

ANNOTATING MULTICHANNEL DISCOURSE: MANUAL GESTURES



Russian Pear Chats and Stories (under construction)

- Discussing 'The Pear Film' (W. Chafe 1980)
- 24 conversations
- 96 native speakers
- ≈ 9 hours
- ≈ 100 000 words
- 24 written retellings



- Annotated subcorpus (current version):**
- 3 conversations
 - ≈ 1 hour

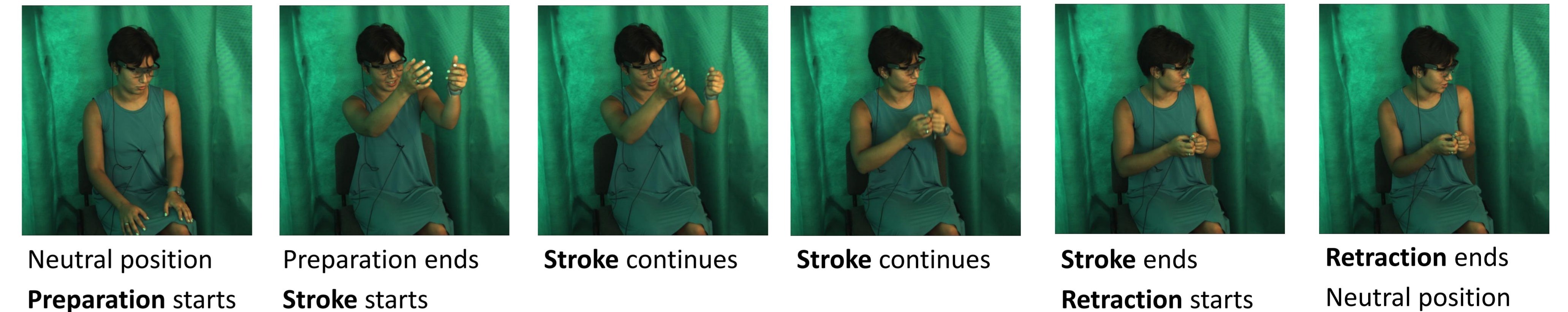
www.multidiscourse.ru

Manual gestures

- Communicatively significant spontaneous hand & arm movements, accompanying speech

? **How to separate gestures from general kinetic background?**

Gesture phase structure: preparation > (hold) > stroke > (hold) > retraction



STROKE — NUCLEUS OF A GESTURE

Kinetic background & Gesticulation portrait

- Stillness**
- Neutral hand/arm positions
 - Stillness periods
- Non-speech motivated movements**
- Hand/arm posture changes
 - Adaptors (a.k.a. self-adaptors, manipulators)

Adaptors: not connected to speech
 Type 1: obvious practical purpose: stretching, scratching, removing hair from face, etc.; structured;
 Type 2: no practical purpose: playing with things, “nervous” finger movements, fidgeting; not-structured;
 Type 3: rhythmical (tapping, etc.); structured
 Speaker’s typical kinetic patterns and habits form **gesticulation portrait** (cf. ‘prosodic portraits’ in Kibrik 2009)

Movement flow segmentation

- Relying on points of kinetic parameters’ change
- articulatory effort
 - velocity
 - trajectory
 - movement direction
 - hand shape and orientation
 - movement range
 - location in gesture space
 - tension

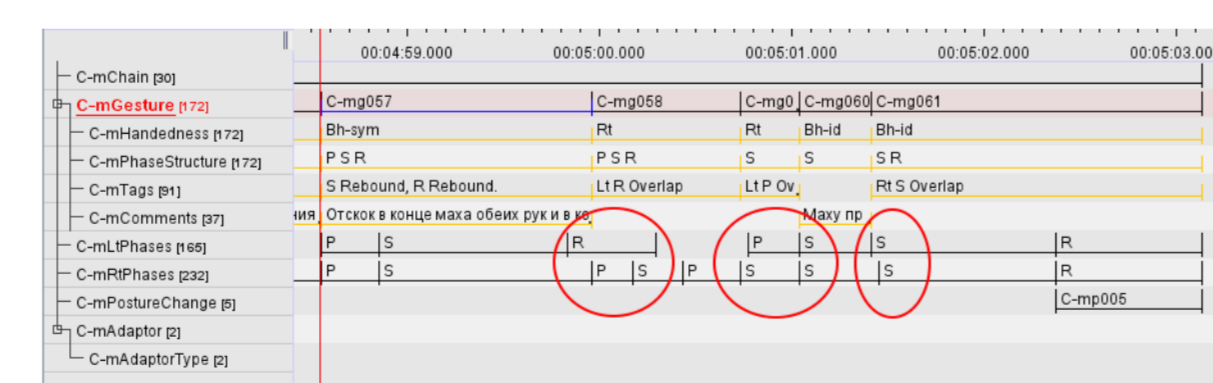
Phase boundary: 2+ parameters change
Gesture boundary: several parameters change

Annotation procedure

- 3 successive passes
1. Annotating motion & stillness periods, putting together gesticulation portrait
SOUND OFF
 2. Finding points of change for kinetic features, segmenting movement flow, creating detailed annotation on all tiers
SOUND OFF
 3. Verifying annotation, using speech context and other kinetic channels
SOUND ON

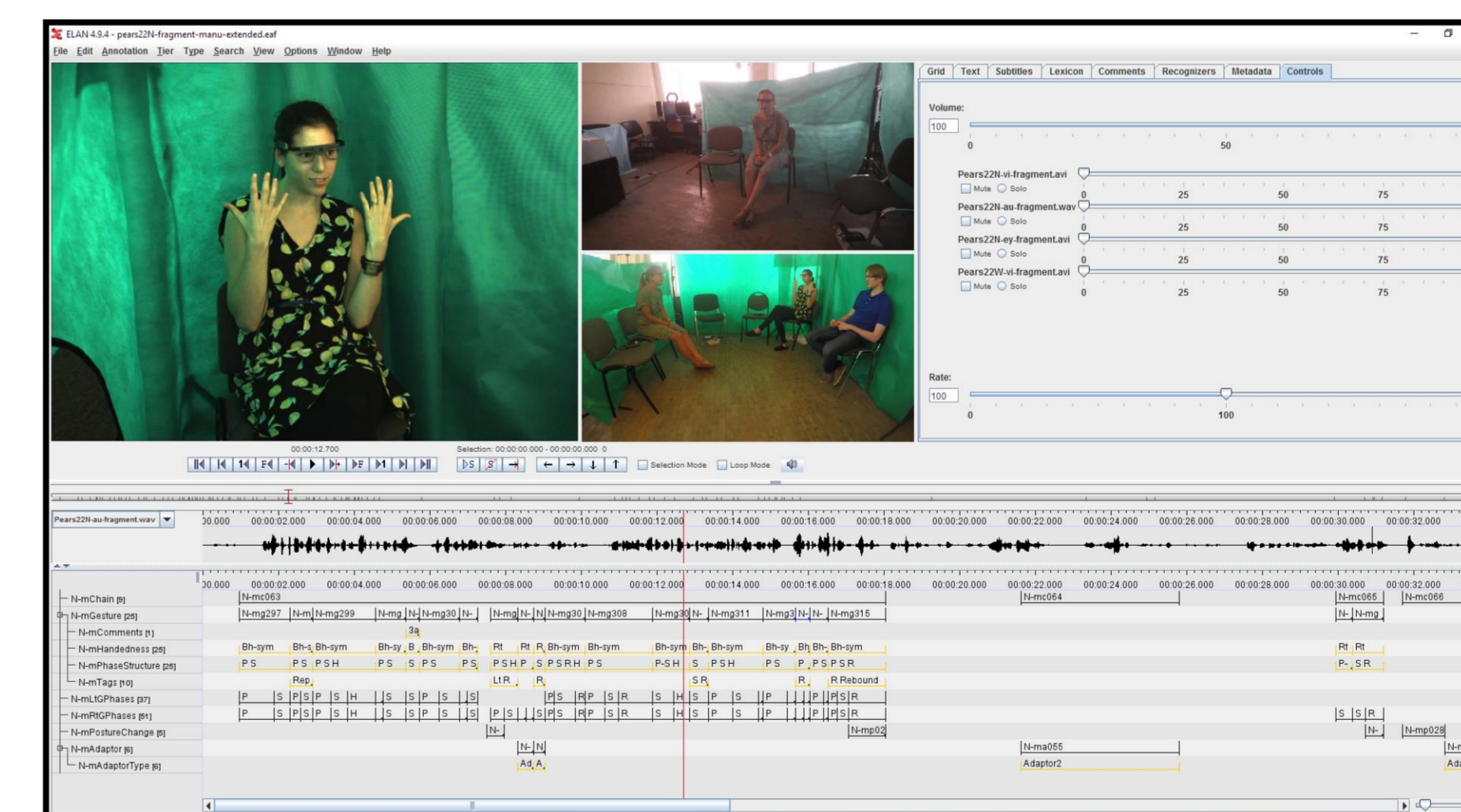
Asynchronous hand movement & gesture overlaps

- Structural overlaps
 - Asynchronous hands movement
- ⇒ Set of rules for gesture boundaries



ELAN annotation scheme

- Independent tiers**
- mChain
 - mGesture
 - mLtPhases
 - mRtPhases
 - mPostureChange
 - mAdaptor
- Dependent tiers**
- mGesture
 - mHandedness
 - mPhaseStructure
 - mTags
 - mComments
 - mAdaptor
 - mAdaptorType



Conclusions

- The proposed annotation scheme:
- provides data for detailed hand/arm movement analysis
 - takes into account individual variation
 - can be with slight modifications applied to the other kinetic channels
 - can be used to study inter-channel dependencies

Further research

- Extending annotated subcorpus
- Adding ‘dominant hand’ parameter for two-handed gestures
- Measuring gesticulation portrait features

Individual variation: handedness

Two-handed and one-handed gestures preference

Code	Two-handed	One-handed	Total
23C	66 67%	32 33%	98
23N	229 66%	120 34%	349
04C	71 60%	47 40%	118
22R	66 44%	83 56%	149
23R	93 42%	126 58%	219
22C	69 40%	102 60%	171
04R	158 32%	329 68%	487
22N	110 32%	239 68%	349
04N	162 27%	441 73%	603

One-handed gestures handedness

Code	RT-handed	LT-handed	Total
22N	231 97%	8 3%	239
22R	72 87%	11 13%	83
22C	79 77%	23 23%	102
04R	225 68%	104 32%	329
04C	32 68%	15 32%	47
23C	20 63%	12 38%	32
23R	47 37%	79 63%	126
04N	144 33%	297 67%	441
23N	40 33%	80 67%	120

Of 9 right-handed participants 3 show preference for left-handed gestures (in one-handed type)

Main references

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 Müller C., Cienki A., Fricke E., Ladewig S.H., McNeill D. & Teßendorf S. (Eds). Body – Language – Communication: An International Handbook on Multimodality in Human Interaction. Berlin: Mouton, 2013.

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