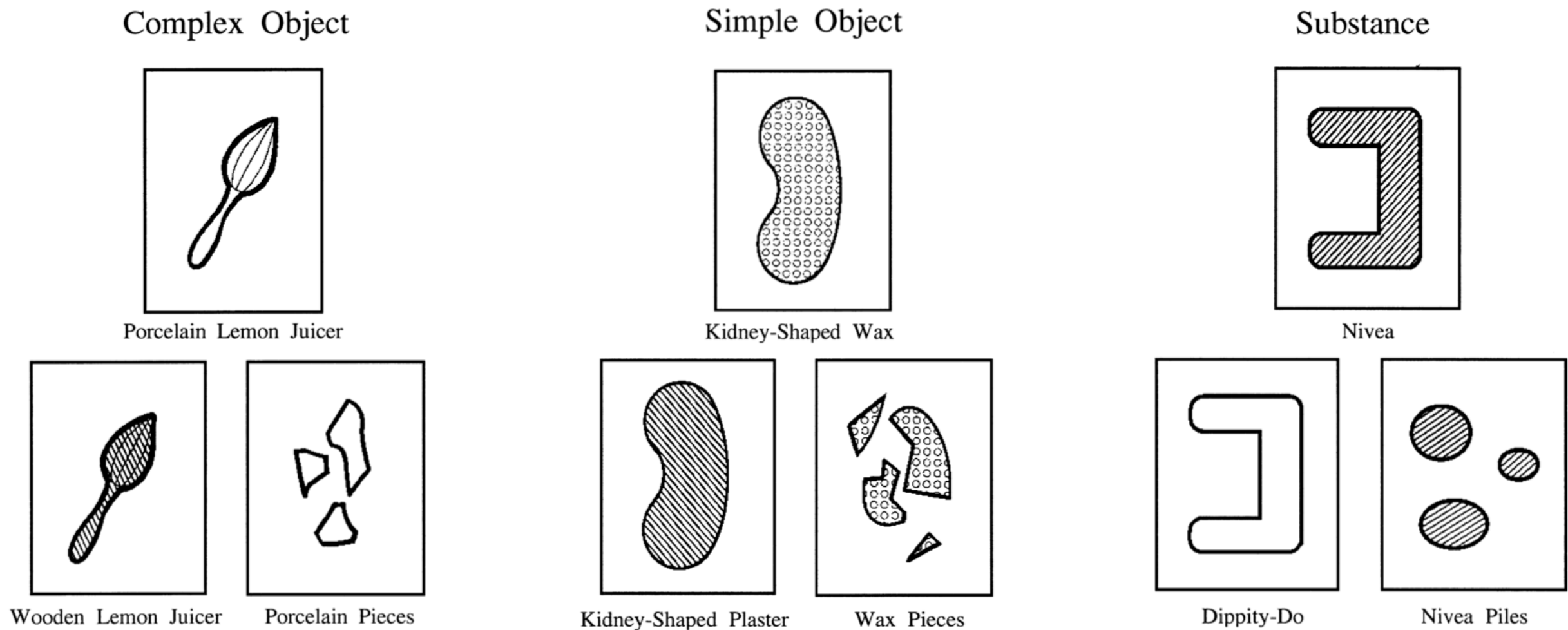
Imai & Gentner (1997) Empirical study

Fig 1. Example stimuli from Imai & Gentner (1997).

Imai & Gentner (1997) Empirical study

American English vs. Japanese
  Each show differences in decisions across entity classes
  Differences in decisions age X entity groups
  Complex objects: no difference in language
  Simple objects: difference in language (Japanese at chance)
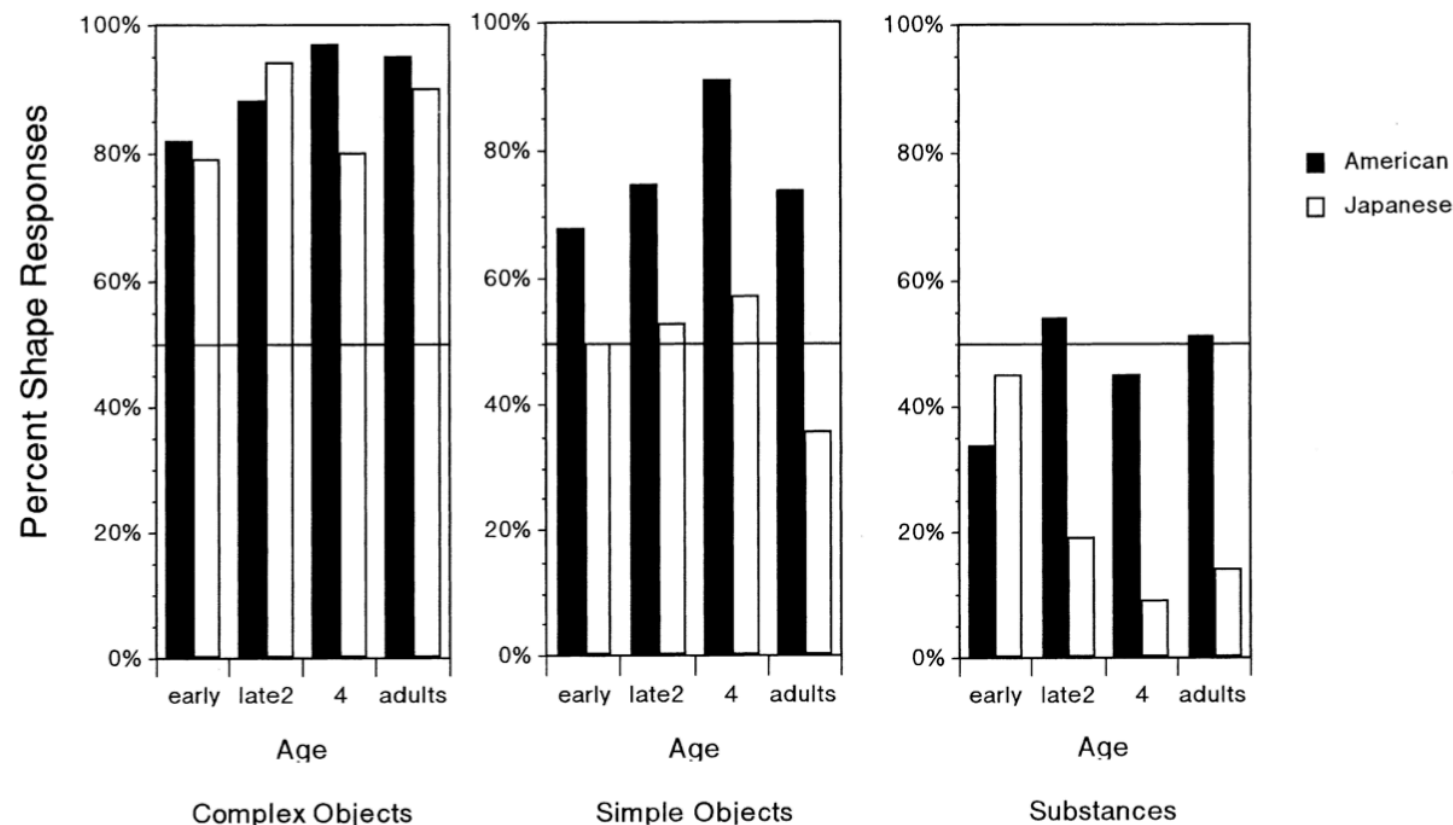 Gestalt substances: difference in language, language X age (English at chance)

Fig 2. Proportion of shape responses in Imai & Gentner (1997).

Exploring previous analyses

Old English as a Classifier Language

~~CIL : no distinction :: NML : some distinction (Toyota 2009)~~
~~CIL : substances :: NML : objects (Toyota 2009)~~
CIL : kinds :: NML : properties?

    as in Krifa (1995), Chierchia (1998, 2010, 2015, 2021), Jiang (2012, 2020), among others

CIL   ~~no determiners (Chierchia 1998)~~
      ~~no number morpholgy (Chierchia 1998, 2010)~~
      no object mass nouns (Chierchia 2010, 2015, 2021)

Open questions: Do OE nouns denote kinds?
                       Does OE have object mass nouns?

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   Null classifiers vs. polysemy

Conclusion
   Old English as a number marking language

Data; Research questions

Distinguishing nouns:
   To what extent does PDE countability reflect that of OE?
      When did PDE countability environments enter
      English?
         When did relevant senses enter English?
         To what extent have they demarcated countability?
      When did PDE massifiers—e.g. *cup of*—enter English?

Object mass nouns:
   When did PDE object mass nouns enter English?
   Did OE have any OMNs that didn't survive to PDE?

Reference to kinds:
   Could all bare nouns refer to kinds in OE?

Data: Methodology

The OED as a corpus (Allan, 2011)

"the evolving OED still offers unparalleled access to a large amount of information about word histories, and alongside other data sources it presents an opportunity to interrogate current theories about semantic motivation and patterns of change" (Allan 2011, p. 37)

It is important to "to pay close and critical attention to the chronology of semantic change presented in OED entries, and to view this chronology as a starting point for further research" (Allan 2011, p. 37)

Data: Methodology

Countability environments and subtypes thereof

Expanding on the classes of Allen (1980) (Grimm & Wahling 2021)

Environment	Subtype
Plural morphology	regular (-(e)s)
	irregular (zero, vowel change, -en, -ren, -i, -a, -ae, -ices, -im, -aux)
Unit Denumerators	a(n)
	one
Fuzzy Denumerators	round numbers (100, 1000, ...)
	approximative numbers (about 50, around 80, ...)
	comparative values (more than 10, over 100, ...)
	plural numerals dozens, hundreds, ...)
	imprecise quantifiers (few, many, several)
Other Denumerators	numbers (two, three, ...)
	digits (2, 3, ...)
	precise quantifiers (both, every, each, these, those)
Antecedent	one
	they, them, those, these, both, each (other)
Mass Environments	all+N
	imprecise quantifiers (much, little)

Table 2. Correspondence between Allen environments and subtypes thereof
(Grimm & Wahlang 2021, p. 366)

Data

When did PDE countability environments enter English?

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	
many	*	mænig	many	many
several				severall
Other Denumerators				
bo ('both')	*bo-	bo		
both			both	both
each	*	aelc	eah	each
every		æfric	every	every
these	*	ðǽs	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

Table 3. First use of countability environments.

Data

Countability environments: senses & demarcation

Environment	OE			ME			ModE		
	C	M	I	C	M	I	C	M	I
Unit Denumerators									
a(n)	1			9			2		
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)				5					
Other Denumerators									
bo ('both')	5			1					
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

Table 4. Novel senses of countability environments in each period of English.

Data

When did PDE portion/measure classifiers enter English?

before 1150	1150-1350	1350-1500
bowl	barrel	gallon
cup	beaker	pint
dish	bottle	vial
flask	sack	
horn		

Table 4: Some portion/measure classifiers in the history of English

(4) Fil me a cuppe of ful god ale. (*Havelod*)

(5) twegen bollan fulle wæteres (*Sax. Leechd*)

(6) Two barylles..ful of bawme (*W. Caxton tr. Thystorye & Lyf Charles the Grete*)

Data

When did PDE object mass nouns enter English?

before 1150	1150-1350	1350-1500	1500-1800	after 1800
bedding	clothing	rigging	freight	lingerie
ware	gear	plumage	munition$_{PL}$	weaponry
	armor	ironware$_{PL}$	clockwork	art
	merchandise$_{PL}$	jewelry	furniture	underwear
	apparel	artillery$_{PL}$	change	outerwear
		hardware	smallware$_{PL}$	laundry
		baggage	paperwork	beachwear
		lentrinware^t	luggage	molt
		wear	leafage	packaging
		coinage	foliage	
		inventory	stock	
		codware^t	earthenware$_{PL}$	
		ammunition	cutlery	
			mail	
			clutter	
			watchwork	
			wheelwork	
			decoration	
			stoneware	
			hollow-ware	
			equipment	
			womenswear	
			crockery	
			tableware$_{PL}$	
			menswear	
			ladieswear	
			loot	

Table 5: First use of object mass nouns in the OED

Data: Outline

Research questions:

Distinguishing nouns:
To what extent does PDE countability reflect that of OE?
When did PDE countability environments enter English?
When did relevant senses enter English?
To what extent have they demarcated countability?
When did PDE massifiers enter English?
When did PDE object mass nouns enter English?

Object mass nouns:
Did OE have any OMNs that didn't survive to PDE?

Reference to kinds:
Did bare OE nouns refer to kinds?

Data: Object mass nouns in OE

Possible OE OMNs that didn't survive to PDE

armor	equipment	furniture	goods	treasure	weapon
bánbeorge	beadusearu	geare	boldgestréon	ǽrgestréon	wǽpenþrǽge
bánrift	geatwe	inéddisc	céap	béag	
eorlgewǽde	heorusceorp	inídisc	céapþing	burgwela	
fierdsceorp	heregeatu	innierfe	feorm	burhwela	
frætwa	néadprin	lóma	flettgesteald	déorwyrðnes	
frætwe	níedprin	rád	ingesteald	dryhtgestréon	
gearwe	sceorp	scipgetáwu	innefeoh	dryhtmáðm	
gúðgeatwe	scipforðung	séam	þiefefeoh	ealdgestréon	
gúðgewǽde	scipfyrðrung	seglgerǽde	woruldfeoh	eorðgestréon	
gúðréaf	scipfyrðung	ýddisc		feoh	
gúðsceorp				feohgestréon	
gúðscrúd				folcgestréon	
gúðsearu				frætwa	
healsbeorg				frætwe	
herewǽd				fyrngestréon	
hildesceorp				gærsum	
hrægl				goldmáðm	
hyrst				héahgestréon	
mǽl				hord	
rǽde				hordgestréon	
réaf				hordwynn	
searu				máðmǽht	
wǽpnung				máðmgestréon	

Table 6: Possible object mass nouns in Bosworth-Toller's dictionary

Data: Object mass nouns in OE

Co-occurence of possible OE OMNs with 'much' & 'many'

	+'much'	-'much'
+OMN	20	1653
-OMN	4285	1500000

Table 7: Co-occurence table for *mycel* ('much') and OMNs in YCOE

	+'many'	-'many'
+OMN	3	1653
-OMN	2753	1500000

Table 8: Co-occurence table for *mænig* ('many') and OMNs in YCOE

'much' = miccla|micclan|miccle|Miccle|miccles|miccllum|micclum|Micclum|Micel|micel|micela|micelan|micele|Micele|miceles|micellre|micelne|Micelne|micelra|micelre|micelu|micelum|michel|micl+an|micla|miclam|miclan|Miclan|miclana|micle|Micle|miclena|miclere|micles|miclne|miclo|miclom|miclon|miclum|Miclum|micul|micyl|milcle|mucel|mucele|Mucele|mucelne|mucelre|myccelum|myccla|mycclan|myccle|myccles|myccllan|mycclle|mycclon|mycclu|mycclum|mycel|Mycel|mycela|mycelam|mycelan|mycele|Mycele|mycelen|Myceles|myceles|mycelne|Mycelne|mycelo|mycelon|Mycelon|mycelra|mycelre|mycelu|mycelum|Mycelum|mycl+an|mycla|myclan|myclce|mycle|mycles|myclon|myclu|myclum|myculum

'many' = m+anega|m+anege|m+anegu|m+anegum|m+anga|m+ani|M+anig|m+anig|m+anige|M+anige|m+aniges|m+anigfealde|m+anigne|m+anigo|m+anigre|m+anigu|m+anigum|m+are|m+ast|m+aste|Manega|manega|manegan|Manege|manege|manego|manegon|manegra|Manegra|manegu|Manegu|manegum|Manegum|MANEGVM|mani|manie|manies|manig|Manig|maniga|manige|Manige|maniges|Maniges|manigfealdum|manigne|manigra|manigu|manigum|manugu|Maran|maran|Mare|mare|menegu|menie|Menig|menig|menige|Menige|menigeo|meniges|menigu|menine|monega|monegan|monege|monegena|monegra|monegre|monegu|monegum|Monegum|monge|mongum|moni|monig|Monig|monig+a|moniga|monigan|monige|Monige|moniges|monigne|monigo|monigra|Monigra|monigre|monigu|monigum|monog|monug|monuga

Data: Object mass nouns in OE

Association of possible OE OMNs with 'much' & 'many'

	+'much'	-'much'
+OMN	20	1653
-OMN	4285	1500000

Table 7: Co-occurence table for *mycel* ('much') and OMNs in YCOE

```
> fisher.test(much, alternative="greater")

        Fisher's Exact Test for Count Data

data:  much
p-value = 1.587e-07
alternative hypothesis: true odds ratio is greater than 1
95 percent confidence interval:
 2.797872     Inf
sample estimates:
odds ratio
  4.235449
```

	+'many'	-'many'
+OMN	3	1653
-OMN	2753	1500000

Table 8: Co-occurence table for *mænig* ('many') and OMNs in YCOE

```
> fisher.test(many, alternative="greater")

        Fisher's Exact Test for Count Data

data:  many
p-value = 0.5847
alternative hypothesis: true odds ratio is greater than 1
95 percent confidence interval:
 0.2691115     Inf
sample estimates:
odds ratio
  0.9888282
```

'Much' is associated with OMNs, 'Many' is not.

Data: Reference to kinds in OE

Testing for kind denotation:
Test whether nouns denote arguments in direct kind predication (Lima 2014, p. 536).

(7)   *Yudja* (Lima 2014, ex. 5).
        Takũ   masehu   txa.
        mutum extinction go
        'The mutum will become extinct.'

Data: Reference to kinds in OE

Testing for kind denotation in OE

"**extinct**" in Bosworth-Tollers's Dictionary: 2 results

acwínan (v.) p. -*cwán*, pl. -*cwinon*; pp. -*cwinen*
To waste or dwindle away, decline, **become extinct**
(Bosworth 2014)

tófaran (v. [strong])
I. to go in different directions, go off separately, part
II. to disperse, scatter
III. to go away, pass off, depart, **become extinct.** v. tð-fær

Data: Reference to kinds in OE

acwínan in YCOE: 1 occurence (8)

acwine|acwan|acwinest|acwine|acwineþ|acwinaþ|acwinon|acwinen|acwinende|geacwinen

(8) *Bede* (YCOE)
    sona eallinga þurh   his gebed **þæt fyr**
    soon wholly   through his prayer **that fire**

    acwan   & adwæsced   wæs.
    declined & extinguished was
    'Soon wholly through his prayer, that fire dwindled and was extinguished.'[1]

acwínan in Helsinki Corpus: 2 occurrences (8), (9)

(9) *Anonymous: Chronicle MS E (Late)* (Helsinki Corpus)
       swa þæt he sona nihtes   to þam   swiðe
       so   that he soon by.night to those strong

       mid ealle **acwanc**.
       with all   **dwindled/declined/became.exitinct**

---

[1]Glosses and translation my own.

Data

tófaran in the Helsinki Corpus: 5 occurrences

(10)   *Anonymous: Alfred's Introduction to Laws l. 178:*
    ða   æfter his ðrowunge, ær   þam   þe   his apostolas **tofarene**
    that after his suffering   before those thee his apostles   **tofarene**

(11)   *Anonymous: Bodley Homilies (12) l. 6:*
    þære ydelnesse. Hwi! nyte   ȝe **þ** all **þ tofaræð** toglit, swa   swa
    that   idleness   EXC! not.know ye **þ** all **þ tofaræð** glide, as.that as.that

(12)   *Anonymous: Chronicle MS E (Early) l. 1133*
    nihta grið   ut   of lande to farenne **tofarenne**
    night truce out of land   to travel   **tofarenne**

(13)   *Anonymous: Alfred's Orosius l. 412, 766*
    a. ac þonne hie   gind   þæt lond **tofarene** wæron,
        but when they through that land **scatter**   were,

    b. mehte, þonne hie   **tofarene** wæron.
        can   when   them **tofarene** were

No evidence of bare nouns in argument position of kind predication.

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Discussion: The data

No strong evidence to support a classifier language analysis of Old English.

The count—mass distinction appears relatively stable over time.

Many environments have existed since Old English

Many environments have had count/mass bias since Old English

Object mass nouns seem to have existed since Old English

Present Day English OMNs arose largely after Old English

OE seems to have OMNs that were eventually lost (YCOE assoc. 'many'/'much')

Reference to kinds in Old English is unclear

Bare nouns occurred (no 'the'/'a'), but not clearly with kind predication.

Discussion: Accounting for the data

Old English as a number marking language.

Accounts for most of what we see:

- A system of quantifiers, determiners, etc. that distinguish count and mass nouns.
- Object mass nouns
- Bare nouns not referring to kinds.

Problem:

"the distinction between mass and count is not strictly made" in counting constructions (Toyota 2009, p. 124)

Discussion: Counting constructions

Accounting for a lack of distinction in counting constructions

Option 1: Null classifier(s) (or partitives?)

- Nouns have count/mass denotations
- Null classifier(s) made mass nouns countable

Semantic change
1. Overt classifiers were introduced
2. Null classifier(s) dissappeared
3. Notionally mass appear more rigidly mass

Predictions
- More occurrences of nominally mass nouns in count environments in OE than PDE

Discussion: Comparing options

Accounting for a lack of distinction in counting constructions

Option 2: Polysemy

- "Lexical nouns are both +MASS and +COUNT, but they are neither +MASS nor +COUNT" (Pelletier 2012)
- Counting constructions worked with count senses of notionally mass nouns.

Semantic change
1. Classifiers were introduced
2. Count senses of notionally mass nouns were lost
3. Notionally mass nouns became more rigidly mass

Predictions
- More occurrences of nominally mass nouns in count environments in OE than PDE

Discussion: Counting constructions

Null classifier(s) vs. Polysemy

Null classifier(s)
1. Classifiers introduced
    1. Nouns take on CL semantics (e.g. Sutton & Filip 2021)
2. Null classifiers dissappear
3. Notionally mass nouns **appear** more rigidly mass

Polysemy
1. Classifiers introduced
    1. Classifier semantics develop
    2. Nouns take on CL semantics
2. Count senses of notionally mass nouns are lost
3. Notionally mass nouns **are** more rigidly mass

Starting with null classifiers seems like the more straightforward path.

Discussion: Why develop classifiers?

Mass nouns

(14) three waters
    a. three bodies of water (rare)
    b. three kinds of water
    c. three containers of water
    d. three portions of water

(15) three beers
    a. ?three bodies of beer
    b. three kinds of beer
    c. three containers of beer
    d. three portions of beer

(16) ?three armors
    a. ?three pieces of armor
    b. ?three kinds of armor
    c. ?three containers of armor
    d. ?three portions of armor

Count nouns

(17) three pebbles
    a. three individual pebbles
    b. three kinds of pebbles
    c. ?three containers of pebbles
    d. ??three portions of pebbles

(18) three arrows
    a. three individual arrows
    b. three kinds of arrows
    c. ?three containers of arrows
    d. ??three portions of arrows

(19) three chickens
    a. three individual chickens
    b. three kinds chickens
    c. ?three containers of chickens (count/mass)
    d. ??three portions of people (mass)

Classifiers disambiguate between possible senses.

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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 does not exhibit the major characteristics of classifier languages.

Old English can be analyzed as a number marking language.

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.

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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	+	+						

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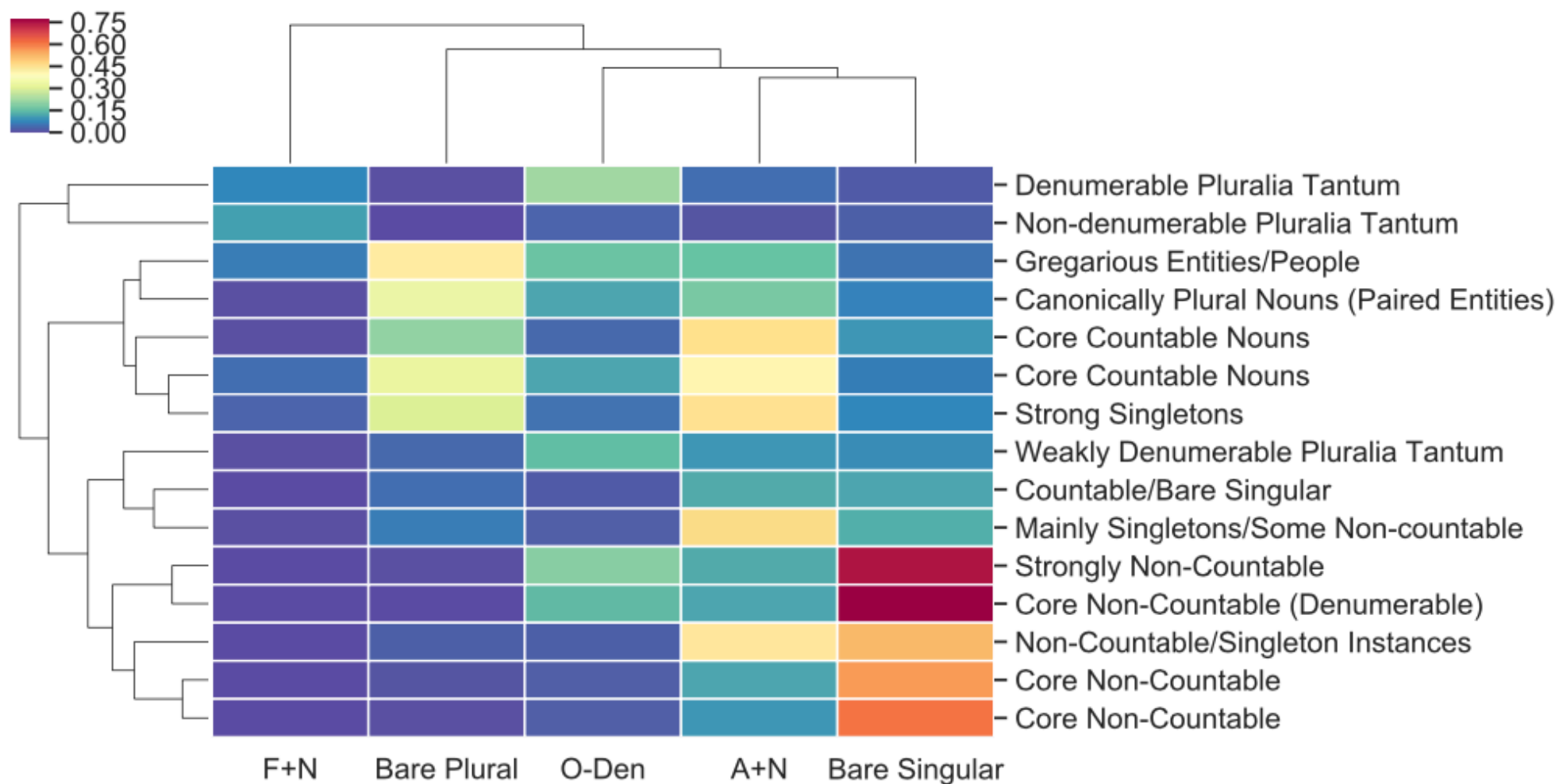
Heatmap of noun clusters' distributional tendencies across countability
environments (Grimm & Wahlang 2021)

Thank you!
Any questions?

Towards a history of
the English countability system

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