The Moral Rhetoric of Climate Change

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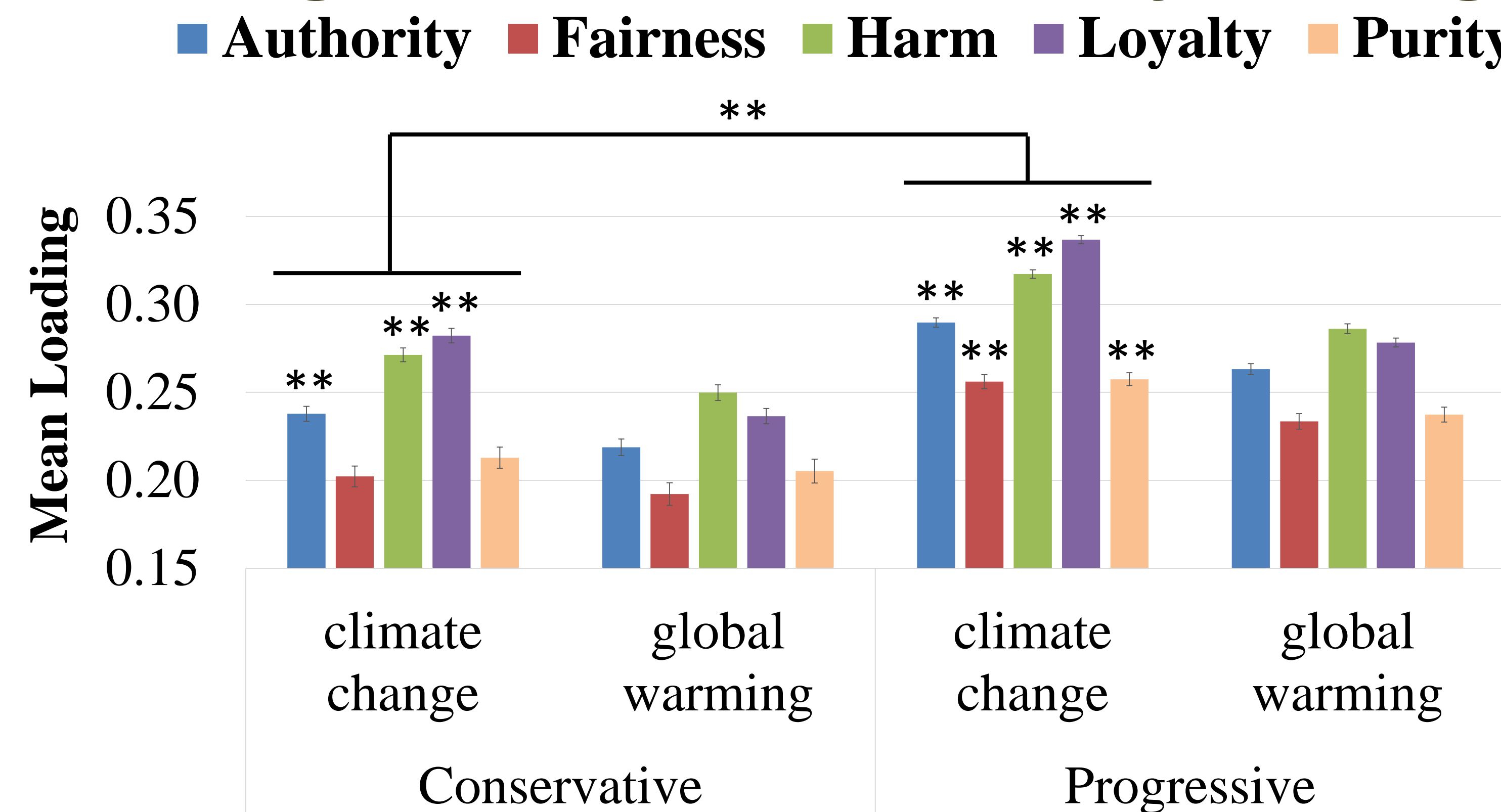[a] Northwestern University   [b] University of California, Merced

Research Questions

What types of Moral Rhetoric are present in media coverage of climate change?

Do they depend on political ideology?

How do events affect moral rhetoric in the media?

Loadings of Moral Rhetoric by Ideology

Legend: ■ Authority ■ Fairness ■ Harm ■ Loyalty ■ Purity

Error bars in graphs represent standard error of the mean

The Effect of Climategate on Rhetoric
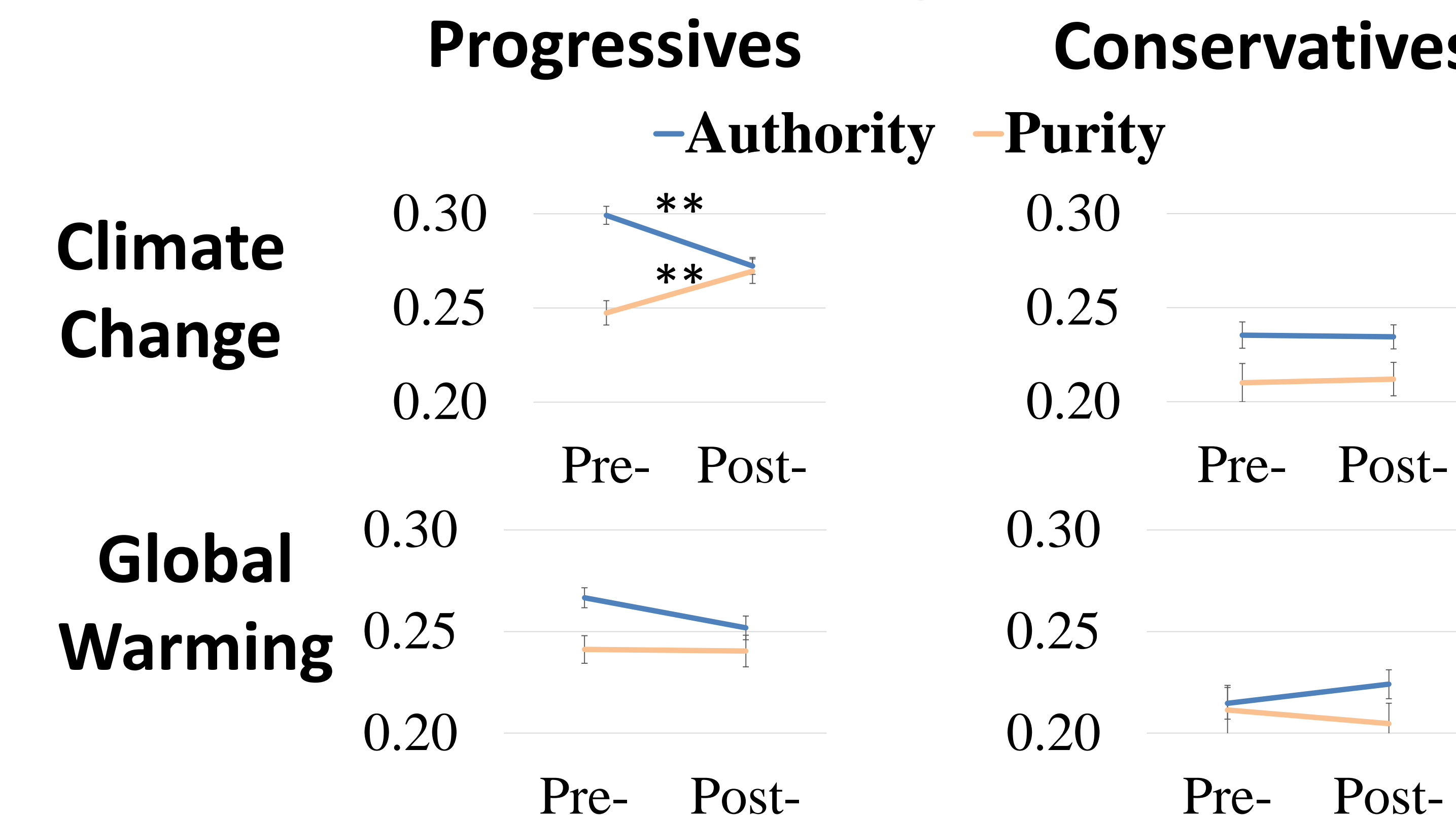
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Moral Foundations Theory
Haidt & Joseph (2004)

- 5 categories of moral concerns:
  - Authority (*command*; *duties*; *protest*)
  - Fairness (*balanced*; *honesty*; *injustice*)
  - Harm (*care*; *damage*; *protection*)
  - Loyalty (*ally*; *group*; *national*)
  - Purity (*dirty*; *exploitation*; *integrity*)

- Moral Foundations Dictionary
  (Graham et al., 2009)
  - A set of terms associated with each concern

Measuring Moral Rhetoric

- Based on Sagi & Dehghani (2014)
- Words as vectors in a *semantic space*
- **Data points**: Contexts of use of key terms
  - *global warming*
  - *climate change*
- **Basic measure**: Angle between vectors of key terms and terms from the Moral Foundations Dictionary
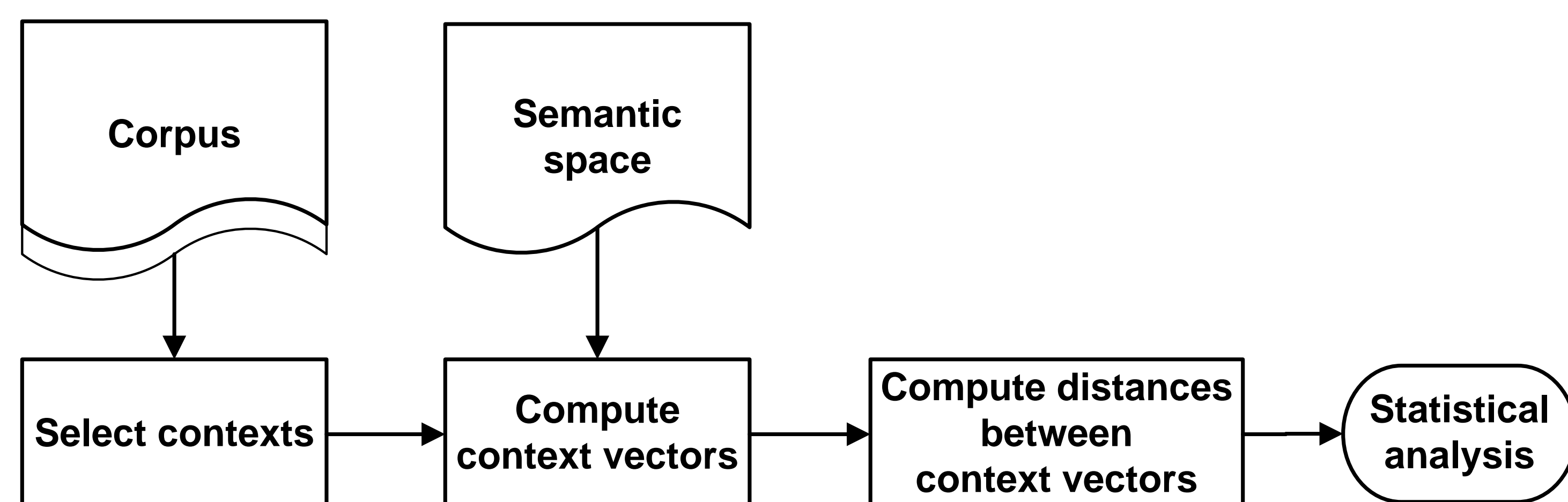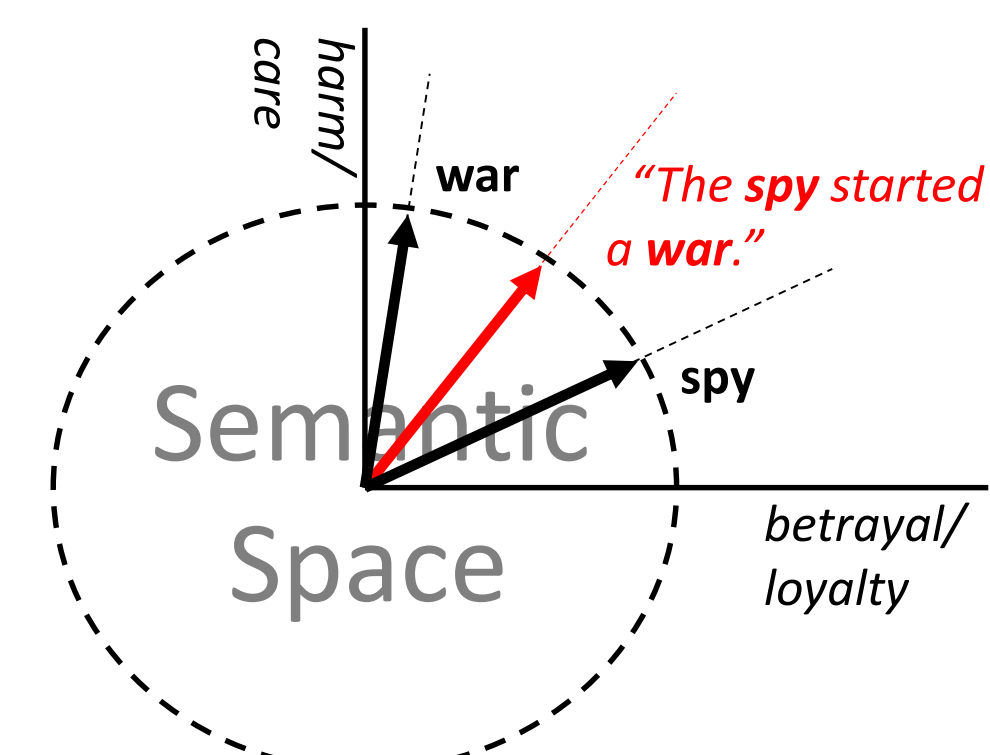

Summary of Results

- Climate change debate rhetoric focuses on:
  - *harm* to the environment
  - *loyalty* to the national interest

- Ideology affects rhetoric
  - Conservative media shows lower levels of rhetoric
  - … but only for *climate change*

- Both groups show lower levels of rhetoric for *global warming*

- Climategate had a minimal effect on media coverage
  - Progressive media exhibited a decrease in *authority* rhetoric and an increase in *purity* rhetoric.

The Corpus
Online News Articles

- 23 online news sources
  - Covers 2008-2013
  - Rated for ideology
  - 18,906 articles
  - about 16M words
 - Selected based on inclusion of *climate change* or *global warming* in article
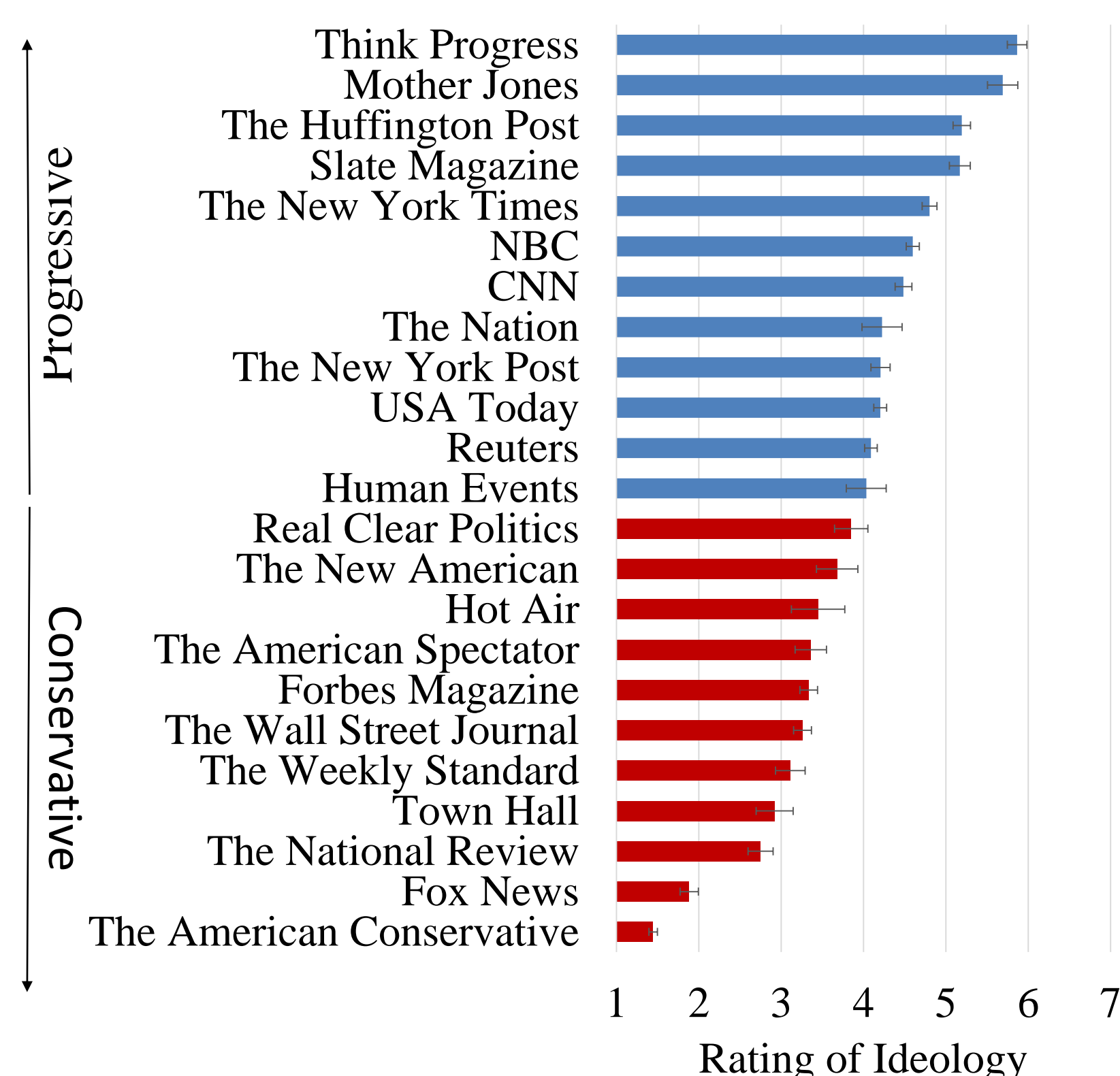
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Semantic Spaces

Topicality: Words that occur together are likely to relate to the same topic

- Based on *Infomap* (Takayama et al., 1999)
  - Similar to *Latent Semantic Analysis* (Deerwester et al., 1990)
- Semantic space is based on patterns of *word co-occurrence*
  - Linear space generated using Singular Value Decomposition (generalized factoring)
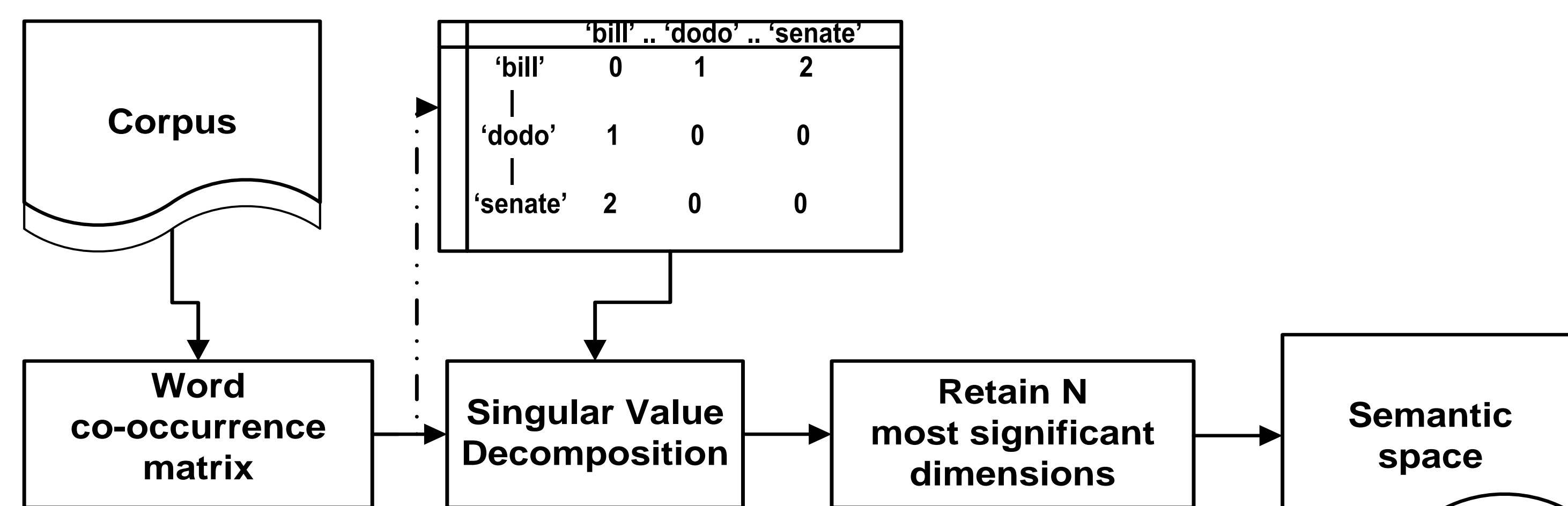
References

1. Deerwester, S., Dumais, S. T., Furnas, G. W., Landauer, T. K., & Harshman, R. (1990) Indexing by Latent Semantic Analysis. *Journal of the American Society for Information Science, 41*, 391-407.

2. Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. Daedalus, 133(4), 55–66.

3. Infomap [Computer Software]. (2007) *http://infomap-nlp.sourceforge.net/* Stanford, CA.

4. Sagi, E., & Dehghani, M. (2014) Moral Rhetoric in Twitter: A Case Study of the U.S. Federal Shutdown of 2013. In P. Bello, Guarini, M., McShane, M., & Scassellati, B., *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 1347-1352).

5. Takayama, Y., Flournoy, R., Kaufmann, S. & Peters, S. (1999) Information retrieval based on domain-specific word associations. In Cercone, N. and Naruedomkul K. (eds.), *Proceedings of the Pacific Association for Computational Linguistics (PACLING'99),* Waterloo, Canada. 155-161.