Three kinds of metaphor-in-language and how we can use them to synthesize theories of metaphor

Jonathan Dunn
Outline

1. Rationale [15 minutes remaining]
2. Three kinds of metaphor-in-language
3. Meta-study: Focus of theories of metaphor
4. Insights from computational modelling
5. Synthesizing theories of metaphor-in-thought
Aspects of Metaphor

Metaphor-in-Thought

- Approach as a Symbolic Structure
  - Grammar vs. Usage
- Approach as a Mental Behavior
  - Grammar vs. Usage

Produces

Metaphor-in-Language

- Approach as a Symbolic Structure
  - Grammar vs. Usage
- Approach as a Mental Behavior
  - Grammar vs. Usage

Purpose

Using Metaphor-in-Language to limit the scope of theories about Metaphor-in-Thought

<table>
<thead>
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The Problem

Many metaphoric utterances are left untouched by theories of metaphor-in-thought.
The crucial question for cognitive linguistics ... is whether the cognitive-linguistic definition of metaphor as thought, that is, metaphor as always involving a mapping between two conceptual domains, can now be maintained.”

Note About Premises

Premise adopted here:

Some, but not all, instances of metaphor-in-language involve a mapping between two conceptual domains.

Thus, not all metaphoric utterances necessarily have a source and a target.
Outline

1. Rationale

2. Three kinds of metaphor-in-language
   [13 minutes remaining]

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Three Kinds of Metaphor-in-Language

- Metaphor-in-Language
  - Approached as a Symbolic Structure
    - Usage
  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances
Important Properties Metaphoric Utterances

(1) Does the utterance have a contextually stable interpretation?*

(2) Does the utterance contain (or reflect) a source-target mapping?

# Types of Metaphoric Utterances

<table>
<thead>
<tr>
<th>Type</th>
<th>Interpretations</th>
<th>Source-Target</th>
<th>Best Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretive</td>
<td>Unstable</td>
<td>No</td>
<td>Semantic Similarity</td>
</tr>
<tr>
<td>Source-Target</td>
<td>Stable</td>
<td>Yes</td>
<td>Source-Target Mapping</td>
</tr>
<tr>
<td>Modulated</td>
<td>Stable</td>
<td>No</td>
<td>Domain Interactions</td>
</tr>
</tbody>
</table>
Examples: Interpretive (1)

(1) But there is a puff of dust on the horizon.

(2) The female soil was possessed and misused by the masculine force of the Spanish invaders.

(3) I'll give it some paint.

Note: All examples are taken from VU Amsterdam Metaphor Corpus.
Examples: Interpretive (2)

(4) That girl is a dog.

(5) Visitors will have to look at these mechanical millipedes for years to come.

(6) The stains on the carpet have survived every name change.
(7) In general our policy should be to proceed with building our state block by block.

(8) His long-term ambition to rule a large south Slav kingdom finally collapsed.

(9) These influences laid the foundations for his blend of the naive and the sophisticated.
Examples: Source-Target (2)

(10) The cost has gone through the barn roof.

(11) Now that would be a great leap forward.

(12) You can be miles ahead in the polls but when you get to the last three weeks things change.
(13) There are few things worse than being bludgeoned into reading a book you hate.

(14) An Arsenal team in peak health would have kept a grip on the match.

(15) She took out a handkerchief and mopped her eyes.
Examples: Modulated (2)

(16) His final task was to weed out of the calendar all the rowing courses made unfair by the wind.

(17) The police driver shot Jamie a look of enquiry.

(18) The few straggling trees struggled to keep their precarious hold in the uncompromising soil.
Overview of Metaphor-in-Language

- Utterances with a metaphoric meaning
  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances
- Metaphorically-motivated grammatical structures

Properties of Metaphoric Utterances

- Conventionality (all utterances)
- Deliberateness (all utterances)
- Metaphoricity (only metaphoric)
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   [8 minutes remaining]
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Meta-Study: What Kind of Examples?

• What types of metaphor-in-language are used as examples in different schools of metaphor research?

• What linguistic forms (e.g., A is B) do the examples take?

  • Conceptual Metaphor Theory
  • Relevance Theory
  • Philosophy of Language
50 metaphoric utterances were taken from three different schools of metaphor research:

• Conceptual Metaphor Theory
  • *Metaphors We Live By* (Lakoff & Johnson, 1980)

• Relevance Theory
  • *Relevance: Communication and Cognition* (Sperber & Wilson, 1995)
  • (Wilson & Carston, 2006; Sperber & Wilson, 2008; Pilkington, 2000; Song, 1998)

• Philosophy of language
  • (Davidson, 1979; Searle, 1979; Martinich, 1984)
Meta-Study Results

Number of Examples of Metaphor-in-Language by Type of Metaphoric Utterance

- Conceptual Metaphor Theory
  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances

- Relevance Theory
  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances

- Philosophy of Language
  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances
Meta-Study Results

Number of Examples of Metaphor-in-Language by Linguistic Form

Conceptual Metaphor Theory
- A is B
- Verbal
- Other

Relevance Theory
- A is B
- Verbal
- Other

Philosophy of Language
- A is B
- Verbal
- Other
Meta-Study Conclusions

• Relevance Theory and Philosophy of Language use similar examples

• Little overlap between these two approaches and Conceptual Metaphor Theory

• Very different theories based on very different metaphoric utterances
Outline

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   [6 minutes remaining]
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Models of Metaphor-in-Language

- Metaphor identification systems are computational models of metaphor-in-language

  - Given a symbolic representation of a linguistic utterance,

  - What are the properties or features of a linguistic utterance which characterize metaphor-in-language?
Metaphor Identification Systems

Four systems based on four different models of metaphor-in-language were evaluated on the VU Amsterdam Metaphor Corpus (Steen, et al. 2010)

(1) Semantic Similarity (Sporleder & Li, 2009; Li & Sporleder, 2010)
(2) Abstractness (Turney & Littmann, 2003; Turney, et al., 2011)
(3) Source-Target Mappings (Shutova, et al., 2010; Shutova, et al., 2013)
(4) Domain Interactions (Dunn, 2013b, 2013c)
The Systems

• Full coverage, non-toy systems which take natural language text as input

• All systems use computational annotations to produce features

• Evaluate features using machine learning algorithms

For technical details of the implementations, see:


Justification

(1) Each of the systems is focused on a particular set of properties of metaphor-in-language

(2) The VU Amsterdam Metaphor Corpus annotates all instances of metaphor-in-language

Question: Do these systems find all of the annotated instances?
Overall Performance

F-Measure on entire test corpus with and without Named Entity Recognition

- **Semantic Similarity**
- **Abstractness**
- **Source-Target Mappings**
- **Domain Interactions**

- With Named Entity Recognition
- Without Named Entity Recognition
Low Agreement Between Systems

Agreement between all four systems using Fleiss’ Kappa
Conclusions

- The systems seem to be identifying distinctly different metaphoric utterances.

- But more works needs to be done to tailor the models to each type of metaphor-in-language and validate the results.
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[3 minutes remaining]
Limiting the scope of theories of metaphor

“Different perspectives often focus on some kinds of metaphor and ignore others, i.e. they only have a particular kind of metaphor in mind and make generalized statements about metaphor as a whole.”

Limiting the scope of theories of metaphor

Metaphor-in-Thought

- Approached as a Symbolic Structure
  - Usage

  - Relevance Theory
  - Conceptual Metaphor Theory
  - Construction Grammar / Coercion

Metaphor-in-Language

- Approached as a Symbolic Structure
  - Usage

  - Interpretive Metaphoric Utterances
  - Source-Target Metaphoric Utterances
  - Modulated Metaphoric Utterances
A Word of Caution

“We need to be careful to not assume that a listener...

hears a metaphorical utterance and then selects

a particular strategy (e.g., categorization)

in order to interpret it...”

Response

Gibbs & Colston discuss metaphor as a mental behavior (136):

“It is important not to confuse:

[1] our consciously-held intuitions about metaphoric meaning, and

[2] fast-acting cognitive processes that may give rise to those interpretations.”

The focus here is on the properties of metaphor-in-language viewed as a symbolic representation.
Conclusions

(1) If we do not assume that all metaphoric utterances necessarily have a source-target mapping, then descriptive adequacy of metaphor-in-language improves.

(2) Existing theories of metaphor-in-thought are based on a sub-set of metaphoric utterances, using some and ignoring others.

(3) The proposed distinction between Interpretive, Source-Target, and Modulated metaphoric utterances, suggested by computational models of metaphor-in-language, can help to improve descriptive adequacy.
Thank you

Questions?
References


