WHEN HANDS BECOME MY VOICE, AND EYES MY EARS

American Signed Language

WHAT WE CAN LEARN ABOUT SPOKEN LANGUAGE FROM STUDYING SIGN LANGUAGE

Overview

1. A brief History of ASL
2. The structure of language
3. Is ASL a language?
4. Language Development
5. Language and the Brain
6. Summary and closing remarks…

1. A Brief History of American Sign Language

- 355 B.C. – "Those who are born deaf all become senseless and incapable of reason." *Aristotle.*

- Socrates – "If we had neither voice nor tongue, and yet wished to manifest things to one another, should we not, like those which are at present mute, endeavor to signify our meaning by hands, head, and other parts of the body?"

How Sign Languages Arise

Homesign
- Gestural communication system for interactions with a deaf family member
- Pidgin—simple grammar, limited vocabulary
- Unique to each family, usage limited to lifespan of deaf person

Village sign language
- Arises in community with high incidence of deafness
- Full-fledged language
- Used by both deaf and hearing members, passed down from generation to generation

Deaf community sign language
- Naturally emerges whenever unrelated deaf individuals brought together to form community
- Residential schools for the deaf

1521 – **R. Agricola** wrote De Inventione Dialectica in which he stated that the Deaf can be taught a language.

How did ASL come to North America?

The Introduction of Sign Language to North America.

- Reverend Thomas Hopkins Gallaudet noticed a neighborhood child who did not play with the other children. Her name was Alice Cogswell.

PROFESSOR CLERC.

1817 – the first permanent school for the deaf opened on April 15th in Hartford. **Gallaudet and Clerc** played a major role in establishing this school.

Gallaudet University

1858 – 17 students enrolled at the **Columbia Institution for Instruction of the Deaf and Dumb and the Blind** (Gallaudet University). Edward Gallaudet was the school's first superintendent.

Fall, 2018 - 1808 students were enrolled at Gallaudet University.

National Sign Languages - ASL

American Sign Language (ASL)

- Used by half million deaf and hearing people in U.S. and Canada
- Developed at American School for the Deaf (Hartford, Connecticut, 1817)
- Based on early 19th century French Sign Language (FSL)
- Influenced the development of sign language used in Quebec: Langue des signes Québécoise (LSQ) (~1850)
- Not related to British Sign Language

Given the history of ASL, should we considered it a natural language or a form of manual language coding?

2. Should ASL be Considered a Language?

Language: *A shared, symbolic system for communication.*

Does ASL have a phonology? Syntax? Morphology? Pragmatics?

Phonology – the Sound Codes of Language

Phoneme: A category of language sounds that are treated as the same sound, despite any physical difference among the category members. It is the smallest unit of sound that makes a difference to the meaning of a word.

What type of phonological representations do persons who are deaf have?

Are there "sound-code" representations?

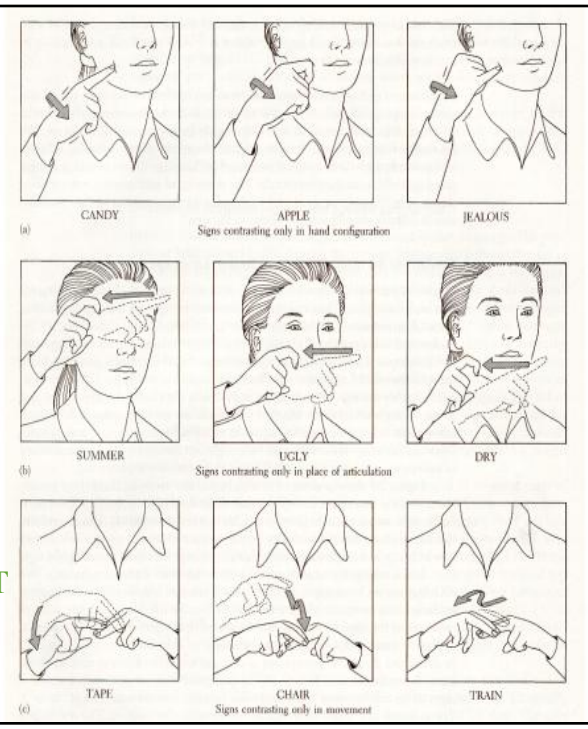
No Sound Codes, but there are Hand Codes - Cherological Representations

- Spoken Languages
  - Phonology:
    - Place
    - Manner
    - Voicing
- Signed Languages
  - Cherology:
    - **Location**
    - **Hand shape**
    - **Movement**
    - **Orientation**

HAND SHAPE

PLACE

MOVEMENT



Phonology

- *The minimalist units of language and the rule system for combining them.*

- Phoneme: **It is the smallest *meaningless* unit of language that makes a difference to the meaning of a word**.

- Cherological codes

Sound Codes???

Skilled readers who are deaf can read novel words and non-words.

If you have not seen a word before, which means you have not had the opportunity to memorize the association between what a word looks like and what it means, naming the word indicates that one accessed phonological or cherological representations.

This skill suggests that readers who are deaf can access similar sound representations as hearing readers.

Pseudohomophone Disadvantage

Pseudohomophone → BRANE

Pseudohomophone: *non-word that "sounds-like" a real word.*

Lexical decision task:		RTs
FOX	yes	500ms
BOCKS	no	850ms
SNOCKS	no	750ms

Both hearing and deaf readers exhibit this pattern of results (Chamberlain & Mayberry, 2001).

How do readers who are deaf acquire spoken phonological representations?

Reading

Lip-reading

Cued-speech

Auditory feedback

Learning to write

Interesting readings:

Marenette, P., & Mayberry, R. I. (2000). Principles for an emerging phonological system: A case study of acquisition of ASL. In C. Chamberlain, J. Morford & R.I. Mayberry (Eds.), *Language Acquisition by Eye*, Mahwah, NJ: Lawrence Erlbaum and Associates.

Morford, J. P., & Mayberry, R. I. (2000). "A reexamination of "Early Exposure" and its implications for language acquisition by eye". In C. Chamberlain, J. Morford & R. Mayberry (Eds.), *Language Acquisition by Eye* (pp. 111-128). Mahwah, NJ.: Lawrence Erlbaum and Associates.

Learning to Read

Literacy as essential skill in modern society
- Vast amounts of printed information
- Writing as means of communicating with hearing people

Reading skills of deaf students typically lag several years behind
- Language skills are often underdeveloped in deaf students
- Lack of phonological awareness
- ASL and English have different grammars and vocabularies

Syntax

Spoken English: subject-action-object order

ASL: SUBJECT-ACTION-OBJECT or SUBJECT-OBJECT-ACTION

Despite the fact that ASL has some differences in terms of ordering words, ASL does have a set of rules for syntactical processing.

Morphology

Free and bound morphemes…

ASL is morphologically richer than English.

Example:
- Ask, ask-you, ask-them…

Pragmatics/Discourse

Again, ASL has some similarities and differences to English in terms of the pragmatic rules of the language.

3. Is ASL a "Language?" Clearing up some misconceptions.

- ASL is not a derivative of English.
- ASL is not simply fingerspelling.
- ASL is not a *universal language* of pantomime.
- ASL is not limited to expressing only concrete ideas.

Is ASL a "Language?"

- Signed languages developed *independently* of spoken languages and hearing cultures.
- ASL is not simply the translation of English into manual codes. ASL takes advantage of our propensity to learn any language, and the flexibility of formal language that aids human communications.

William Stokoe – ASL is not a pantomime. **It has the same basic properties we observe with spoken languages.**

Language Development

Deaf Children of Deaf Parents

Infants exposed to signed language from birth pass typical milestones of language development

Manual babbling

- Repeated movements of hands and arms in ways that mimic components of signed language

Sign language advantage

- Infants can produce first signed word earlier than first spoken word
- Muscle control of upper limbs develops before vocal tract

Sign language advantage soon lost

- Speaking and signing children produce first two-word sentence about same time (18-24 months)

Deaf Children of Hearing Parents

Most deaf children grow up in hearing families

- May be several years old before first exposure to sign language
- Sign language used by family members is poor, since not their native language

Many deaf children don't get full exposure to sign language until they enter school

- Poor advice from doctors and therapists, lack of access to services

Late learners of sign language often fail to develop into native signers

Situation similar to that of children of pidgin-speaking parents

- Although signing of hearing parents is inconsistent, deaf children extract regularities in the input
- Deaf children quickly surpass parents' signing ability

Hearing Children of Deaf Parents

Situation similar to that of second-generation immigrants
- Learn sign language at home, spoken language outside

Code blending
- Discourse in which signed and spoken language are produced simultaneously

Unimodal bilingual
- Able to communicate in two spoken languages

Bimodal bilingual
- Able to communicate in both spoken and signed language
- Do not show cognitive advantage of unimodal bilinguals

Language and the Brain

Neurological Basis for Language Deficits

- It is assumed that the brain is the basis of cognition and language.
- Therefore, if the brain is damaged or insulted in any manner, we should observe specific cognitive deficits.
- The physical brain produces language and thought.

- Brentari, Poizner, & Kegl (1995).
- Question: Is it the case that deaf individuals with Parkinson's disease or aphasia exhibit the same language dissociations as seen in hearing individuals?
- Participants: (1) Deaf individuals with Parkinsonian symptomatology, (2) Deaf individual with aphasia (left temporal lobe lesions), (3) aged-matched Deaf individuals.

	Parkinson's	Aphasics
Error patterns:	substitutions	incorrect templates
Fluidity:	monotonous signing	longer phrase-finals (staccato)
ASL structure:	movement	handshape

ASL engages similar brain regions as spoken languages. Damage to these regions influences language comprehension and/or production.

This evidence provides further support for the materialism perspective of cognitive processing.

Summary Remarks

Sign language
- Structured communication systems with all the features of spoken language
- Perceived visually, produced through hand movements and facial expressions
- Term often reserved for specific language, such as American Sign Language (ASL)

Signed language
- Expression of language in the manual-visual mode
- As opposed to spoken language

Closing …

Early exposure to language will allow a child to develop "normally" whether that language is spoken or signed.

Selected readings and references:

*Gannon, J.R. (1981). Deaf heritage: A narrative history of Deaf America. Silver Spring, Md.: National Association of the Deaf.

*Lane, H.L. (1984). When the mind hears : A history of the deaf. New York: Random House.

Petitto, L.A. & Marentette, P.F. (1991). Babbling in the manual mode: Evidence for the ontogeny of language. Science, 251, 1493-1496.

Poizner, H., Bellugi, U., & Klima, E.S. (1990). Biological foundations of language: Clues from Sign Language. Annual Review of Neuroscience, 13, 283-307.

Rapin, I. (1995). Acquired aphasia in children. Journal of Child Neurology, 10, 267-270.

Rapin, I. (1996). Reply to Woll and Sieratzki. Journal of Child Neurology, 11, 348-349.

***Sacks, O.W. (1989). Seeing voices : A journey into the land of the deaf. Berkeley : University of California Press.**

Soderfeldt, B., Ingvar, M., Ronnberg, J., Eriksson, L., Serrander, M., & Stone-Elander, S. (1997). Signed and spoken language perception studied by positron emission tomography. Neurology, 49, 82-87.

Woll, B. & Sieratzki, J.S. (1996). Sign language for children with acquired aphasia. Journal of Child Neurology, 11, 347-348.

Video and Web Learning Supports

Video: an example of some basic ASL signs. Note that some of these are minimal pairs – see if you can identify them. If you know a signer, see if s/he can show you some minimal pairs for taboo or swear words, so you don't make those mistakes, of course! Lifeprint.com

Video: showing and explaining differences between ASL and SEE (signing exact English), with a voice over translation.

Audio: Marie Coppola talks about her research with Nicaraguan Sign Language and homesign systems, and the non-profit organization she founded and directs, Manos Unidas, to help support this community. NPR, Worldview

Audio: An interview involving Professor Emmorey: the transcript, along with some still shots. Australian Broadcasting Corporation

Video and Web Learning Supports

National Association of the Deaf – promoting civil rights of deaf people, with many educational resources, as well.

Handspeak.com – a great resource to learn about many aspects of ASL. Check out the word of the day feature, the dictionary, tutorials, deaf culture, etc. There are several other ASL dictionaries and educational sites, too.

Karen Emmorey's Lab for Language and Cognitive Neuroscience at San Diego State University. She and her colleagues, some of them deaf, investigate many questions about sign languages.

A listing of sign languages around the world – use the yellow tabs to access the information. There are also home sign systems that deaf people in more isolated circumstances develop with their caregivers and local community.