Sign language

Ling 001 – Fall 2016
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Some myths about sign languages

- Sign languages are not human languages.
- Sign languages are just pictures in the air.
- Sign language is universal.
- Sign languages are manual encodings of the surrounding spoken language.
Sign languages are languages

- Brain studies provide incontrovertible evidence that sign languages are human languages.
- Like spoken language, sign language is processed by the linguistic (generally left) hemisphere.
- As with spoken language, trauma to the linguistic hemisphere results in either Broca’s aphasia or Wernicke’s aphasia.
Brain activation for sign and speech
(fMRI study by Sakai et al. 2005:1411)
Arbitrariness vs. iconicity

- In spoken language, the form of a word (its sound) is generally unrelated to properties of its referent.
- Based on spoken language, arbitrariness has been taken to be a fundamental design feature of human language (Hockett 1960).
- Words in sign languages tend to be more iconic than are words in spoken languages.
TREE - American Sign Language
TREE - Chinese Sign Language
TREE - Danish Sign Language
Limits of iconicity - Synchronous, 1

- The three signs for TREE evoke the physical shape of the referent (= iconic).
- But the shape is evoked in different ways (= arbitrary), and the sign is fixed (= conventional) for each language.
- Signers cannot decide to use a different sign – no matter how iconic.
- Conventionality trumps iconicity.
Limits of iconicity - Synchronic, 2

- Etymologically iconic signs become opaque to native signers.
  - JOT < PUT + PAPER
- This is comparable to English compounds that have lost their transparency.
  - always < all + ways (cf. dialectal ‘all roads’)
  - cupboard < cup + board
Limits of iconicity - Diachronic

- The origin of signs is often iconic.
- But once a sign becomes conventional, the basis of the association with its referent becomes purely formal.
- Iconicity goes from being in the driver’s seat to being a dispensable passenger.
Loss of iconicity

- As a result, a sign’s iconic properties are subject to erosion.

  - HOME < EAT + BED
  - SISTER < GIRL + SAME
  - STUDENT < LEARN + agentive suffix
Universal sign language?

- Ethnologue lists 130 Deaf sign languages throughout the world
How do sign languages arise?

- Spontaneous emergence
  - Home sign
  - Village sign
- Some examples
  - Nicaraguan Sign Language
  - Al-Sayyid Bedouin Sign Language
  - Martha’s Vineyard Sign Language
- Language movement, contact, and evolution
  - Comparable to the emergence of pidgins and creoles
  - ASL is one example of this
ASL is not fingerspelled English!

- Sign languages are not manual encodings of the surrounding spoken language.
- ASL is not historically related to English.
- It is not historically related to British Sign Language.
- It is also not mutually intelligible with BSL.
ASL < LSF

- ASL is historically related to L(angue des) S(ignes) F(rançaise) (French Sign Language).
- It developed in the early 1800s from contact between LSF and early North American village sign systems.
- Notable among the latter is Martha’s Vineyard Sign Language (< Old Kentish Sign Language).
Sign language has phonology (!)

- *phon-* < Greek for voice
- How can languages that don’t use the voice have phonology?
Duality of patterning, 1

- All human languages have meaningful units (morphemes) that combine with one another to yield phrases and sentences.
- The part of a language’s grammar that governs the combination of meaningful units with one another is called the morphosyntax.
Duality of patterning, 2

- Individual morphemes can be broken down into meaningless units.
- The part of the grammar that governs the combination of the meaningless units among each other and into the meaningful units is called the phonology.
The bifurcation of grammar into syntax and phonology is a key design feature of human language.

Hockett 1960 calls it duality of patterning.

Duality of patterning is independent of a language’s modality (signed or spoken).
Duality of patterning, 4

- Both spoken and signed languages have meaningless units.
- The meaningless units in spoken language concern gestures made with the muscles of the vocal tract, resulting in acoustic signals.
- The meaningless units in signed language concern gestures made with other muscles (notably the arms and hands, but including others), resulting in visual signals.
Phonological minimal pairs in English

- b-ad, d-ad, f-ad, m-ad, ...
- b-a-d, b-e-d, b-i-d, b-u-d, ...
- ba-d, ba-g, ba-ck, ba-n, ...

The words in each of these groups are not related by way of meaning.

Rather, they are related by way of form; their relation is purely phonological.
Phonological minimal pairs in ASL

- ASL has phonological minimal pairs that are comparable to the ones for spoken languages.
- The minimal pairs provide evidence for linguistic properties that are independent of meaning – that is, for phonology and duality of patterning.
Phonological parameters of sign languages

- Handshape
- Location
- Movement
- Orientation
- Non-manual features
Handshape

- Position of fingers and thumbs and flexion / extension of relevant joints
- Minimal pairs show that handshape is part of a morpheme’s lexical entry (i.e., it must be memorized).
- CANDY vs. APPLE
Unmarked handshapes, 1
Unmarked handshapes, 2

- Perceptually most distinct and salient
- Universal across sign languages
- Used most frequently in each sign language
- Acquired earliest
- Phonologically less restricted
Marked handshapes

- 20+ in ASL
- Articulatorily and perceptually more complex
- Less common in and across sign languages
- Acquired later
- Phonologically more restricted
Handshape - Crosslinguistic variation

- Each sign language uses a limited number of possible handshapes.
- Handshapes may be grammatical in one sign language, but ungrammatical in another.
- Taiwan Sign Language signs for BROTHER and SISTER are ungrammatical handshapes in ASL.
Location

- Place of articulation relative to face, torso, or non-dominant hand or arm
- Again, minimal pairs show that location is part of a morpheme’s lexical entry
- SUMMER vs. UGLY vs. DRY
Movement, 1

- Primary movements
  - Straight vs. arc vs. hook (“7”)
  - Vertical vs. horizontal
  - Towards vs. away from the body
  - Unidirectional vs. bidirectional

- Secondary movements
  - Wiggling or hooking fingers
Movement, 2

- CHAIR vs. TRAIN
- CHURCH vs. CHOCOLATE
- Also, deverbal nominalizations:
  - SIT, CHAIR
Orientation

- Various parts of the hand (palm, fingertips) can be oriented differently.
  - Up or down
  - In or out
  - Ipsilateral (right hand faces right) or contralateral (right hand faces left).
    Analogously for left hand.
- SOCK vs. STAR, GAME vs. WITH
Non-manuals, 1

- Non-manual gestures involve the head, eyebrows, mouth, position of body, etc.
- Independent of expression of affect!
- LATE vs. NOT-YET
Non-manuals, 2

- Gestures with whole head or lower face can indicate adverbial modification
  - Headshake ‘negation’
  - MM ‘as usual, with enjoyment’
  - TH ‘carelessly, sloppily’
  - Puff cheek = takes a long time
Non-manuals, 3

- Gestures involving eyebrows and angle of upper body are comparable to spoken-language intonation
  - Marks topics
  - Mark sentence type
    - Statement vs. yes-no question vs. wh-question
  - Distinguish true questions from question-answer pairs
A further source of evidence for sign phonology

- Deaf Broca’s aphasics produce partial errors resulting in nonsense words.
- The sign on the right has the correct location and movement for FINE, but the wrong handshape.
Questions?
References

Influences of surrounding language and culture

- **Shared gestures**
  ME = point to nose in Japan, point to chest in most other parts of the world
- **Fingerspelling**
- **Mouthing**
- **Morpheme order**
  25 generally twenty + five, but five + twenty in German Sign Language (cf. German *fünfundzwanzig*)
Types of signs (in the sense of Peirce)

- **Icon**
  Sign resembles referent in some respect

- **Index**
  Sign has some real-world connection to referent (other than resemblance)

- **Symbol**
  Sign has an arbitrary relation to referent
What about onomatopoeia?

- Onomatopoeia: acoustic iconicity
- Acoustic indexicality is exploited in naming brands.
- But onomatopoeia is not central to spoken languages.
Visual iconicity

- From a game-theoretic point of view, iconic forms are optimal candidates for signs (= Schelling points).
- Humans are a primarily visual species. Given the possibility of a visual language, it’s no wonder that such a species would exploit visual iconicity.
Arbitrariness revisited

- If arbitrariness is a central design feature of human language, and if sign languages are full of iconicity, then the status of sign languages as full-fledged human languages is always in danger.
- “Upplaying” the amount of iconicity in spoken languages is a weak defense.
Arbitrariness revisited, 2

- A stronger defense is to insist on the irreducibly conventional character of morphemes, independently of their iconicity.
- It is this conventionality that allows arbitrariness to emerge in sign languages as a result of factors including:
  - ease of production and perception
  - vocabulary “inertia”
  - increases in vocabulary size
A conjecture: A mode-specific limit on arbitrariness in sign languages

- If signs can develop to be as arbitrary as words in spoken language, upward points could in principle come to mean DOWN, and vice versa.
- We conjecture that such a development is impossible, and that the impossibility is a consequence of the Stroop effect.
An important point about pointing

- Pointing is a distinctively human ability.
- Non-human primates in the wild do not point (Robert Seyfarth, pers. comm., November 17, 2014).
- Chimpanzees in captivity look like they point, but they don’t.
- When put to the test, they fail spectacularly (Povinelli et al. 2003).