Lexical Reciprocity

Yoad Winter

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Referential Semantics, ESSLLI 2016

Forthcoming papers: Empirical Issues in Syntax and Semantics (Paris), Cognitive Structures (Dusseldorf), NELS 2016 (UMASS)

Experimental work: with Imke Kruitwagen and Eva Poortman
Lexical reciprocity

Morpho-semantic relation between:

- **binary** predicate

  Sue *dated* Dan
Lexical reciprocity

Morpho-semantic relation between:

- **binary** predicate
  
  Sue *dated* Dan

- **collective-unary** predicate
  
  Sue and Dan *dated*
Types of predicates

**Eventive verbs**  marry, meet, hug, kiss, argue

**Stative verbs**  match, rhyme, be in love, intersect

**Nouns**  partner, cousin, friend, enemy

**Adjectives**  similar, adjacent, equal, parallel
Notes on symmetry

A binary predicate $R$ is **symmetric** if for all $x, y$:

$$R(x, y) \iff R(y, x).$$
Notes on symmetry

A binary predicate $R$ is **symmetric** if for all $x, y$:

$$R(x, y) \iff R(y, x).$$

- property of binary predicates
- formally unrelated to reciprocity
- **non**-symmetry $\neq$ asymmetry
Familiar facts about lexical reciprocity

- **Symmetry and non-symmetry:**
  
  Sue is Dan’s cousin = Dan is Sue’s cousin
  Sue is dating Dan = Dan is dating Sue

  Sue is hugging Dan ≠ Dan is hugging Sue
  your car collided with mine ≠ my car collided with yours

  The terminology “symmetric” for collectives obscures this non-symmetry.

Symmetry predicts reciprocity: the vast majority of the symmetric binary predicates in English have a reciprocal parallel. Notable exceptions: far, near, resemble.
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  \[
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- **Symmetry predicts reciprocity:** the vast majority of the symmetric binary predicates in English have a reciprocal parallel.
  
  notable exceptions: *far, near, resemble*
Reciprocity-Symmetry Generalization (RSG): Symmetry (date) correlates with a different type of reciprocity than non-symmetry (hug).
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Symmetry (date) correlates with a different type of reciprocity than non-symmetry (hug). plain reciprocity vs. pseudo-reciprocity

Proposal:

1. Symmetry is systematically derived from lexical collectivity (Lakoff & Peters 1969)
   no meanings postulates here, pace Partee (Monday)

2. Non-symmetry (hug) reflects typical polysemy of the in/transitive forms, not logic
   pace virtually all previous works

3. Dowty’s protoroles inspire a formal account of RSG: between concepts and lexicon
Broader perspectives

1. On the nature of “resemble” et al. – RSG as a language universal

2. On the nature of “hug” et al. – pseudo-reciprocity as a typicality phenomenon: experimental work with Imke Kruitwagen and Eva Poortman
General properties of lexical reciprocals

- Non-productive

\#Sue and Dan praised
General properties of lexical reciprocals

- Non-productive
  
  \#Sue and Dan praised

- No obvious relation to reciprocal quantifiers
  
  Sue and Dan praised each other
General properties of lexical reciprocals

- Non-productive
  \[\#Sue\ and\ Dan\ praised\]

- No obvious relation to reciprocal quantifiers
  \[Sue\ and\ Dan\ praised\ each\ other\]

- Productive morpho-syntax, notably Romance clitics – set aside
Plan

- Reciprocity-symmetry generalization
- Protopredicates and the RSG
- On pseudo-reciprocity (Kruitwagen et al.)
Reciprocity and symmetry

- Two kinds of lexical reciprocity
- Correlate with (non) symmetry
Symmetric and non-symmetric predicates

**Symmetric:**

(1) Sue dated Dan
    \(\iff\) Dan dated Sue

**Non-symmetric:**

(2) Sue hugged Dan
    \(\not\iff\) Dan hugged Sue
Two kinds of lexical reciprocity

**Plain reciprocity** \(\text{(plainR)}\):

(1) Sue and Dan dated

\(\Leftrightarrow\) Sue dated Dan and Dan dated Sue
Two kinds of lexical reciprocity

**Plain reciprocity** (plainR):

(1) Sue and Dan dated
    \[⇔\] Sue dated Dan and Dan dated Sue

**Pseudo-reciprocity** (pseudoR):

(2) Sue and Dan hugged
    \[\n\not⇔\n\] Sue hugged Dan and Dan hugged Sue
Two kinds of lexical reciprocity

**Plain reciprocity** *(plainR)*:

1. Sue and Dan dated
   \[\iff\text{Sue dated Dan and Dan dated Sue}\]

**Pseudo-reciprocity** *(pseudoR)*:

2. Sue and Dan hugged
   \[\not\iff\text{Sue hugged Dan and Dan hugged Sue}\]

---

<table>
<thead>
<tr>
<th>Sue hugs Dan</th>
<th>Dan hugs Sue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dan is asleep</strong></td>
<td><strong>Sue is asleep</strong></td>
</tr>
</tbody>
</table>
Short history

1960s: symmetry assumed for lexical reciprocals

Dong (1971): pseudo-reciprocity and non-symmetry

1970s-now: missing formal semantic generalizations
## Reciprocity-Symmetry Generalization

<table>
<thead>
<tr>
<th></th>
<th>Reciprocity</th>
<th>Symmetry</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>⇔</td>
<td>+</td>
</tr>
<tr>
<td>HUG</td>
<td>⊖</td>
<td>-</td>
</tr>
<tr>
<td>PRAISE</td>
<td>✗</td>
<td>-</td>
</tr>
</tbody>
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1. Apparently new, but hinted at in Gleitman et al. (1996)
2. Does not follow from definitions of symmetry and plain (pseudo) reciprocity
3. Stronger version: symmetry only appears due to plain reciprocity (praise)
Reciprocity-Symmetry Generalization

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**Generalization:**

*Plain* reciprocity (⇔) correlates with *symmetry*.

*Pseudo*-reciprocity (☐) correlates with *non*-symmetry.
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2. Does not follow from definitions of symmetry and plain (pseudo) reciprocity
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## Examples

### Plain reciprocity & Symmetry:

- *talk* (with)
- *meet* (with)
- *share NP* (with)
- *rhyme* (with)
- *collaborate* (with)

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<thead>
<tr>
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<tr>
<td><em>talk</em> (with)</td>
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### Pseudo-reciprocity & Non-symmetry:

- *talk* (to)
- *meet* (ACC)
- *fall in love* (with)
- *be in love* (with)

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<th>Result</th>
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<tbody>
<tr>
<td>talk (with)</td>
<td></td>
<td></td>
<td>marry (ACC)</td>
</tr>
<tr>
<td>meet (with)</td>
<td></td>
<td></td>
<td>neighbor (of)</td>
</tr>
<tr>
<td>share NP (with)</td>
<td></td>
<td></td>
<td>match (ACC)</td>
</tr>
<tr>
<td>rhyme (with)</td>
<td></td>
<td></td>
<td>partner (of)</td>
</tr>
<tr>
<td>collaborate (with)</td>
<td></td>
<td></td>
<td>similar (to)</td>
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<td></td>
<td></td>
<td></td>
<td>sibling (of)</td>
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<td></td>
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<td></td>
<td>identical (to)</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>parallel (to)</td>
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<td></td>
<td>twin (of)</td>
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</tr>
<tr>
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<td></td>
<td></td>
<td>kiss (ACC)</td>
</tr>
<tr>
<td>be in love (with)</td>
<td></td>
<td></td>
<td>fuck (ACC)</td>
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<tr>
<td></td>
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<td>embrace (ACC)</td>
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Examples

Plain reciprocity & Symmetry:

- talk (with)
- meet (with)
- share NP (with)
- rhyme (with)
- collaborate (with)

merry (ACC)
match (ACC)
similar (to)
identical (to)
parallel (to)

neighbor (of)
partner (of)
sibling (of)
cousin (of)
twin (of)

Pseudo-reciprocity & Non-symmetry:

- talk (to)
- meet (ACC)
- fall in love (with)
- be in love (with)

collide (with)
hug (ACC)
kiss (ACC)
Fuck (ACC)

embrace (ACC)
pet (ACC)
cuddle (ACC)
nuzzle (ACC)

kiss with, hug with... (Hebrew, Greek...
An apparent counter-example

(1) Sue and Kim are sisters
    ⇔ Sue is Kim’s sister and Kim is Sue’s sister

(2) Sue is Kim’s sister
    \(\not\Rightarrow\) Kim is Sue’s sister

A counter-example for RSG?
An apparent counter-example

(1) Sue and Kim are sisters
   ⇐ Sue is Kim’s sister and Kim is Sue’s sister

(2) Sue is Kim’s sister
    ⇨ Kim is Sue’s sister

A counter-example for RSG?


- $x$ is sister of $y$ asserts that $x$ and $y$ are siblings, and only presupposes that $x$ is female.
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(1) Sue and Kim are sisters
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A counter-example for RSG?


- \( x \) is sister of \( y \) asserts that \( x \) and \( y \) are siblings, and only presupposes that \( x \) is female.

- Thus, sister of is “Strawson symmetric” – truth-conditionally identical to sibling/brother of
Irreducibility of collective predication

Collectivity is a lexical primitive:

- simplex predicate ranging over sets
- not definable on the basis of other concepts
Irreducibility of collective predication

Collectivity is a lexical primitive:
- simplex predicate ranging over sets
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*lexically reciprocal predicates = one species of irreducible collectivity*
Some plain reciprocals

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<th>Binary</th>
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<tr>
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<tr>
<td>talk</td>
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<td>meet</td>
<td>meet with</td>
</tr>
<tr>
<td>similar</td>
<td>similar to</td>
</tr>
<tr>
<td>parallel</td>
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</tr>
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The collective predicate is primitive; the binary predicate is derived
Some plain reciprocals

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Non-standard treatment of symmetric kinship terms...
The plainR Rule

\[ x \text{ is cousin of } y \overset{\text{def}}{=} \text{Cousin}(\{x, y\}) \]
\[ \approx x \text{ and } y \text{ share grandparents} \]
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**The plain\text{R} Rule:** \( R = \lambda x.\lambda y. P(\{x, y\}) \)
The plainR Rule

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Lakoff & Peters (1969):
- logical
- collective \(\rightarrow\) binary
- symmetry with plain reciprocals – part of RSG
The plainR Rule

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Lakoff & Peters (1969):

- logical
- collective \(\rightarrow\) binary
- symmetry with plain reciprocals – part of RSG

But how about pseudo-reciprocals?
The puzzle of pseudo-reciprocals

(1) Sue & Dan hugged
(2) Sue hugged Dan and Dan hugged Sue

(2) $\not\Rightarrow$ (1)
The puzzle of pseudo-reciprocals

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What does (1) “really mean”?
The puzzle of pseudo-reciprocals

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• Does (1) really entail (2), as previous works assume?
The puzzle of pseudo-reciprocals

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(2) $\not\Rightarrow$ (1)

What does (1) “really mean”?

- Does (1) really entail (2), as previous works assume?
- Do we really want grammar to explain what collective hugs are?
A and B are hugging

?the woman is hugging the man
A and B are hugging?
A and B are hugging?
A battery of tests, using illustrations and short films, which check things like:

**Kruitwagen et al.**
A battery of tests, using illustrations and short films, which check things like:

In a given situation:

Is B talking to A? / Did B talk to A?

Are A and B talking? / Did A and B talk?
A battery of tests, using illustrations and short films, which check things like:

In a given situation:

Is B talking to A? / Did B talk to A?
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Many participants answer “no” to 1, but “yes” to 2, depending on the reaction of B to the whole event.
A battery of tests, using illustrations and short films, which check things like:

In a given situation:

Is B talking to A? / Did B talk to A?
Are A and B talking? / Did A and B talk?

Many participants answer “no” to 1, but “yes” to 2, depending on the reaction of B to the whole event.

**Conclusion:** Pseudo-reciprocity is a preferential strategy of a lexical concept, with no “logical” definition.
Collective intentionality

A hug is an act of collective intensionality.
Collective intentionality

A hug is an act of **collective intensionality**.

**Searle (1990)**: “Collective intentional behavior is a primitive that cannot be analyzed as just the summation of individual behavior.”
A hug is an act of collective intensionality.

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An event $e$ is typical for “Sue and Dan hugged” proportionally to two values:
- Sue and Dan’s CI as demonstrated in $e$
- the number of uni-directional hugs in $e$
A hug is an act of collective intensionality.

Searle (1990): “Collective intentional behavior is a primitive that cannot be analyzed as just the summation of individual behavior.”

An event $e$ is **typical** for “Sue and Dan hugged” proportionally to two values:

- Sue and Dan’s CI as demonstrated in $e$
- the number of uni-directional hugs in $e$

Collective **HUG** is a complex concept, but logically it simplex – not defined on the basis of meaning postulates using the “simpler” concept for binary **hug**.
Protoroles and protopredicates

**Protoroles** = “entailments of a group of predicates with respect to one of the arguments or each” (Dowty 1991)
Protoroles and protopredicates

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Protoroles and protopredicates

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- “group of predicates” → non-standard types (unary + binary)
- thematic arguments → Davidsonian
Protoroles and protopredicates

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- distinct from morpho-syntax
- “group of predicates” → non-standard types (unary + binary)
- thematic arguments → Davidsonian

**Protopredicates** = typed Davidsonian predicates without morpho-syntactic features
## Types of protopredicates

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<thead>
<tr>
<th></th>
<th>agent</th>
<th>patient</th>
<th>collective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>binary</strong></td>
<td>DRAW</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td><strong>collective</strong></td>
<td>SHAKE-HANDS</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>binary/collection</strong></td>
<td>HUG</td>
<td>A,B</td>
<td>A,B</td>
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## Implications for RSG

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<tr>
<th>Type p-predicate</th>
<th>Reciprocity</th>
<th>Symmetry?</th>
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<tbody>
<tr>
<td>b</td>
<td>X</td>
<td>-</td>
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<tr>
<td>c</td>
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Summary: Protopredicates and the RSG

- **DRAW**
  - Binary
  - Binary, $\neg$-sym

- **MARRY**
  - Collective
  - Binary, sym $\Leftrightarrow$ plainR
  - Collective
  - marry1
  - marry2

- **HUG**
  - Binary, Collective
  - Binary, $\neg$-sym $\Leftrightarrow$ pseudoR

- **PlainR**
  - Hug
  - Hug with

- **Draw**
  - Draw2
Acknowledgements

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Sophie Chesney
Heidi Klockmann

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References I


