Nouns are more stable than Verbs: Patterns of semantic change in 19th century English

Eyal Sagi

Northwestern University

Semantic Change
(Traugott & Dasher, 2002)

- Words sometime change their meaning over time e.g., Old English 'deer' (animal) vs. Modern English 'deer'
- Several types of change have been catalogued (e.g., narrowing, pejoration)

Hypothesis

Verbs change their meaning more over time than Nouns do

Relationality:
A contributing factor?

Entity vs. Relational nouns

- The difference in mutability between verbs and nouns has an analog in nouns: relational and entity nouns.
- A corresponding difference is expected in the rate of semantic change.

The graph below is based on lists of entity and relational nouns collected by Dedre Gentner and her colleagues.

Measuring Semantic Change

- Latent Semantic Analysis statistically quantifies semantic meaning by representing each semantic entity (word, phrase, etc.) using a vector in a multidimensional space
- The correlation between two semantic vectors is a measure of their semantic similarity

The Verb Mutability Effect
(Gentner & France, 1988)

- Verb interpretations are more affected by their contexts than noun interpretations.
- Most verbs denote relations, most nouns denote objects
- Verb meaning is more likely to change than noun meaning in a semantically strained sentence: “The lizard worshipped”

Are verbs more likely than nouns to undergo semantic change?

Are some words more susceptible to semantic change than others?

The method

- Generated a semantic space based on British and American literary works found in Project Gutenberg (~240 million words) using Infomap
- Calculated the semantic vector representing the context of each occurrence of the 500 most frequent content words for works by authors born in the 19th century.
- The grammatical category of each word was determined using the MRC2.
- Computed the average context vector for 25-year time periods for each word (based on the author’s date of birth).
- The angles between the vectors for the same word between different time periods were used as the basis for the analysis.

Possible sources for difference in rate of change:

Familiarity and Concreteness

- Calculated the semantic vector representing the context of each occurrence of the 500 most frequent content words for works by authors born in the 19th century.
- The grammatical category of each word was determined using the MRC2.
- Computed the average context vector for 25-year time periods for each word (based on the author’s date of birth).
- The angles between the vectors for the same word between different time periods were used as the basis for the analysis.

Discussion

- Semantic change is more pronounced in verbs than in nouns.
- Mutability might be a contributing factor to semantic change.

Future Directions

- Do verbs and nouns undergo the same types of semantic change?
- Do relational nouns exhibit the same degree of semantic change as verbs?
- What other factors affect the rate and likelihood of semantic change?

Error bars in graphs represent standard error of the mean, number of words at bottom of bars.

References

Error bars in graphs represent standard error of the mean, number of words at bottom of bars.

Measuring Semantic Change

- Latent Semantic Analysis statistically quantifies semantic meaning by representing each semantic entity (word, phrase, etc.) using a vector in a multidimensional space
- The correlation between two semantic vectors is a measure of their semantic similarity

The method

- Generated a semantic space based on British and American literary works found in Project Gutenberg (~240 million words) using Infomap
- Calculated the semantic vector representing the context of each occurrence of the 500 most frequent content words for works by authors born in the 19th century.
- The grammatical category of each word was determined using the MRC2.
- Computed the average context vector for 25-year time periods for each word (based on the author’s date of birth).
- The angles between the vectors for the same word between different time periods were used as the basis for the analysis.

Possible sources for difference in rate of change:

Familiarity and Concreteness

- Calculated the semantic vector representing the context of each occurrence of the 500 most frequent content words for works by authors born in the 19th century.
- The grammatical category of each word was determined using the MRC2.
- Computed the average context vector for 25-year time periods for each word (based on the author’s date of birth).
- The angles between the vectors for the same word between different time periods were used as the basis for the analysis.

Discussion

- Semantic change is more pronounced in verbs than in nouns.
- Mutability might be a contributing factor to semantic change.

Future Directions

- Do verbs and nouns undergo the same types of semantic change?
- Do relational nouns exhibit the same degree of semantic change as verbs?
- What other factors affect the rate and likelihood of semantic change?

Error bars in graphs represent standard error of the mean, number of words at bottom of bars.

References