Sign language semantics, Day 5: Iconicity, classifiers, role shift, and quotation

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Section 1

Introduction: Logical vs. iconic meaning
Iconicity in the grammar

Symbolic meaning
(Lillo-Martin, ...)

S

<table>
<thead>
<tr>
<th>DP</th>
<th>VP</th>
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<tbody>
<tr>
<td>D</td>
<td>NP</td>
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<tr>
<td>the</td>
<td>car</td>
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Iconic meaning
(Cuxac, Liddell, ...)

Schlenker, Lamberton, and Santoro 2012: An iconic mapping defines a set of individuals or events. Thus, add an iconic predicate directly into the logical form.
Iconicity in the grammar

Symbolic meaning
(Lillo-Martin, ...)

```
S
  DP
    D
      the
  VP
    NP
      car
    V
      moved
```

Iconic meaning
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Iconicity in the grammar

Symbolic meaning
(Lillo-Martin, ...)

(S
  DP, VP
  D, NP, V
  the, car, moved)

Iconic meaning
(Cuxac, Liddell, ...)

Schlenker, Lamberton, and Santoro 2012:
An iconic mapping defines a set of individuals or events. Thus, add an iconic predicate directly into the logical form.
Roadmap for today

1. What kind of meaning does a picture have?

2. How do we integrate two different kinds of meanings into a single interpretation?

3. What are the points of interface between logical meaning and iconic meaning?
   - Classifier constructions
   - Role-shift constructions
Section 2

Pictorial semantics (see Greenberg 2015)
A semantics of pictures?

- Is it possible to give a precise semantics for pictures?
- Why not?
- Just as you can state the meaning of a sentence with respect to truth conditions (i.e., the set of conditions under which the sentence is true), you can state the meaning of a picture with respect to accuracy conditions.
Accuracy judgments

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Accuracy judgments

Accurate

Inaccurate
Accuracy judgments

Accurate

Inaccurate

Moral: possible to assign ‘truth’ or ‘accuracy’ conditions to pictures.
Another examples
Another examples

Accurate

Inaccurate
Underspecification

Accurate

Accurate
Underspecification

Moral: pictorial information may be underspecified.
Underspecification

What kinds of information can be underspecified?
Under specification

- Preservation of **topology** but not **geometry**.
Analogy to vagueness in natural language

- Both sentences and pictures can be underspecified or vague with respect to certain information.

1. John is tall.
   (Exactly how tall?)

2. It’s raining.
   (Who is president of the US?)

3. (What color is Obama’s tie?)
   (What is going on outside the picture frame?)
McCloud (1993), *Understanding Comics*
Iconic predicates

- The meaning of a picture is a set of individuals or events.
  (Zucchi et al. 2012, Schlenker et al. 2013, Davidson 2015)

- A set of individuals:
  \[
  \left[ \begin{array}{c}
  \text{John} \\
  \text{Bill} \\
  \text{Steve} \\
  \end{array} \right] = \{ \text{john, bill, steve, ...} \}
  \]

- A set of events:
  \[
  \left[ \begin{array}{c}
  \text{Event 1} \\
  \text{Event 2} \\
  \text{Event 3} \\
  \end{array} \right] = \{ \text{event}_1, \text{event}_2, \text{event}_3, ... \}
  \]

- Observe that this is the same semantic **type** as nouns or verbs.
Iconicity definition

Let us be a bit more precise:

- A sign is **iconic** if there is a structure-preserving mapping from the form of the sign to its meaning.

- Given a phonetic form $\Phi$, an **iconic predicate** is the set of individuals or events iconically match $\Phi$.

- Being the same type as logical meanings, the two may interact.

$$\left[ \begin{array}{c} \text{Iconic} \\ \land \\ \text{[linguist]} = \{john, steve, \ldots\} \end{array} \right]$$
Section 3

Iconicity and gradience in sign language
Iconicity in sign language

▶ Claim: sign language displays iconicity.

▶ Examples (ASL):

“The person walked up to the vehicle along a wavy path.”

small disk $\leftrightarrow$ smaller disk

(Emmorey & Herzig 2003)
Iconicity in sign language

How do we prove that these are iconic, as opposed, to, say, combinatorial morphemes?

▶ An iconic mapping can preserve geometric structure (i.e. measurement).

▶ Result: gradient phonetic changes yield gradience in semantic interpretation.

▶ In contrast, generative grammar is a discrete, combinatorial system. Thus, gradient effects not possible.

▶ Upshot: the interpretation of gradient phonetic changes can serve as a diagnostic for iconicity.

(Emmorey and Herzig 2003)
Deaf signers and hearing non-signers asked to choose the size of an indicated medallion (from a set of stickers).

- Two handshapes, each lexicalized in ASL for small disks.
- Gradient manipulations of the aperture (as seen in ASL).

**Findings:** For signers, gradient interpretation of aperture; significantly more sensitive to gradience than non-signers.

- In a (non-contrastive) production task, no significant use of gradience; significance of choice of handshape.
Two caveats:

1. Gradience is not *necessary* to show the presence of iconicity.
   - As we saw, can preserve a range of different kinds of structure; gradience only emerges when *geometric* structure preserved.

2. Gradience is sufficient to show the presence of *something* beyond a discrete grammar, but not necessarily iconicity.
   - We will see an example with accents in a moment.
Section 4

How do these meanings interact?
Incorporating meaning from two sources

- Sign language communicates both logical and iconic meaning.
  - One example, so far; more to come.

- But, is it surprising that humans are able to integrate two kinds of meaning?
  - After all, we make inferences all the time about how people look, sound, dress, ....

- Is iconicity in sign language any different?
Interpreting (gradient) accents

“guide”

[Plichta and Preston 2005]

▶ [I ate [pa].] = I ate pie and I am from the south.
Differences in compositional properties

Several differences:

- arbitrariness of mapping (formant contour to latitude)
- low intentionality of production
- low awareness in perception

Compositional properties differ:

(4) If I eat [pa], I’ll be happy.
\[ \neq \text{If (I eat pie and I am from the south), I’ll be happy.} \]
\[ = \text{(If I eat pie, I’ll be happy) and I am from the south.} \]

Systematically projects to top level.
Differences in compositional properties

- We have already seen at least two cases where iconicity in sign language is evaluated at a lower level.
- What were they?
Differences in compositional properties

Iconicity in sign language can be ‘at-issue’:

(5) LSF

\[ \text{IF MIRKO PAPERS GIVE-rep-accel, IX SECRETARY HAPPY.} \]
\[ = \text{‘If (Mirko gives papers at an accelerating pace), the secretary will be happy.’} \]

\[
S \\
\downarrow \text{if} \ \\
\text{q} \\
\text{p} \land \text{Icon}
\]
Differences in compositional properties

- Iconic predicates can take a non-sentential logical argument:

(6) **LSF**

LAST-YEAR MY GRANDMOTHER DIE-incomplete.

= ‘Last year, my grandmother almost died.’

≠ ‘My grandmother died and it happened like this: incompletely.’

```
last-year
   grandma
      Icon
        m-death
```
What about co-speech gesture?

- One possibility: iconicity acts similarly to **co-speech gesture**. (Goldin-Meadow and Brentari to appear)

- Schlenker 2015: Different projective properties.

\[
\text{slap gesture}
\]

(7) If I punish my child, my spouse will be upset.

\[=\] If I punish my child, my spouse will be upset, and punishing my child would happen with an ear-pinch.

- Co-speech gestures tend to project; iconicity, as we have seen, may be evaluated ‘low’.
In the following sections, we will explore some **points of interface** between iconicity and the combinatorial grammar in sign language.
Section 5

How is iconicity introduced in S.L.?
How are iconic predicates introduced?

Some questions: can anything be iconic? Are there any limits regarding when iconicity can be interpreted in sign language?

Up to this point, it’s possible that I’ve given the impression that ‘anything goes’ in sign language.

This, however, is not the case.

For many verbs in ASL/LSF, modifications w.r.t. telicity/pluractionality are restricted to certain temporal properties.

In Italian Sign Language, iconic adjectival modifications only hold of a certain morphological class of adjectives.
Iconic adjectives in LIS

- Aristodemo and Geraci 2015 argue that scales are iconically represented for adjectives in Italian Sign Language (LIS).
- For some adjectives, a comparative form can be constructed by signing the adjective at two different positions along a path.

(8) MARIA TALL-x GIANNI TALL-scale-more-y.
    ‘Gianni is taller than Maria.’ (LIS)
Iconic adjectives in LIS

But, these iconic modifications are only available for a certain morphological class of adjectives.

- TALL1 vs. TALL2
- DEEP1 vs. DEEP2
- EDUCATED vs. SMART
Constructions that introduce iconic arguments

- Notably, there are several specific constructions in sign language that allow a much freer use of iconicity.

- **Classifier predicates**: handshapes that illustrate movement and locations.

- **Role shift**: body shift that indicates taking some individual’s perspective.
### At-issue iconic content in English

- Even in English, there are certain ways of making gestural or depictive content at-issue.

- **Demonstrative pronouns:**

  \[
  \text{(9)} \quad \text{If I punish my child like this, my spouse will be angry.}
  \]

- **Quotative constructions:**

  \[
  \text{(10)} \quad \text{John was all, ‘wahhh I don’t like loud music!’}
  \]

- Analysis: both demonstratives and quotatives are functions that ask for an iconically specified predicate as an argument.
The general proposal I’d like to suggest here is that both classifier constructions and role shift also subcategorize for an iconically defined predicate.
Section 6

Classifier predicates
Classifiers

▸ ‘Classifier’ terminology comes from spoken language

(11) Japanese

kami ni mai
paper two CL-flat
‘two pieces of paper’

▸ Classifiers in SL – handshape carries similar restriction

(12) ASL

PAPER THREE CL-flat CL-flat CL-flat
‘three pieces of paper’

▸ Handshapes conventionalized.

▸ Mismatch results in ungrammaticality (for both modalities).
Classifiers as iconic predicates

Unlike spoken language, classifiers in ASL act as verbal predicates, iconically indicating an event.

‘The person moved to the car along a wavy path.’

This iconic predicate preserves at least:

- Location
- Orientation
- Classifier-internal structure
Conventionalized underspecification preserves specific internal structure of an object (c.f. stick figures).
Proposal sketch (Zucchi et al. 2012; Davidson 2015):

- A classifier is an event predicate (i.e. a set of events) that
  
  a. presupposes that its agent (for object classifiers) or its theme (for handling classifiers) is in the specified nominal class, and
  
  b. entails that the event happened in the manner iconically demonstrated
Evidence for demonstration argument CODAs (Davidson 2015):

- Sound effects frequently accompany classifiers:

(13) GOLF CL-1(path of ball) BALL CL-1(path of ball)
    golf (sound-effect) ball (sound-effect)
    ‘In golf the ball goes high up, the ball goes like this.’
    (3 year-old with Deaf father)

- Corpus search of 48 classifiers:
  - 20 accompanied by no speech (all w/Deaf interlocutor)
  - 14 accompanied by verb (12 w/hearing interlocutors)
  - 9 with sound effects (equal mix interlocutors)
  - 5 other/unintelligible
An analogue in spoken language?

- **Ideophones** = onomatopoetic words with eventive meaning.
  - English: *snip*; Tseltal: *tsok’*

- ‘Sound classifier’? - only applies to very specific events.
- Allow freer iconic modification than other verbs:

  (14) I went to the barber and snip, no more ponytail.

  (15) I went to the barber and snip snip snip, no more ponytail.

- At-issue accompaniment by gestures.
Section 7

Role Shift and Quotation
Quotation as a means to introduce iconicity

In spoken language, direct quotation is intuitively a way of *demonstrating* what happened.

(16) John said to pay attention.
(17) John said, ‘Pay attention!’
     → these are the exact words that he said.

Sentence-embedding verbs like ‘said’ entail a speech act, but other constructions embed more general demonstrations.

(18) John was all ‘Ahh! I hate spiders!’
(19) My cat was like ‘Feed me!’
(20) He was like [gobbling gesture].  (Davidson 2015)
Use vs. mention

Use of a word vs. mention of a word:

(21) Use: John ate succotash.
(22) Mention: John said the word ‘succotash’.

Some cases seem to be simultaneously use and mention:

(23) Trump doesn’t want a ‘loser’ to be president.
(24) Warren says electing Trump would be a ‘really really really’ big mistake for the American people.

Mention, in that this must be the exact words that were said.
Use, in that it retains the syntax and semantic type of original.
Use or mention?
(25) I hear the words ‘that’s final’ come out of your mouth ever again, they truly will be ___.

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Role shift

- In sign language, **role shift** is a perspective-taking construction, marked by shifting the body.

- **Attitude role shift:**
  - Very much like quotation in spoken language.
  - Entails the existence of a speech act.

\[
(26) \quad \text{JOHN} \xrightarrow{\text{RS-a}} \text{IX-a} \xrightarrow{\text{RS-a}} \text{IX-1 LIKE ICECREAM.}
\]

  ‘John said, ‘I like icecream.”

- **Action role shift:**
  - No speech act entailed.

\[
(27) \quad \text{MARY-a} \xrightarrow{\text{RS-a}} \text{1-WATCH-b.}
\]

  Mary was watching it (like this).
Role-shift preserves iconic information

- ASL, no Role Shift:

(28) IX-b HAMMER.
‘He was hammering’
\[\text{\#Response: No, he was hammering upwards}\]

- ASL, Action role shift:

(29) IX-b \underline{RS-b} HAMMER
‘He was like hammering [like this]’
\[\text{Response: No, he was hammering upwards}\]
Role-shift preserves iconic information

(30) IX-a 1-WALK-WITH-ENERGY(CL-ONE).

‘He walked with energy.’

Even if smile starts before RS, the presence of RS means that it must be interpreted as the agent being happy.
Analysis sketch

- Under role shift, words are both *use* and *mention*.
  - Syntax must be obeyed, but the *manner* of utterance is also interpreted.

- Role shift, like classifiers, introduces an iconic argument; this iconic argument captures the ‘mention’ qualities of the utterance.

- Davidson (2015) (following Supalla 1982): Can role shift be viewed a classifier of the whole body?
  - Here, ‘preserving internal structure’ will entail that facial expressions, etc. will be retained.
Section 8

Other topics
New directions...

- All this work is super new ... the large majority of the results I’ve presented have appeared in the last five years.

- Many questions and phenomena still to investigate!
Topics

▶ Non-manuals
  ▶ The role of simultenality
  ▶ The meaning of functional non-manuals
    (Wilbur 2011, Benitez-Quiroz et al. 2016)

▶ Sublexical decomposition
  ▶ Again-ambiguities
    (Kuhn 2015)

▶ Specificity of indefinites and quantifier domain restriction
  (various works by Gemmar Barberà; Davidson and Gagne 2014)

▶ Counterfactuals and modality
  (Schlenker 2013)
Spoken language is generally considered a linear signal.

Sign language, with two articulators and a face, can express simultaneous signals.

- Not the same pressure to linearize.

Simultaneity of manual signs:

- Classifiers
- Buoys
Non-manual signs

- Simultaneity of non-manual signs (i.e. facial expressions).
- Two functions:
  - **Grammatical**: Y/N questions, wh-questions, negation, conditionals. (Similar to intonation in spoken language.)
  - **Affective (adverbial)**: carefully, sloppily,...
- Wilbur 2011: Roughly speaking, non-manual signs spread over the syntactic domain over which they take scope.
- Tentative data:

  (31) a. \(\text{ALL STUDENTS UNDERSTAND}^{hs} \) \(\checkmark \neg > \forall\) \(\forall \checkmark > \neg\)

  b. \(\text{ALL STUDENTS UNDERSTAND}^{hs} \) \(\star \neg > \forall\) \(\forall \checkmark > \neg\)

  ‘All the students didn’t understand.’
The meaning of non-manuals

- Some non-manuals seem to indicate a natural semantic class.

- Brow-raise:
  - Y/N questions
  - Antecedent of conditions
  - Disjunction
  - Topicalization

- Can we state a generalization in terms of inquisitive semantics?
Section 9

‘Again’-ambiguities
In English, the adverb *again* has been shown to be ambiguous with telic verbs.

(32) I closed the door again.

a. **Repetitive:** I closed the door twice.

b. **Restitutive:** I returned it to a state of closure.
Again ambiguities in English

A popular analysis:

- Verb is morphologically complex; structural ambiguity based on where *again* attaches.
- In our terms, something like:

\[
\text{(33) } \quad \begin{array}{c}
\text{a. } \\
\text{again} \\
\text{pos} \\
m
\end{array} \quad \begin{array}{c}
b. \\
\text{pos} \\
\text{again} \\
m
\end{array}
\]
Again-ambiguities in ASL

For some signers, ASL shows a similar ambiguity with AGAIN.

(34)  
   a. IX-1 DOOR AGAIN CLOSE.  
       ‘I closed the door again.’  
   b. YESTERDAY JOHN SELF CHANGE WOLF AGAIN  
       ‘Yesterday, John changed into a wolf again.’  
   c. THIS YEAR, GROUP AGAIN GREW.  
       ‘This year, my group grew again.’  
   d. THIS WEEK, TEMPERATURE INCREASE AGAIN.  
       ‘This week, the temperature increased again.’
Iconicity and *again*

*Preliminary results!*

- With iconically incompletive forms, verbs still ambiguous!

  (35) I DOOR AGAIN CLOSE-incomplete.

  a. **Repetitive:** I incompletely closed the door twice.

  b. **Restitutive:** I returned it to a state of being incompletely closed.

- The state of incomplete closure must be retrievable from the meaning of the modified verb so it can be targeted by *again*.

- This state is available on a scale-based decomposition, which represents the full set of closure-degrees.
Section 10

Scope and domain of quantifiers
Domain of quantifiers

- Davidson and Gagne 2014: height tracks domain restriction. (‘More is up.’)

(36) Context:
Last night I watched a movie with my friends about vampires. Afterwards I went to bed and I dreamt that...

(37) a. ALL-low TRANSFORM INTO VAMPIRE.

b. ALL-high TRANSFORM INTO VAMPIRE.
‘...everyone transformed into vampires.’

- Also for NONE, SOMEONE
Specificity of existentials

- For existentials, what’s the contribution of widening the domain?
- Perhaps: implicature of unidentifiability
- Barberà 2012: in Catalan Sign Language, this is grammatically encoded.
  - High loci used for non-specific reference
  - High locus can’t introduce discourse referents without modal subordination
Thanks!