The language–gesture connection -seminar, University of Oulu, 22–24 October 2015

Gesture in sign language

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Gesture or not?

Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject

Gesturing or not?

Video

(He) [gets an idea], walks (to the) oven (and) picks up some coal (with him). (He) [puts (the pieces of coal on the snowman) as eyes (and) as mouth]. (He) looks at (what he has done and is very) satisfied.

Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject

Traditional view on *gesture*

For example, McNeil (1992: 1):

- The gestures "are the **movements of the hands and arms** that we see when people talk. Sometimes the movements are extensive, other times minimal, but movements there usually are."
- They "are the **spontaneous** creations of individual speakers, **unique** and **personal.**"
- In "**no** sense are they **elements of a fixed repertoire.**"
- They "are free and **reveal the idiosyncratic imagery of thought**."

EMMOREY, K. (1999). Do signers gesture? In Lynn S. Messing & Ruth Campbell (eds.), *Gesture, Speech, and Sign*, 133-159. New York: Oxford University Press. – McNEILL, D. (1992). *Hand and mind: What gestures reveal about thoug*ht. Chicago and London: The University of Chicago Press.

Gesture AND Language

- Whole determines meaning
- Different meaning, one form
- Noncombinatoric

- Parts determine meaning
- One meaning, one form
- Combinatoric

EMMOREY, K. (1999). Do signers gesture? In Lynn S. Messing & Ruth Campbell (eds.), *Gesture, Speech, and Sign*, 133-159. New York: Oxford University Press. – McNEILL, D. (1992). *Hand and mind: What gestures reveal about thoug*ht. Chicago and London: The University of Chicago Press.

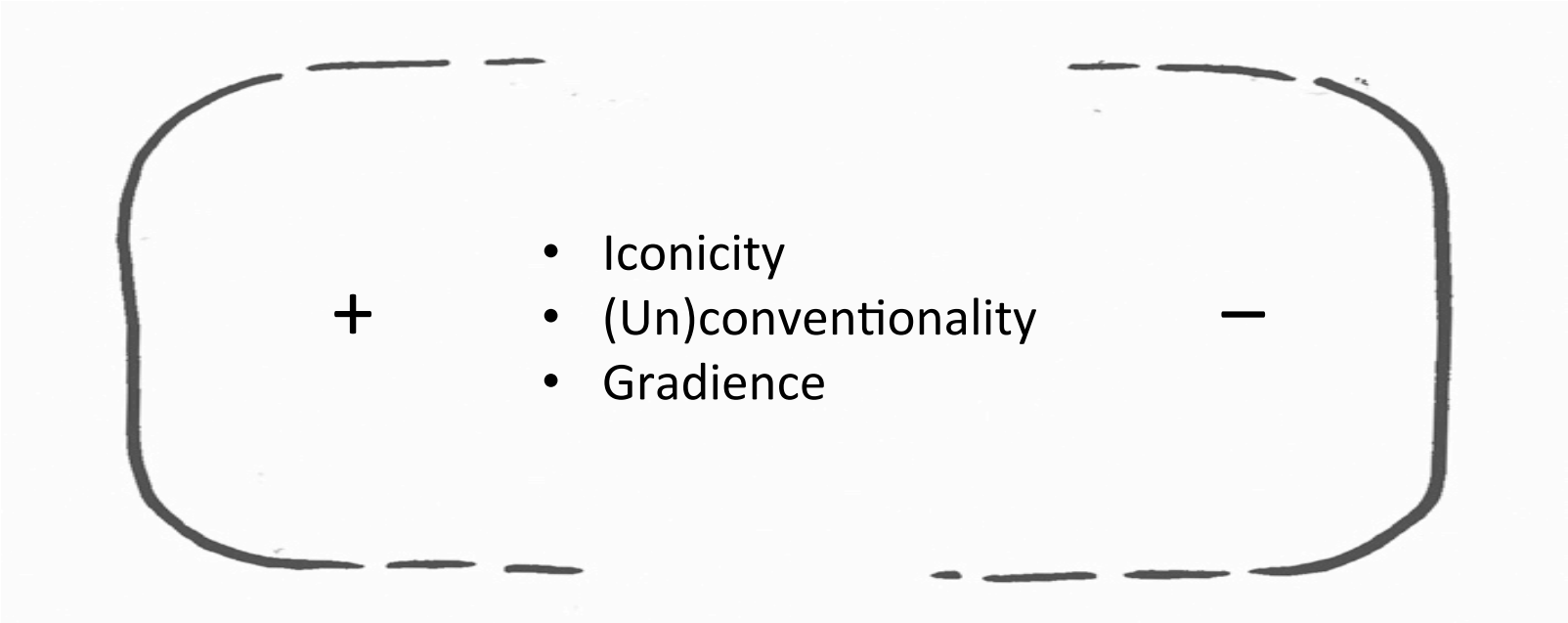
Semiotic view on *gesture*

Okrent (2002: 187):

- Gesture is "that which **expresses the imagistic side of thought** during speaking **through forms directly created to conform to that imagery**; the imagery can be concrete or abstract."
- "The forms created are **unconventionalized**."
- "The form of the gesture patterns meaning onto form in a **gradient**, as opposed to a categorical way."

OKRENT, A. (2002). A modality-free notion of gesture and how it can help us with the morpheme vs. gesture question in sign language linguistics (or at least give us some criteria to work with). In Richard P. Meier, Kearsy Cormier & David Quinto-Pozos (eds.), *Modality and structure in signed and spoken languages*, 175-198. Cambridge: Cambridge University Press.

Gesture IN Language



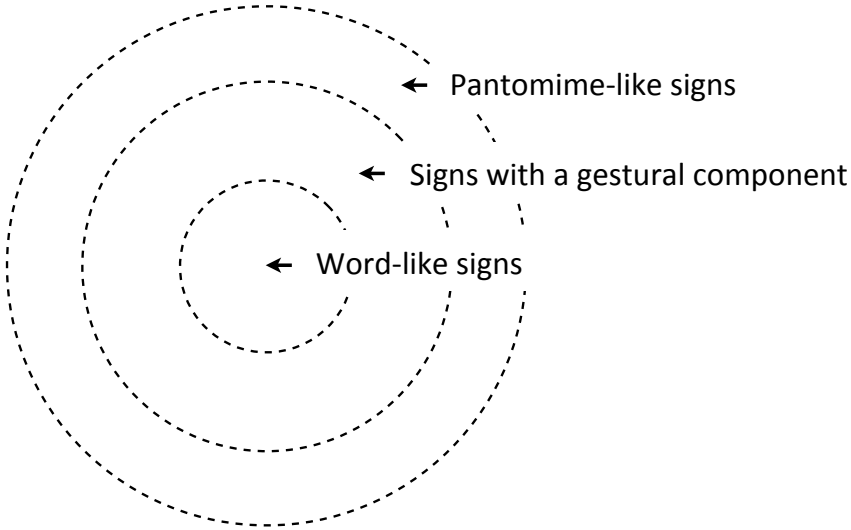
OKRENT, A. (2002). A modality-free notion of gesture and how it can help us with the morpheme vs. gesture question in sign language linguistics (or at least give us some criteria to work with). In Richard P. Meier, Kearsy Cormier & David Quinto-Pozos (eds.), *Modality and structure in signed and spoken languages*, 175-198. Cambridge: Cambridge University Press.

Gesture in

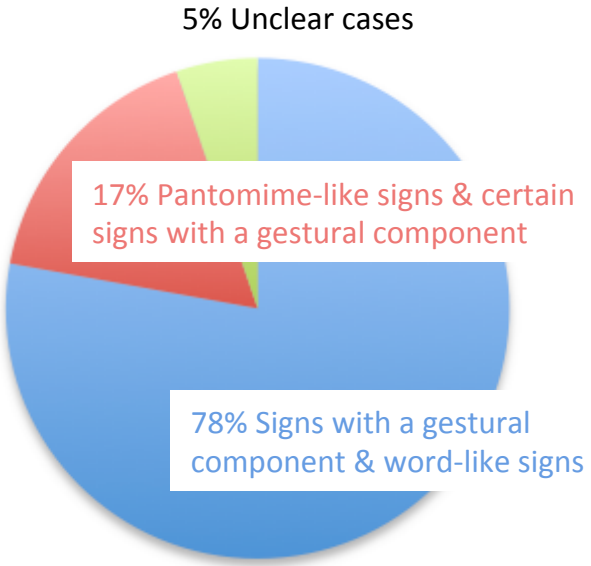
LEXICON

Main types of signs

Structure of the lexicon



Statistics (narrative material, n=4309 signs)



Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject – JANTUNEN, T. (2010). Suomalaisen viittomakielen pääsanaluokat [The main parts of speech in FinSL]. In T. Jantunen (Ed.) *Näkökulmia viittomaan ja viittomistoon*, 57-78. Soveltavan kielentutkimuksen teoriaa ja käytäntöä 5. Jyväskylä: Jyväskylän yliopisto. – JOHNSTON, T. & Schembri, A. (1999). On defining lexeme in a signed language. *Sign Language & Linguistics* 2:115-185.

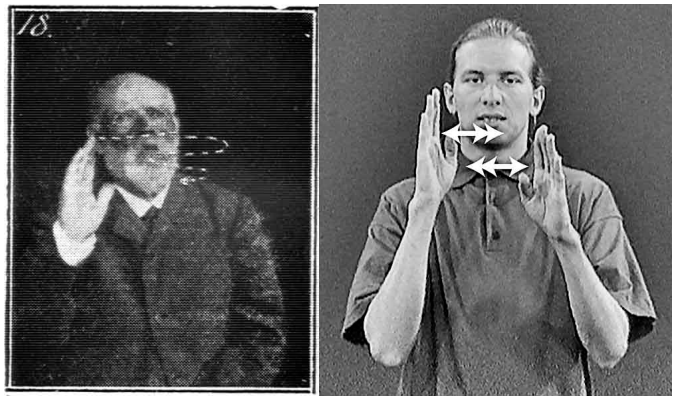
Etymologies

- »Kappalten merkitsemiseksi otetaan […] merkki niiden laadusta, muodosta, vaikutuksesta, käytännöstä eli alusta. Niin merkitään esimerkiksi kissa kraapasemalla taikka niin että kämmentä silutetaan käsivartta ylöspäin, koira haukkumisella taikka haukuttelemalla, niin että taputetaan kädellä reittä, lehmä lypsämällä ja sarvilla päässä, härkä sarvilla päässä ja sen kiukkuinen luonto, puskemisesta näkyvä. Miestä kelpaa merkitsemään lakin eli hatun päästä ottaminen eli miehen vaatteen parsi, parta eli lyhkänen tukka y. m. ja naista helpoimmasti kuverat rinnat.» (Alopaeus 1868:11–12.)

ALOPAEUS, C. H. (1868). *Lyhykäinen ohje kuuromykkiä kotona kaswattamaan ja opettamaan* [ruotsinkielisestä käännös]. Turussa, Frenckellin kirjapainosta, 1869. – JANZEN, T. & Shaffer, B. (2002). Gesture as the substrate in the process of ASL grammaticization. In Richard Meier, David Quinto-Pozos & Kearsy Cormier (eds.), *Modality and Structure in Signed and Spoken Languages*, 199-223. Cambridge: Cambridge University Press.

Diachronic change of signs

1.



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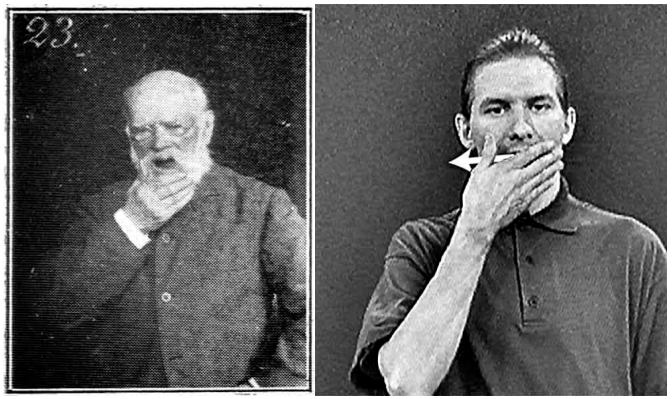
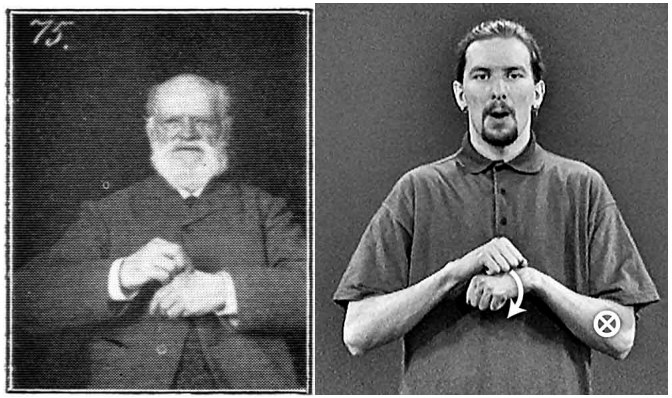


3.



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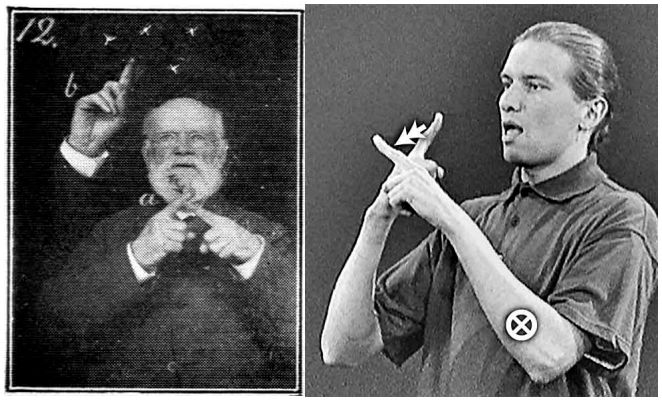


FRISHBERG, N. (1975). Arbitrariness and Iconicity: Historical Change in American Sign Language. *Language* 51, 696–719. – HIRN, D. F. (1910, 1911, 1916). *De dövstummas åtbördsspråk i Finland – Kuuromykkäin viittomakieli Suomessa, I–III* [The Deafmutes Sign Language in Finland, I–III]. Helsingfors: Finlands Dövstumförbunds Förlag. – JANTUNEN, T. (2003). Viittomien historiallinen muutos ja deikonisaatio suomalaisessa viittomakielessä [Historical change and deiconisation of FinSL signs]. *Puhe ja kieli* 23, 43-60. – *Suomalaisen viittomakielen perussanakirja* (1998) [The Basic Dictionary of Finnish Sign Language]. Helsinki: KL Support Oy.

Gesture as a component of signs

Liddell (2003: 273–274):

- In sign languages, “some meaning comes from identifiable morphemes, some meaning is associated with the full lexical unit itself, and meaning is also constructed by means of mental space mappings motivated by the variable and gradient ways that the hand is located and oriented” and directed.

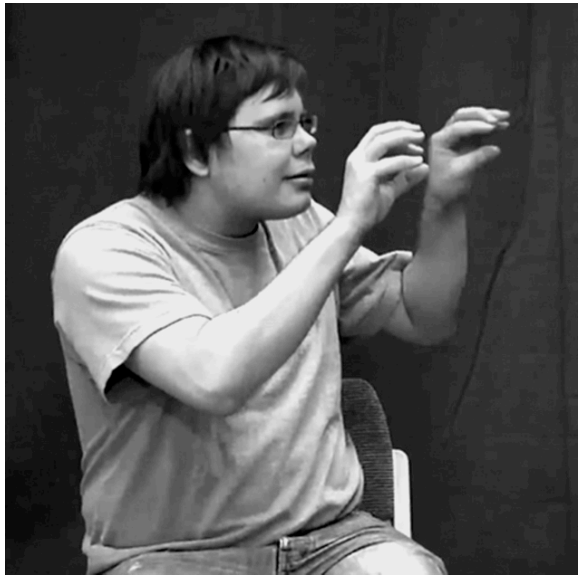
LIDDELL, S. K. (2003). *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.

Pointings & Type 2 verbals

- The directionality of most pronoun-like pointing signs and Type 2 verbals (Jantunen 2013) is a gradient feature.
- In order to understand the meaning of these signs, the addressee must make a semantic association between the morphological content of the sign and the location the sign is directed toward (Liddell 2003: 189).

De BEUZEVILLE, L., Johnston, T. & Schembri, A. (2009). The use of space with indicating verbs in Auslan: A corpus-based investigation. *Sign Language & Linguistics* 12:53-82. – JANTUNEN, T. (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36(3), 303-332. – LIDDELL, S. K. (2003). *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.

Type 3 verbals



- Type 3 verbals (Jantunen 2013) "encode meanings related to actions and states, and in addition to that they also depict certain aspects of their meanings" (Liddell 2003: 261).
- The placement, orientation, and movement of the hands are analogous and gradient properties linked to the visual imagery.

EMMOREY, K. & Hertzig, M. (2003). Categorial Versus Gradient Properties of Classifier Constructions in ASL. In Karen Emmorey (ed.), *Perspectives on Classifier Constructions in Sign Languages*, 221-246. Mahwah, New Jersey; London: Lawrence Erlbaum Associates. – JANTUNEN, T. (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36(3), 303-332. – LIDDELL, S. K. (2003). *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.

Gesture in

SYNTAX

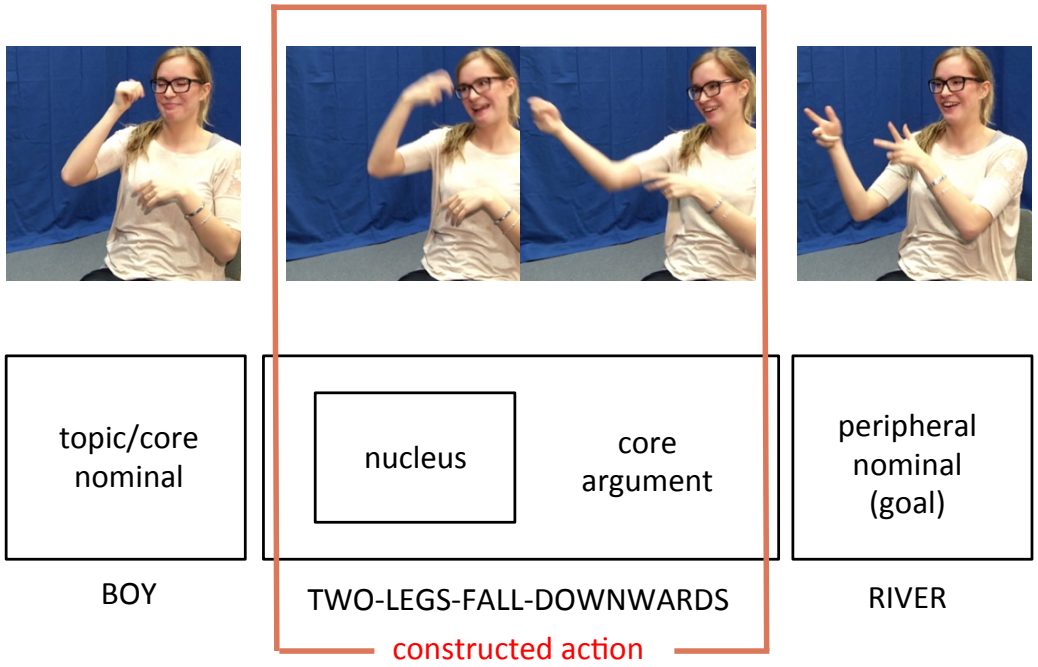
Constructed action

Ferrara & Johnston (2014: 211):

- Constructed action (i.e. gestural enactment) **integrates with all types of signs into composite clauses** and affects meaning construction in Australian Sign Language discourse.
- Constructed action **may function within clauses as a predicate and/or argument** by profiling processes and participants.
- As a result, constructed **action has the potential to influence surrounding grammatical structure**.

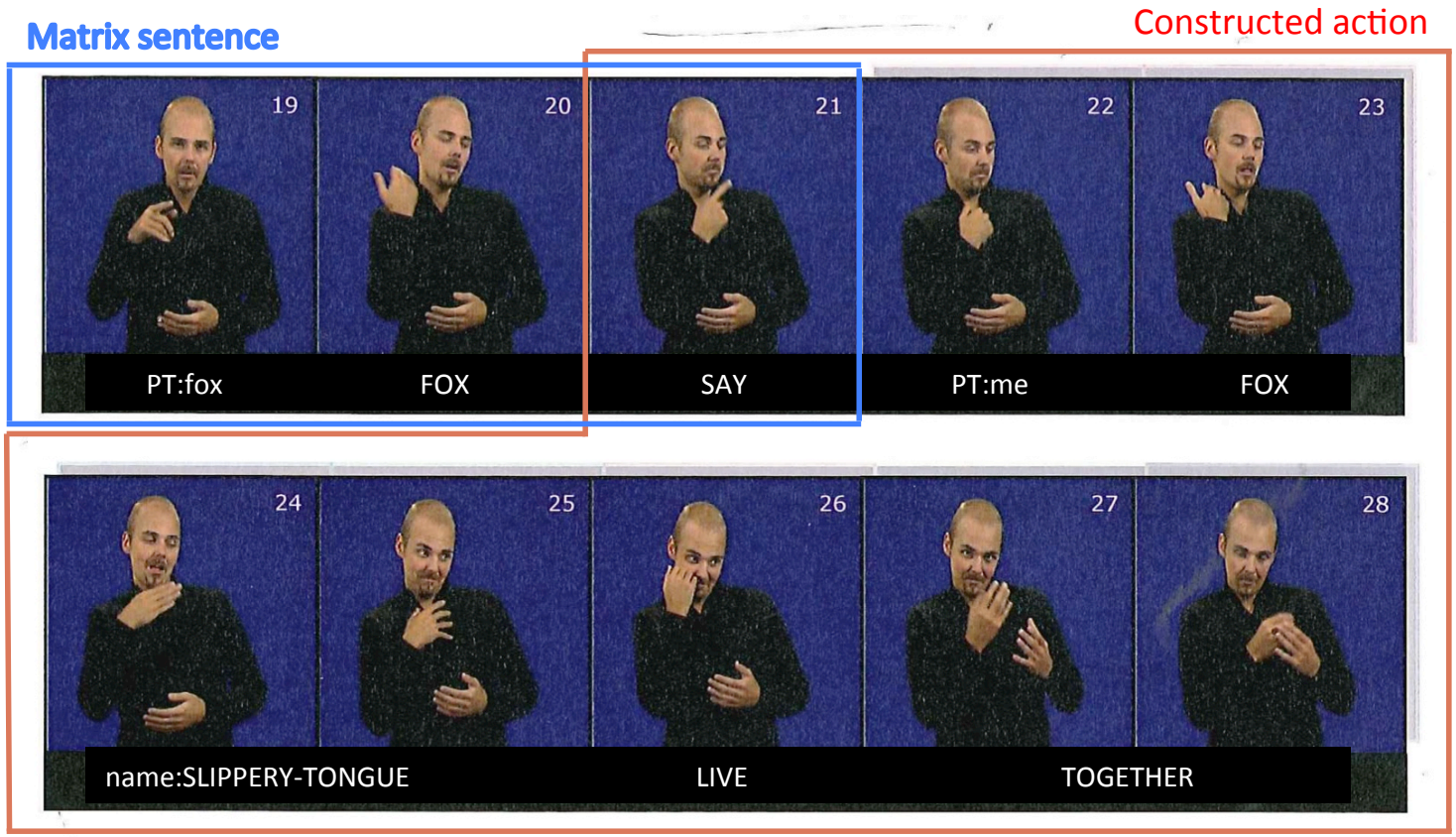
FERRARA, L. & Johnston, T. (2014). Elaborating Who's What: A Study of Constructed Action and Clause Structure in Auslan (Australian Sign Language). *Australian Journal of Linguistics* 34:2, 193-215.

Sentence schema of Type 3 verbals



Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject – JANTUNEN, T. (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36(3), 303-332.

Direct speech



The fox said: “I‘m Fox ‘Slippery tongue’. Want to live together?”

JANTUNEN, T. (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36(3), 303-332. – LUKASCZYK, U. (2008). SANOTTUA, AJATELTUA JA TEHTYÄ. Referointi kolmessa suomalaisella viittomakielellä tuotetussa fiktiivisessä kertomuksessa [Said, thought, and done: Refereeing in three fictive FinSL narratives]. MA thesis, Institute of Teacher Education, University of Jyväskylä.

Clause chains

Video

constructed action[aVp[the snowman grabs the boy's hand] (and] sV[they both go upwards and fly in the sky] (and) aVp[the snowman and the boy look down and hold hands while they are flying] (and) (A)PV[they arrive at home]]

Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject – JANTUNEN, T. (forthcoming in 2016). Clausal coordination in Finnish Sign Language. *Studies in Language* 40(1).

Simultaneous coordination

_____constructed action: "the signer looks around in a puzzled manner"

h1: CL-Vbent-"sit”-right

h2: CL-Vbent-"sit”-left

i. 'The boy and the dog sit and look around in a puzzled manner.'

ii. 'The boy sits and looks around in a puzzled manner and the dog sits and looks around in a puzzled manner.’

Corpus project of Finland´s sign languages @ https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/viittomakieli/tutkimus/finslscorpusproject – JANTUNEN, T. (forthcoming in 2016). Clausal coordination in Finnish Sign Language. *Studies in Language* 40(1).

Gesture's effect on syntactic structure

Jantunen (submitted):

- "The exploitation of gesture and mime can be considered to reduce the need to rely solely on highly structured clauses and sentences in the construction of linguistic messages. This, in turn, opens up the possibility to build up traditional linguistic units relatively freely and to leave out, for example, syntactic elements which in other (spoken) languages would be crucial for the proper comprehension of linguistic messages."

JANTUNEN, Tommi (submitted). Finnish Sign Language. A book chapter submitted to *The Oxford Handbook of Ellipsis*, Ed. by Jeroen van Craenenbroeck & Tanja Temmerman, in preparation for publication with OUP.

Ellipsis example (1)

BOY LOOK-AT Ø ’ Ø constructed action:("let-it-be”)
'The boy watched (the dog barking around) and (thought that) "umh, let it be".’

JANTUNEN, Tommi (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36:3, 303-332. – JANTUNEN, Tommi (under review). Finnish Sign Language. A book chapter submitted to *The Oxford Handbook of Ellipsis*, Ed. by Jeroen van Craenenbroeck & Tanja Temmerman, in preparation for publication with OUP. – LIDDELL, Scott K. (2003). *Grammar, gesture, and meaning in ASL*. Cambridge: CUP. –LUKASCZYK, Ulrika (2008). SANOTTUA, AJATELTUA JA TEHTYÄ. Referointi kolmessa suomalaisella viittomakielellä tuotetussa fiktiivisessä kertomuksessa. MA thesis in Pedagogics, Institute of Teacher Education, University of Jyväskylä.

Ellipsis example (2)

Video

line 1: COMPUTER / ME ca:(TYPE-KEYBOARD-front_down) /
line 2: ME ca:(LOOK-AT-front_up>front_neutral Ø /
line 3: Ø content_question:[BETTER bh:CL-C-”change places"-front_up|front_neutral]) /
line 4: ME ca:(PUNCH-KEYBOARD-front_down /
line 5: Ø bh:CL-C-”places change"-front_up|front_neutral /
line 6: Ø FINE)

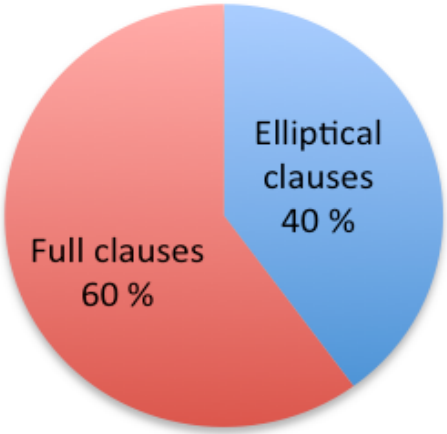
'I was typing with the computer. When I was reading the text on the screen I started to wonder whether the order of the two paragraphs should be changed. I typed in the command and the order changed. Now the text was fine.’

(*Suvi*, article 4, example 2)

Ellipsis in FinSL

- **Grammatical** contexts that clearly favor ellipsis in FinSL include:
  - Coordinate constructions
  - Topic-comment structures
  - Structures involving Type 2 verbals, which are strongly linked to
  - Constructed action.
- FinSL elides especially the thematic elements in the **discourse**; this functions to add positively to the continuity and cohesion of the discourse.

Frequency of ellipsis in FinSL
(n=1077 clauses, 10 signers, narrative material)



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FERRARA, L. & Johnston, T. (2014). Elaborating Who's What: A Study of Constructed Action and Clause Structure in Auslan (Australian Sign Language). *Australian Journal of Linguistics* 34:2, 193-215. – JANTUNEN, Tommi (2013). Ellipsis in Finnish Sign Language. *Nordic Journal of Linguistics* 36:3, 303-332. – JANTUNEN, Tommi (under review). Finnish Sign Language. A book chapter submitted to *The Oxford Handbook of Ellipsis*, Ed. by Jeroen van Craenenbroeck & Tanja Temmerman, in preparation for publication with OUP. – McSHANE, Marjorie J. (2005). *Theory of Ellipsis*. Oxford: OUP. – WULF, Alyssa; Dudis, Paul; Bailey, Robert & Lucas, Ceil (2002). Variable subject presence in ASL narratives. *Sign Language Studies* 3(1), 54–76.

Gesture in

(nonmanual) PROSODY (well…)

Traditional classification of *nonmanuals*

Affective

- E.g. facial expressions:

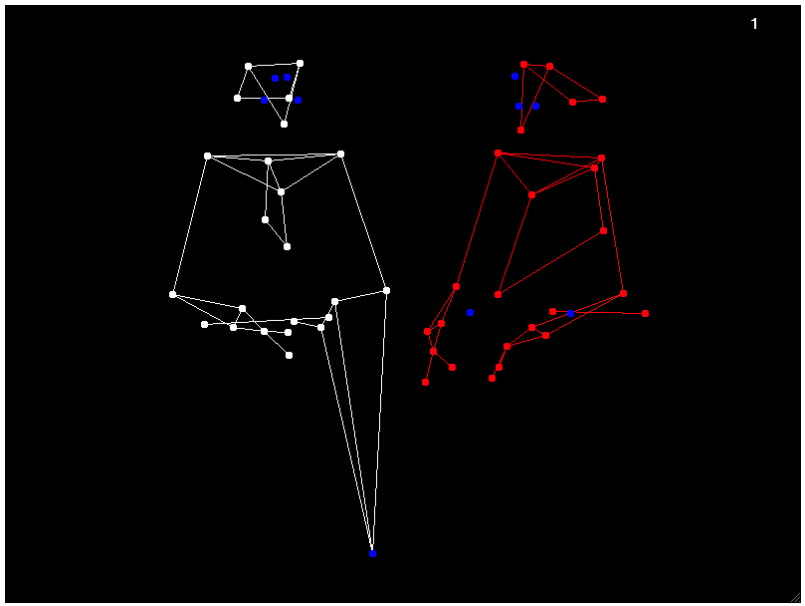
Linguistic

- **Grammatical** (What is the role of nonmanuals on different levels of linguistic structure, e.g. in syntax?)
- **Prosodic** (How nonmanuals are used for edge and domain marking?)
- Syntactic (i.e. grammatical) nonmanuals may function as prosodic markers

PFAU, R. & Quer, J. (2010). Nonmanuals: their grammatical and prosodic roles. In Brentari, D. (Ed.), *Sign languages: A Cambridge language survey*, 381-402. Cambridge: CUP. – WILBUR, R. B. (2000). Phonological and prosodic layering of nonmanuals in ASL. In K. Emmorey & H. Lane (Eds.), *The signs of language revisited: An anthology to honor Ursula Bellugi and Edward Klima*, 215-244. Mahwah, New Jersey (USA): LEA.

MoCap data

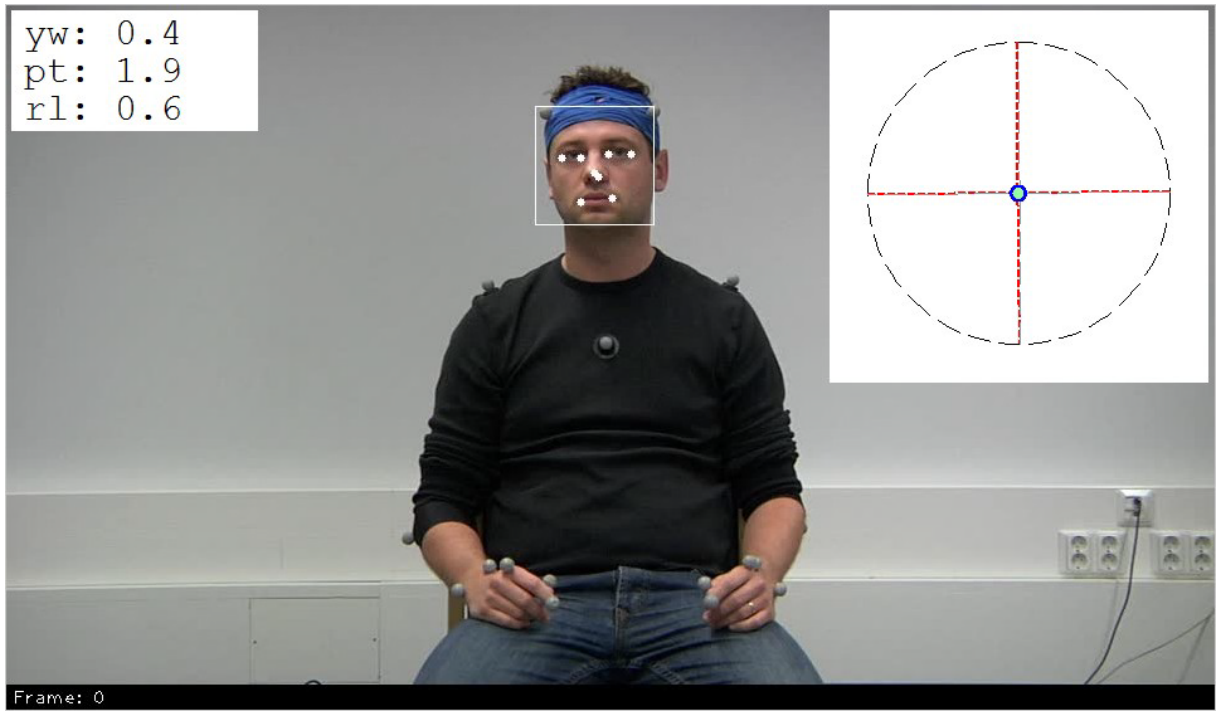
Videos



JANTUNEN, Tommi; Burger, Birgitta; De Weerdt, Danny; Seilola, Irja & Wainio, Tuija (2012). Experiences collecting motion capture data on continuous signing. In *Proceedings of the 5th Workshop on the Representation and Processing of Sign Languages (Interactions Between Corpus and Lexicon)*, organized as a part of LREC 2012 in Istanbul, Turkey, 27 May, 2012. – PUUPPONEN, A.; Wainio, T.; Burger, B. & Jantunen, T. (2015). Head movements in Finnish Sign Language on the basis of Motion Capture data: a study of the form and function of nods, nodding, head thrusts, and head pulls. *Sign Language & Linguistics* 18(1), 41-89.

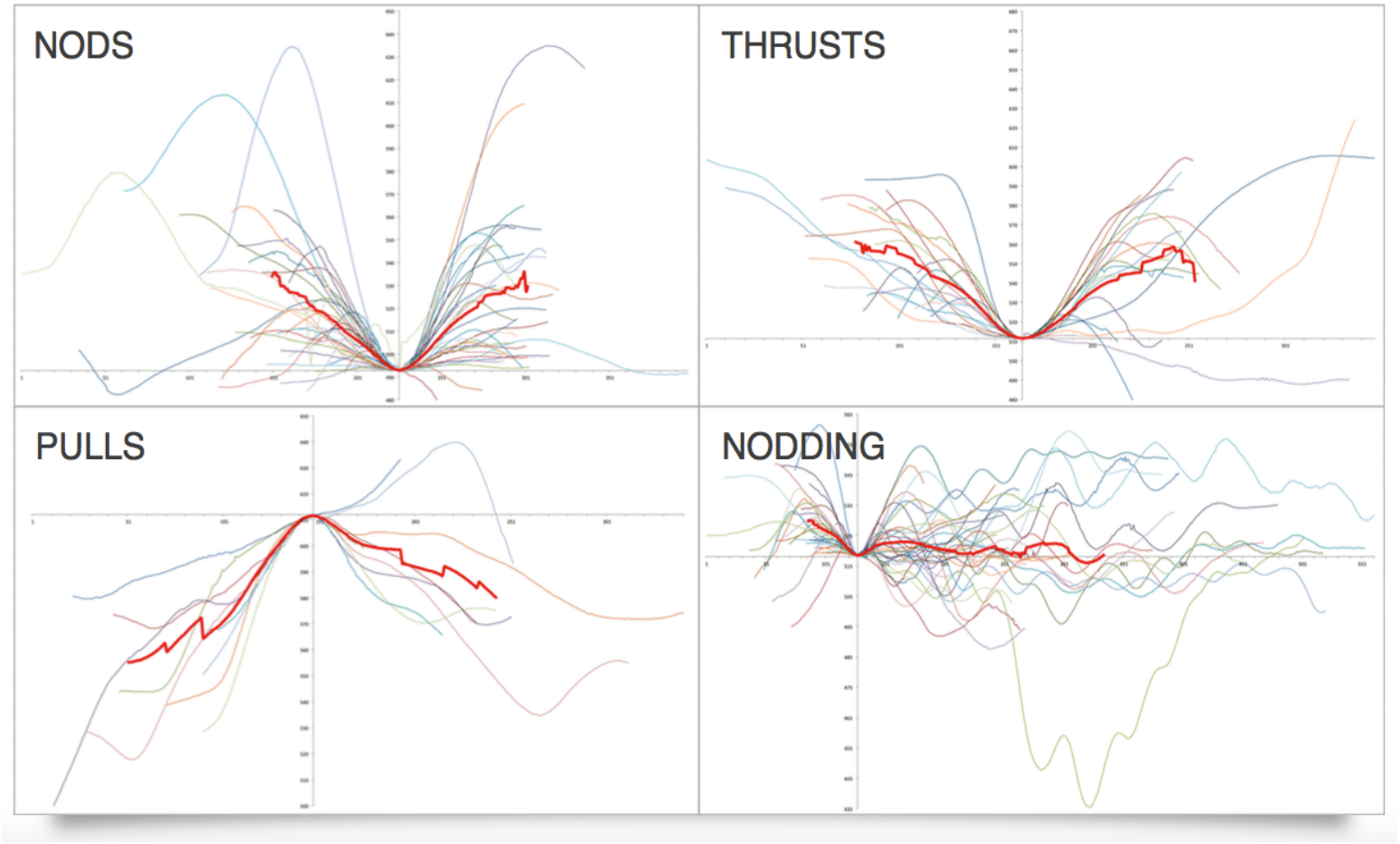
Computer-vision data

Video



KARPPA, M.; Viitaniemi, V.; Luzardo, M.; Laaksonen, J. & Jantunen, T. (2014). SLMotion - An extensible sign language oriented video analysis tool. In N. Calzolari, K. Choukri, T. Declerck, H. Loftsson, B. Maegaard, J. Mariani, A. Moreno,J. Odijk & S. Piperidis (Eds.), *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)* [organized at Reykjavik, Iceland, 28-30 May, 2014], pp. 1886-1891. Paris: European Language Resources Association (ELRA). – LUZARDO, M; Karppa, M.; Laaksonen, J.; Jantunen, T. (2013). Head pose estimation for sign language video. In J.-K. Kamarainen & M. Koskela (Eds.), *Image Analysis* [18th Scandinavian Conference, SCIA 2013, Espoo, Finland, June 17-20, 2013. Proceedings], pp. 349-360. Lecture Notes in Computer Science, Vol. 7944. Springer.

Forms of sagittal head movements

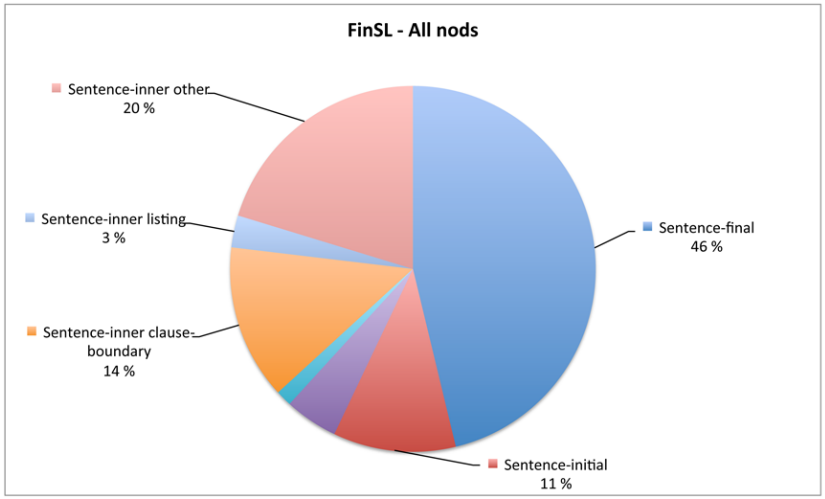


PUUPPONEN, A.; Wainio, T.; Burger, B. & Jantunen, T. (2015). Head movements in Finnish Sign Language on the basis of Motion Capture data: a study of the form and function of nods, nodding, head thrusts, and head pulls. *Sign Language & Linguistics* 18(1), 41-89.

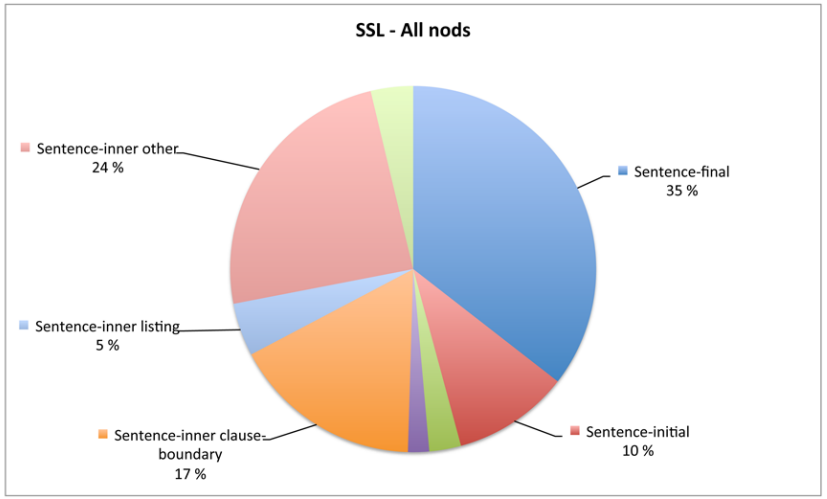
Functions of sagittal head movements

PUUPPONEN, A. (2015). FinSL head movements at the interface between gesture and language... or..? Poster presented at the *Nonmanuals at the Gesture Sign Interface (NaGSI)* -seminar, Georg-August-Universität Göttingen, 9–10 October 2015. – PUUPPONEN, A.; Wainio, T.; Burger, B. & Jantunen, T. (2015). Head movements in Finnish Sign Language on the basis of Motion Capture data: a study of the form and function of nods, nodding, head thrusts, and head pulls. *Sign Language & Linguistics* 18(1), 41-89.

Distribution of nods in FinSL and SSL



n=212



n=107

JANTUNEN, T.; Mesch, J. & Puupponen, A. (forthcoming in 2016). Aspects of the rhythm in Finland and Swedish Sign Language. Paper to be presented at the *12th Conference on Theoretical Issues in Sign Language Research (TISLR 12)*, Melbourne, Australia, 4–7 January, 2016. – PUUPPONEN, A.; Jantunen, T. & Mesch, J. (in preparation). Head nods as punctual markers of rhythm in Finnish and Swedish Sign Languages (provisional title).

Gesture in head movements

Puupponen et al. (2015):

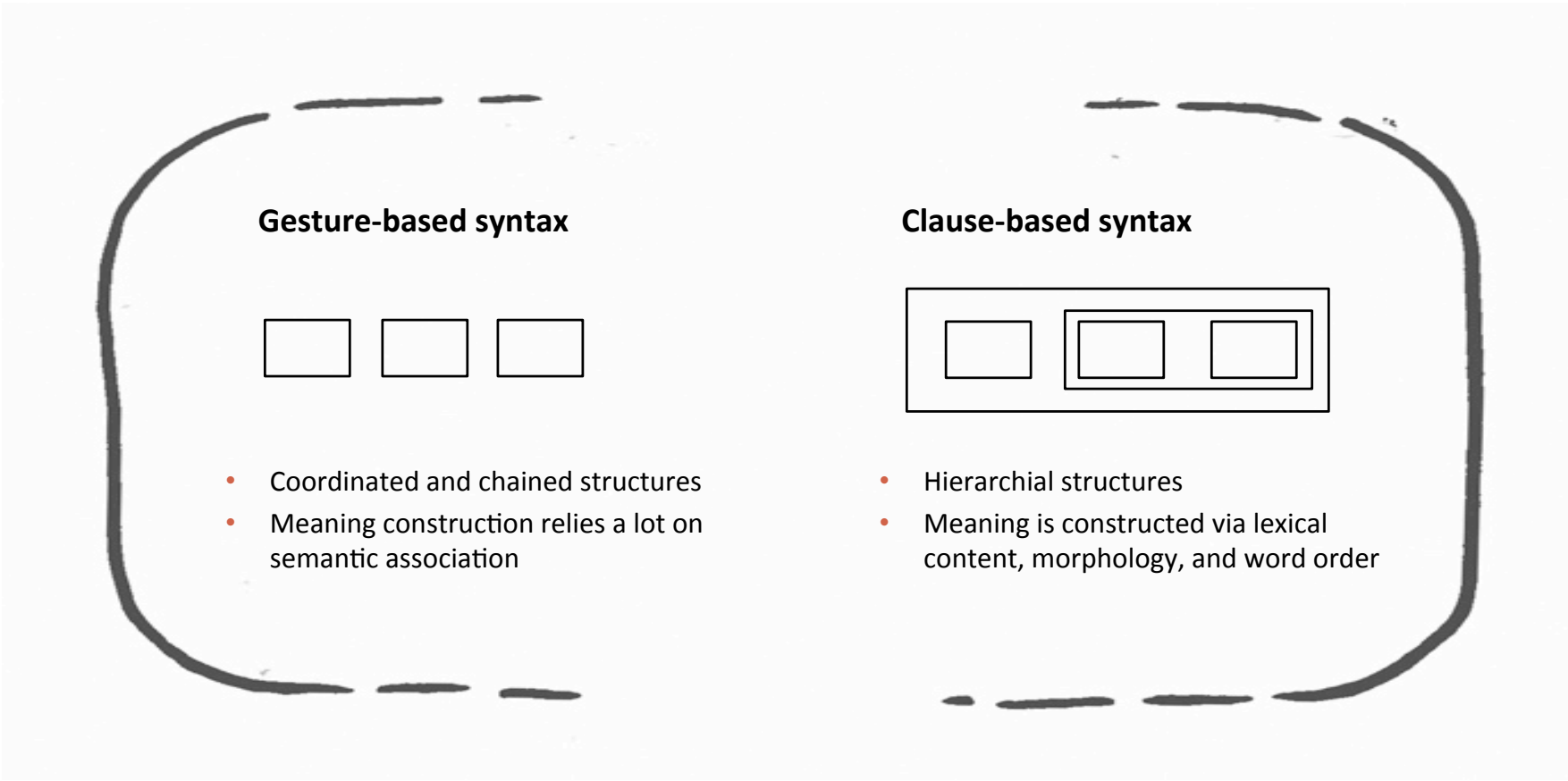
- "The observations concerning the overlapping and gradual relationship between the forms and functions of different head movements in the data are interesting when viewed against, for example, Okrent's (2002) definition of gestures. According to Okrent, gestures are non-conventional in form and the relationships between the forms and functions of gestures are gradient and non-categorical in nature. […] Moreover, the division of nonmanuals into affective or linguistically significant has been based on the level of sharpness in their on- and offsets. So should we conclude that all head movements in FinSL are gestures?"

OKRENT, A. (2002). A modality-free notion of gesture and how it can help us with the morpheme vs. gesture question in sign language linguistics (or at least give us some criteria to work with). In Richard P. Meier, Kearsy Cormier & David Quinto-Pozos (eds.), *Modality and structure in signed and spoken languages*, 175-198. Cambridge: Cambridge University Press. – PUUPPONEN, A.; Wainio, T.; Burger, B. & Jantunen, T. (2015). Head movements in Finnish Sign Language on the basis of Motion Capture data: a study of the form and function of nods, nodding, head thrusts, and head pulls. *Sign Language & Linguistics* 18(1), 41-89.

Gesture in sign language

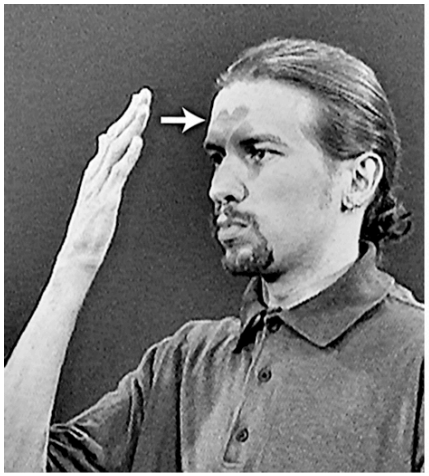
CONSEQUENCES & CONCLUSION

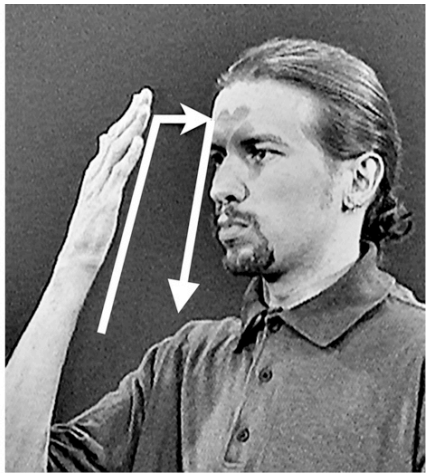
How is the syntax like in sign languages?



GIL, D. (2008) How complex are isolating languages? In Matti Miestamo, Kaius Sinnemäki & Fred Karlsson (eds.), *Language complexity: typology, contact, change*, pp. 109–131. Amsterdam: John Benjamins. – JANTUNEN, T. (in preparation). Fixed, NOT free: order of the verbal predicate and its core arguments in declarative transitive clauses in FinSL revisited (provisional title).

How long is the sign?

1. 

2. 

- **Traditional view** (as in 1): the sign is a relatively short unit.
- **Gesture-based view** (as in 2): the sign is a relatively long unit consisting of the same phases as gestures (i.e. preparation, stroke, and retraction).
- Empirical evidence suggests that the gesture-based view is more accurate.

JANTUNEN, T. (2015). How long is the sign? *Linguistics* 53(1). 93–124. – KITA, Sotaro, Ingeborg van Gijn & Harry van der Hulst. 1998. Movement phases in signs and co-speech gestures and their transcription by human coders. In Ipke Wachsmuth & Martin Froelich (eds.), *Gesture and sign language in human-computer interaction: Proceedings of international gesture workshop*, 23–35. Berlin: Springer.

How we see sign language?

Traditional view:

- "In spoken languages, [sequential morphological operations are] very common while simultaneous operations are rarer. Sign languages, in contrast, show a marked preference towards simultaneous morphological operations. **Sequential affixal morphology is very infrequent, and** (apart from compounding) **has been reported in only a few sign languages**." (Meir 2012: 81–82; emphasis added.)

Gesture-based view:

YELL ~~FROG~~ ~~POINT(B)~~

FROG:dat

If we follow the gesture-based view on sign language which does not rely on the notion of *transition* in between signs, we may find out, for example, that there is a lot of sequential morphology involved in sign formation.

JANTUNEN, T. (2015). How long is the sign? *Linguistics* 53(1). 93–124. – MEIR, Irit. 2012. Word classes and word formation. In R. Pfau, M. Steinbach & B. Woll (Eds.), *Sign language: An international handbook*, 77–112. Berlin: Mouton De Gruyter.

The main points of the talk have been…

- From *gesture AND language* to *gesture IN language*.
- The role of gesture in (Fin)SL lexicon, syntax, and (nonmanual) prosody:
  - The origin of many signs is in mime & signs still include gesturality on various levels,
  - Gestural enactment combines with & elides syntactic structure,
  - Form–function relationship & distribution of head movements suggests that their traditional division into affective and linguistic movements is not valid.
- Suggested a continuum between gesture-based and clause-based syntax.
- Accepting gesture as an integral part of sign language is necessary, and once we do it fully it will change the way we see **the language**.

Thank you!

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