Annotation of Highly Iconic Structures (HIS)

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Acknowledgments

- The organisers Onno Crasborn and Johanna Mesch
- The LSF group in Paris (Univ. Paris 8, Paris 5, Lille 3), particularly Brigitte Garcia and Antonio Balvet
- The interpreters staff
Issues

- What are Highly Iconic Structures (HIS)?
- How to transcribe HIS (= non lexical units)? (Johnston 2008)
- Which notation conventions to use?
- Why do we annotate these units?
Introduction: what are Highly Iconic Structures (HIS)?

- Very iconic structures
- Deeply linked to lexical signs. Diachronic and synchronic interdependencies.
- Very frequent (65% in narratives, 30% in other discourses)
- Present in every SL studied to this day, showing similar frequencies
  - Eg: LSF, ASL, LIS, DGS, LSM, NGT...
Quantitative results for LS-COLIN corpus (Sallandre 2003)

<table>
<thead>
<tr>
<th>Categories</th>
<th>% Narrative 1</th>
<th>% Nar 2</th>
<th>% Recipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS</td>
<td>8,0</td>
<td>8,8</td>
<td>9,6</td>
</tr>
<tr>
<td>Situation T</td>
<td>4,8</td>
<td>13,2</td>
<td>1,9</td>
</tr>
<tr>
<td>Personal T</td>
<td>24,7</td>
<td>17,4</td>
<td>13,1</td>
</tr>
<tr>
<td>TP profo</td>
<td>5,7</td>
<td>4,5</td>
<td>0,0</td>
</tr>
<tr>
<td>TP loupe</td>
<td>2,3</td>
<td>1,2</td>
<td>0,0</td>
</tr>
<tr>
<td>TP stéréo</td>
<td>0,1</td>
<td>1,0</td>
<td>0,4</td>
</tr>
<tr>
<td>TP dr gest</td>
<td>4,2</td>
<td>1,0</td>
<td>0,3</td>
</tr>
<tr>
<td>TP dr g-profo</td>
<td>0,3</td>
<td>0,1</td>
<td>0,0</td>
</tr>
<tr>
<td>TP dr Gl</td>
<td>1,5</td>
<td>0,4</td>
<td>0,0</td>
</tr>
<tr>
<td>PT dr std</td>
<td>14,1</td>
<td>8,8</td>
<td>1,5</td>
</tr>
<tr>
<td>TP dr st-profo</td>
<td>0,4</td>
<td>0,1</td>
<td>0,0</td>
</tr>
<tr>
<td>Half PT</td>
<td>2,8</td>
<td>2,4</td>
<td>0,2</td>
</tr>
<tr>
<td>TP se-profo</td>
<td>0,1</td>
<td>0,3</td>
<td>0,0</td>
</tr>
<tr>
<td>TP pseudo</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
</tr>
<tr>
<td>DT clas</td>
<td>3,4</td>
<td>1,9</td>
<td>6,2</td>
</tr>
<tr>
<td>DT profo</td>
<td>0,5</td>
<td>1,1</td>
<td>0,0</td>
</tr>
<tr>
<td>DT loupe</td>
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<td>0,7</td>
<td>0,0</td>
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<tr>
<td>DT semi</td>
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<td>0,0</td>
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<tr>
<td>DT dr</td>
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<td>0,1</td>
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<tr>
<td>DT comp</td>
<td>0,2</td>
<td>0,5</td>
<td>0,1</td>
</tr>
<tr>
<td>Lexical signs</td>
<td>22,8</td>
<td>30,8</td>
<td>61,4</td>
</tr>
<tr>
<td>Pointings</td>
<td>3,3</td>
<td>4,6</td>
<td>4,2</td>
</tr>
<tr>
<td>Fingerspelling</td>
<td>0,1</td>
<td>0,0</td>
<td>1,0</td>
</tr>
<tr>
<td>Total unités</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>
Question: What is the core of SLs?

*It depends on the perspective…*

The core for Cuxac’s model

The core for many models
Cuxac’s model, an overview

- Cuxac (1983, 1996, 2000) hypothesizes that all SLs are grounded in a **process of iconisation** of signers’ own perceptive-practical experience.

- According to Cuxac, compared to Spoken Languages, SLs exploit an additional semiotic dimension, whereby in SLs there are two **ways** of signifying:
  - either by “saying and showing” (producing **HIS**)
    - illustrative intent
  - or “without showing” (producing lexical signs, pointings and fingerspelling)
    - non illustrative intent

- 8 parameters are important in this model (4 manual + 4 non manual) but **eye gaze** plays a crucial role to distinguish between intents, and the related structures that are produced.
Cuxac’s model, a schematic overview

**SIGNIFY IN SL**
Process of iconisation

- **Illustrative intent**
  SAY AND SHOWING
  Highly Iconic
  Structures: Transfers
  - Transfers of size and shape (TSS)
  - Situation Transfer (ST)
  - Personal Transfer (PT)
  - Lexical Signs
    - DT
    - Half PT
    - Various PT

- **Non-illustrative intent**
  SAY WITHOUT SHOWING
  Degenerated Iconicity
  - Pointings

- **Alternation in discourse**

- **Fingerspelling**
Parallels between terminologies (*an attempt...*)

<table>
<thead>
<tr>
<th>International Terminology</th>
<th>Cuxac’s Terminology</th>
<th>Some authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classifiers</td>
<td>• Transfer of size &amp; shape</td>
<td>Supalla, Emmorey, etc.</td>
</tr>
<tr>
<td></td>
<td>• Situation Transfer</td>
<td></td>
</tr>
<tr>
<td>Polycomponental signs</td>
<td>• Transfer of size &amp; shape</td>
<td>Slobin, etc.</td>
</tr>
<tr>
<td></td>
<td>• Situation Transfer</td>
<td></td>
</tr>
<tr>
<td>Role shift</td>
<td>• Personal Transfer</td>
<td>Enghberg-Petersen, Schembri</td>
</tr>
<tr>
<td></td>
<td>• Half-Personal Transfer</td>
<td></td>
</tr>
<tr>
<td>Constructed action</td>
<td>• Personal Transfer</td>
<td>Liddell, Johnston</td>
</tr>
<tr>
<td></td>
<td>• Half-Personal Transfer</td>
<td></td>
</tr>
<tr>
<td>Constructed dialogues</td>
<td>Personal transfer with dialogues (with signs,</td>
<td>Liddell, Johnston</td>
</tr>
<tr>
<td></td>
<td>gestures, pointings or HIS)</td>
<td></td>
</tr>
<tr>
<td>Multiple references</td>
<td>Double Transfer</td>
<td>Dudis</td>
</tr>
</tbody>
</table>
Main categories of HIS

3 main transfers…
- **TSS**: transfer of size and shape
- **ST**: situation transfer
- **PT**: personal transfer

… and some of their possible combinations:
- Double transfer
- Half-PT
- PT with dialogues
- Close-up PT
- etc…

*Now, some examples in various SLs…*
**TSS** (transfer of size and shape): Entities described by their size or shape (no process, no agent).

**LIBRAS**

Length and shape of the “fence”

**LSF**

**Similarities:** handshape, eye gaze towards the shape, location of hands.

**Difference:** hands orientation, facial expression.
**ST (situation transfer)**: An object or a character moving (dominant hand) in relation to a stable locative (weak hand). The scene seems to be seen at a distance.

**Similarities**: movement of the dominant hand over the dominate hand, eye gaze.

**Differences**: handshape of the weak hand, facial expression.

"The horse is jumping over the fence"
ST (situation transfer)

LSF: The cat’s tail trajectory (agent) under the tree branch (locative)

NGT_AH_fab5: The bone (patient) is floating in the water (locative, not visible?).
**PT** (personal transfer): Role shift (with agent and process). The signer "becomes" the entity he/she is talking about.

**Similarities:** posture, facial expression, eye gaze

**Difference:** handshape

Remark: There is not just one role shift, but rather a panel.
**DT (double transfer):** Simultaneous association of a ST (locative) and a PT (agent or patient).

- **Similarities:** Dominant hand (cow) around dominate hand (horse), body posture, facial expression (effort) and eye gaze.

```
“the cow bandaging the horse’s leg”
```
Half-PT: Personal transfer with a lexical sign (for the action)  
(This structure combines both intents)

LSF: “A man is thinking” (PT with sign THINK)

LSF: “A man is selecting somebody carefully” (PT with sign SELECT)
**PT** with dialogues: *Reported speech* between PT characters by means of lexical signs, emblem gestures or HIS.

**Similarities:** body posture and attitude, eye gaze

**Difference:** lexical sign (by dominant hand)
Close-up PT: PT with a close-up effect on a body part of small dimensions (often mouth), by using hands to represent the action. Two cinematographic views in the same image.

LSF: « The cow is ruminating »

NGT_AH_fab5: « The dog opened his mouth » (with mouth + RH)
<table>
<thead>
<tr>
<th>Time</th>
<th>RH</th>
<th>LH</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.000</td>
<td>FIGHT</td>
<td>SPLASH</td>
<td></td>
</tr>
<tr>
<td>46.000</td>
<td>“I want to snatch that bone”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46.000</td>
<td>open his mouth</td>
<td>SPAS (open mouth)</td>
<td></td>
</tr>
<tr>
<td>46.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The translation is: "the dog in the water. So, you wanna fight? He growled, "I want to snatch that bone!" He opened his mouth. SPLASH! The bone fell into the water and the stream swept it away."
First conclusion

- Different kinds of HIS
- HIS are highly combinable (with every component: HIS, lexical signs or pointings)

→ they are structures
→ they could be carefully annotated (with as much details as the lexical signs)
The advantages of annotating HIS

- Identify **linguistic functions** from initial annotation stages:
  - Links between entities (eg: intro with a lexical sign, then PT, then pointing etc.)
  - Topic/focus (informational structure)
  - Identification of semantic roles (agent, patient, locative etc.)
  - Anaphora
  - Morphemes simultaneity in SLs
Our different notation systems

Partition-like notation systems, devised by our team throughout the years:

- Cuxac (1996), Word™
- Sallandre (2003), Excel™
- Cuxac (2008), ELAN annotation of “La Création des Associations”
- Etc.
### Example of Cuxac (1996) annotation, with Word

<table>
<thead>
<tr>
<th>MD</th>
<th>Pointage</th>
<th>[Moi]</th>
<th>Point MD-MG : B sur MG vers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Det G</td>
<td></td>
<td>[REVENIR EN ARRIERE][MILLE NEUF CENTS SOIXANTE DIX HUIT]</td>
<td></td>
</tr>
<tr>
<td>MG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>3/4g</td>
<td>.centre</td>
<td>(\text{oui} ) (\text{oui} )</td>
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<tr>
<td>R</td>
<td>Soi</td>
<td>(\text{X} )(\text{X} )</td>
<td>(\text{TF} ) (\text{vers d} )</td>
</tr>
<tr>
<td>MF</td>
<td>(\text{----} )</td>
<td>(\text{X} ) fronce (\text{----} )</td>
<td>(\text{----} ) duratif</td>
</tr>
</tbody>
</table>
Example of LS-COLIN Corpus annotation, with Excel (Sallandre 2003)

<table>
<thead>
<tr>
<th>Photos</th>
<th>Timer</th>
<th>N° de l'unité</th>
<th>Unités (gloses)</th>
<th>Catégorie</th>
<th>Actant</th>
<th>Regard</th>
<th>M.Dominante</th>
<th>M.dominée</th>
<th>Minime sociale</th>
<th>Posture</th>
<th>Labialisation</th>
<th>Traduction française</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04:18</td>
<td>1</td>
<td>PARDON</td>
<td>TP d'std</td>
<td>le cuisinier dit à la pomme</td>
<td>en bas, vers pomme</td>
<td>std</td>
<td>(Gauche)</td>
<td>std</td>
<td>incliné vers bas à sa droite</td>
<td>mot français &quot;pardon&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>désolé, mais</td>
<td>TP d'gestualité</td>
<td>le cuisinier dit à la pomme</td>
<td>en bas, vers pomme</td>
<td>(Gauche)</td>
<td>&quot;désolé&quot;</td>
<td>(Droite)</td>
<td>incliné vers bas (pomme)</td>
<td>&quot;mais&quot;?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>poser le pomme sur le support</td>
<td>Double Transfert</td>
<td>cuisinier</td>
<td>en bas devant, vers pomme</td>
<td>(Droite)</td>
<td>configuration &quot;pomme&quot;</td>
<td>(Gauche)</td>
<td>de face, vers</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Graph Cuis_Nas
ELAN annotation of “Création des Associations”, Cuxac (2008)  

► our first ELAN notation for LSF

Remarks:

- A template without any hierarchy (types & prototypes)

- No tier for “category”, but main HIS on the tier for body (“corps”)

- PT as a umbrella category (including half PT, close-up PT, etc.)

- The 2̂de part of original annotation was left out : information lost.
Today: ELAN template proposal *(work in progress)*

- From textual structure to sign
- **Important**: Lexical sign, PT, ST, Pointing, etc.
- Different parameters allow us to identify the category of each unit
- (specific to LSF acquisition)
- Translation in complete utterances, in 2 languages
- Idem for signer 2
Some notation conventions *(very simple!)*

- Lexical signs: CAPITALS
  - Eg: CHIEN
- Person signs: ‘CAPITALS’
  - Eg: ‘CHARLOT’
- HIS: lower case *(abstract meaning)*
  - Eg: flat shape
- Pointings: Pt.
  - Eg: Pt.
- Fingerspelling: M.A.J.
  - Eg: M.A.R.Y.
- Controlled vocabulary: lists
  - Eg: PT, lexical sign, ↑ , →
Remarks (and limitations of our present annotation)

- No direct access to the signifying forms
  - Near future: include some HamNoSys or SignWriting symbols in independent tiers (cf. experiment Italian team)?

- Problem of the "unit of meaning" tier: not completely identical to "gloss" in the literature, but not wholly satisfying.

- Difficulty to identify and establish the hierarchy of correct types and stereotypes in ELAN.

- For lexical signs, no lemmatisation for the moment, because:
  - No LSF electronic dictionary available (but BD LSF exists, is a novel database: lexical entries as well as morphemic and parameter-centered ones, Garcia & Boutet)
  - Many lexical creations to be included in the database, but how? (with no pre-existent entries)
Proposals

- Lemmas (Johnston): for lexical signs, but in a slight different perspective (Garcia, 2010)

- How do we annotate the many lexical creations inherent to SLs? (with morphemes, with lemmata?)

- For HIS: abstract and consistent annotations, eg:
  - “flat shape” vs “car”
  - “vertically raised index” vs “a man is moving”

- Add/delete some tiers (eg. 1 or 2 tiers for eye gaze? Braffort et al.)

- Most importantly associate the category and the unit = associating 2 tiers
Thank you for your attention

*Tack!*
Resources for LSF

On-line corpora on the CRDO website

- Corpus « La création des associations »
  http://crdo.risc.cnrs.fr/exist/crdo/rechercher.xq?term1=LSF&field1=Languag e&mode1=near&langue=*&howmany=50

- Browse: metadata, XML fichier, clauses-segmented corpus
- Download: footage + annotations + metadata
Some references


Annotation of Highly Iconic Structures (HIS)

Hands-on session

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Workshop Sign Language Corpus Network 3
Stockholm, Sweden, June 15, 2010
Hands-on session (2.5 hours incl. a break)

Aims:
- a) identify HIS categories
- b) annotate these categories

In 3 steps:

1) Reminder of the morning session (20 min)
   How can we annotate such complex structures as HIS? Why? - What are the links between all these structures and why is it a continuum?
   - Why it’s not holistic?
   - What are the main difficulties/limits? (pb: gloss, etc.)

2) Applying analysis grid to analyse HIS structures
   How to describe these simultaneous structures? (25 min)
   - On a piece of my data in LSF and in NGT
   - On a piece of your own data?

3) Exercise with ELAN (80 min)
Hands-on session

Selection of video extracts in different SLs:

- LSF: Nas_Cuis (cook recipe)
- NGT: CNGT0805_S035_b
- LSF: Création des associations
Hands-on session: LSF: Nas_Cuis

- **18:06**: “the dough”
  - PT: “the cook is rolling the dough”
  - TSS: “flat shape”
  - PT: “the dough is spread/flattened”

- **19:39**: DT “the apple is being cut by the cook”
Hands-on session:
NGT corpus CNGT0805_S035_b

- 03:17: **Double transfer**: "someone is calling him"
   - weak hand (left): someone
   - body: PT
   - dominant hand: astonished

- 03:20: **PT dr std**: "you're crazy" (*gekken*"

- 03:30: **PT**: dance

- 03:24: A **PT central** from the semantics of the utterance is not annotated: why? Because it is considered as gesture?

- 03:25: "to have goosebumps" stereotyped expression in **PT**

- 03:27 & 03:34: [@pfff] = **PT dial gesture** (shaking both hands, emblem)

- 03:32: **Double transfer**: "he is offered several pints of beer"
  - strong hand (right): give glass (x3)
  - body: PT

- 03:34: [@pfff] = **PT dial gesture** (idem)

- 03:47: "plane" with dominant hand = **ST** without locative?