

# Multimodal annotation

Volker Gast

Friedrich-Schiller-Universität Jena

01 Aug, 2019

## General questions

- Some questions:
  - What is the relationship between speech and gesture?
  - What is the communicative function of gesturing?
  - Do gestures carry meaning? If so, what type of meaning do they convey?
  - What is the relationship between gesturing and sign language?
  - Are gestures a visual correlate of intonation?

## Problems of annotation

- What are the 'linguistic objects' of gesturing?
- How can we classify 'gestural linguistic objects'?
- Is there a way of objectifying this?

## Segmenting gestures

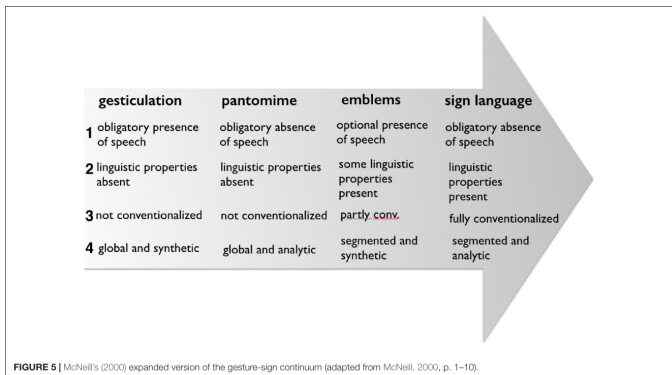
- Phases of a gesture<sup>1</sup>
  - rest position
  - preparation phase
  - gesture stroke
  - holds
  - retraction/recovery

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<sup>1</sup>Adam Kendon (1972). "Some relationships between body motion and speech". In: *Studies in Dyadic Communication*. Ed. by A. Siegman and B. Pope. New York: Pergamon, pp. 177–210; Adam Kendon (1980). "Gesture and speech: two aspects of the process of utterance". In: *Nonverbal Communication and Language*. Ed. by Mary R. Key. The Hague: Mouton, pp. 207–227.

## Major types of gestures

- A popular typology (or 'continuum')<sup>2</sup>



<sup>2</sup>D. McNeill (2000). "Introduction". In: *Language and Gesture*. Ed. by D. McNeill. Cambridge University Press, pp. 1–10; Cornelia Müller (2018). "Gesture and sign: Cataclysmic break or dynamic relation?" In: *Frontiers in Psychology* 9.1651, pp. 1–20.

## Semiotic types of gesticulations/gestures

- Some types distinguished by McNeill (1992):
  - beats
  - deictics
  - cohesives
  - metaphorics
  - iconics

## An example of a coding scheme

- The NUMIN annotation scheme.<sup>3</sup>

| Modality        | Expression type                           |
|-----------------|---|
| Facial displays | Eyebrows<br>Eyes<br>Gaze<br>Mouth<br>Head |
| Gestures        | Hand gestures<br>(Body posture)           |
| Speech          | Segmental<br>(Suprasegmental)             |

**Table 1:** Unimodal annotation level

<sup>3</sup>Jens Allwood et al. (2005). *The MUMIN multimodal coding scheme*. Tech. rep.

## Another coding scheme

- The NUMIN annotation scheme: Gestures

| Gestures      | Shape of gesture                   |  |
|---------------|------------------------------------|--|
| Hand gestures | Handedness                         | Both-H both hands<br>Single-H single hand                        |
|               | Trajectory                         | Up<br>Down<br>Sideways<br>Complex<br>Other                       |
|               | <b>Semantic-pragmatic analysis</b> |  |
|               | Semiotic types                     | Indexical Deictic<br>Indexical Non-deictic<br>Iconic<br>Symbolic |
|               | Communicative function             | Feedback give<br>Feedback elicit<br>Turn managing<br>Sequencing  |

**Table 4:** Gesture annotation scheme

# A coding scheme for facial expression

- The NUMIN annotation scheme: Facial expressions

| Facial display feature |          | Form of expression/<br>Movement values |                                  |
|------------------------|----------|--|----------------------------------|
|                        |          | Value                                  | Short tag                        |
| General face           |          | Smile                                  | Smile                            |
|                        |          | Laughter                               | Laugh                            |
|                        |          | Scowl                                  | Scowl                            |
|                        |          | Other                                  | Other                            |
| Eyebrows               |          | Frowning                               | Frown                            |
|                        |          | Raising                                | Raise                            |
|                        |          | Other                                  | Other                            |
| Eyes                   |          | Exaggerated Opening                    | X-Open                           |
|                        |          | Closing-both                           | Close-BE                         |
|                        |          | Closing-one                            | Close-E                          |
|                        |          | Closing-repeated                       | Close-R                          |
|                        |          | Other                                  | Other                            |
| Gaze                   |          | Towards interlocutor                   | Interlocutor                     |
|                        |          | Up                                     | Up                               |
|                        |          | Down                                   | Down                             |
|                        |          | Sideways                               | Side                             |
|                        |          | Other                                  | Other                            |
| Mouth                  | Openness | Open mouth                             | Open-M                           |
|                        |          | Closed mouth                           | Close-M                          |
|                        | Lips     | Corners up                             | Up-C                             |
|                        |          | Corners down<br>Protruded<br>Retracted | Down-C<br>Protruded<br>Retracted |
| Head                   |          | Single Nod (Down)                      | Down                             |
|                        |          | Repeated Nods (Down)                   | Down-R                           |
|                        |          | Single Jerk (Backwards Up)             | BackUp                           |
|                        |          | Repeated Jerks (Backwards Up)          | BackUp-R                         |
|                        |          | Single Slow Backwards Up               | BackUp-Slow                      |
|                        |          | Move Forward                           | Forward                          |
|                        |          | Move Backward                          | Back                             |
|                        |          | Single Tilt (Sideways)                 | Side-Tilt                        |
|                        |          | Repeated Tilts (Sideways)              | Side-Tilt-R                      |
|                        |          | Side-turn                              | Side-Turn                        |
|                        |          | Shake (repeated)                       | Side-Turn-R                      |
|                        |          | Waggle                                 | Waggle                           |
|                        |          | Other                                  | Other                            |

Table 5: Coding scheme for facial displays: form

## An alternative scheme: NEUROGES

- NEUROGES:<sup>4</sup> NEUROpsychological GESTure



<https://neuroges.neuroges-bast.info/neurogesr-analysis-system>

<sup>4</sup>Hedda Lausberg and Han Sloetjes (2009). "Coding Gestural Behavior with the NEUROGES-ELAN System". In: *Behavior Research Methods* 41.3, pp. 841–849.

# ELAN

- ELAN:<sup>5</sup> Annotation tool widely used for multimodal language documentation.
- The NEUROGES-scheme was developed for ELAN.

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<sup>5</sup>Han Sloetjes and Peter Wittenburg (2008). "Annotation by category – ELAN and ISO DCR." In: *Proceedings of the 6th International Conference on Language Resources and Evaluation (LREC 2008)*.

## Gestures in the American campaign

- MA-thesis by A. Meier:  
“Presidential Candidates Coming Face to Face: An Analysis of the Gestures and Facial Expressions Used by Clinton and Trump in the Second Presidential Debate” (2017)
- Multimodal annotation of a TV-debate between H. Clinton and D. Trump.