Sign Language Semantics Day 1: Introduction – modality and meaning

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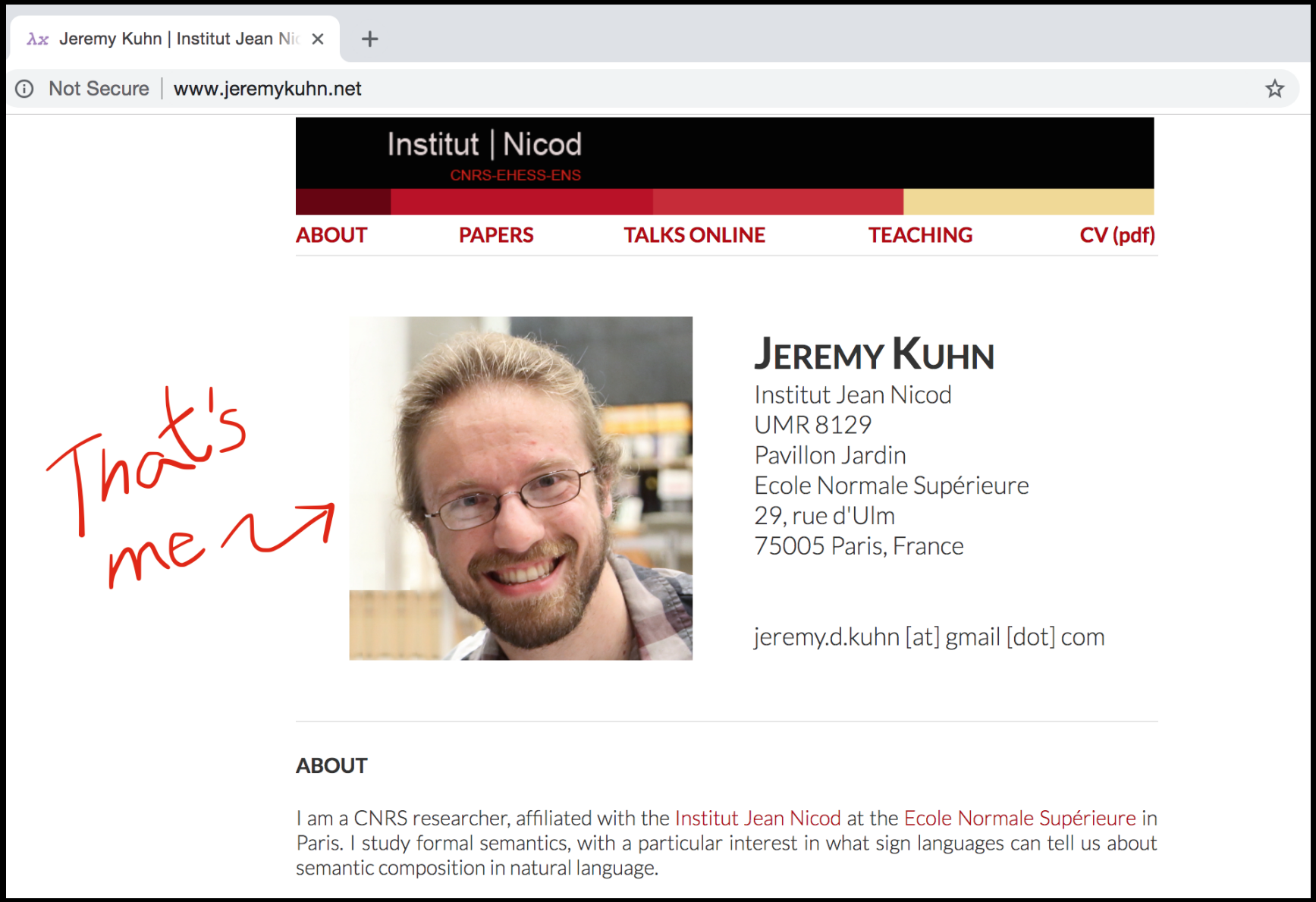
Who am I?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ABOUT
I am a CNRS researcher, affiliated with the Institut Jean Nicod at the Ecole Normale Supérieure in Paris. I study formal semantics, with a particular interest in what sign languages can tell us about semantic composition in natural language.

Who are you?

Why study sign languages?

1. We want to understand general language faculty.
   - Any theory of natural language must take into account language in all its forms, signed as well as spoken.
   - Sign languages are relatively understudied (though there's more and more good work!).

2. Sign languages are often learned differently, as a late first language.
   - What does this tell us about acquisition?

3. Sign languages occur in a different modality: they are manual/visual instead of oral/auditory

Two modalities of language

Spoken language

Sign language

Articulators: Mouth/tongue
Signal: Linear, acoustic waveform
Perception: Auditory (ears)

Hands/face
Multi-dimensional image
Visual system (eyes)

Sign language semantics?

- A different modality
  - Allows us to abstract away from the oral/auditory mode.
  - When does 'modality matter'?
- Modality effects on syntax, morphology, phonology....
- This class: what can sign languages tell us about the **semantics** of natural language?

Section 1

Getting started

Some myths about sign language

- **Myth 1:** Sign language is mime.
- Sign languages can talk about non-tangible things: ideas, philosophy, mathematics, ...
- Words are arbitrary:

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American Sign Language: ‘where’

French Sign Language: ‘not’

Japanese Sign Language: ‘what’

Some myths about sign language

- Now, there *is* iconicity in sign language...
- ...but what is iconically represented is not predictable.

BIRD

Israeli Sign Language

American Sign Language

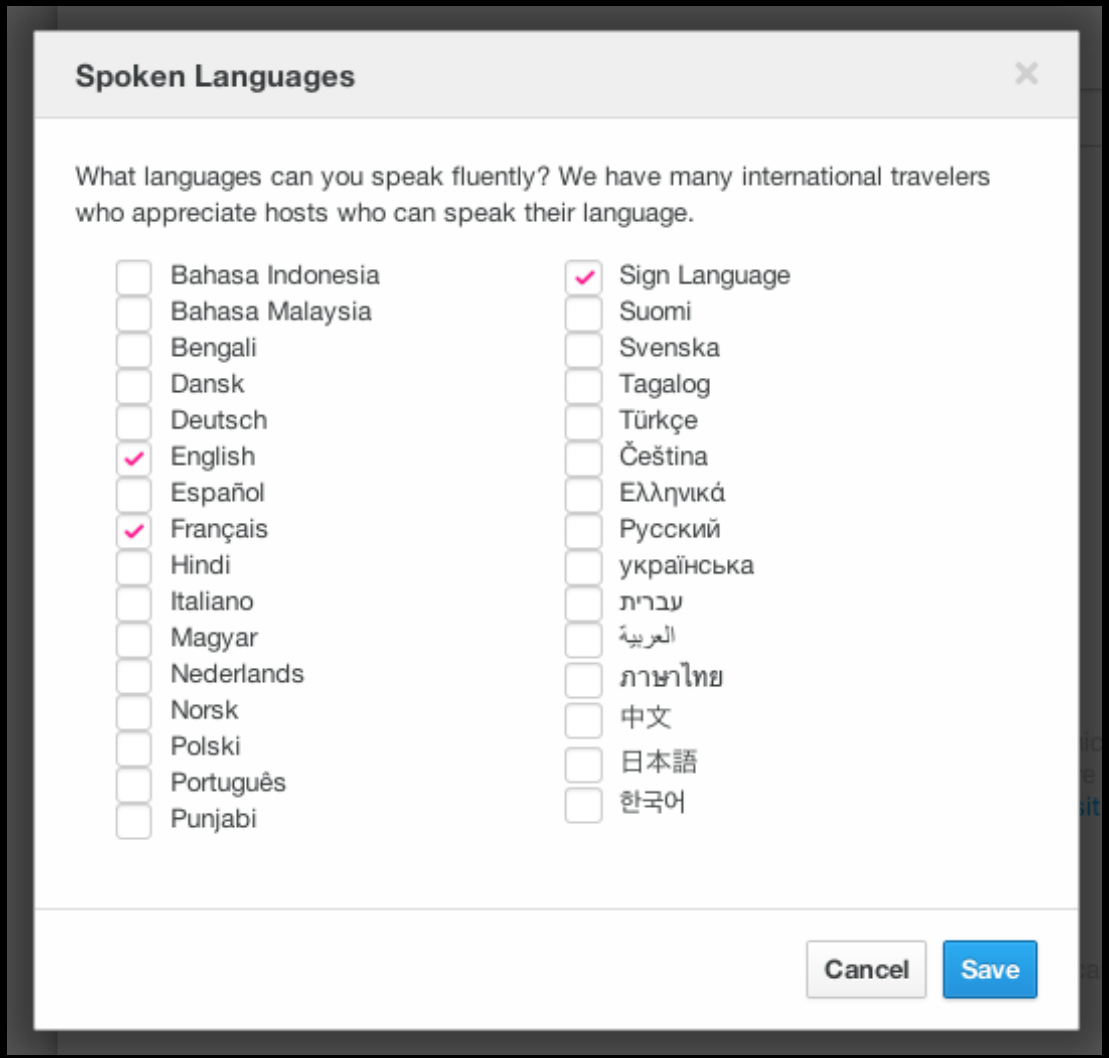
Some myths about sign language

- **Myth 2:** There is one sign language.

Dr. Peter Hauser (right) presenting in ASL at TISLR 11, simultaneously being translated into English, British Sign Language (left), and various other sign languages (across the bottom of the stage).

Some myths about sign language

From airbnb.com:



Some myths about sign language

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LIS: object > verb

Italian: verb > object

(1) a. GIANNI COFFEE ORDER

b. Gianni ha ordinato il caffè
'Gianni has ordered a coffee'

Some myths about sign language

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  LIS: object > verb > modal

  Italian: modal > verb > object

  (2) a. GIANNI CONTRACT SIGN CAN
  b. Gianni può firmare il contratto
  'Gianni can sign the contract'

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  LIS: object > verb > modal > negation

  Italian: negation > modal > verb > object

  (3) a. GIANNI CONTRACT SIGN CAN NEG
  b. Gianni non può firmare il contratto
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Some myths about sign language

- **Myth 3:** The grammar of a sign language depends on the grammar of the spoken language.

  LIS: object > verb > modal > negation

  Italian: negation > modal > verb > object

  (3) a. GIANNI CONTRACT SIGN CAN NEG
  b. Gianni non può firmare il contratto
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- Italian is *head-initial*; Italian Sign Language is *head-final*!

Section 2

Some sign language history

Sign language 'protohistory'

- We have every reason to believe that sign languages are just as old as spoken languages
  - Deaf people have been around forever
  - Language tends to emerge in communities that need it
- A difference: sign languages don't have a written form*.
  - French dates to 842, with *The Oaths of Strasbourg*
  - It is much harder to track the history of sign languages!

*At least, nothing old and widespread.

Old LSF

- The first SL with clear documentation: Old LSF.
- In the 1700's, the Abbot Charles De l'Epée dedicated himself to the education (and salvation) of the deaf.
- By looking at the way deaf children communicated among themselves, De L'Epée thought he had discovered the "Universal Language." Really, it was Old LSF.
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- Anyhow, De l'Epée founded his school in 1755.
- What about before the Abbé de l'Epée? How do you track the history of a language without a written form?

[Check out the work of Yann Cantin!]

The birth of ASL

- In the early 1800s, Thomas Gallaudet wanted to establish a school for the Deaf in the US.
- First went to England, which used 'oralist' methods.
  - Unwilling to share methods. Why? Proprietary secrets.
- So, Gallaudet decided to go to Paris, where he met Laurent Clerc, a Deaf teacher at De l'Epée's school.

The birth of ASL

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- Their school, established 1816, became very influential.
- The Old LSF imported by Clerc amalgamated with local sign languages to make ASL.
- *Surprising result:* ASL and British SL are unrelated languages, despite the fact that the dominant community speaks the same spoken language.
- By the way, there is now a university for the Deaf in the United States.
  - All instruction is in ASL.
  - This is the only university of its kind in the world
  - Its name: Gallaudet University.

Deaf history, more generally

Notice:

- The history of ASL, and thus, of the American Deaf population, is highly dependent on rather arbitrary sociohistorical facts, and in particular, to the opinions of hearing people about how best to educate the deaf.

A much sadder story:

- In 1880, an international congress met in Milan.
- Goal: best educational practices for the deaf.

The Congress of Milan

- At this time, there were two dominant philosophies:
  - Sign language-based: children learn best in a language that they can perceive.
  - The oralist method: children should be prevented from signing, or they won't learn spoken language.

  (We now know: this is false!)
- Through politics and rhetoric, the oralist camp made a convincing show at the Congress of Milan.
- *The result:* the oralist method was adopted as the standard teaching philosophy throughout all of Europe.

The result

- The oralist tradition was implemented in many countries of Europe for 100 years. Until 1980!
- In France, where sign language had had a strong tradition, LSF was suppressed, yielding fewer native speakers, and a much more fragmented language.
- Around 1980, an LSF 'renaissance,' with Deaf signers taking ownership of their language.

[Check out *Une clé sur le monde* by Victor Abbou]

In short...

- Sign language is a **natural human language**.
  - Unique grammars
  - Unique histories
- We see the same grammatical patterns that we see in spoken language.
  - Syntax, semantics, morphology, ... even phonology!
  - **Conclusion:** the same underlying cognitive system.
- But, several places where 'modality matters'.
  - What can you do with signs that you can't with speech?

Sign language is unique

- The **visual-spatial channel** of sign language results in some unique properties:
    1. **Synchronicity**
    2. **Use of space**
    3. **Iconicity**
- Looking at two different modalities gives us a richer perspective on the deep properties of language.

Section 3

Why sign language semantics?

Why study sign language semantics?

Several properties that provide unique perspectives:

- **Visibility:** making overt some linguistic mechanisms hypothesized but covert in spoken language.
- **Iconicity:** form-meaning mapping is non-arbitrary and structure preserving.

(Schlenker 2016)

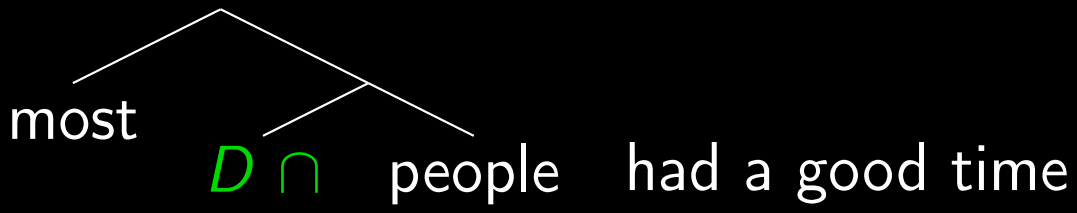
Visibility

- **Visibility:** making overt some linguistic mechanisms hypothesized but covert in spoken language.
  - Direct vs. indirect evidence.
  - Good evidence that something exists if you can see it!

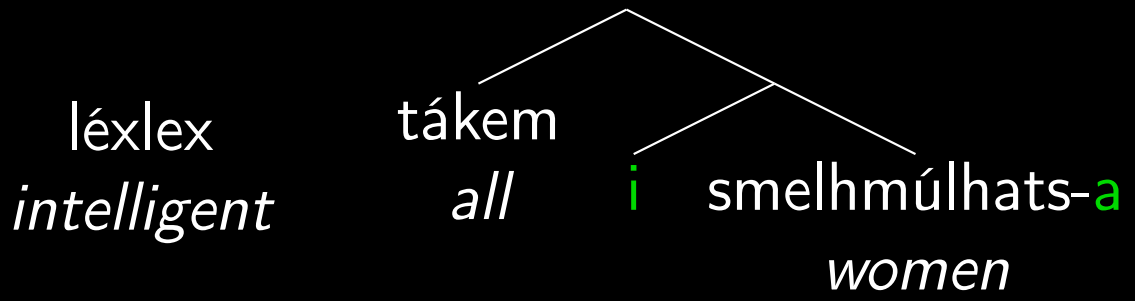
Visibility ... in spoken language

Domain restriction and DP structure (Matthewson)

- English:



- St'át'imcets:



Visibility ... in sign language

(4) Zazaki

hɛseni va kɛ OP [ɛz dɛwletia]
Hesen said that I rich

'Hesen said that Hesen is rich.'

(5) ASL:

role shift
JOHN THINKS IX-1 WILL WIN

Visibility ... in sign language

(4) Zazaki

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(5) ASL:

JOHN THINKS $\overline{\text{IX-1 WILL WIN}}^{\text{role shift}}$

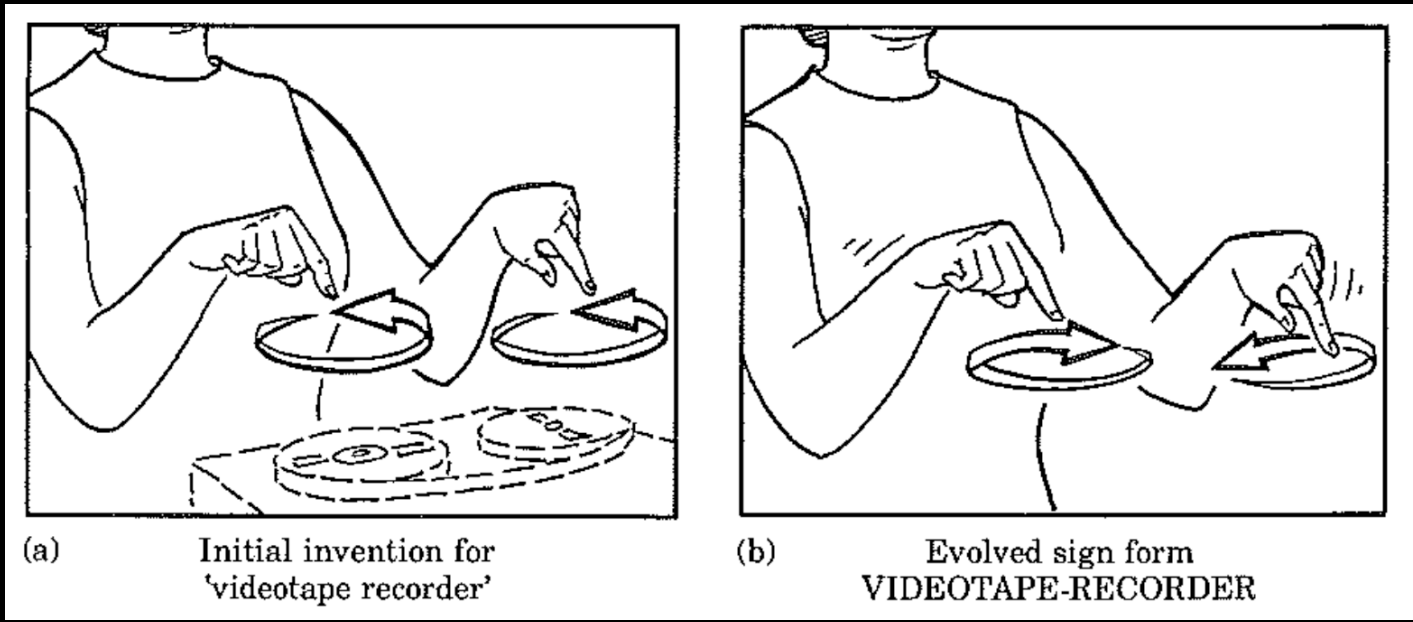
- Visibility in sign language:
  - More frequent?
  - Similar marking across sign languages?

Iconicity

- **Iconicity:** form-meaning mapping is non-arbitrary and structure preserving.

Iconicity

- Many lexical items in sign language have iconic roots.
- But: not clearly active in the synchronic grammar.
  - TREE in ASL, Chinese SL; BIRD in ASL, Israeli SL
- Signs evolve to conform to phonology

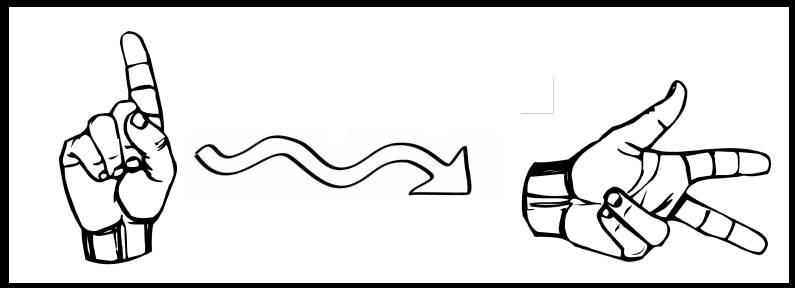


(a) Initial invention for 'videotape recorder'

(b) Evolved sign form VIDEOTAPE-RECORDER

Iconicity

- In other cases, iconic meaning synchronically available.
- Iconicity as a structure preserving mapping between the form and the meaning.



"The person walked to the vehicle along a wavy path."

small disk $\leftrightarrow$ smaller disk

(Emmorey & Herzig 2003)

Iconicity of logical meaning

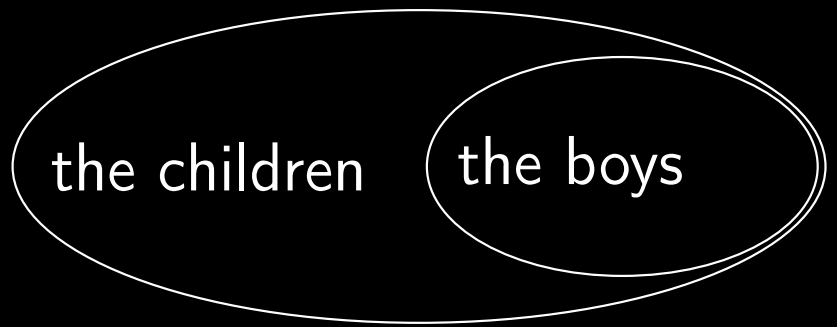
- Also iconic mappings of **abstract, logical meaning**

Iconicity of logical meaning

Example 1: Mereological relations

('Mereology' = the study of parts)

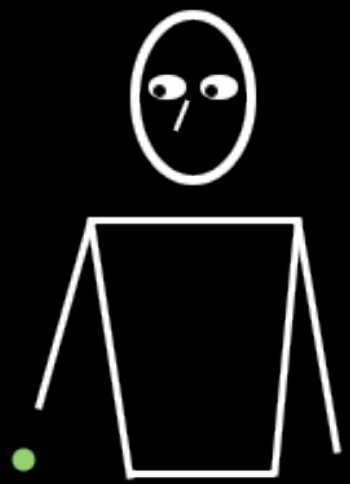
- Natural language makes reference to individuals
  - $[\![\text{John}]\!]$ is an individual (type e)
  - $[\![\text{the boys}]\!]$ is an individual (type e)
  - $[\![\text{the children}]\!]$ is an individual (type e)
- Individuals show mereological structure.



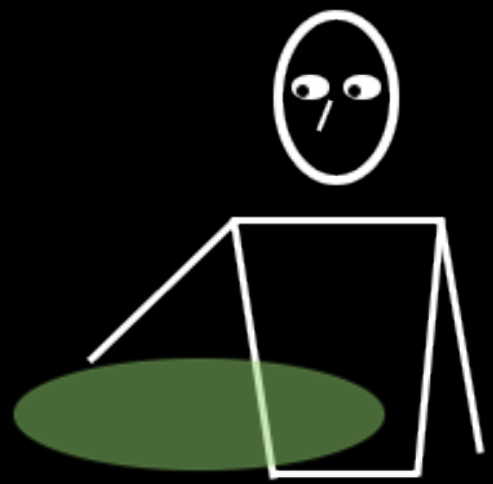
Iconicity of logical meaning

Sign language:

- Singular individuals indexed at points in space.
- Plurals (i.e. sets of individuals) are indexed over areas of space (i.e. sets of points).



singular locus

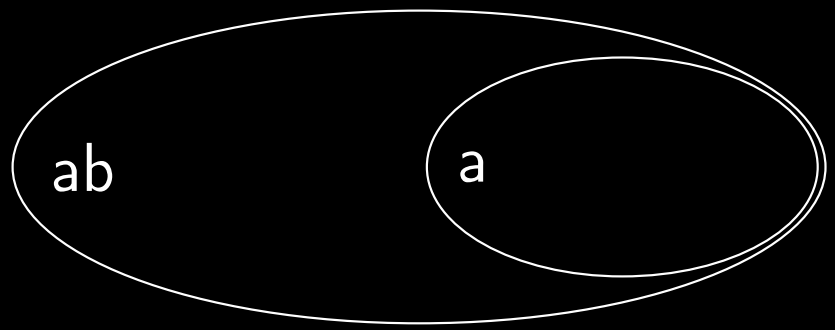


plural locus

Iconicity of logical meaning

Schlenker, Lamberton, and Santoro (2013):

- When one plural locus is a sub-area of another plural locus, an inference: the denotation of the first is a subset of the denotation of the second.

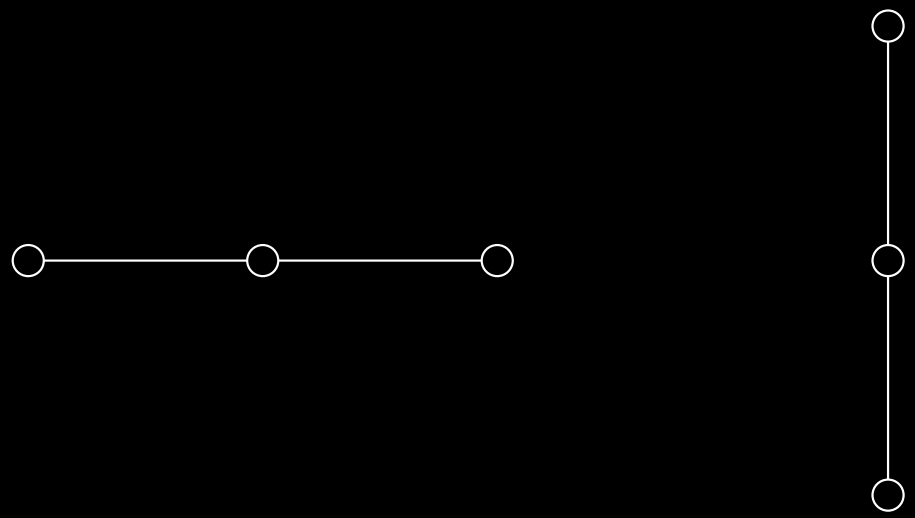


- Iconic preservation of mereological structure.

Iconicity of logical meaning

Example 2: Total orderings

- Natural language makes reference to times and degrees
  - $[\![\text{[PAST]}]\!] = \lambda p.\exists t[t < t_{\text{now}} \wedge p(t)]$
  - $[\![\text{-er}]\!] = \lambda A dx.\exists d'[d' > d \wedge A(x) = d']$
- Times and degrees show a total ordering.



Iconicity of logical meanings

Sign language:

- Times and degrees may be placed along an axis in space.
- Spatial order preserves temporal or scalar order.

Times in CSL:

Lin et al. 2021

Degrees in LIS:

Aristodemo & Geraci 2018

Natural language metaphysics

Metaphysics: what is there, and what is it like?

- The world (physics, math)
  - Jumbled mass of space-time continuum
- Human cognition (psychology, cognitive science)
  - Object cognition
  - Event cognition
- Human language (linguistics)
  - Individuals, events, times, agentivity

Iconicity and visibility

- *Hypothesis:* Iconicity in sign language acts on the same discrete semantic categories as the combinatorial system.
- Visibility in sign language may have its roots in iconicity.

Section 4

The rest of the week

Schedule

Day 1 Introduction: modality and meaning

Day 2 Pronouns in space

Day 3 Events: telicity and pluractionality

Day 4 Iconicity and linguistic typology

Day 5 Gestures, classifier predicates, and quotations

Thematic questions

Addressing old questions:

- Debates about pronouns
- Debates about plurality and licensing

Introducing new questions:

- How does iconicity interface with the formal grammar?
- To what extent does spoken language have analogous iconic phenomena?

Contact

Don't hesitate to get in touch with me if you have any questions throughout the institute:

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