On the weight of phrase-final prosodic words

Els van der Kooij
Onno Crasborn
Johan Ros
Radboud University Nijmegen

Domain-final phenomena in signed languages

- Perlmutter 1993: final lengthening as as phonological process (final mora insertion)
- Miller 1996, 2004: role of mora in surface rhythmic structure
- Brentari: “The number of subcomponents of movements can influence sentential word order; that is, the greater the number of subcomponents, the more likely that the word will appear sentence-finally” (1998:245)

Domain-final phenomena spoken language

- Tyler & Cutler (2008): final lengthening as a universal phonetic process; other boundary cues are language specific (syllable complexity, tone)

Possible expressions of prosodic weight

Sequential
- Added movement unit: repetition or hold
- Adding a ‘light’ sign
  - INDEX (IX)
  - PALM-UP
  - PERSON
  - Etc.

Simultaneous
- Adding a hand in one-handed signs (‘weak prop’)
- Adding a simultaneous movement unit (path movement)
- Non-manuals
Observations on final pointing in NGT (TISLR9)

- No pointing following utterance-final polysyllabic (or polymorphemic?) predicate
- Initial evidence that leaving out a final pointing sign can be compensated by enhanced movement of the final sign or added non-manual features (head nod, stronger facial expression)

Final pointing signs in syntax

- Pronoun for emphasis/focus (ASL; Padden 1988 et al.)
- Pronoun copy helps identify the subject in the absence of verb agreement (Bos 1993 on NGT)

Assumption: prosodic hierarchy

- Syllable
  - Foot
  - Prosodic word
  - Phonological phrase
  - Intonational phrase
  - Utterance

Miller 1996, 2004

- Analysis of different types of movement in terms of different syllable types, involving one or two moras
- Heavy (µµ, µµµ) vs. light (µ) syllables

Miller (2004, talk)
Hypotheses on sentence final pointing signs

- Not all sentence-final pointing signs stem from a syntactic operation (pronoun copy) or structure; they may also stem from the prosodic structure
- Larger prosodic domains (e.g., sentences) end in a heavy prosodic word
- In addition to lengthening, adding a pointing sign (or other manual ‘light’ element) can create a heavy prosodic word

Study 1: sentence-final signs

Is it indeed the case that light elements like PALM-UP and INDEX frequently appear in sentence-final position?

Corpus NGT
www.ru.nl/corpusngtuk

92 signers
72 hours

September 2010
12.5 hrs glossed
2 hrs translated
3.5 hrs segmented by sentence

Sentence-final signs

- September 2010: 5.5 hours of glossed sessions that had also been segmented at sentence level

<table>
<thead>
<tr>
<th>Sign</th>
<th>Count</th>
<th>%</th>
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<tbody>
<tr>
<td>IX</td>
<td>636</td>
<td>11</td>
</tr>
<tr>
<td>IX-1</td>
<td>229</td>
<td>4</td>
</tr>
<tr>
<td>IX and PO (L/R)</td>
<td>32</td>
<td>.5</td>
</tr>
<tr>
<td>PO</td>
<td>1667</td>
<td>28</td>
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<tr>
<td>other</td>
<td>3303</td>
<td>56</td>
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<tr>
<td>unclear</td>
<td>35</td>
<td>.5</td>
</tr>
<tr>
<td>Grand Total</td>
<td>5902</td>
<td>100</td>
</tr>
</tbody>
</table>
Study 2: elicited sentences

- Potentially ending in a pointing sign (from van Gijn 2004)
- 21 sentences; translations of written Dutch
- recorded 4x in two different orders
- three native NGT signers
- instruction after second set: reduce pointing

Elicitation sentences

This (X) knows that (Y) is/are (Z)

e.g. The woman knows that her colleague is weird

Final pointing sign

GIRL INDEX PERSON KNOW SWEATER IX WET IX

Final hold

GIRL KNOW ORANGE DIRTY (hold)
‘That girl knows oranges are dirty’
Repetition
GIRL PERSON KNOWS SWEATER WET (rep.)

Adding multiple light elements
BOY LOOK KNOW IX MAN IX SHY PERSON IX
'This boy knows the man is shy'

Do non-manual signals contribute to prosodic weight (and how)?

• PALM-UP as pointers to the non-manual information (e.g. Questions, Modal meanings) in phrase final position

• Evidence from current study: adding or enhancing non-manual signals is one of the compensation strategies in the absence of sentence final weight

PALM-UP + nonmanual as a heavy prosodic unit

Non-manual weight: ‘minimal pair’
IX JUDGE PERSON IX KNOW BOY IX INNOCENT IX
JUDGE PERSON KNOW BOY INNOCENT
head shake
'The judge knows that the boy is innocent'
Possible expressions of prosodic weight
Findings on NGT

Sequential
- Adding a movement unit: repetition or hold: yes
- Adding a ‘light’ sign:
  - INDEX: yes
  - PALM-UP: yes
  - PERSON: yes
  - etc.: combinations; gestures

Simultaneous
- Adding a hand in one-handed signs (‘weak prop’): no
- Adding a simultaneous movement unit: yes
- Non-manuals: yes

What is the nature of these sentence-final phenomena?
- Spoken language final lengthening: a phonetic process
- NGT: multiple phenomena that cannot be analysed as phonetic variation → they can only be unified by a (more abstract) phonological representation of some kind

Proposal: they are surface forms that express a final mora (cf. Perlmutter 1993)

Representation of INDEX
- ‘Projects’ a single µ
- Lexically: only an (open) end slot for setting
- Path movement not lexical
- The phonetic path movement is an epiphenomenon of the transition from the end setting of the preceding sign

Phonological specification

<table>
<thead>
<tr>
<th>Hand configuration</th>
<th>index finger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation</td>
<td>tip</td>
</tr>
<tr>
<td>Location</td>
<td>ρ x</td>
</tr>
</tbody>
</table>

→ only an end setting slot that is filled in post-lexically by the morphology

To what is the mora added?
- It may be added to a plain sequence of syllables, the last one taking on the µ if possible (cf. Perlmutter’s 1993 representation)
- More likely that it comes with a larger prosodic domain of some kind (PP/IP/U)
Conclusions: pointing signs

- Indexical signs can appear (in a final position) without a syntactic motivation
- The alternative appearances of ‘prosodically heavy’ make it unlikely that they are correlates of a specific syntactic operation
- This leaves open that some final pointing signs are indeed syntactically--semantically motivated, but the prediction is that these form a separate bimoraic syllable (i.e., have a path movement), and are not cliticised to a preceding sign

Conclusions: final position

- Final lengthening appears to be different in spoken languages (phonetic) and signed languages (phonological), cf. Perlmutter 1993
- Final positions are prosodically heavy; phrase final Prosodic Words are minimally bimoraic
- Various features can contribute to weight of the final Pwd
  - lengthening (phonetic duration)
  - adding a simultaneous movement specification
  - repetition (increased number of repetitions)
  - an indexical sign (or other ‘light’ element)
  - intense non-manuals
- Sequential weight is represented in terms of an extra mora (µ)
- Nonmanual and manual features are evaluated in the same terms at the lowest prosodic level (µ)

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- Determine the nature of the final prosodic unit that encapsulates the final mora
- The next step: analyse the rest of rhythmic structure in terms of morae as well (cf. Miller, Perlmutter)

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Contact details

e.van.der.kooij@let.ru.nl
o.crasborn@let.ru.nl
www.ru.nl/sign-lang