Semantic change in the visual-spatial modality: Evidence from cross-linguistic body-part naming

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ISGS 6
July 8, 2014

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Background: Prior work

• Wilkins (1996) identifies 5 tendencies in semantic change
  • Typological study of 41 body-part concepts
  • Dravidian, Bantu, Indo-European, Tibeto-Burman
    • Validated with data from Austronesian, Papuan, and indigenous American languages
  • Tendencies account for 50% of documented changes

• Where are the signed languages?
  • Systematic variation driven by modality-specific effects
  • Diachronic: Morphophonological change
    • Decrease in iconicity (Frishberg 1975)
  • Synchronic: Iconicity principle (Wilcox and Wilcox 1995)
    • Concrete concepts more iconic than abstract/metaphoric concepts
  • Body-part naming in the visual modality: **direct indexicality**
Background: Current study

- Wilkins (1996) identifies 5 tendencies in semantic change
- Where are the signed languages?
- Goals of this study
  - Investigate changes in body-part naming in signed languages
    - Compare modern ASL and LSF data to historical OLSF data
    - Sources:
      - ASL and LSF: online and print dictionaries
  - Compare diachronic and synchronic patterns in signed body-part naming
Background: 5 tendencies

- Wilkins (1996) identifies 5 tendencies in semantic change
  1. Visible person-part shifts to refer to the visible whole of which it is part
     - Example: ‘navel’ → ‘belly’ → ‘trunk’ → ‘body’ → ‘person’
  2. Person-part term shifts to refer to a spatially contiguous person part within the same whole
     - Examples: ‘belly’ ↔ ‘chest’; ‘skull’ ↔ ‘brain’
  3. Where the waist provides a midline, terms referring to parts of the upper body shift to refer to parts of the lower body and vice versa
     - Examples: ‘elbow’ ↔ ‘knee’; ‘uvula’ ↔ ‘clitoris’; ‘anus’ → ‘mouth’
  4. Term for an animal part shifts to refer to a person part
     - Examples: ‘snout’ → ‘nose’; ‘beak’ → ‘face’
  5. Term for a verbal action involving the use of a particular person part shifts to refer to that person part
     - Examples: ‘walk’ → ‘leg’; ‘hold’ → ‘hand’
Methodology

• Data collection
  • 37 body-part OLSF entries; compared to ASL and LSF lexemes with similar semantics
  • OLSF semantics and phonological forms categorized
  • Modern lexemes compared to OLSF forms and categorized:
    • Types of changes
    • According to Wilkins’ tendencies

• Phonological changes:
  • Addition or deletion of movement or location
  • Shift from indexical non-marked handshape (1-hand or B-hand) to marked handshape (eg., G-hand, bent B-hand)
  • Change to fingerspelling

• Semantic changes:
  • Degree of indexicality
  • Change in phonological forms leads to semantic narrowing
  • Complete change in meaning
Results: OLSF

• Mostly prose descriptions; some illustrative plates
• 36/37 entries are indexical
  • 27 entries: *l’indiquer sur soi(-même)* ‘indicate on (one)self’
    • 5 entries: description of manner of movement
  • 4 entries: implied direct indexicality
    • DOIGT ‘finger’: *en indiquer un*
• 1 entry: iconic
  • GENOU ‘knee’: verbal classifier “kneeling”
## Results: Types of changes

<table>
<thead>
<tr>
<th>Type of change</th>
<th>ASL</th>
<th>LSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>No evidence of major change</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Sweep extent of visible body part</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Pat or pinch part of body part</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Pat or pinch totality of body part</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Fingerspelled</td>
<td>5</td>
<td>none</td>
</tr>
<tr>
<td>Shift in meaning from upper body to lower body</td>
<td>none</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
Types of change: Extent

• Sweep extent of visible body part
  • Change from ambiguous index to delineation of extent
  • Example:
    • OLSF BRAS ‘arm’: indiquer son bras droit en le frappant de la main gauche (indicate his right arm by hitting with the left hand)
    • ASL ARM

![Image of ASL ARM and LSF BRAS]
Types of change: Extent

• Indicate extent of body part
  • Change from ambiguous index to delineation of extent
  • Example:
    • OLSF BRAS ‘arm’: indiquer son bras droit en le frappant de la main gauche (indicate his right arm by hitting with the left hand)
    • OLSF: may be analyzed as ‘forearm’ or ‘arm’ or possibly ‘this particular spot on arm’
      • Unclear if hand included in referent
    • Semantic narrowing: Change from conflation of type indexicality and deixis to type indexicality
  • Classified as Wilkins’ tendency #1: reference from visible part to the visible whole of which it is a part
    • Maintenance of direct indexicality and handshape
    • Change to whole arm
Types of change: Indicate part

• Pat or pinch part of given body part
  • Example: OLSF  CERVEAU ‘brain’: *l'indiquer sur soi*
    CHEVEU ‘hair’: *en indiquer*
    TÊTE ‘head’: *l'indiquer sur soi-même*
    CRÂNE ‘skull’: *l'indiquer sur soi*

• OLSF:  Same sign for brain/hair/head/skull

• ASL  HAIR: F-hand pinch hair
    HEAD: Bent-B hand chin, forehead
    SKULL: 2-hand forehead, chin

• Significant phonological changes differentiate meaning
Types of change: Indicate part

- Pat or pinch part of given body part
  - Example: OLSF CERVEAU ‘brain’: *l'indiquer sur soi*
    CHEVEU ‘hair’: *en indiquer*
    TÊTE ‘head’: *l'indiquer sur soi-même*
    CRÂNE ‘skull’: *l'indiquer sur soi*
  - ASL BRAIN:
    - Narrowing: brain/hair/head/skull → brain
    - Classified as Wilkins’ tendency #2: shift to refer to a spatially contiguous person-part within the same whole
    - Indirect indexicality
Types of change: Totality

• Pat or pinch totality of body part
  • Change from ambiguous index to delineation of extent
  • Example: OLSF MÂCHOIRE ‘jaw’: l'indiquer sur soi
    JOUE ‘cheek’: l'indiquer sur soi
  • OLSF Same sign for jaw/cheek
  • LSF MÂCHOIRE: indicate length of jaw with C-hands
    JOUE: point to cheek with circular motion
  • Narrowing: cheek/jaw → cheek
  • Classified as Wilkins’ tendency #1: Reference from visible part to the visible whole of which it is a part
    • Possible challenge to claim that this tendency is unidirectional: part → whole, not whole → part
Types of change: Fingerspelling

- Fingerspelling
- Above the waist constraint
- Example: OLSF CHEVILLE ‘ankle’: *l'indiquer* → ASL: #ANKLE
- Change to new form
Types of change: Upper/lower

- Upper body → lower body
  - OLSF: PIED ‘foot’ *l'indiquer sur soi*
    MAIN ‘hand’ *l'indiquer sur soi*
  - ASL: fingerspelled or maintains indirect indexicality
  - LSF: indexes hand to indirectly index foot

LSF PIED

LSF MAIN
Types of change: Upper/lower

- Other cases: Upper body → lower body
  - OLSF: PIED ‘foot’ *l'indiquer sur soi*
  - MAIN ‘hand’ *l'indiquer sur soi*
  - ASL: fingerspelled or maintains indirect indexicality
  - LSF: indexes hand to indirectly index foot

- Classified as Wilkins’ tendency #3:
  Terms referring to parts of the upper body shift to refer to parts of the lower body and vice versa
Types of change: Other cases

• Other cases: Body/person
  • OLSF PERSONNE/INDIVIDU ‘person, individual’:
    *des deux mains se parcourir le corps de la poitrine aux cuisses,*
    *indiquant ainsi le corps human* ‘the two hands travel the body from
    the chest to the thighs, thus indicating the human body’
  • OLSF CORPS ‘body’:
    *l'indiquer sur soi-même en se palpant avec les mains le sein le flanc et les cuisses* ‘indicate on oneself by palpating the chest, flank, and thighs’
Types of change: Other cases

- Other cases: Body/person
  - OLSF PERSONNE
    des deux mains se parcouvrir le corps de la poitrine aux cuisses, indiquant ainsi le corps 'the two hands travel the body from the chest to the thighs, thus indicating the human body'
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    l'indiquer sur soi-même en se palpant avec les mains le sein le flanc et les cuisses 'indicate on oneself by palpating the chest, flank, and thighs'
Types of change: Other cases

- Other cases: Body/person
- ASL, LSF ‘person’: New word; less iconic
Types of change: Other cases

- Other cases: Body/person
- ASL, LSF ‘body’: Deletion of thigh location; maintains direct indexicality

ASL BODY

LSF CORPS

- Deletion due to above-waist constraint/size of signing space
Types of change: Other cases

• Other cases: Body/person
• ASL, LSF ‘body’: Deletion of thigh location
  • Deletion due to above-waist constraint/size of signing space
• Narrowing: body/person → body
• Classified as Wilkins’ tendency #1: reference from visible part to the visible whole of which it is a part
  • Possible challenge to unidirectionality of tendency #1
  • Proposes: ‘body’ → ‘person’; not ‘person/body’ → ‘body’
Types of change: Other cases

- Other cases: Cultural differences
  - Account for 30% of Wilkins’ data
- OLSF SEIN ‘breast’: *l'indiquer légèrement sur soi-même*
  POITRINE ‘chest’: *l'indiquer sur soi*

ASL CHEST

LSF POITRINE
Types of change: Other cases

- Other cases: Cultural differences
  - Account for 30% of Wilkins’ data
- OLSF SEIN ‘breast’: *l'indiquer légèrement sur soi-même*
  - POITRINE ‘chest’: *l'indiquer sur soi*

ASL BREAST  

LSF SEIN
Diachronic tendencies

- Observed Wilkins’ tendencies 1, 2, & 3
- Phonological change
  - Above waist constraint/Signing space
  - Decrease in iconicity
    - Direct indexicality: highly iconic
    - Marked handshapes, deletion of indexed locations: less iconic
- Effect of visibility: Iconicity principle at work
  - Visible body parts maintain direct indexicality: patting, pinching, sweeping across body part, undergoing phonological change
  - Abstract or less-visible body parts (‘pied’; ‘cerveau’): semantic narrowing or shift to indirect indexicality
- Additional tendency: Semantic change driven by modality
  - Ability to indicate extent of visually available part drives process
  - Leads to semantic change
Synchronic patterns

- Pyers (2006): Semantics of ASL phonological forms
  - Open-B: surface of a body part
  - Bent-B: internal organs, the skeletal system, and muscles
    - Iconicity principle: Increased markedness of bent-B for non-visible body parts
- 1-hand point with reduplicated movement: type of body part
- 1-hand point with contact and no reduplication: specific area
  - OLSF: ‘indiquer’ direct indexicality not semantically narrow
  - ASL: direct indexicality semantically narrowed
  - Apparent contradiction to part → whole unidirectionality
Conclusion

• Observed semantic and phonological changes from OLSF to ASL, LSF

• Described modality-driven indexicality
  • Direct indexicality: Body part indexed is referent (e.g.: arm for arm)
  • Indirect indexicality: Body part indexed is spatially contiguous to non-visible referent (e.g.: head for brain), or analog of less-visible referent (e.g.: hand for foot)

• Verified 3 proposed tendencies of semantic change
  • Observed potential challenges to unidirectionality of synecdoche

• Proposed additional, modality-specific change

• Compared to systematic variation in synchronic ASL data

• Future directions: Investigate tendencies 4 & 5
References


Acknowledgements

• Thanks to Eve Sweetser, Gary Holland, I-Hsuan Chen, and Oana David for their comments.
Reliability of OLSF data

- 1750s: ~200 individuals in Parisian Deaf community
- Abbés de l’Épée and Roche-Ambroise Sicard:
  - dictionaries of *Langue de Signes Méthodiques* (1779; 1800)
- Abbe Lambert: *Le Langage de la Physionomie et du Geste mis à la Portée de Tous* (1865)
  - documented actual OLSF
- Written data corroborated via comparison w/ illustrated data
  - Unmarked handshapes (1-hand, Open B-hand) not mentioned
  - Marked handshapes described (usually via manner)
  - Unmarked manner of movement not included
  - Marked manner and path of movement described
  - Number of hands reliably described
  - Location reliably described
- Example: *l’indiquer sur soi-même en se palpant avec les mains le sein le flanc et les cuisses*
  - Includes manner; # hands; location; no handshape -> unmarked handshape in illustration
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