

Between count and mass: *Furniture* and other functional collectives

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Setting the Context

Non-countable nouns include well-behaved mass nouns (*water*, *wood*) and some misfits.

- ▶ *furniture*, *mail*, *luggage*, *change*, *jewelry*, *ammunition*, . . .

These nouns—*furniture*-nouns—have received little attention (but see Wierzbicka 1985, Wisniewski and Murphy 1989, Mihatsch 2007).

Furniture-nouns are problematic because of a surprising combination of properties, which straddles mass and count

Properties of Furniture-Nouns

- ▶ Like core liquid and substance mass nouns (e.g. *water*, *butter*, *sand*, *sugar*), they are non-countable
 - ▶ furniture/*furnitures, mail/*mails
 - ▶ *two furnitures, *three mails
- ▶ But unlike core mass nouns, their denotations appear to include individual objects, which have their own names
 - ▶ e.g. *furniture* may be comprised of *chairs*, *tables*, *beds*, *sofas* (compare *sand*/*grain of sand*)
 - ▶ hence apparent substitutability with component nouns (*furniture* \approx *tables* + *chairs*)

Properties of Furniture-Nouns

- ▶ The individual objects which are components of e.g. *furniture* are different types of entities
 - ▶ This heterogeneity is at odds with the standard observation that mass nouns are homogeneous

Primary Research Questions

Key question addressed in this talk:

- ▶ What is in the denotation of *furniture*-nouns that allows them to have this puzzling conjunction of properties?

These properties have motivated two previous approaches, which in turn provide a context for our own proposal

Primary Research Questions

Key to the analysis: the artifactual nature of these nouns, which brings in an **associated event**

- ▶ this facilitates a comparison with typical mass nouns, which are natural kinds, allowing us to see similarities with and differences from them
- ▶ when considered at the appropriate level of abstraction, these nouns turn out to be analogous to granular aggregate mass nouns (*sand* or *sugar*)

Previous Approaches

The properties have motivated 2 previous approaches:

- ▶ **Collection of Individuals View**

motivated by substitutability of *furniture*-nouns with component nouns

- ▶ **Mass Superordinate View**

motivated by heterogeneity of component elements

Collection of Individuals View: Basics

The View: the denotation of *furniture*-nouns is simply composed from their component entities (e.g. Chierchia 1998, Bale & Barner 2009)

- ▶ *furniture*-nouns are synonymous and co-extensive with their components

“What else can the denotation of *furniture* be, if not all the pieces of furniture (down to the single ones)?” (Chierchia 1998: 68)

- ▶ **Evidence:** degree of substitutability between, e.g., *mail* and *letters* or *living room furniture* and *sofa, coffee table, chairs*

John arranged { the furniture.
the chairs, tables, desks and bookcases.

Collection of Individuals View: Basics

- ▶ Non-countability is not a problem since proponents consider the count-mass distinction to be arbitrary (Chierchia 1998, Pelletier 1991, Rothstein 2010)

“In fact, the same slice of reality can be classified as either count or as mass, as attested by the existence of near synonyms.” (Chierchia 1998: 56)

Collection of Individuals View: Shortcomings

The relationship between *furniture*-nouns and their constituent parts is, however, more complicated:

- ▶ they are not truly co-extensive
- ▶ some adjectival modifiers prefer one type of noun to the other and vice versa

Lack of Co-extensiveness

Mail: the set of objects that one receives via the post;

- ▶ may include letters, but also magazines, packages, postcards, and the like.

Letters: a far narrower class of entities, that need not actually have been mailed.

Magazines: also a far narrower class of entities, that need not actually have been mailed but can be bought in a store.

Key point: Not all letters or magazines are mail, nor is all mail letters or magazines.

Lack of Co-extensiveness

Prediction: any strong form of substitutability should allow for the same inferences

The relevant evidence:

The furniture was wood \Rightarrow The table was wood.

The furniture was sparse \nRightarrow *The table was sparse.

Mary sent John letters \Rightarrow Mary sent John mail.

Mary sent John long letters \nRightarrow *Mary sent John long mail.

Conclusion: The prediction is falsified

Collection of Individuals View: Adjectival Modification

Prediction: substitutability would suggest the same patterns of adjectival modification

The relevant evidence:

- ▶ **Preferential Distribution:** different preferences for the adjective types found with the two noun types
- ▶ **Complementary Distribution:** adjectives which are only found with one of the noun types

The study results: A corpus analysis reveals real and systematic differences

The Corpus Study: Preferential Distribution

Extracted all adjective-noun combinations for *furniture*-nouns and plausible constituent objects from British National Corpus (BNC)

<i>Furniture</i> -Nouns	Tokens	Component Nouns	Tokens
Mail	364	Letters	587
Furniture	460	Chairs	283
		Tables	242
		Beds	200

Adjectives coded by semantic class according to the schema of GermaNet: approx. 50 categories

<http://arbuckle.sfs.uni-tuebingen.de/GermaNet/>

Preferential Distribution: Mail/Letters

Table of Results:

Category	Example	<i>Mail</i>	<i>Letters</i>
Behavior-Related	<i>malicious, poignant</i>	1%<	21%
Mood-Related	<i>cheery, dreadful</i>	1%<	10%
Delivery	<i>express, international</i>	45%	2%

Preferential Distribution: Mail/Letters

Generalizations:

- ▶ The adjectival modifiers for *letters* often characterize the content of the letters
- ▶ The adjectival modifiers for *mail* overwhelmingly concern the event tied to the noun, its delivery

Preferential Distribution: Furniture

Table of Results:

Category	Example	<i>Furniture</i>	<i>Chairs, tables, beds</i>
Total Spatial		6%	18%
Shape	<i>oblong, high-backed</i>	< 1%	6%
Dimension	<i>high, narrow</i>	0%	4%
Localization	<i>opposite, central</i>	0%	2%

Preferential Distribution: Furniture

Generalizations:

- ▶ Adjectives denoting shapes, dimensions or localization are more prevalent with individual pieces of furniture
 - ▶ cf. adjective preferences with mass or count nouns: *round bowl* vs. **round soup*:
dimensional (shape) adjectives apply to individual objects (Bunt 1985)

Adjectival Modification: Complementary Distribution

Instances where substitutability fails with adjectives:

- ▶ contradictory letters \neq ?contradictory mail
- ▶ Collective adjectives: sparse furniture \neq *sparse table and chair

Collection of Individuals View: Conclusion

Key point: Co-extensionality and substitutability in the strong form fail, casting doubt on the collection of individuals view.

Mass Superordinate View

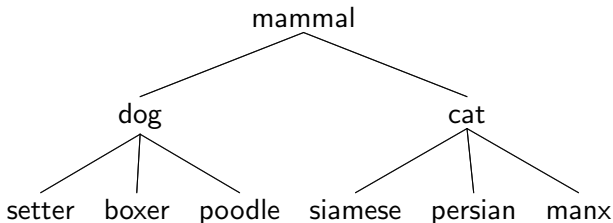
The view: *furniture*-nouns are a sort of superordinate term, viz. name the top element of a taxonomic hierarchy (Markman 1985, Rosch 1975)

The motivating question:

Why does the denotation of e.g. *mail* encompass so many different types of objects?

The relation between a noun such as *mail* and its components resembles the manner in which a superordinate term gathers together heterogeneous subordinate terms

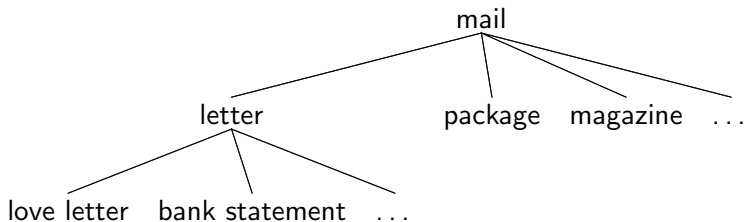
Mass Superordinate View



Properties:

- ▶ **A kind of relation:** A sub-element is a *kind of* super-element
- ▶ **Inheritance:** A sub-element inherits the properties of the super-element

Mass Superordinate View: Shortcomings

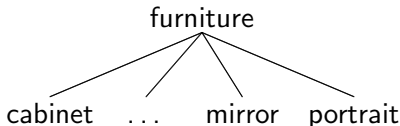


- ▶ **A kind of relation:** seems awkward
 - ▶ A letter is not a kind of mail
- ▶ **Inheritance:** the properties of the purported superordinates do not trickle down (cf. Wierzbicka 1985, Mihatsch 2007)
 - ▶ If mail is delivered, then the subordinate terms do *not* inherit this property, viz. not all magazines are delivered

Mass Superordinate View

The problem is exacerbated by *furniture*:

“The furniture was all his too, those cabinets with bulging fronts and curved legs, chairs with buttoned backs, a velvet-covered love seat, a big oval table supported on a wooden base shaped like a vase, mirrors framed in gilt, pale mauve and green watercolours and dark portraits in oils”. (BNC CDB)



Mass Superordinate View: Conclusion

Key point: Both superordinate and subordinate relations fail for *furniture*-nouns, making it difficult to maintain the mass superordinate view.

From Observation to Theoretical Characterization

The data suggest that *mail* denotes something other than letters, magazines, etc.

What makes something qualify as mail?

- ▶ simply that it has been mailed.

mail: a set of entities which have in common that they travel *together* through the postal system

Artifacts and Their Associated Events

The nouns discussed designate artifacts

Artifacts differ from natural kinds in that they have a function, related to what Nichols (2008) calls an “associated event”, cf. Pustejovsky’s (1995) telic component

“two types of noun meaning

- a. nouns whose meaning is based on physical properties of the referent, and
- b. nouns whose meaning is represented by the canonical event associated with the referent” (Nichols 2008: 694)

Artifacts and Their Associated Events

The canonical associated events for the nouns at issue:

- ▶ *furniture*: furnishing a space
- ▶ *mail*: transmittal through the postal system
- ▶ *luggage*: pulling or carrying throughout a journey
- ▶ *change*: returned money from monetary transaction

Outline of Proposal

furniture-nouns denote:

- ▶ a set of elements that participate together in an event
- ▶ the event canonically involves
 - ▶ a *collection* of elements, which often function together
 - ▶ typically a heterogeneity of elements in the collection
- ▶ Given their critical components, *furniture*-nouns are better thought of as **functional collectives**

Outline of Proposal: Functional Collectives

The associated event imposes constraints on such nouns

- ▶ the countability properties follow from the collective nature of the associated event

They do not directly denote individual objects

- ▶ rather a set of elements unified by their joint participation in a particular associated event

Corroborating evidence: experimental and etymological

Functional Collectives: Evidence for an Associated Event

Adjectival Modification Evidence:

- ▶ Some of the adjective + noun combinations clearly specify properties of the event (*mail* and *delivery*)

Etymological Evidence:

- ▶ The nouns at issue are often deverbal, wearing the associated event on their “sleeve”

furniture (< Fr. *fournir* “to furnish”)

luggage < *lug* (v.) + -age

change < *change* (v.)

- ▶ Or are closely tied with an event:
mail is derived from bags used by couriers (“mail of letters”),
cf. Mod. Fr. *malle* ‘suitcase’

Evidence for Collectivity

Evidence for Collectivity:

- ▶ some adjectives such as *sparse* or *dense* highlight this element of meaning within these terms
 - ▶ *sparse furniture*

Evidence for Heterogeneity

Prediction for comparatives: Since our analysis contends that a functional collective implies that the components satisfy the associated event together and involve a degree of heterogeneity

- ▶ A set of items that better represents its heterogeneity will be considered to represent *more* of the functional collective

Evidence for Heterogeneity

Experimental study: 20 participants were asked to evaluate whether (i) five chairs or (ii) a sofa, two chairs, a coffee table, and a bookcase (five items) counted as more furniture.

Results: Participants unanimously answered (ii), with many commenting that this set better performed the function of furnishing.

The results run counter to the predictions of any theory where the denotation of *furniture* is equivalent to the constituents in the set.

Why Are Functional Collectives Non-Countable?

Proposal: the factors that influence countability of natural kinds carry over to artifacts

Wierzbicka (1985) proposes *conceptual* and *cultural factors* influence a noun's classification as mass or count:

- ▶ *Distinguishability* of any constituent element, which is influenced by its *size* and *contiguity*.
- ▶ *Mode of interaction* with the relevant entity.

Receives strong experimental support (Middleton et al. 2004)

Countability For Natural Kinds

For natural kinds, aggregate collectives are not countable (“have mass syntax”) in English:

- ▶ wheat, grass, rye, sand, flour, etc.
(\neq group collectives such as *team*, *committee* or *flock*)

The reason:

- ▶ *Distinguishability*: the members are not distinguishable (are similar) in form
- ▶ *Mode of interaction*: one interacts with them as a group

Countability For Artifacts: Functional Similarity

Analogous conditions are at work for artifacts, but with respect to the canonical associated event of the entity at hand

Similarity in function among elements of a functional collective is the analogue of the more familiar **similarity in form** among elements of granular aggregates

Number Marking For Artifacts

Distinguishability: *furniture*-nouns name sets whose members are identical with respect to their role in an associated event

- ▶ each element of *furniture* satisfies the furnishing event

Mode of interaction: one canonically interacts with multiple items when it comes to *mail* or *furniture*

- ▶ In episodic contexts, these nouns canonically refer to multiple co-located elements

Heterogeneous, yet Homogeneous

Despite the heterogeneity of their components, functional collectives are homogeneous when considered from the perspective of the associated event.

- ▶ granular aggregate nouns are undifferentiated and homogeneous in terms of the form of their components (e.g. the individual grains of sand)
 - ▶ a collection of different instances of the same form
- ▶ *furniture*-nouns are undifferentiated and homogeneous in terms of their components with respect to their participation in the event (e.g. furnishing)
 - ▶ a collection of different instances of an element satisfying the same function

Number Marking For Artifacts: Conclusions

The non-countability of functional collectives follows from considering their associated events

- ▶ It remains a mystery under the collection of individuals or mass superordinate views

Conclusion

- ▶ *Furniture*-nouns are better understood as *functional collectives*
- ▶ They designate more than a collection of individuals or a special type of superordinate term
- ▶ The notion of functional collective accounts for observed semantic properties (collectivity, heterogeneity, reference to function)
- ▶ Functional collectives merit their own place in an ontology of nouns:
 - ▶ they show similarities with core count and mass nouns, but are distinct from both
 - ▶ have properties that reflect the nature of the associated event

Thank You

Thank you!