Distant time, distant gesture: connection between distance in space and distance in time

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## Table of contents

1. Introduction  
2. Theoretical framework  
3. Methodology  
4. Results and discussion  
5. Conclusion  
6. References
1. Introduction

What?
Time conceptualisation through gesture analysis. Temporal and gestural distance.

How?
Large scale analysis of gestures that co-occur with linguistic spatial metaphors

Why?
Time-gesture research has explored spatial dimensions like axis or direction, but no research has been so far performed addressing time-gesture distance.
2. Theoretical framework

- CMT & CIT (Lakoff & Johson, 1980; Fauconnier & Turner, 2002).

TIME IS SPACE metaphor
2. Theoretical framework

Timelines

• Mental time line (Bonato, Zorzi & Umiltá, 2012).
• Thinking processes in metaphor creation involve an extremely complex manipulation of structures that requires stability provided by a material anchor (Hutchins, 2005).
• Temporal material anchor => timelines (Cánovas & Jensen, 2013; Coulson & Cánovas, 2013; Hartmann & Mast, 2012...).
• Canonical direction of time: past-future=left-right; behind-in front of; up-down (English).
• Writing direction, language, cultural artefacts.
2. Theoretical framework
2. Theoretical framework

Why should we care about gestures?

• Unique access to less conscious cognitive processes (McNeill, 1992, 2000, 2005; Núñez & Sweetser 2006…).

• Speech and gesture are part of the same cognitive reality; embodied approach for language.

• Largely unconscious and synchronised with speech (McNeill, 1992); link between speech and gesture development (Bated & Dick, 2002; Goldin-Meadow, 2003).

• Speech and gesture provide complementary (and overlapping) information (Kendon, 2000); linguistic metaphorical mapping also present in gesture e.g. MORE IS UP (Cienki, 1998; Cienki & Müller, 2008; McNeill 1992; Núñez, 2006…).
2. Theoretical framework

Gesture typology

- Two large sets of gestures: imagistic and non-imagistic.
  - Imagistic: Reproduce the shape of objects, actions, movements. Image through bodily representation.
  - Iconic: Semantically and pragmatically linked to speech. Address physical objects or actions.
  - Metaphoric: display an abstract image.
- Non-imagistic: referential gestures and discourse markers
  - Deictic: pointing gestures, direct reference to context
  - Beat gestures: movements with “no discernible meaning”, discourse regulation (recently challenged by Casasanto and Bottini, 2016).
2. Theoretical framework

Gestures and time: previous work

• Left (past)-to-right (future) temporal gestures co-occur with temporal English language (Casasanto & Jasmin, 2012, Cienki 1998; Cooperrider & Núñez, 2009).
• Spontaneous temporal gestures produced combined-axis gestures doubly congruent (Walker & Cooperrider, 2015).
• Elicited gestures tend to be sagittal, while spontaneous gestures tend to be lateral (Casasanto & Jasmin, 2012; Walker & Cooperrider, 2015).
3. Methodology: data

The NewsScape Library
3. Methodology: data
3. Methodology: Data

<table>
<thead>
<tr>
<th>Spatial temporal linguistic expressions</th>
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<td>Not (that) long in the past</td>
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<td>Future</td>
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<tr>
<td>Remote past</td>
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<tr>
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## 3. Methodology: Data

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<th>Repeated clips</th>
<th>False hits</th>
<th>Broken link</th>
<th>Real hits</th>
<th>Voice over</th>
<th>No hands</th>
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</table>
3. Methodology: Gesture analysis

• Gesture analysis framework based on Bressem’s (2013) proposal for co-verbal gesture annotation (with some tweaks!).

• Location of gesture in gesture space taking the body as a reference point.

• Mostly based on gestures located on the transversal/lateral axis.

• 3 different locations: 1. Centre (between the shoulders) 2. Periphery (shoulders) 3. Extreme periphery (further away from shoulders)
3. Methodology: Gesture analysis
3. Methodology: Gesture analysis

- Physiological features for sagittal gestures:
  - Centre: gesture employs hands and wrist, little to no motion in the arms
  - Periphery: Extension of the forearm (only forward gestures).
  - External periphery: full extension of the arm. Rotation of the arm in sagittal backward gesture.
4. Results and discussion

3 key points

– Gesture frequency: distance vs proximity

– Gesture location in distance vs proximity

– The possible role of gesture shape
4. Results and discussion: gesture frequency

Percentages of gesture distribution among categories

<table>
<thead>
<tr>
<th>Gesture Type</th>
<th>Distance</th>
<th>Proximity</th>
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<td>29</td>
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</table>

Distance and Proximity categories are shown for each gesture type.
4. Results and discussion: gesture location

Gesture distance (percentage)

- Centre: Distance 18, Proximity 48
- Periphery: Distance 32, Proximity 38
- Extreme periphery: Distance 50, Proximity 14
4. Results and discussion: gesture shape
5. Conclusion

• First large scale study of temporal distance and gesture distance.

• Distance (in English) entails a more complex configuration; this could explain the higher number of gestures.

• Gesture distance is analogous to temporal distance.

• Other gesture characteristics, such as shape, could also add different sorts of temporal information not present in language.
6. References


