

## Outline of the talk

- Introduction
- Signs, transitions & the characteristics of transitions
- Experiments with transitions
  - (i) Distribution of acceleration peaks in continuous signing(ii) Comprehension of signing without signs
- Implications for the notion of sign
- Conclusion

#### The sign - temporal perspective

Segmental phonology

A sequence of dynamic and static segments, prototypically containing at least one dynamic segment during which the hand produces a path movement (e.g. Liddell & Johnson 1989; Sandler 1989; Perlmutter 1992)

Prosodic phonology

Prototypically one syllable, understood generally as one dynamic phonological movement unit (e.g. Perlmutter 1992; Sandler 1993; Brentari 1998; Jantunen & Takkinen 2010)

#### Corpus linguistics

Prototypically a series of video frames that identifies with a semantically coherent sequence of sign stream during which the hand(s) move from the initial location of the sign to the final location of the sign, both marked by a change in the direction of the movement (e.g. Crasborn & Zwitserlood 2008: lohnston 2009; Mesch 2010)

### Sign identification method

#### • A sign begins...

on the video frame that immediately precedes the frame in which the dominant hand first shows movement away from the initial location of the sign; if the sign includes only a local movement, the beginning of a sign corresponds to the frame that immediately precedes the frame in which the initial handshape or orientation of the dominant hand first starts to change

A sign ends...

at the frame immediately following the frame in which the path movement of the dominant hand has reached its end or in which the dominant hand still holds a posture or a hand configuration of the sign

## Transitions

• Two types of transitions (see e.g. Blondel & Miller 2001:41-43):

- Sign external transitions, i.e., movements of the hand(s) that occur inbetween signs and transfer the hand(s) from the end location of one sign to the start location of the next sign
- Sign internal transitions, i.e., movements of the hand(s) that occur inside repeated signs and transfer the hand(s) from the end location of the first part of the sign back to the start location of the second part of the sign
- Standard theory treats transitions as nonlinguistic, unintentional, meaningless, automatic, nonsalient, unmodifiable, holistic, etc. (e.g. Wilbur 1990a, Perlmutter 1990, Wilcox 1992, van der Hulst 1993)

#### Research into transitions & key findings

Phonetics

Acceleration peaks, the maximally perceivable and salient moments in the sign stream (e.g. Shaw & Cutting 1980, Wilbur 1990b, Luck & Sloboda 2008, Wolfe & al 2008), can associate with transitions - typically with their beginnings and/or ends - making transitions the most salient moments in the sign stream (e.g. Wilbur 1990ab, Wilcox 1992, Jantunen & al. 2010)

• Poetry

Transitions are modifiable, also linguistically, e.g. for the purpose of expressing emphatic stress (e.g. Blondel & Miller 2001, Sutton-Spence & Kaneko 2007; see also Wilbur 1990a)

• Sign recognition

The lexical recognition point of signs is located within the pre-sign transition (e.g. Grosjean 1981, Clark & Grosjean 1982, Emmorey & Corina 1990, Arendsen, van Doorn & de Ridder 2007, ten Holt & al. 2009)

### Experiment I - Introduction

- The aim: to **demonstrate** the distribution of acceleration peaks in continuous signing with a new software tool developed in cooperation with the Aalto University and JyU for the purpose of visualizing and analyzing signed language motion from a digital video (Jantunen & al. 2010; see also Koskela & al. 2008)
- The basis of the tool is quantitative computer vision analysis (Tomasi & Kanade 1991)
- The tool includes four phases (see the next slide)
- Data: semi-pre-rehearsed FinSL monologue/interview; native Deaf signer; 25fps

### SL Motion Analysis Tool phases











Demonstration The distribution of acceleration peaks (dom. hand only)

















### My argument

- The prevailing conception of the sign is misguided
- Signs are ontologically longer and fuzzier units than the . prevailing view acknowledges
- The ontological re-segmentation and re-definition of • the linear sign makes it possible (i) to count the "transitional peaks of salience" as internal parts of signs and (ii) to say that the (lexical) meaning is conveyed through linguistic symbols also in signed language

#### Towards the ontologically revised sign



# Conclusion

- The data from research into transitions (in continuous signing) suggests that the prevailing ontology concerning the sign and transitions is misguided
- The sign needs ontological revision into a longer and fuzzier unit
- The consequences, e.g., for SL phonology (how the revised sign, and especially the movement component, should be represented) and corpus work (how signs should be identified from the video) need to be further investigated

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