Computational Analysis of the Use of Metaphors vs. Similes

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Ever since Aristotle, it has been noted that the meanings of metaphors and similes seem very close; it seems that (1a) and (1b) mean pretty much the same thing.

(1) a. My lawyer is a shark b. My lawyer is like a shark

This raises a question: why do we have these two forms, instead of only one?

Chiappe & Kennedy (2001) found that people sometimes prefer one form over another. For example, informants prefer the metaphor (2a) over the simile (2b), but the simile (3b) over the metaphor (3a). The question is: why?.

(2) a. Life is a journey b. Life is like a journey

(3) a. Highways are snakes. b. Highways are like snakes.

Chiappe & Kennedy claim that the preference is based on similarity: metaphors are preferred as similarity between tenor and vehicle increases. In earlier work, Gibb & Wales (1990) argue that the preference is based on abstractness: metaphors are preferred as vehicles are more abstract.

Both studies are based on eliciting subjective judgments of similarity or abstractness, but it is not clear on what basis the informants made their judgments. We argue that a a more objective measure is called for, and demonstrate how at computational analysis provides precisely this measure.

We first set out to check the role of similarity. We examined a list of tenors and vehicles of 30 figurative statements, used by Chiappe & Kennedy. For each tenor and vehicle we extracted the word vectors from Sense2Vec (Trask *et al*. 2015) and the preference of metaphor over simile, but found no significant correlation, in contrast with Chiappe & Kennedy's claims.

Turning to abstractnesss, we assigned a rating to the vehicle in each tenor-vehicle pair, taken from a dataset developed using the computational method described in Turney et al. (2011). Our results show a very strong correlation between these variables, supporting Gibb and Wales (1990).

Thus, a computational approach helps decide between theories of metaphor.

References: • Chiappe, D. L., & Kennedy, J. M. (2001). Literal bases for metaphor and simile. *Metaphor and Symbol*, 16(3-4), 249-276. • Gibb, H., & Wales, R. (1990). Metaphor or simile: Psychological determinants of the differential use of each sentence form. *Metaphor and Symbol*, 5(4), 199-213. • Trask *et al.*(2015). Sense2Vec—a fast and accurate method for word sense disambiguation in neural word embeddings, arXiv preprint, 1511.06388 •Turney *et al.* (2011). Literal and metaphorical sense identification through concrete and abstract context. EMNLP (680-690).