Seminar: Ling K
Topics in Mereological Semantics and Genericity

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11. July, 2024

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Main goals for today

Main goals:

- Brief recap of the count/mass distinction and mereology in semantics
  - sums and parts for analysing mass and count nouns
- Count/mass variation and non-canonical grammatical reflexes of countability
  - Focus: variation in count/mass lexicalization patterns
  - Why do some nouns pattern differently from canonical count/mass nouns
- Counting with abstract nouns
  - Nouns denoting informational entities and eventualitites

Plan for today

1. Recap: Mereology
2. Recap: The count/mass distinction
3. Count/Mass Variation & Non-canonical grammatical reflexes of countability
4. Semantics & Objects
5. The need for context sensitivity
6. Extending the analysis to abstract nouns
7. Summary & Conclusions

Extensions as sets

$$[\![[_{DP} \text{ Greybeard }]]\!]^{s'} = [\![gb]\!]^{s'} = a$$
$$[\![[_{N} \text{ pirate }]]\!]^{s'} = [\![\lambda x.pirate(x)]\!]^{s'} = \{a, b, c\}$$
$$[\![[_{N} \text{ barrel }]]\!]^{s'} = [\![\lambda x.barrel(x)]\!]^{s'} = \{d, e, f\}$$

But what about *pirates* and *barrels*?

Mereology: adding structure to the domain

From unstructured sets: $\mathcal{D}_e = \{a, b, c, ...\}...$

...to sets with elements structured as a semilatttice:

$$\mathcal{D}_e = \left\{ \begin{array}{ccc} & a \sqcup b \sqcup c, & \\ a \sqcup b, & a \sqcup c, & b \sqcup c, \\ a, & b, & c, \end{array} \right\}$$

We are enriching our ontology to include ARBITRARY SUMS of entities.

Warning: Sums are not the same as individuable objects

- There is a sum of Angela Merkel and the Moon
- There (probably) isn't an individuable object that is identical with this sum.

Lewis (1991): Mereological sums are "ontologically innocent"

Plural denotations with sums

$$
\begin{array}{lcll}
[\![[_{DP}\ \texttt{Greybeard}\ ]]\!]^{s'} & = & [\![gb]\!]^{s'} & = & a \\
[\![[_{N}\ \texttt{pirate}\ ]]\!]^{s'} & = & [\![\lambda x.pirate(x)]\!]^{s'} & = & \{a, b, c\} \\
[\![[_{N}\ \texttt{pirates}\ ]]\!]^{s'} & = & [\![\lambda x.pirates(x)]\!]^{s'} & = & \{a, b, c, \\
 & & & & a \sqcup b, a \sqcup c, b \sqcup c, \\
 & & & & a \sqcup b \sqcup c\}
\end{array}
$$

- Proper names denote singular individuals
- Sg common nouns denote sets of individuals
- Pl common nouns denote sets of individuals and sums thereof

Plural denotations from singular denotations

Star operator: * (Link 1983)

$\forall P.{}^*P = \{x : x = \sqcup Q, Q \subseteq P\}$

The set of all Ps and sums thereof

$$
\begin{aligned}
[\![[_N \text{ pirate }]]\!]^{s'} &= [\![\lambda x.pirate(x)]\!]^{s'} \\
[\![[_N \text{ barrel }]]\!]^{s'} &= [\![\lambda x.barrel(x)]\!]^{s'} \\
[\![[_{PL} \text{ -s }]]\!]^{s'} &= [\![\lambda P.\lambda x.{}^*P(x)]\!]^{s'} \\
[\![[_N \text{ pirates }]]\!]^{s'} &= [\![[_{PL} \text{ -s }]]\!]^{s'}([\![[_N \text{ pirate }]]\!]^{s'}) \\
&= [\![\lambda x.{}^*pirate(x)]\!]^{s'} \\
&= {}^*\{a, b, c\} \\
[\![[_N \text{ barrels }]]\!]^{s'} &= [\![[_{PL} \text{ -s }]]\!]^{s'}([\![[_N \text{ barrel }]]\!]^{s'}) \\
&= [\![\lambda x.{}^*barrel(x)]\!]^{s'} \\
&= {}^*\{e, d, f\}
\end{aligned}
$$

The part-relation: $\sqsubseteq$

$a \sqsubseteq b$ means a is a part of b

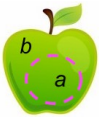
We take $\sqsubseteq$ as a basic notion, defined only in terms of three properties. For all a, b, c:

$a \sqsubseteq a$	Everything is a part of itself	(Reflexivity)
$(a \sqsubseteq b \wedge b \sqsubseteq c) \rightarrow a \sqsubseteq c$	If a is a part of b and b is a part of c, then a is a part of c	(Transitivity)
$(a \sqsubseteq b \wedge b \sqsubseteq a) \rightarrow a = b$	If a is a part of b and b is a part of a, then a is identical with b	(Antisymmetry)

Reflexivity

Transitivity

If 

and 

, then 

Antisymmetry

Proper part

a is a proper part of *b* if and only if *a* is a part of *b* and *a* is not identical with *b*:

$$a \sqsubset b \leftrightarrow a \sqsubseteq b \wedge a \neq b$$

$a \sqsubset b$, $b \sqsubset c$, $a \sqsubset c$, but not: $a \sqsubset a$

Quantization (Krifka 1989, 1986)

P quantized if and only if there is no *a* and *b* in *P* that stand in a proper part relation:

$$QUA(P) \leftrightarrow \forall x, y[(P(x) \wedge P(y)) \rightarrow \neg x \sqsubset y]$$

Examples:

Example	Quantized
$\{a, b, c\}$	✓
$\{a, b, b \sqcup c\}$	✗
$\{a\}$	✓

Quantization prevents double counting of wholes and parts

- If a set is quantized it doesn't contain wholes and proper parts

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The count/mass distinction

In many (if not all!) languages, not all nouns pattern alike distributionally.
At least two distinct groupings that are called:

- Count nouns
- Mass nouns (aka non-count nouns)

The “signature property” (Chierchia 2010)

- straightforwardly felicitous combination with numerals

(1) a. Alex has two/three/47 boxes/kittens/apples/tables
b. #Alex has two/three/47 bloods/muds/airs/furnitures

How do the following nouns pattern the same way in languages that you speak?
hair kitchenware pasta jewellery bean(s) lentil(s) equipment

Count/Mass distinction in English

		Canonical Count Nouns	Canonical Mass Nouns
a.	Plural morphology	✓	✗
b.	Numeral constructions (no CL)	✓	✗
c.	Bare singular	✗	✓
d.	Distributive determiners	✓	✗
e.	Stubs	✓	✗

(2)
a. Alex described the cats/#muds.
b. three cats/#muds; one cat/#mud
c. Mud/#Cat was on the floor.
d. Every cat/#mud was hidden under the rug.
e. big/small/round/square cat(s)/#mud

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Three types of variation

1. Anti-universal variation?
   - One language has a grammatical count-mass distinction, but the other does not

2. Morphosyntactic variation
   - Two languages have a grammatical count-mass distinction, but the distinction is reflected differently in their grammars

3. Lexicalization pattern variation (our focus today)
   - Two languages have a grammatical count-mass distinction, but the mapping from concepts/properties to count/mass nouns is different

Anti-universal variation?

Languages without any countability distinctions?

- Mandatory classifier languages

(3) san *(zhī) xíong (Mandarin)
three CL bear
'three bears'

(4) liǎng *(zhāng) zhuōzi (Mandarin)
two CL table
'two tables'

  - All nouns are mass
    - ⋆ Muromatsu 1995 for Japanese
    - ⋆ Chierchia 1998 for Mandarin
  - Now more-or-less widely seen to be false (Doetjes 1997)

Anti-universal variation?

- Yudja (Tupi)

(5) Txabïu apeta pe∼pe∼pe
three blood drip∼REDUP
'three (drops of) blood'

  - All 'notional mass nouns' are count (Lima 2014a,b)
  - Still an open question
  - Some doubt based on Deal 2017 (for a relevantly similar language Nez Perce, and also, with slightly weaker conclusions for Yudja)

Morphosyntactic variation

		Canonical Count Nouns	Canonical Mass Nouns
Plural morphology	Eng	✓	✗
	Fin	✓	✗
	Man	(N/a)	(N/a)
	Yud	(N/a)	(N/a)
	Grk	✓	✓
Numeral constrc (no CL)	Eng	✓	✗
	Fin	✓	✗
	Man	✗	✗
	Yud	✓	✓
Bare singular	Eng	✗	✓
	Fin	✓	✓
	Man	✓	✓
	Yud	✓	✓

Lexicalization pattern variation

	Count	Mass
Functionally combinatorial		
`furniture`	*huonekalu-t* (Fi); *meubel-s* (Dutch);	*furniture* (En); *meubilaire* (Dutch)
`jewellery`	*koru-t* (Fi); *joya-s* (Spa)	*jewellery* (En); *Schmuck* (Ger)
Granular		
`lentil`	*lentil-s* (En); *linssi-t* (Fin)	*čočka* (Cz) *lešta* (Bul)
`bean`	*bean-s* (En); *papu/-vut* (Fin)	*fasole* (Rom) *bob* (Bul)
Interconnected		
`fence`	*fence-s* (En); *plot-y* (Cz)	*fencing* (En); *oplocení* (Cz)
`shrub`	*shrub-s* (En); *Strauch/-äucher* (Ger)	*shrubbery* (En); *Strauchwerk* (Ger)

Overview: Two claims

(Sutton and Filip 2024)

Empirical claim: A strong correlation between:

- properties (concepts) that display variation in their count/mass lexicalization patterns and
- the properties underpinning nouns that have **non-canonical** grammatical reflexes of countability

Theoretical claim: The centrality of objects

- A broad notion of object that includes e.g., grains of sand and jigsaw puzzles.
- objects as a necessary condition for count lexicalization (at least for concrete properties)
  - This in turn explains the observes non-canonical reflexes of mass nouns

Overview: impact for lexical semantics

Context sensitivity:

- At least some count nouns have context-dependent individuation conditions (e.g., Rothstein 2010; Zucchi and White 2001)

Structure in the lexicon:

- Common nouns specify their truth-conditions, and
- their individuation/counting criteria (e.g., Landman (2011, 2016); Sutton and Filip (2020))
  - Needed to be able to distinguish co-intensional mass-plural count pairs (e.g., *meubels-meubilaire*)
- bi-partite lexical entries

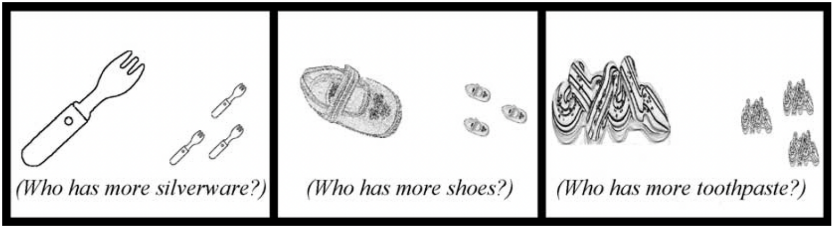
Object mass nouns (OMNs)

ammunition, apparel, armor, art, artillery, artwork, autumnwear, baggage, bakeware, beachwear, bedding, change, china, clothing, clutter, coinage, crockery, cutlery, decoration, dishware, equipment, earthenware, freight, furniture, footwear, gear, glassware, hardware, inventory, jewelry, knitwear, ladieswear, laundry, legwear, lingerie, loot, luggage, mail, menswear, merchandise, [...], outerwear, packaging, paperwork, plasticware, rigging, seating, shapewear, silver, silverware, software, sportswear, [...], stock, swag, tackle, teaware, tupperware, underwear, weaponry (Erbach 2021, p. 201)

OMNs as a focus of count/mass semantic accounts:

- A notional/grammatical mismatch: denote countable objects, but are grammatically mass
- This shows up in their grammatical reflexes

OMNs: Cardinality comparison readings (Barner and Snedeker 2005)



Object mass nouns have cardinality comparison readings, but canonical mass nouns do not

- Also have measure readings (e.g., Rothstein 2017)

OMNs: Felicitous when modified by Stubs

Stubbornly distributive predicates (Stubs) (Schwarzschild 2011; Rothstein 2010)

- *big*, *small*, *round*, *square*

(6) Alex moved the round/small tables/furniture/#oil.
⇒ Each of the tables/pieces of furniture are round/small

OMNs: count/mass variation

	Count	Mass
`furniture`	*huonekalut* (Fi); *meubels* (Dutch);	*furniture* (En); *meubilaire* (Dutch)
`jewellery`	*korut* (Fi); *joyas* (Spa)	*jewellery* (En); *Schmuck* (Ger)
`cutlery`	*ruokailuvälineet* (Fi);	*cutlery* (En); *príbor* (Cz)
`kitchenware`	*Küchengeräte* (Ger); *keittiövalinnet* (Fi)	*kitchenware* (En); *nádobí* (Cz)

Functionally combinatorial nouns

- A cover term for OMNs and their count counterparts

Beyond OMNs

Arguably too much attention

- Present in Germanic, Romance and Slavic languages
- Very rare/absent in others (Greek, Finnish)

Much focus on cardinality comparison readings

- Led to less attention on other nouns

Granular and Filament nouns

Variation

- Granular and filament mass nouns widely attested in many languages
- Frequently lexically simply (cf object mass nouns)

	Count	Mass
`lentil`	*lentil-s* (En); *linssi-t* (Fin)	*čočka* (Cz) *lešta* (Bul)
`bean`	*bean-s* (En); *papu/pavut* (Fin)	*fasole* (Rom) *bob* (Bul)
`cabbage`	*cabbage-s* (En); *kaali-t* (Fin)	*cabbage* (En) *Kohl* (Ger)
`asparagus`	*asperge* (Fr);	*asparagus* (Rom)
`bamboo`	*Bambusrohr-e* (Ger);	*bamboo* (En)

But some limits on variation

- E.g., `dust`, `pollen` always lexicalized as mass

Granular and Filament nouns in German: Stubs

Observation: GF mass nouns are felicitous with Stubs, just like OMNs

(7) **Pine pollen is large** and is released in clumps. It generally falls to the ground quickly and does not aerosolize like smaller pollens. [EnTenTen20]

(8) **If the gravel is too large** to be siphoned, then the gravel can be removed with a scoop or similar. [ukWaC]

(9) Most of **the dust was no larger** than specks of cigarette smoke. [ukWaC]

(10) I prayed by the sweet thyme, whose little flowers I touched with my hand; by **the slender grass**; [ukWaC]

(11) The peel is thinner on **slender asparagus**

(12) [square bamboo is] simply **round bamboo** that has been worked down to a square cross-section, probably using a sharp scraper. [ukWaC]

Granular and Filament nouns: Cardinality comparison readings?

Mostly only under very heavy context-setting

- Landman (2021, (Sutton p.c.)): a rice grain hunting competition in which contestants must find as much rice as possible in an allotted time. The intuition is that the winner would have the most grains, regardless of whether they found the most by weight or volume.)

But at least one case: *pollen*

- supposing that last month, most of the pollen in the air was small grass pollen, and this month, larger tree pollen, if the numbers of pollen grains in the air are the same, it is not clear to us that 'There is more pollen in the air this month' is true.

Granular and Filament nouns in the literature

Often treated as in some sense mass by default e.g., Chierchia 2010; Landman 2020

- Chierchia:
  - stably atomic properties have a set of atoms shared across all contexts. E.g., what counts as a minimal chair (a chair atom) is stable
  - granular properties are not stably atomic: e.g., what counts as the smallest *rice* entities varies with context.
  - A standardized partition operator needed to account for count granulars
- Landman
  - 'Neat mass' nouns have a disjoint set of atoms in their extensions
  - 'Mess mass' nouns do not
  - Granular mass nouns are mess mass (like canonical mass nouns)

Interconnected nouns: Variation

Mass nouns commonly derived morphologically from count nouns

	Count	Mass
`fence`	*fence-s* (En); *plot-y* (Cz)	*fencing* (En); *oplocení* (Cz)
`shrub`	*shrub-s* (En); *Strauch/-äucher* (Ger)	*shrubbery* (En); *Strauchwerk* (Ger)
`wall`	*wall-s* (En); *zed'/-i* (Cz)	*walling* (En); *zdivo* (Cz)

Does not always result in a mass noun:

(13) Einige AktivistInnen nutzten den Raum zwischen zwei Umzäunungen zu einem
several activists use the space between two fencing.PL to an
"Atomwaffenfreien Picknick".
atomic.weapon.free picnic
"Several activists use the space between two (boundary) fences for an 'atomic weapon free picnic'."

Interconnected mass nouns: stubs

A little rare, but some instances attested:

(14) a. They sell large fencing, small fencing - any size. [enTenTen21]
b. For a nicer and cleaner finish, add some small fencing around your garden [enTenTen21]

(15) For smaller hedging or trimmed shrubs, bays and rosemary are both extremely hardy, water savvy and aromatic.

Interconnected count nouns: pseudopartitives
(Filip and Sutton 2017)

Count nouns in English cannot be used in the bare singular

- Including as the 'downstairs' NP in a pseudopartive construction

(16) a. #6 kilograms of baby
b. #You can find a heavy piece of baby in the nursery.

But interconnected count nouns can:

(17) Thick woolen drapes of red and gold covered every inch of wall. (COCA)

(18) Thus a cm dry length of twig increased in dry weight by 0.047g. (*Community Ecology of a Coral Cay*, Heatwole et al. p.152)

(19) The cages were 1 foot in diameter and enclosed a 3-foot length of branch. (*California Agriculture*. Mar-Apr, 1989 p.7)

(20) 155 kilometers, or 96 miles, of wall encircled West Berlin (CNN "Berlin wall secrets")

	Count diagnostic environments			*Mass diagnostic environments*	
Mass Ns	NNCs	Card. comp.	Stubs	SG NP Meas	Bare SG
Canonical	✗	✗	✗	✓	✓
Interconnected	✗	✗	✓	✓	✓
Granular & Filament	✗	✗/✓	✓	✓	✓
Func. Combinatorial (object mass)	✗	✓	✓	✓	✓
Count Ns					
Interconnnected	✓	✓	✓	✓	✗
Func. Combinatorial	✓	✓	✓	✗	✗
Granular & Filament	✓	✓	✓	✗	✗
Canonical	✓	✓	✓	✗	✗

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Hypotheses and observations

(Sutton and Filip 2024)

Observations:

- When the properties that display variation in their count/mass lexicalization patterns are lexcalized as mass, these mass nouns are felicitous with stubs.
- In general variation implies some kind of non-canonical grammatical reflexes of countability

Hypotheses:

- For concrete properties, only properties with objects in their extensions can be lexicalized as count.
- If such properties are lexicalized as mass, these objects can be accessed by the grammar (e.g., the semantics of stubs)

Spelke Objects

Spelke objects

- “bodies that are cohesive, bounded, spatiotemporally continuous, and solid or substantial; they move as connected wholes, independently of one another, on connected paths through unoccupied space” (Soja et al. 1991, p. 183).

Too narrow

- Entities that are not cohesive or bounded
- Entities that are connected to others but are different objects

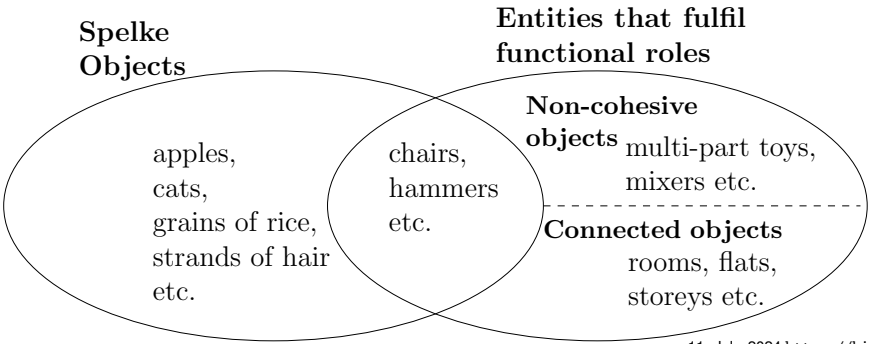
Other kinds of objects

Non-cohesive objects

- multi-mixers, potato head toys, jigsaw puzzles

Connected objects

- fences, rooms in a house, houses in a terrace



Objects can account for the Stub data

When objects are central to the semantics of common nouns the Stubbornly Distributive Predicate data is no longer surprising

- Stubs are felicitous with any nouns (count or mass) that have objects in their extensions
- Not just *round/big furniture*
- But also *round rice*, *slender bamboo*, *small fencing*

As such, one swath of the non-canonical reflexes of some mass nouns can be accounted for

Why are these nouns still mass?

We now have:

- Count nouns with objects in their extensions (*cat*, *bean*, *apple*)
- Mass nouns with objects in their extensions (*furniture*, *rice*, *fencing*)

Challenge: What semantically distinguishes count from mass nouns?

- We can make this problem acute in the form a a paradox: *The Coextensionality Problem*

The coextensionality problem

(P1)	The count/mass distinction is reflected in the semantics of common nouns.	
(P2)	The only relevant locus for a semantic countability distinction is the extension of a common noun at a world and in a context. E.g. the extension is generated from a quantized/disjoint/stably atomic set etc.	
(P3)	There are plural count nouns and singular mass nouns that are coextensional.	
(C1)	There can be no coextensional plural count nouns and singular mass nouns.	(P1, P2)
(C3)	$\perp$	(P3, C1)

Option 1: Singleton sets

Deny (P3), (Chierchia 2010, 2015)

- Not: There are plural count nouns and object mass nouns that are coextensional.

$[\![\texttt{huonekalut}]\!]^w$ = The number neutral set containing single furniture items and sums thereof in w.

$$[\![\texttt{huonekalut}]\!]^w = \left\{ \quad , \quad , \quad , \quad , \quad , \quad \right\}$$

$[\![\texttt{furniture}]\!]^w$ = The singleton set containing only the sum of all furniture items in w.

$$[\![\texttt{furniture}]\!]^w = \left\{ \quad \right\}$$

Option 2: Extension and counting base sets

(e.g., Sutton and Filip 2024)

Deny (P2)

- Not: The only relevant locus for a semantic countability distinction is the extension of a common noun at a world and in a context.
- Landman 2011, 2016; Sutton and Filip 2016, 2017
- Bi-partitite lexical entries $\langle \text{Extension}, \text{Counting base} \rangle$

Extension	The set of (sums of) entities the noun denotes in the world
Counting base	The set of (sums of) entities that count as 'one'

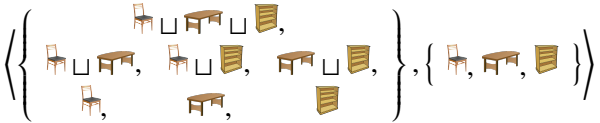
Proposal

- Only count nouns have a quantized counting base set

Option 2: Extension and counting base sets

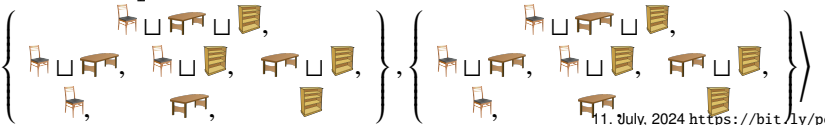
$[\![\texttt{huonekalut}]\!]^w$ = A pair: The number neutral set containing single furniture items and sums thereof in w, and the set of single items of furniture (what counts as 'one')

$[\![\texttt{huonekalut}]\!]^w =$



$[\![\texttt{furniture}]\!]^w$ = A pair: The number neutral set containing single furniture items and sums thereof in w, and also the number neutral set containing single furniture items and sums thereof in w.

$[\![\texttt{furniture}]\!]^w =$



Comparing the options: Impact on compositional semantics

Bi-partite approach

- All VPs modifiers etc. adjusted to compose with pairs of sets as opposed to single sets

Singleton property approach

- A difference between count and mass nouns for simple predication

$$[\![\texttt{this chair is furniture}]\!]^w = \text{  } \in \left\{ \text{  } \right\} \quad \Leftarrow \textit{False}!!$$

- Grand scale ambiguity for all predicates?

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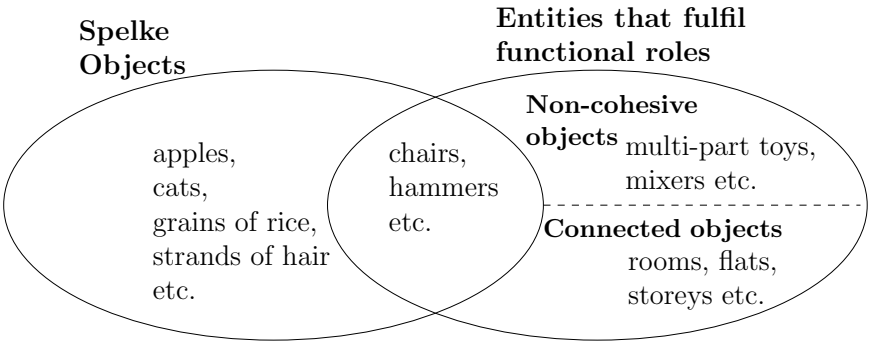
Recap: objects



Objects do not form a non-quantized set

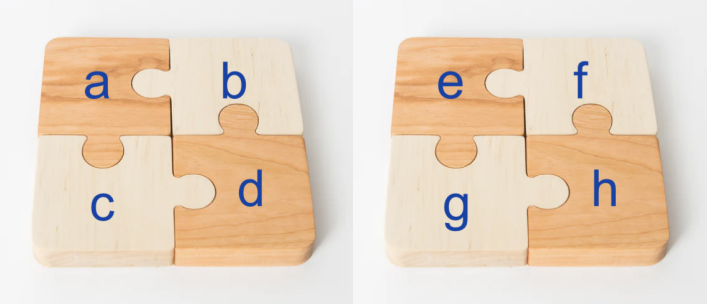
Recall: Quantized

- No entity in the set is a proper part of another
- $QUA(P) \leftrightarrow \forall x, y[(P(x) \wedge P(y)) \rightarrow \neg x \sqsubset y]$

The set of objects is not quantized

- jigsaw puzzles and pieces
- multimixers and parts
- fences and certain parts of fences

Quantization relative to a predicate



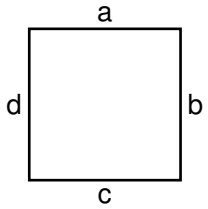
Both *jigsaw* and *jigsaw piece* are quantized

- $[\![\texttt{jigsaw piece}]\!] = \{a, b, c, d, e, f, g, h\}$
- $[\![\texttt{jigsaw}]\!] = \{a \sqcup b \sqcup c \sqcup d,\ e \sqcup f \sqcup g \sqcup h\}$

Interconnected nouns as a challenge

A challenge is when we have different admissible counting results relative to the same predicate

Fencing around a square field (Rothstein 2010):



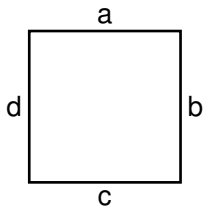
How many fences are there?

- 1? i.e. $a \sqcup b \sqcup c \sqcup d$
- 2? e.g., $a \sqcup b, c \sqcup d$
- 4? i.e., a, b, c, d

Results we need to prevent

- > 4 e.g., $a, b, c, d, a \sqcup b \sqcup c \sqcup d$

Quantization relative to a context/counting perspective



Suppose the set of *fence* objects includes:

- $a, b, c, d, a \sqcup b \sqcup c \sqcup d$

We can index the semantics of *fence* to a context/counting perspective:

- At each context, there is a quantized set of *fence* objects for counting

$$[\![\text{fence}]\!] = \begin{cases} c_1 & \mapsto & \{a, b, c, d\} \\ c_2 & \mapsto & \{a \sqcup b \sqcup c \sqcup d\} \end{cases}$$

Recap: non-canonical countability reflexes of Interconnected nouns

(21) a. #6 kilograms of baby
b. #You can find a heavy piece of baby in the nursery.

(22) The cages were 1 foot in diameter and enclosed a 3-foot length of branch. (*California Agriculture*. Mar-Apr, 1989 p.7)

(23) 155 kilometers, or 96 miles, of wall encircled West Berlin (CNN “Berlin wall secrets”)

Explaining the fence data

(Filip and Sutton 2017; Sutton and Filip 2024)

Previous restriction on pseudopartitive (measure) constructions (e.g., Krifka 1989)

- Measure constructions select for non-quantized predicates
- ⟦baby⟧ is quantized (*# 6 kilograms of baby*)
- ⟦rice⟧ is not quantized (*6 kilograms of rice*)

Alternative from the object-centred, contextualist perspective

- Measure constructions select for predicates that are non-quantized across contexts. I.e.
  - Predicates that are never quantized (e.g., *rice*)
  - Predicates that are quantized at each context, but where the what counts as *one P* in one context is a proper part of what counts as *one P* in another context (e.g., *fence*, *twig*)

Summary: Concrete nouns

Data:

- Count/mass variation
- Coincides, roughly, with non-cononical reflexes of countability
  - Mass nouns with Stubs (e.g., object mass, granular)
  - Interconnected count nouns in measure constructions

Explanations

- Objects as a central part of the theory (variation)
- Objects license Stubs
- Counting is counting quantized sets of objects relative to a context
- When extension vary across contexts (*fence*) this can license some mass-like grammatical reflexes

Plan for today

1. Recap: Mereology
2. Recap: The count/mass distinction
3. Count/Mass Variation & Non-canonical grammatical reflexes of countability
4. Semantics & Objects
5. The need for context sensitivity
6. Extending the analysis to abstract nouns
7. Summary & Conclusions

Informational object nouns: tests

Nouns that (can) denote informational/propositional contents. Two tests:

- Felicitous use with propositional complement clauses

(24)
a. Alex's belief that Biden will win
b. Alex's statement that Biden will win
c. Alex's information that Biden will win
d. #Alex's party that Biden will win

- Felicitous predication with true/false

(25)
a. Alex's belief is true/false.
b. Alex's statement was true/false.
c. Alex's information was true/false.
d. #Alex's party was true/false.

Counting informational contents

One can always count the informational contents of count IONs, in some contexts

(26) Alex's two beliefs were true/false.

(27) Alex's two statements were true/false.

And with a suitable classifier for mass IONs

(28) Alex's two pieces of information were true/false.

- Suggests that, in some sense, informational 'objects' are 'seen' by the grammar like regular concrete objects
  - Prime candidates for counting when they are salient

Informational object nouns: contextual variation

Prediction:

- Informational entities are not inherently bounded/individuated
- Like fences, twigs etc., it is not given what counts as 'one' independently of context, we should expect to find context sensitivity with IONs as well

Prediction borne out:

(29) Alex's **(one) statement/two statements** that Biden will win and serve a full term.

(30) **One piece/two pieces of information** is/are perhaps of interest to our loyal visitors: All cast members are satisfied that they have improved year on year, but nevertheless think that they still have enough potential for enhancement.

Informational object nouns: Polysemy

Many IONs are polysemous

- Multiple (non-accidentally) interrelated senses
- cf. *bank*/*bank* (lexical ambiguity)

(31)
a. Alex's statement was true. [Inf]
b. Alex's statement lasted 5 minutes. [Evt]
c. Alex's statement is on the table. [Phys]

Next: a quick look at telicity and counting with IONs

IONs and telicity

Light verb constructions as a probe for telicity of underlying eventualities

(32) a. #Alex had (those) two beliefs in 5 years.
b. Alex had (those) two beliefs for 5 years.

(33) a. Alex made (those) two statements in 5 years.
b. (#)Alex made (those) two statements for 5 years.

Hypothesis – atelic eventuality denoting senses of IONs should be harder to count

Anchoring

- Objects as anchors for counting (Grimm 2014)
- Extension: also to e.g. temporal traces and paths etc.

(34) Alex's two statements that spending will increase.

- We can infer a temporal trace for any events, so as long as we can anchor each statement to a different time (and possibly also place), we can happily count the stating eventualities.

(35) ?Alex's two beliefs that spending will increase.

- Mental states are not spatio-temporally located in the same way. Not quantized set of anchors (both beliefs are in Alex's head for extended periods).

Predictions

Restricting anchors for events should prevent counting

(36) ?Alex's two simultaneous statements at 14:03 that spending will increase.

Providing anchors for mental states should enable counting

(37) Alex's and Billie's two beliefs that spending will increase. [Anchoring to Experiencers]

Quantization for eventuality denoting nominal predicates

(38) Where $\Theta = \{\textsc{ag}, \textsc{exp}, \tau, \textsc{loc}\}$:

$QUA(E_{\langle v,t\rangle}, f)$ iff $f \in \Theta$. $QUA(\{y : e \in E, y = f(e)\})$

E is a quantized set of eventualities relative to f if the set of f-values (e.g., agents, time intervals or locations) is quantized.

- Eventuality denoting nominal predicates are in some sense 'easier' to count than their verbal counterparts
- Nouns: Any one anchor is sufficient to start counting eventualities
- Verbal predicates: stricter conditions (e.g., non-quantization of DO predicate can make the whole VP non-quantized)
  - *read a book in an hour* vs. *# read books in an hour*

Plan for today

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Order in chaos?

Variation in count/mass lexicalization patterns is messy

- Taken to be evidence that countability is purely grammatical (Rothstein 2010)

But variation is not random

- Importance of objects
- Restriction to certain kinds of objects (not discussed today)

The Coextensionality Challenge

- Does this mean that the count/mass distinction is not semantically encoded in the lexicon? (Pelletier 1975; Borer 2005)
- But, again, variation is not random
- We do need to add structure to the lexicon (bi-partite lexical entries)

Abstract nouns (esp. Informational Object Nouns)

- Propositions-as-objects for counting
- Anchoring to objects to count eventualities

Thanks

Thank you for listening!

Most of my research described here was undertaken jointly with Hana Filip and is detailed more fully in our (hopefully soon forthcoming) book.

Many thanks to Frank Grüneisen and Nina Haslinger for providing German judgements and to Markus Hippi for assistance with Finnish judgements and translations.

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