Coding Manual

ANR Multimodality research project 2005-2009
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Multimodal Data Transcription and Annotation with ELAN

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The ANR Multimodality research project

The main purpose of the “Multimodality” research is to lead us to a better knowledge of the child’s later speech development on its pragmatic, discourse and gesture aspects, considering typical and non typical development as well as crosslinguistic issues.

It is grounded on the multimodal reality of speech as established by gesture researchers, as well as on the evidence of the complementary semiotic nature of speech signs and gesture signs. It is also grounded on data from neuroscience and cognitive science showing that the interactants integrate auditory and visual information from linguistic, prosodic and gesture sources into a single message. Other findings show that a gesture-speech system starts to operate within the second year of life, and that co-speech gesture – manual or head gestures and facial expressions closely linked to speech – seems to grow and vary as the child gets older. However, in 2005, at the start of this study, we lacked information on the way this speech-gesture system develops in children over three years old, on how it gets modified under the influence of new linguistic acquisitions and new communicative behaviour such as narrative and expository discourse, and on the impact of language and culture on gesture production and development. Directed by Jean-Marc Colletta (Grenoble 3 university), the research prospect involved two French teams (Grenoble, Jean-Marc Colletta, coord., and Toulouse, Michèle Guidetti, coord.), a team in Chicago (Susan Goldin-Meadow and Susan Levine, coord.), and an Italian team (Olga Capirci and Carla Cristilli, coord.). It was designed to explore four main directions.

Firstly, a developmental study was conducted on elicited narrative and expository discourse produced by 140 French children aged from 3 to 11 years whose language abilities were assessed (first corpora), and by three age groups (6-year-olds, 10-year-olds and adults, second corpora) to match data collected by our Italian and American colleagues (see report on the cross-language study below). The most interesting results so far were obtained by analysing the second set of data, with a significant age effect on gesture production, as well as a significant effect of the narrative’s length. Gesture and speech seem to co-evolve in narrative production, with greater complexity at the sentence as well as the discourse level, and with a change in gesture use towards more cohesive and framing gestures in 10-year-olds and adults.

Secondly, a cross-linguistic study was conducted in collaboration with American and Italian colleagues. We collected 160 narratives produced by 6- and 10-years-old children (80 French children, 40 American children and 40 Italian children) in order to study the respective effect of culture and age on discourse and gesture production. The first results show an age effect on overall narratives as well as an effect of culture on gesture production, with Italian children gesturing significantly more than French and American children. Other subtle differences in the coding of manner and path, reference tracking and the gesture framing of verbal utterances involve cognitive and social-cognitive considerations that go beyond language and culture differences.

Thirdly, a study on deaf children’s narratives was conducted, using the same data collection protocol. The main goal was to study how language (sign language vs French) and multimodality (visual vs audible non linguistic signals) interrelate, and to gain new knowledge on the multimodal communication abilities of deaf children. Specific bilingual and bimodal language behaviour was put forward, inviting scholars to reconsider the relevance of certain basic tools for linguistic description, as well as methods to assess language abilities and to teach language to deaf children.

Fourthly, several studies were conducted on atypical populations to better understand the role played by gesture in language and cognitive development. According to our American collaborators, the use of gesture helps children with unilateral brain damage to acquire language. Narrative data produced by children with language impairment were collected in Grenoble and will be studied in a similar way. Finally, in the line of their previous work on children with William’s syndrome, our Italian colleagues found that the analysis of gesture reveals cognitive impairments in visual-spatial and praxis cognition. Does gesture only reflect language and cognitive acquisitions or, as Goldin-Meadow and other scholars put up, does it play an active part in the process? Some of our results support the second view. However, they will need to be complemented.


Coding manual

1. Transcription conventions

2. Linguistic Annotation (6 stages)

3. Narrative Annotation (5 stages)

4. Annotation of explanations (1 stage)

5. Gesture transcription (5 stages)

6. Validation of the gestures’ annotation (2 stages)

7. Other gesture coding (6 stages)

The transcription of both the narrative and gestures are carried out using the software ELAN. ELAN is an annotation tool developed by the Max Planck Institute of Nimègue which can be downloaded at: http://www.lat-mpi.eu/tools/elan/

Here is an outline of the interface:
1. Transcription conventions

• The transcription of the words of the speakers appears on two tracks

< adult >  < child >

• The transcription of the words is to be treated clause by clause.
  E.g.
  “and after egg it rolled”
  “mmhm”
  “it rolled to the house of the mouse”

• The transcription is orthographical and presents the entirety of the remarks of the speakers.

1.1. Conventions of linguistic aspects

the *button = respect the exact pronunciation of the child (“coat” for “goat”; “button” for “mutton”) and
the *coat precede the phoneme or the syllable which does not correspond to the standard form with the * star sign
the go/ goat he ret/ returns = to announce the unfinished words (goat, returns) with a / sign at the end of the word

(be)cause ()it is necessary = highlight the phonemes or syllables elided by ()

[no / know] = to put the terms for which one hesitates between []; to give the two possibilities
heu heum mm = hesitations

(xxxx) = note the terms or segments impossible to identify by crosses: an x per syllable/ (xxxx)

{to laugh} {sigh} = transcriber’s comments

NO = use capital letters to note strongly accentuated words; no capital letters for proper names

1.2. Conventions for prosodic aspects

// = highlight the pauses between two segments of speech

? ! = use these two punctuation marks exclusively and only when necessary, to announce a question or an exclamation

no::, we::ll = vocalic lengthening
2. Linguistic annotation

Stage 1: < Speech turns > segmentation of child speech turns

**Speech turns** are annotated when the words of the child occur:

- after a prompt from the adult during the narrative task;
- after a question or a prompt from the adult during the explanation task.

**Reminder:** in the task of recounting the narrative, one considers two types of **prompts**:

1. In case of silence, or too short a narrative, the adult asks “what else happened? can you tell me more?”
2. When the child is towards the end of his narrative, the adult asks: “have you finished? Did anything else happen?”

**Note:** in the narrative task, it happens frequently that the child delivers his complete narrative the first time, without being prompted by the adult, therefore, there is only one speech turn to be annotated.
Stage 2: < Clauses > segmentation of the child words in clauses

Work is facilitated by the preliminary transcription of the words clause by clause.

We call a clause:
- A predicate matched by one, two or three arguments (logical approach), or
- A continuation of words including a verb matched by its satellites as subject and complement(s) (grammatical approach).

Examples are given at stage 3.

In the case of an incomplete clause, one annotates it like a single clause if the speaker formulates a verb.

On the other hand, at this stage, one standardizes the words to allow the linguistic analysis (segmentation in words):

- removal of the nonlinguistic signs such as: / ( ) * ?!
- removal of the comments of the transcriber between { }
- removal of hesitation marks and vocalic lengthenings
- removal of the false starts when it is of a syllable, a word or a group of words
- removal of the restarts when it is about the repetition of a word or a group of words

Ex (see illustration):
// and hum // and at just the moment she leaves // >>> and at just the moment she leaves

Note: maintain restarts when it is about the repetition of a whole clause or a reformulation.

Ex: After Gromit I mean Wallace’s dog he says… >>> After Gromit I mean Wallace’s dog he says..
Stage 3: <Types of clauses> Categorization of the clauses

Double click on the place where you wish to annotate, then click on the value chosen on the drop-down menu

<Nominal sentence>: annotation of non-predicative expressions (do not include the clauses introduced by a presentative copula such as “it is” or “there is”)

Ex: No example in the French corpus

<Independent>: isolated clause, surrounded or not by connectors (between brackets)

Ex:
- it looks at its watch
- (then) it leaves
- (and) it leaves the egg in the nest
- (and) (in fact) the egg (afterwards) it shakes
- (and) it turns around the nest

<Independent with presentative copula>: isolated clause, surrounded or not by connectors (between brackets), introduced by a presentative copula of the type “there is”, “it is”, “here”

Ex:
- there is a sheep
- it is a mother bird in a nest

<Main>: clause to which a noun or adverbial clause is attached

Ex: see following

<Main with presentative copula>: subordinate clause (underlined noun clause or adverbial clause) dependant on a main clause introduced by a presentative copula like “there is”, “it is”, “here” (in bold)

Ex:
- There is the sheep [which wants to leave]
- It is a mother bird [who knits]

<Verb compl.>: subordinate completive clause (underlined) dependent on the main clause verb (in bold)

Ex:
- He says [I leave tomorrow]
- Wallace’s owner says [you were hungry at night]
- His mother tells him [to be careful]
- He wants [Marie to eat]
- He asks [if Wallace will leave]
- He saw [that there were many things (which had disappeared)]
- He learned [to be a hunter]
- She knows [that she has all the time]
- I don’t know any more more [what it is]
- They called some people [for them to come and see {what is happening}]

<Sentence compl.>: subordinate adverbial clause (underlined) dependent on a main clause (in bold)

Ex:
- And afterwards [when he looks at things] it was all eaten
- Afterwards [he had eaten so much] he fell asleep
I left [without him seeing]
She takes something [to bring it to her grandmother]

< Noun compl. > : subordinate clause (underlined) dependent on a nominal group subject or complement (in bold)

Ex :
The children [who were sleeping] heard nothing
He sees something [which moves]
He read the newspaper [where they wrote about the accident]

< Focalised noun compl. > : subordinate clause (underlined) dependent on a nominal group (in bold) introduced by a presentative copula

Ex :
There is the sheep [that wants to come out]
It is the wolf [that won]
It is time [to eat]
He saw that there were many things [that had disappeared]

< Adjective complement > : subordinate clause (underlined) dependant on an adjective (in bold)

Ex :
It is very hard [to verify his work]
I am happy [to see you]

< Adverb complement > : subordinate clause (underlined) dependant on an adverb (in bold)

Ex :
Luckily [we found it at last]

< Infinitive > : subordinate non finite adverbial or completive clause (underlined)

Ex :
He went to the river [to search for stones] (adverbial)
He sees [him go] (completive)

< Factive > : subordinate causative clause (underlined)

Ex :
He makes [him come down from the bed]

Note: It is considered that one deals with one and only one clause when the verb 1 in a sequence [finite verb 1 + non finite verb 2] is:

- either an aspectual verb:
  Ex :
  he is about to leave the nest
  he begins to bang with his beak
  he hurries to go to grandmother’s house

- or a modal verb:
  Ex :
  she is allowed to go to eat
  the little boy could not catch the ball
  the bird wants to destroy everything
  She had to see her grandmother
Stage 4: <Words> Word segmentation

By using the command « tokenize tier » from the « Tier » menu. Then by defining « source tier » and « destination tier » as following:
Stage 5: <Synt.Complex.clues>: Identification of syntactic complexity (subordination clues)

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

We annotate

<Subordinative conjunctions>: subordinating conjunctions such as:
  - that, when, like, so that, of what, because, whereas, without, all that, etc

<Relative Pronouns>: the relative pronouns:
  - who, who, where, of which, etc

<Prep>: prepositions and prepositional locutions introducing an infinitive:
  - Ex: to see you better
  - I ask you to leave
  - the mouse comes out in order to take it back to the nest

Note: Other subordinates such as adverbs, adverbial phrases, etc may be annotated by leaving the annotation box empty.

Note: when the word is in two segments like “so that” or “in order to”, one annotates only at one place.
Stage 6: <Disc. Coherence.clues > identification of connectives and anaphora

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

6.1. Connectives: one annotates like <Connective> all the words which have a role of either marking the discourse structure, or marking logical, chronological, spatial, argumentative or enunciative relationships between clauses. See examples in the table below (extracted from Colletta, 2004).

<table>
<thead>
<tr>
<th>Discourse structure markers</th>
<th>They allow to announce the opening or the end of a conversational unit (well, now, then, okay, so…), and to organize the discursive progression (initially, firstly, to start, secondly, in the second place, then, lately, lastly, to finish, finally…).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical, chronological and spatial connectives</td>
<td>They mark inter-clause relationships within explanatory sequences (logical connectives such as if…then, therefore, because, consequently…), narrations (chronological connectives such as and, then, before, at the same moment, afterwards, later…) and descriptions (spatial connectives such as at the top, below, near, on the left, on the right, further, in front, behind…).</td>
</tr>
<tr>
<td>Argumentative connectives</td>
<td>They mark inter-clause relationships within argumentative sequences. They mark opposition (no, on the other hand…), justification (because, since, indeed, moreover…), concession (certainly, of course, it is true that…), counter-argumentation (but, however, nevertheless…), consequence (thus, also, therefore, consequently…), summary (finally, all in all, in short, definitely…).</td>
</tr>
<tr>
<td>Enunciative connectives</td>
<td>They signal metadiscourse (otherwise said, I want to say, it means…).</td>
</tr>
</tbody>
</table>

6.2. Anaphora: one annotates all the words which have a role of reiterating a former referent. Anaphoric function (referred in bold, anaphora underlined) can be carried by:

< Noun > a noun or a nominal group: **the mouse**… Jerry… **the mouse Jerry**

< Determiner > a determiner: **a sheep**… the sheep… **this sheep**

< Pronoun > a personal pronoun: **a sheep**… it entered the house

< Relative pronoun > a relative pronoun: there is a **sheep** which gets off a truck and there it sees **the plant** which had been eaten

< Zero anaphora >: no example in French

< Other >: anaphora carried by a verbal group, an adverb, a clause, etc (to be annotated by leaving annotation box empty)
Note 1: in the case of the possessive determiner like in “the bird… its mom”. One does not regard “its” as anaphora at the time of the first mention of the referent “mom”.

Note 2: when there is repetition of the co-reference in the same clause (focalisation), one only annotates the first anaphoric reference (underlined) and one ignores the second (in italics)

Ex :

Wallace… I know [that Wallace he adores cheese]  
< Noun >

A sheep… The sheep, it is eating the leaves  
< Det >

The bird… it pecks [all that it finds, the bird]  
< Pronoun >

Note 3 : when one annotates the files corresponding to the explanations, one annotates as anaphora the first mention of a referent if and only if this referent was mentioned explicitly in the question or the prompt of the adult.

Ex :

Adult: why was the baby bird glad to see the mouse?  
Child: because it believes that it is its mom  
< Pronoun >
3. Narrative annotation

Stage 1: <Narrative> resumption of the segmentation of the child’s clauses

It is enough to copy the annotations already recorded at stage 2.
Stage 2: <Macro-unit> categorization of the clauses in macro-episodes

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

List of macro-episodes:

<table>
<thead>
<tr>
<th>Episode code</th>
<th>Episode description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>In the nest</td>
</tr>
<tr>
<td>B</td>
<td>From nest to bed</td>
</tr>
<tr>
<td>C</td>
<td>The hatching</td>
</tr>
<tr>
<td>D</td>
<td>“Imprinting”</td>
</tr>
<tr>
<td>E</td>
<td>Damage</td>
</tr>
<tr>
<td>F</td>
<td>How to calm the baby bird</td>
</tr>
<tr>
<td>G</td>
<td>Back to the nest</td>
</tr>
</tbody>
</table>

Note 1: Several clauses can be assigned to a macro-episode, and conversely, it can happen that a macro-episode is not the subject of any clause.

Note 2: when the words of the child do not correspond to any identified macro-episode; the child evokes events out of the history (e.g. hereafter), explains, comments on or interprets (cf. stage 4), one leaves the annotation empty while clicking outside the drop-down menu.

Ex: “I don’t really know why”

(See above annotation illustration)
Stage 3: < Micro-unit > categorization of the clauses in micro-episodes

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

List of micro-episodes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description of micro-episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>The mother knits</td>
</tr>
<tr>
<td>A2</td>
<td>The mother looks at the egg</td>
</tr>
<tr>
<td>A3</td>
<td>The mother looks at the time</td>
</tr>
<tr>
<td>A4</td>
<td>The mother puts down her knitting</td>
</tr>
<tr>
<td>A5</td>
<td>The mother tucks in the egg</td>
</tr>
<tr>
<td>A6</td>
<td>The mother looks at the egg</td>
</tr>
<tr>
<td>A7</td>
<td>The mother leaves</td>
</tr>
<tr>
<td>B1</td>
<td>The egg jumps about</td>
</tr>
<tr>
<td>B2</td>
<td>The egg falls on a cobweb</td>
</tr>
<tr>
<td>B3</td>
<td>The cobweb breaks</td>
</tr>
<tr>
<td>B4</td>
<td>The egg falls on a flower</td>
</tr>
<tr>
<td>B5</td>
<td>The flower drops the egg on a leaf</td>
</tr>
<tr>
<td>B6</td>
<td>The egg rolls from the leaf to the house</td>
</tr>
<tr>
<td>B7</td>
<td>The egg pushes the door open</td>
</tr>
<tr>
<td>B8</td>
<td>The egg rolls up until it reaches the bed</td>
</tr>
<tr>
<td>C1</td>
<td>The mouse turns on top of the egg</td>
</tr>
<tr>
<td>C2</td>
<td>The egg wakes the mouse</td>
</tr>
<tr>
<td>C3</td>
<td>The mouse discovers the egg</td>
</tr>
<tr>
<td>C4</td>
<td>The egg makes the mouse fall from the bed</td>
</tr>
<tr>
<td>D1</td>
<td>The egg cracks</td>
</tr>
<tr>
<td>D2</td>
<td>The baby bird runs with its shell on the head</td>
</tr>
<tr>
<td>D3</td>
<td>The mouse removes the shell</td>
</tr>
<tr>
<td>D4</td>
<td>The baby bird runs in circles</td>
</tr>
<tr>
<td>D5</td>
<td>The baby bird thinks the mouse is its mother</td>
</tr>
<tr>
<td>D6</td>
<td>The baby bird hugs the mouse</td>
</tr>
<tr>
<td>D7</td>
<td>The mouse pats the head of the baby bird</td>
</tr>
<tr>
<td>E1</td>
<td>The baby bird sees something</td>
</tr>
<tr>
<td>E2</td>
<td>The baby bird runs and climbs on the chest of drawers</td>
</tr>
<tr>
<td>E3</td>
<td>The baby bird attacks the drawers with its beak</td>
</tr>
<tr>
<td>E4</td>
<td>The baby bird destroys the lampshade</td>
</tr>
<tr>
<td>E5</td>
<td>The mouse wants to catch the baby and gets knocked on the head</td>
</tr>
<tr>
<td>E6</td>
<td>The bird makes a hole on the wall</td>
</tr>
<tr>
<td>E7</td>
<td>The mouse holds the bird by its beak and vibrates</td>
</tr>
</tbody>
</table>
The mouse places the bird
The mouse has an idea
The mouse searches for something to eat
The mouse holds out a morsel of food
The baby bird eats
The mouse hands another morsel of food
The baby bird eats the morsel of food as well as the mouse’s arm
The mouse shakes himself free
The bird gets stuck on the floor
The mouse pulls the bird free
The mouse wipes its forehead and prepares to sit down
The baby bird destroys the stool and the mouse falls
The mouse looks at the bird angrily
The mouse takes the bird in his arms
The mouse takes the bird outside
The mouse looks up, he searches by turning his head right then left
The mouse sees something and smiles
The mouse climbs on the tree until reaching the nest
The mouse places the bird inside
The mouse waves goodbye
The mouse leaves

Note 1: several clauses can be assigned to a micro-episode, and conversely, it can happen that a micro-episode is not the subject of any clause. When the words of the child do not correspond to any identified micro-episode: the child evokes events out of the history, explains, comments on or interprets (cf. stage 4), one leaves the annotation empty by clicking outside the drop-down menu.

Ex :
“Well it is woodpecker I mean a mother woodpecker who makes an egg”

Note 2: when the child’s words correspond to a micro-episode identified without using word for word the formulation suggested, the corresponding micro-episode is all the same selected.

Ex :
“well in fact at the start a bird knits”  < A1 > : The mother knits
“after it (the egg) trembles”  < B1 > : The egg jumps about
“and then it (the egg) turned around the nest”  < B1 > : The egg jumps about
“and it slips to a flower”  < B5 > : The flower drops the egg on a leaf…
Stage 4: < Pragmatic acts > categorization of the clauses as expressing speech acts

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Select:

<narrates> when the clause takes the description of a micro-episode or states the explicit dimension of this micro-episode: the child tells the event such as it appears in the cartoon.

Thus: any clause having been identified at stage 3 as corresponding with a micro-episode is to be annotated with < narrates >

< explains > when the clause imports a precision of a causal nature: the child includes a supplementary explanation to the narrated event such as it appears in the cartoon.

Ex:
(then afterwards he tries to sit down) because he (Jerry) is tired
(he takes it back to his nest) because it’s breaking everything

< interprets > when the clause presents an inference or an interpretation concerning the situation or the intentions of the characters: the child invents from the event, makes some hypothesis…

Ex:
(then it looks at its alarm clock) it realizes (that it is the hour [to leave])
>>> 3 clauses to be annotated with < interpret >

< comments > when the clause deals with neither the explicit aspects, nor the implicit aspects of the course of the events but presents a “meta-narrative comment” relating to a character, an action or any aspect of the story, or a “para-narrative comment” relating to the action of telling the history (judgement, personal appreciation…)

Ex:
it is a crazy bird
I like [when the egg falls into the spider web] >>> 2 clauses to be annotated with < comments >
Stage 5: <Narrative level> categorization of the clauses as expressing foreground vs background of the story

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Select:

- <Foreground> the content of the clause describes the course of the events such as they appear in the cartoon.
  
  Ex: then it looks at its alarm clock

- <Background> the content of the clause gives information on the the background of the events; it may occur while retelling the beginning of the story (micro-units A1, A2 and A3 mainly) or its end (micro-units G8 and G9 mainly), or while giving depictions of characters or places.
  
  Ex: well, at the beginning there is a bird knitting

Note: Two options:

1. the child recounts the events using the present as the linguistic tense: the change from background to foreground is marked by the use of a connective introducing a new event (suddenly, and then)

or:

2. the child is using the past as linguistic tense: the change from background to foreground is marked by the tense that is used: imperfect for the background, simple past tense (or preterit) for the foreground

We leave the annotation empty when the clause is annotated with <comments> at stage 4, since the child is no longer telling explicits or implicit aspects of the story.
4. Annotation of Explanations

Stage 1: <Answer explanation> partial resumption of the segmentation of the child’s speech

After each question or a request for an explanation by the adult, you need to make a brief annotation which indicates if there is or not an answer by the child.

Select <0> on the drop-down menu if there is no response.

Select <1> on the drop-down menu if there is a response from the child.
5. Gesture Transcription

It is carried out in parallel by two independent coders 1 and 2, who annotate each the various stages:

For each of the following stages, there will be corresponding examples of the options of the roll-down menus in the file ELAN “Jonas.CM1.Ma.Tom.eaf”. One opens this file on ELAN with the corresponding audio and video files which are appenedixed to the present document in file “ANR Coding Manual”.
Stage 1: <Gest. Phase> identification of gestures and annotation of the gesture phases

1.1. Identification of the gesture units

To identify the gesture units that it is on the point of annotating, the coder takes into account the three following criteria, to which it allows a value between 0 and 2:

If the **movement** is:

- Easy to perceive: of good amplitude, marked well by its speed  2
- not easy to perceive: of small amplitude, not marked by its speed  0
- between the two  1

If the **location** is:

- in frontal space of locutor, for interlocutor  2
- on a side, little or not locatable by the interlocutor  0
- between the two  1

If the **configuration** (in the case of a manual gesture):

- corresponds to a precise hand shape  2
- corresponds to an imprecise hand shape  0
- between the two  1

One identifies the movement as a gesture if the sum of the allotted values is > 3

1.2. Annotation of the gesture phases

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

One selects one of the six following values (see examples in A. Kendon, 2004, chap. 7):

- **< stroke >** = the gesture itself, which is a hand gesture, or a movement of the head, shoulders or bust.

**Note:** every stroke corresponds to a gesture: the number of strokes which one annotated must thus correspond to the number of gestures which one identified in the sequence.
< prep > = the movement which precedes a hand gesture stroke, which takes the hand(s) from its (their) initial position (at place of rest) to where the gesture begins.

< return > = the movement which brings back the hand(s) from its (their) position at the end of a hand gesture stroke to a rest position, identical or not to the preceding one.

< chain > = the movement which brings the hand(s) from its (their) initial position at the end of a hand gesture stroke to the place where a new stroke begins, without returning to a rest position between the two strokes.

< hold > = the maintaining of the hand(s) in its (their) position at the end of a hand gesture stroke, before the returning phase or a chained gesture, or during the < prep > (preparation) phase.

< mix > = we do not use this annotation.

Note: contrary to hands, the position of head, the bust or shoulders is fixed. These movements can therefore not be “prepared” as hand movements and consequently can only be annotated as “strokes”.
Stage 2: \(<\text{Gest.function}>\) attributing function to gesture

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

<table>
<thead>
<tr>
<th>Pragmatic function</th>
<th>Comments</th>
<th>Narrative function</th>
<th>Foreground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pragmatic function</td>
<td>Pragmatic function</td>
<td>Narrative function</td>
<td>Foreground</td>
</tr>
</tbody>
</table>

Select:

\(<\text{Deictic}>\) = hand or head gesture pointing to an object present in the communication setting, or to the interlocutor, or to oneself or a part of the body, or indicating the direction in which the referent is found from the actual coordinates of the physical setting.

\[\text{Ex} :\]
- The locutor points to himself while saying « this is what I understood. »

\(<\text{Representational}>\) = hand or facial gesture, associated or not to other parts of the body, which represents an object or a property of this object, a place, a trajectory, an action, a character or an attitude, or which symbolises, by metaphor or metonymy, an abstract idea.

Examples of gestures representing objects, properties, places, trajectories, actions, characters from the concrete world:
- 2 hands drawing an oval form to represent the egg
- 2 hands drawing the form of a container to represent the nest
- Rapid movement of the hand or index high then low to represent the fall of the egg (abstract pointing)
- Hand or head movement, in the direction to the right, to the left, high or below to represent the trajectory of an object or a character (abstract pointing)
- Rapid or repeated hand movements in a picking form to represent the woodpecker attacking an object
- Arms and hands mimicking carrying an object to represent Jerry when he takes the bird to the nest
- Rapid sagging movement of the body to represent Jerry falling down
- Movement of the head + gaze above to represent Jerry searching for the bird’s nest

Examples of gestures symbolising abstract ideas:
- Hand or head gesture pointing to a spot that represents a character (the bird, Jerry) or an object (the nest, furniture) (abstract pointing)
- Movement of the hand towards the left to symbolise « before », the past or the perfect, or the right to symbolise « after », the future or the imperfect.
- Movement of both hands flat, palms towards the top, to express the idea of wholeness.
- Head gesture of negation to express ignorance or the incapacity of the character
- Gesture of the hand and shoulders to express helplessness, the inability of a character to do something

\(<\text{Performative}>\) = gesture which allows the gestural realisation of a non assertive speech act (response, question, request for confirmation, etc.), or which reinforces or modifies the illocutionary value of a non assertive speech act.

Example of gestures which accomplish a speech act:
Examples of gestures reinforcing the function of the act expressed verbally:
- Vigorous head nodding accompanying an affirmative response
- Vigorous head shaking gestures accompanying a negative response

Examples of gestures modifying the function of the act expressed verbally:
- When the gesture or the mimic contradicts speech: not seen in Grenoble corpus

**< Framing >** = gesture occurring during narration (during the telling of an event, or commenting an aspect of the story, or commenting the narration itself) and which expresses an emotional or mental state of the speaker.

Ex:
- Face showing amusement to express the comical side of a situation
- Shrugging or facial expression of doubt to express incertitude of what is being asserted
- Shrugging or facial expression to express the obviousness of what is being asserted
- Using « finger inverted commas » to express distance in relation to terms used
- Frowning and staring above to express reflection while trying to recall the story or the next event

**< Discursive >** = gestures generally brief which aid in structuring speech and discourse by the accentuation or highlighting of certain linguistic units, or which mark discourse cohesion by linking clauses or discourse units with the help of anaphoric gestures or gestures accompanying connectives.

Examples of accentuating or highlighting gestures:
- Rhythmic movements (beats) of the head or hands accompanying the accentuation of certain words or syllables
- Raising of eyebrows accompanying the accentuation of certain words or syllables

Examples of segmentation or demarcation gestures:
- Rapid movement of the hand sketching the gesture of hunting/ chasing something to signify changing an episode, when coming back to the narrative after a commentary or vice versa

Examples of gestures of discourse cohesion
- Hand sketching the form of a content to symbolise the topic or the title of the story
- Hand sketching the form of a content to symbolise an episode of a story
- Hand or head abstract pointing gesture with an anaphoric function: pointing to a spot in the frontal space to refer to a character or an object previously referred and assigned to this spot
- Representational gesture with an anaphoric function (gesture identical or similar to another gesture produced before and that tracks the same referent in the story)
- Brief hand gesture or beat accompanying a connective

**< Interactive >** = gesture accompanied by gaze towards the interlocutor to express that the speaker requires or verifies his attention, or shows that he has reached the end of his speech turn or his narrative, or towards the speaker to show his own attention.

Ex:
- Rapid hand or head movement, including a gaze towards the interlocutor in quest for his attention
- Nodding head while interlocutor speaks
- Orienting the head and gaze towards the interlocutor at the end of speech turn or narrative.

**< Word Searching >** = Hand gesture or facial expression which indicates that the speaker is searching for a word or expression.

Ex:
- Frowning and staring above while searching words
- Tapping fingers, with or without a mimic of reflection, while searching words

**Note:** If the gesture appears difficult to categorise, if it appears to fill two or many functions at the same time, we can annotate it as **<mixed>** by leaving the annotation empty. But it is preferable to select one function: the function that appears dominant.
Stage 3: <Semant.relation> definition of the relation of the gesture to corresponding speech

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Select:

- **<Reinforces>** = the information brought by the gesture is identical to the linguistic information it is in relation with.
  
  Ex:
  
  Nodding head accompanied by a «yes» of an affirmative
  Shrugging accompanied by a «I don't know» or a response full of doubt
  A deictic pointing gesture towards an object explicitly named

  **Note**: this annotation does not concern the <representational> gestures, as the information brought by the gesture always says more than the linguistic information.

- **<Complements>** = The information provided by the gesture brings a necessary complement to the incomplete linguistic information provided by the verbal message: the gesture disambiguates the message.
  
  Ex:
  
  Pointing gesture accompanying a location adverb like «here», «there»
  Pointing gesture aiming at identifying an object not explicitly named

  **Note**: this annotation only concerns the <deictic> gestures.

- **<Integrates>** = the information provided by the gesture adds precision to the encoded linguistic information: mode of displacement or direction of trajectory of the action referred to, shape and dimension of the object referred to, etc.
  
  Ex:
  
  «she leaves»
  ********* : shifting of the left hand towards the left side, indicating the direction of the displacement.
  «the egg moves»
  *************** : oscillation of the hand representing the vibrations of the egg
  «it makes the mouse move»
  *************** : oscillation of the hand representing the vibrations of Jerry.

  **Note**: this annotation only concerns the <representational> gestures.
< Supplements > = the information brought by the gesture adds a new information not coded in the linguistic content.

Examples of representational gestures providing a supplementary signification:
- « he tries to come out » ********
  : vertical agitation of the hand to represent the baby bird moving inside the egg
- « the egg jumps » ********
  : oscillation of the hand which in addition, shifts towards the bottom.

Examples of performative gestures providing a supplementary meaning:
- Vigorous nodding accompanying an affirmative
- Vigorous shaking of head accompanying a negative response

Examples of framing gestures providing a supplementary meaning:
- Face showing amusement signs to express a comical side of the narrated event
- Face showing disgust to express a depleasing action
- Shrugging or showing a mimic of doubt to express incertitude of what has been asserted

Note: all < framing > gestures are annotated with < supplements >, unless if they contradict the verbal message (cf. following annotation)

< Contradicts > = The information provided by the gestures is not only different from the linguistic information in which it is linked but contradicts it.

Ex:
When the gesture or mimic contradicts speech : not seen in Grenoble corpus

Note: this annotation normally concerns only the < framing > and < performative > gestures. However, contradiction may also occur in gesture-speech mismatches that include a < representational > gesture, eg.: the speaker mentions three objects and produces a gesture which represents number « two ».

< Substitutes > = The information provided by the gesture replaces linguistic information.

Ex:
Nodding in affirmative response
Shrugging and mimic showing ignorance as a response expressing doubt
Pointing gesture aimed to identify an object in the absence of speech
Stage 4 : < Synchronrelation > indication of the temporal placement of the gesture in relation to the corresponding speech

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Select :

< Synchronous > = The stroke begins at the same time as the corresponding speech segment, whether it is a syllable, a word (noun, verb, adjective, connective….) or a group of words (the notation **** corresponds to a gesture hold).

Ex :
She leaves
********

< Anticipates > = The stroke begins before the corresponding speech segment: the speaker starts his gesture while delivering a linguistic information prior to the one corresponding to it.

Ex :
Errrrr _ – this this made it jump everywhere
******

< Follows > = The stroke begins after the corresponding speech segment: the speaker begins his gesture after having finished speaking, or while delivering a linguistic information posterior to the one corresponding to it.

Ex :
It falls – it goes on top of a spiderweb
*******************************
Stage 5: <Gest.form>

Double click on the place where you wish to annotate, then type the information you wish to input in the block:

We give a brief description of the annotated movement sticking to its most salient points:
- body part of movement: head, chest, shoulders, 2 hands, left hand, right hand, index, eyebrows, mouth….
- if there is a trajectory: direction of the movement (towards the top, bottom, left, right, frontal, behind…..)
- if there is a hand shape: the form of the hand (flat, cutting, closed in a punch-like form, curved, palm up, palm down, fingers pinched, fingers in a circle….)
- the movement itself: head nod, beat, circular gesture, rapid or not, repeated or not….
6. Validation of the gestures’ annotation

Principles

The validation of the gestural annotation covers two objectives:
- firstly, to finalise the gestural annotation from selections made by the 2 independant coders and decide in case of disagreement;
- secondly, to ground the measure of inter-reliability between coders by looking for agreements/disagreements.

The validation phase only applies to the parameters that allow immediate quantitative analysis: identification of a gesture unit, function and relation to speech. A third and independent coder adds the definite annotation of these three parameters by adding appropriate information on the following tracks: <Geste(phases)cp>, <Valeur du Geste-cp> and <Relation Geste/Parole-cp>.

The measure of inter-reliability requires as a preliminary stage the close comparison of annotations by coder 1 and coder 2 to track all agreements/disagreements within their selections. Such information is annotated on the following tracks: <Accord gestes>, <Accord fonction> and <Accord relation>.

Stage 1: definite gesture annotation

<Geste(phases)cp> = coder 3 validates the identification of gesture strokes by copying the relevant information out of coder 1 or coder 2 annotations.

Coder 3 may face two distinct situations:
1. **Coder 1 and coder 2 identified a gesture stroke** at the same spot on the video timeline. Whether their boundaries are perfectly synchronous or not (see the screen copy above), coder 3 copies and locates the stroke on the corresponding track out of one of the two annotations.
2. **Only one coder identified a gesture stroke** at this very spot on the video timeline (for example, see coder 1 first annotation above). Then coder 3 must decide whether a gesture was produced or not. If so, he copies and locates the stroke on the corresponding track out of the coder annotation. If not, he leaves empty the corresponding spot on the timeline (or annotates a different gesture phase, as in the above example).
<Valeur du Geste-<cp> > = Coder 3 validates each gesture’s function by selecting in the drop-down menu the function that was selected by both coder 1 and coder 2. As for the identification of gesture strokes, he has to decide in case of disagreement among coders and select the most appropriate function.

Note: every time a gesture stroke was identified by only one coder then validated by coder 3, the latter has to select the most appropriate function, accordingly or not with the other coder’s choice.

<Relation Geste/Parole-<cp> > = Coder 3 validates each gesture-speech relation by selecting in the drop-down menu the type that was selected by both coder 1 and coder 2. As for the gesture’s function, he has to decide in case of disagreement among coders and select the most appropriate gesture-speech relation.

Note: every time a gesture stroke was identified by only one coder then validated by coder 3, the latter has to select the most appropriate type of gesture speech relation, accordingly or not with the other coder’s choice.

Stage 2: annotation of agreements/disagreements among coders

<Accord gestes> = coder 3 annotates “accord” (agreement) when both coder 1 and coder 2 identified a gesture stroke at the same spot on the video timeline (whether their boundaries are perfectly synchronous or not), and « désaccord » (disagreement) when only one of them identified a gesture stroke.

Note: when a gesture stroke was identified only by coder 1 or by coder 2 then annotated by coder 3, agreement vs disagreement on the coding of the gesture function is based on the two available annotations.
<Accord relation> = coder 3 annotates “accord” (agreement) when coder 1 and coder 2 selected the same type of gesture-speech relation in the drop down menu, and « désaccord » (disagreement) when they selected two distinct types.

*Note*: when a gesture stroke was identified only by coder 1 or by coder 2 then annotated by coder 3, agreement vs disagreement on the coding of the gesture-speech relation is based on the two available annotations.
7. Other gesture coding

Following McNeill, Kita, Özyürek and other researchers’ propositions, the goal is to annotate specific aspects of gesture and the gesture-speech relation:
- To identify abstract pointing gestures;
- To code representational gestures for voice (O-Vpt / C-Vpt);
- To code for specific aspects of O-vpt and C-vpt gestures: schematization in the representation of action and mime, and abstraction in the representation of locations and scenes.
- To identify representational gestures and linguistic clauses that express movement in space and to code their meaning (manner / path, or else).

Stage 1: < Pointage abstrait > abstract pointing

Every hand or head gesture that points to a spot in the frontal space to refer to a character or an object:
- On prior mention of referent: gesture that locates the referent, gesture that indicates a trajectory;
- On ulterior mention of referent: anaphoric gesture;
- By self pointing (head, arm, etc.) to represent a character (his head, his arm, etc.): substitution pointing, as in Colletta, 2004.

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Note: abstract pointing gestures are gestures that were annotated either as < representational > or as < discursive > (gesture anaphora) at stage 2 of the gesture transcription.

Stage 2: < Referent > attributing a referent to each representational gesture

The next annotation process starts with attributing a referent to each representational gesture: character (bird, egg, mice), action (knitting, rolling, falling, pushing, drilling…), object (tree, nest, leaf, house, bed…) or else. A referent is attributed to a discourse gesture only when it performs a gesture anaphora (gesture tracking of a referent former represented in gesture within the same narrative episode).

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1 The additional coding that is described in this section was planned at a later stage of the Multimodality research project. However the validation and control process we present in section 6 can easily be applied to such coding.
Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Stage 3: <Voice> expression of a point of view on the gestured events

Select:

- <C-VPT> the gesture expresses an internal perspective (mimes or represents a character by enactment of the whole body or the sole hand).
  Ex.: gesture that mimes the action of knitting, the movements of the baby bird inside the egg, the mice catching the bird’s beak or carrying the bird to its nest…

- <O-VPT> the gesture expresses an external perspective (abstract pointing gesture to locate or show change of location of the referent in the frontal space).
  Ex.: pointing up when telling about the mummy bird taking flight; pointing down when telling about the fall of the egg; abstract pointing to locate a character…

- <Mixt> the gesture expresses a dual perspective (gesture that combines O-Vpt and C-vpt, or chimera gesture (Parrill, 2009) C-vpt + C-vpt).
  Ex.: gesture that combines both perspectives: right hand points up (to represent the nest) while left arm mimes the mice carrying the bird; right hand draws the egg trajectory in frontal space while left hand holds its oval shape. Chimera gesture: left hand represents the egg’s beak while right arm represents the mice’s arm.

Note: The following coding only applies to gestures of the concrete that express external or internal perspective, that is to say, gestures which refer to a character of the story (the bird, the egg or the mice).
Stage 4: <Voice 2> schematization of mime and action in C-Vpt gestures

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:

Select:
- <Body> global enactment with whole body.
- <Hand> partial and schematic enactment with sole hand and arm.

Note: <Voice 2> coding adds new information about gestures that express an internal perspective and is thus limited to gestures annotated as <C-VPT> or <Mikt>.

Stage 5: <Perspective> = abstraction in representing locations and scenes in O-Vpt gestures

Double click on the place where you wish to annotate, then click on the value chosen in the drop-down menu:
Select:

- <Inside> the referent is located in an abstract space related to the speaker’s spatial coordinates, as if the speaker’s physical space and that of the story were amalgamated.

- <Outside> the referent is located in an abstract space not related to the speaker’s spatial coordinates, as if the speaker was depicting scenes and locations on a TV screen in front of him/her.

Ex.: a gesture pointing up to represent the nest in the tree will be coded as <Outside> when produced in the frontal space of the speaker, <Inside> when produced above his head. A substitution pointing towards the head or the arm of the speaker is to be coded as <Inside>.

Note: <Perspective> coding adds new information about gestures that express an external perspective and is thus limited to gestures annotated as <O-VPT> or <Mixt> (gesture chimera being excluded).

Stage 6: Coding of linguistic clauses and representational gestures that express movement

<Manner Path Ling> = every clause that expresses movement of a character in the spatial scene has to be annotated by selecting:

- <Path> when expressing the trajectory only (to get in, get out, go to, go in, go up, go down, get to…);

- <Manner> when expressing the manner only (to take flight, land, roll, bounce, jump, hop, climb…);

- <Both> when expressing both manner and trajectory (to roll inside, roll towards, bounce on, walk in, climb up…);

- <Cause> when expressing the characters’ movement as caused by another character or an external factor (to carry the bird back to its nest…).
**Manner Path Gst** = every representational gesture that expresses movement of a character in the spatial scene has to be annotated by selecting:

- **< Path >** when expressing the trajectory only (pointing gesture);
- **< Manner >** when expressing the manner only (gesture enacting the character’s movement);
- **< Both >** when expressing both manner and trajectory (gesture that combines pointing and enactment);
- **< Cause >** when expressing the characters’ movement as caused by another character or an external factor (ex.: enactment of two characters).
References

1. **Transcription conventions** adapted from VALIBEL:
   
   [http://valibel.fltr.ucl.ac.be/](http://valibel.fltr.ucl.ac.be/)

2. **Linguistic annotations** (définition of the clause, categorisation of clauses, connectives and anaphora) are based on:
   

3. **Narrative annotation** (episodes, narrative levels, pragmatic acts) are based on:
   

4. **Gesture transcription** (phases, function, gesture-speech relation) are based on:
   