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THE ASSOCIATION BETWEEN WORD FREQUENCY AND POLYSEMY – A CHICKEN AND EGG PROBLEM?

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Topic

In this paper we try to answer the following questions: Why do frequently used words tend to be polysemous? And what comes first - frequency or polysemy? We shall stress the key role of frequency in the explanation of the association between frequency and polysemy.

Overview

Associations between

- frequency and cognition
- frequency and prototypicality
- frequency and polysemy

Why are frequent words polysemous?

- The emergence of polysemy
  - Reduction processes in frequently used words
  - **The role of word frequency in the creation of metaphors**
  - Conventionalization of metaphors and metonymies
  - Bleaching of metaphors through frequent use

Frequency and Cognition

- Frequency is a central factor in cognitive performance.
- Our cognitive apparatus and its implicit learning shows some special sensitivity to frequency. It constructs automatically, without any specific instruction or demand, a representation of the context-relevant relative frequencies of events or elements (e.g. Hasher & Chromiak 1975).

Frequency and familarity

The frequency of linguistic segments does not exert any *direct* effect on language structure, but it affects, first of all, cognitive processes:

A higher frequency of use of such a segment results in higher *familiarity* of this segment, while the *cognitive costs* for producing and/or perceiving these segments decrease.

Frequency and prototypicality

Despite a rather afrequentistic conceptualization of *prototypicality* in Rosch (e.g. 1978) frequency can be seen as an underlying factor of prototypicality in at least three respects (Fenk-Oczlon 1988):

1. Frequency of the features determining family resemblance
2. Relative frequency within a certain context
3. "Frequency of instantiation" (Barsalou 1985), i.e. the frequency in which subjects "have experienced an entity as a member of a particular category"

Frequency and linguistic phenomena

More frequent words show a tendency

- to be shorter
- to be irregular
- to survive in neutralization
- to survive in paradigm regularization
- to occupy initial positions in frozen binomials
- to be more often and to a greater extent **polysemous**

Definition of Polysemy/Homonymy

- **Polysemy**:
  one word - different meanings that are **semantically related**
  emergence: reduction processes, metaphors/metonymies

  e.g.: *head* (upper part of the body, chief person in a group)
  mouth (part of the body, part of a river)
  язык (part of the body, language)

Definition of Polysemy/Homonymy

- **Homonymy**:
  one word – different meanings that are **semantically unrelated**
  emergence: accidental result of sound merger

  OE **earm** 'upper limb of the body' > *ME* ***arm***

  OE ***arme*** 'weapon' > ME ***arm*** (Blank, 2003)

  e.g.: лук (onion, bow)
  Kiefer (part of the body, tree)
  inn, in (guesthouse, preposition)

Definition of Polysemy/Homonymy

- But there seems to be no clear-cut dichotomy between polysemy and homonymy. Originally related senses can "become so distant that they are perceived as unrelated" (Nerlich & Clarke 2003:11).

  e.g.: French *voler* 'to steal'

  voler 'to fly'

A well-known association between frequency and polysemy

- Zipf 1949: The number of different meanings of words increases with their frequency (→ Principle of Economical Versatility of Words)
- Köhler 1984: The association of frequency and polysemy is bidirectional. Frequency shortens words, and shorter words show a higher tendency to get polysemous.
- WordNet uses polysemy as an indicator of the familiarity of a word: The more frequently a word is used, the more different meanings it will have.

Why are frequent words polysemous - a chicken- and egg problem?

- Polysemous words become frequent
- Frequent words become polysemous

Rather a problem of an “interactive step-up”

with the strongest and initial impulses coming from frequency!

Emergence of polysemy: reduction processes

- Reduction processes in frequent/familiar words:
  - e.g. **aphaeresis**:

around → *round* (verb, noun, adj, adv, prep)

remember → *member*

because → *cause*

ahead → *head (go 'head of me)*

  - *e.g.* **clipping**:

gymnasium, gymnastics → *gym*

Eisenbahn → *Bahn*

Emergence of polysemy: *bleaching*

- E.g. Aitchison & Lewis (2003:263):

  "Words signifying catastrophic events like 'disaster' are subject to bleaching, and consequently, the development of polysemy." Frequent use is a prerequisite for the development of polysemy.
- To be more precise: Frequent use favors a layering of the (still existing) original concept by more or less related meanings. The periphery of the concept, where most of the use happens, gets fuzzy and has lower emotional content (disaster in sports, cookery, etc.)

Emergence of polysemy: metaphors/ metonymies

Metaphors and metonymies are considered as the main sources of polysemous sense extensions.

- Metaphoric polysemy is "based on a more or less salient similarity between two concepts that belong to different or even distant conceptual domains."

  → *mouse* (small rodent, computer device)

- Metonymic polysemy is "based on conceptual contiguity, i.e. the typical and salient co-occurrence or succession of elements in frames or scenarios or of these frames themselves." (Blank, 2003:268f)

  → *lingua* (tongue, language)

High frequency/prototypicality of the source word (concept)

But:

- When a new metaphor is created, only words being **well-entrenched** in the lexicon of the respective language community, or being **familiar** within this community, can be incorporated in this metaphor. The prerequisite for high **familiarity** is a rather **high token frequency** of these words or concepts. The same holds for metonymies.

High frequency/prototypicality of the source word (concept)

- With the metaphorical/metonymical use of unfamiliar words one would risk the metaphor/metonymy not being understood or being misinterpreted, or that its processing and comprehension would at least require too much time.

High frequency/prototypicality of the source word (concept)

A strong tendency to metaphorical use of e.g.

- animals which are frequent/prototypical and/or are frequently mentioned and therefore well known:

  fox, bear, ox, dog, cow, lamb, frog, bird, elephant, camel etc.

  You are a platypus *(*duckbill*)* would hardly be understood in Austria

  → high cultural variation

High frequency/prototypicality of the source word (concept)

- frequent verbs:

  see, hear, smell, touch, sit, stand, lie, go, run

  → low cultural variation?

- prototypical colors (*black, white, red, blue, green, yellow*) have more metaphorical meanings than e.g. *violet*

  → low cultural variation?

Frequency of predications: conjoint frequency of a concept and its attributes

- The frequency of predications, in which the predicates express typical attributes, activities, and relations of the concept:

  The fox is cunning. → *He is a fox.*

  Der Fuchs hat ein rötliches Fell. → Bavarian: *Sie is fuchsat.*
  'she has red hair'

  The cactus is prickly. → *He is a cactus*.

  The parrot „parrots". → *He is a parrot.*

  The parrot is colorful. → She dresses like a parrot.

Frequency of predications: conjoint frequency of a concept and its attributes

The same seems to hold for metonymies

- *Schiffe haben einen Kiel* → *„Tausend Kiele näherten sich der Küste*“ (Keller (1995:176)
- *He likes to drink a glass of wine* → *He likes to drink a glass.*

Conventionalization of metaphors/metonymies

An increasing frequency of use of a certain metaphor/metonymy means a conventionalization of this metaphor with potentially two results:

1. The metaphorical character of the metaphor ‘bleaches’ (fades in meaning), and it may become a ‘frozen’ or a dead metaphor.
2. The relevant (vehicle) term may get an additional meaning; the respective word has become polysemous.

Interactive step-up

- Frequency favours the development of polysemy.
- On the other hand, polysemy favours word frequency: polysemous words are used in a higher number of contexts and in frequently used formulaic expressions.

Polysemy/homonymy, idioms, and formulaic speech

Do polysemy and homonymy enhance the number of idiomatic and formulaic expressions?

With the help of the context, a language can tolerate a high degree of polysemy and homonymy.

Therefore the polysemous and homonymous words should be stored and memorized together with (typical) contexts.

A large number of idioms and a tendency to formulaic speech in turn **increases**

the frequency of the polysemous words

(cf. Fenk-Oczlon & Fenk 2008)

Conclusions

- Regarding our initial questions we may say: Frequency comes first in the interactive step-up between frequency and polysemy! It seems to be the trigger in the emergence of polysemy.
- Frequent use plays a crucial role in phonological reduction processes as well as in the bleaching of meanings that can lead to polysemy.

Conclusions

- High frequency/familiarity of words favors their use in metaphorical/metonymical expressions that are well-known as sources for polysemous sense extensions. Through frequent use metaphors and metonymies become conventionalized, the source words get additional meanings.
- Polysemous words are apt to be used in a higher number of different (con-)texts. Thus, polysemy in turn increases the token frequency of the respective words.

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