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## Pointing and Shaking: On the Grammaticalization of Gestures

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### Introduction

- Just like spoken languages, sign languages (SLs) are subject to diachronic change due to external (e.g. borrowing and standardization) and internal factors (e.g. Battison 1978; Brentari 2001; Schermer 2003).
- Recent studies on grammaticalization in SLs have shown that, for the most part, the attested grammaticalization pathways are modality-independent (Pfau & Steinbach 2006, 2011; Janzen 2012).

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### Introduction

- In addition, some pathways have been identified that appear to be modality-specific; e.g. N-to-Aux chain (Steinbach & Pfau 2007).
- Also, SLs have the unique possibility to grammaticalize manual and non-manual co-speech gestures.

→ **focus** of today's talk

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### Overview

1. Grammaticalization in sign languages
  - 1.1 Methodological challenges
  - 1.2 Grammaticalization of lexical elements
  - 1.3 Grammaticalization of gestures
2. Grammaticalization of pointing
  - 2.1 Pointing as co-speech gesture
  - 2.2 Pointing signs in sign languages
  - 2.3 Evidence from Nicaraguan Sign Language
3. Grammaticalization of headshake
  - 3.1 Headshake as co-speech gesture
  - 3.2 Negative headshakes in sign languages
4. Conclusion

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## - 1 - Grammaticalization in Sign Languages

### Methodological Challenge

- Lack of a written form makes the identification and comparison of earlier and later forms impossible ([NAD-movie: George W. Veditz, 1913](#))
- Internal reconstruction (IR): "the exploitation of patterns in the synchronic grammar of a single language [...] to recover information about its prehistory" (Ringe 2003: 244)
- IR is generally a less reliable method

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## Methodological Challenge

- Given that
  - the lexical and the grammatical item are phonologically similar,
  - grammaticalization is (usually) unidirectional, and
  - we do know about common grammaticalization paths from the study of languages for which written records do exist,
 we may make inferences about grammaticalization on the basis of synchronic data.

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## Grammaticalization in SLs

- In American SL (ASL), the verb GO-TO (1a) developed into a **future tense** marker (1b) (Janzen & Shaffer 2002: 203; Neidle et al. 2000: 79)

(1) a. TWO, THREE DAY PREVIOUS E.M. GALLAUDET [ASL]  
**GO-TO** TOWN PHILADELPHIA  
 'Two or three days before, (E.M.) Gallaudet had gone to Philadelphia.'  
 b. JOHN **FUTURE<sub>INT</sub>** BUY HOUSE  
 'John will buy a house.'

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## Grammaticalization in SLs

- In German SL (DGS), the noun REASON (2a) developed into a cause-**complementizer** (2b).

(2) a.  $\begin{array}{ccc} \text{top} & & \text{neg} \\ \text{REASON}, & \text{INDEX}_1 & \text{UNDERSTAND} \end{array}$  [DGS]  
 'I don't understand the reason.'  
 b. INDEX<sub>1</sub> SAD REASON POSS<sub>1</sub> DOG DIE  
 'I'm sad because my dog died.'

- The grammaticalization paths in (1) and (2) are also common in spoken languages (Heine & Kuteva 2002).

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## Grammaticalization in SLs

- Other pathways that have been described include (cf. Pfau & Steinbach (2006) for overview):
  - from noun/adjective to **modal verb** in ASL and Catalan SL (LSC);
  - from (ad)verb to completive/perfective **aspect marker** in ASL, Italian SL (LIS), and Israeli SL;
  - from noun to **pronoun** in Israeli SL;
  - from adjective/verb to **intensifier** in ASL, DGS, and Adamorobe SL (Ghana).

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## Grammaticalization of Gestures

- SLs have the unique possibility of grammaticalizing manual and non-manual gestures.
- Wilcox (2004, 2007) distinguishes two grammaticalization paths from gesture to sign:
  - the gesture develops into a lexical element, which may then further develop into a functional element.
    - gesture 'strong' > STRONG > modal CAN [ASL]
    - gesture 'owe' > OWE > modal verb MUST [ASL]
    - gesture 'wait a second' > SLOW > negative completive NOT-YET [Jordanian SL]

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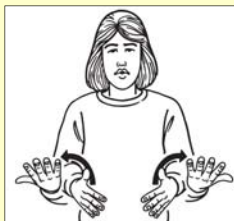
## Grammaticalization of Gestures

- Grammaticalization paths from gesture to sign:
  - grammaticalization proceeds directly from a gestural source to a functional element, skipping the intermediate lexicalization stage.
    - gesture > classifier handshapes (that combine with verbs of motion and location)
    - gesture > question particle / discourse marker
    - gesture > pronoun

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### Grammaticalization of Discourse Marker

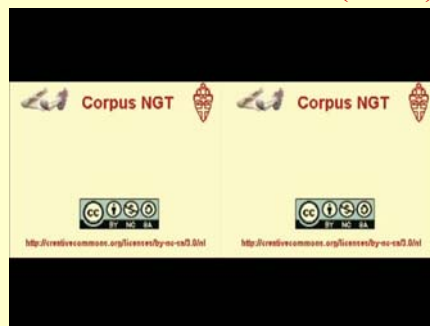
- Use of discourse marker PALM-UP has been described for Danish SL, ASL, New Zealand SL, and SL of the Netherlands (NGT)



- Functions of PALM-UP
  - interactive (backchannel, turn signal)
  - cohesive (e.g. conjunction)
  - modality (e.g. evaluative & epistemic stance)
  - question particle

(Engberg-Pedersen 2002; Conlin et al. 2003; McKee & Wallingford 2011; van Loon 2012)

### Connective Function (NGT)



SURELY INDEX<sub>arc</sub> LOOK **PALM-UP** YET RESPECT INDEX<sub>arc</sub>  
 “Surely they look, but they have respect.”

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### Grammaticalization of Pointing

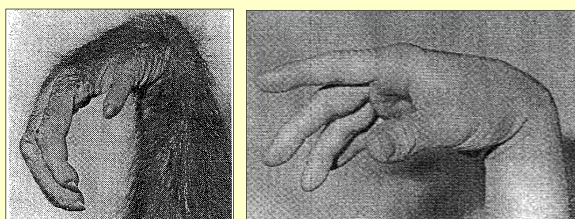
### Pointing as Co-speech Gesture

- Pointing is “a communicative body movement that projects a vector from a body part. This vector indicates a certain direction, location, or object.” (Kita 2003: 1)
- Pointing with a locative function (“there”) and a nominal function (“that”, “s/he”)
- Pointing is a universal human behavior; it can be considered a foundational building block of human communication.

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### Pointing

- Is species-specific; predominance of index finger pointing results from morphological features of the human hand (Povinelli & Davis 1994)



### Pointing and Acquisition

- Pointing to nearby objects emerges at an average age of 11 months (Butterworth & Morissette 1996).
- Correlation between the onset of pointing and the age at which infants produce their first words (Harris et al. 1995).
- The combination of single-word utterances and pointing gestures may function as a transitional bridge between one- and two-word speech (Goldin-Meadow & Butcher 2003).
- Role of pointing in language evolution (Hewes 1981)

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### Variation: Handshape & Orientation

(Kendon & Versante 2003; Kendon 2004)

- Use of different handshapes appears to be context-dependent
- A **1-hand** is likely to be used when “a speaker singles out an object which is to be attended to as a particular individual object”
- **B-hand** when “the object being indicated is not itself the primary focus or topic of the discourse but is something that is linked to the topic”
- Use of **A-hand** can be explained at least partially by anatomical factors

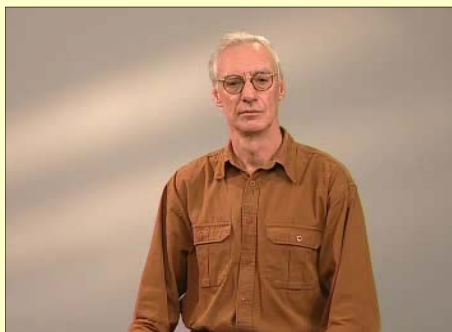


### Pointing in Sign Language

- Grammatical uses of pointing (INDEX<sub>x</sub> / IX<sub>x</sub>)
  - localization of non-present referents (R-locus)
  - locative uses
  - pronominal uses
  - different types of determiners (e.g. demonstrative)
- Lexical uses of pointing
  - body parts (Pyers 2006)
  - time concepts
- Engberg-Pedersen estimates that “on the average, almost every fourth sign in signed discourse is a pointing sign” (2003: 271).

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### Localization & Pronominalization



IX<sub>1</sub> BROTHER IX<sub>3a</sub>, SOON IX<sub>3a</sub> PARIS GO-TO<sub>3b</sub>

### Localization & Pronominalization



localization of non-present referent



pronominalization

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### Locative Use of INDEX

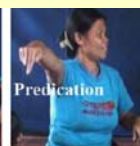


SCHOOL IX<sub>3b</sub>, TOMORROW EVENING MEETING IX<sub>3b</sub>, IX<sub>2</sub> BE-PRESENT IX<sub>2</sub> ?

### Phonological Variation

(Pfau 2011)

- Movement: direction, manner, repetition
- Handshape: 1-, B-, A-, and L-hand
- Orientation: palm vertical vs. palm down (Engberg-Pedersen 2003; de Vos 2008)



- Non-manuals: eye-gaze

(Senghas & Coppola 2011)

### Syntactic Distribution

- Language-specific constraints with respect to the distribution of different pointing signs.
- Subject pronoun copy in ASL (Padden 1988)
- DP-internal INDEXes in ASL (Bahan et al. 1995):
  - pre-nominal: definite determiner
  - post-nominal: locative adverbial
  - combination is possible:  
[IX MAN IX]<sub>DP</sub> (cf. French *cet homme-là*)
- DP-internal INDEXes: distributional differences in NGT and LIS (Brunelli 2011)

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### Semantic Interpretation

- Specific handshapes for different functions (possessive, reflexive) in some SLs
- Use of different planes in signing space for marking specificity in Catalan SL (Barberà 2012)
  - lower plane: definite DPs
  - upper plane: non-specific indefinites

a. INDEX(PL)<sub>up-right</sub> SOME DENOUNCE INDEX<sub>3</sub> THERE-IS  
‘Someone denounced they were there.’  
b. CAT INDEX<sub>up-right</sub> INDEX<sub>1</sub> WANT BUY.  
‘I want to buy a cat<sub>non-spec.</sub>’

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### Semantic Interpretation



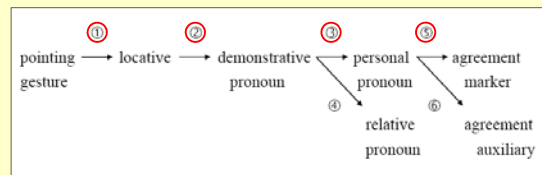
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‘Someone denounced they were there.’  
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### Suggested Grammaticalization Path

(Pfau & Steinbach 2006, 2011; Pfau 2011)

- Clearly, the use and distribution of pointing signs is guided by linguistic principles.



- All steps, except ① and ⑥, are well-attested in spoken languages (Heine & Kuteva 2002)

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### From Locative to Demonstrative (②)

- Locative function appears to be most basic; even homesigners make frequent use of locative points
- Common development in spoken languages; proximal/distal distinction

a. Ke mdo **ken**  
I live here  
‘I live here.’  
b. Ke mdo byaj **ken**  
I live house this  
‘I live in this house.’

Buang (Austronesian)

a. Andù yanã **càn**  
Andu 3.M.be there  
‘Andu is over there.’  
b. dabböbin **càn**  
animals that  
‘those animals (over there)’

Hausa (Chadic)

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### From Demonstrative to Pronoun (③)

- Mostly for 3<sup>rd</sup> person pronouns; different paths for 1<sup>st</sup> and 2<sup>nd</sup> person pronouns (Diessel 1999; Heine & Song 2011)

a. Kemal **o** ev-de otur-uyor  
Kemal DIST.DEM house-LOC live-PRES  
‘Kemal lives in that house (in the distance).’  
b. (O) İstanbul-da otur-uyor  
he/she İstanbul-LOC live-PRES  
‘He/she lives in Istanbul.’

(Turkish)

- Alternatively, both the demonstrative and the locative developed from the pointing gesture

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### From Pronoun to Agreement (⑤)

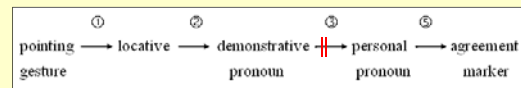
- The same locations that are crucial in indexical signs also determine the beginning/end point of some verbs → subject/object agreement
- Agreement markers derive from cliticized pronouns (Keller 1998; Wilbur 1999)

	PRONOUN	AGREEMENT
1 <sup>st</sup> singular	bi	-b
2 <sup>nd</sup> singular	ši	-š
1 <sup>st</sup> plural	bide	-bdi
2 <sup>nd</sup> plural	ta	-t

(Buryat; Mongolia)

### Interrupted Path: Kata Kolok

- In Kata Kolok, a village SL of Bali, pointing signs are never used for non-present referents → absolute frame of reference (de Vos 2012)
- Pointing only to real-world locations



- Consequently, Kata Kolok also does not have agreement verbs (Marsaja 2008)

### Pointing in Kata Kolok



INDEX<sub>Temple-A</sub>

INDEX<sub>Temple-B</sub>

12-O'CLOCK

### Evidence from Nicaraguan SL

(Coppola & Senghas 2010; Senghas & Coppola 2011)

- S&C compared use of pointing signs by homesigners and signers from different cohorts.
- The use of locative points ('there') remained fairly constant across cohorts.
- In contrast, the use of nominal points ('that, s/he') increases dramatically across cohorts.
- Nominal points frequently replace nouns, i.e. they "are increasingly being used in a pronoun-like way".

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### Developments across Cohorts: Locative vs. Nominal Points

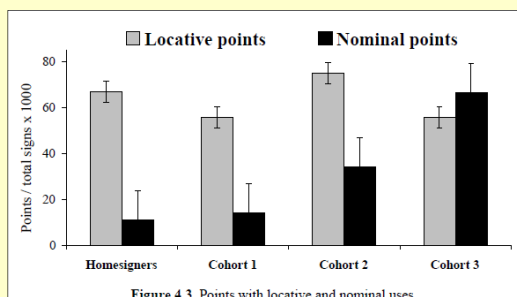


Figure 4.3. Points with locative and nominal uses.

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### Evidence from Nicaraguan SL

- Within the group of nominal points, only the use of points that combine with verbs (e.g. POINT CLIMB) increased across cohorts.
- Use of points that combine with nouns (e.g. POINT BIRD), i.e. demonstrative use of points, remained constant.
- Demonstrative use of nominal points is the more basic one, available to signers at an earlier stage in the development of the language.

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### Developments across Cohorts Pronominal Use of Points

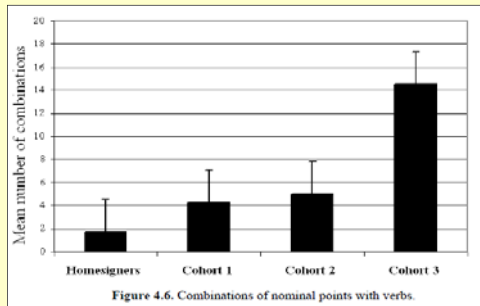


Figure 4.6. Combinations of nominal points with verbs.

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### - 3 - Grammaticalization of Headshake

### Origin of Headshake

- Headnod as “obvious visual representation of bowing before the demand” symbolizes obedience (Jakobson 1972: 92)
- Semantically opposite sign requires contrasting head motion  
→ headshake (or backwards head tilt)
- Alternative explanation: rooted in infants’ experience during (breast)feeding  
→ turning head away from food

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### Gestural Uses of Headshake

(McClave 2000, 2001; Kendon 2002)

- Headshakes as **negative** replies or accompanying negative statements

<+++++++>

G: No, stann tutti chiusi, tutti sigillati  
No, they are all closed, all sealed up.

<++++> <++++>

S: He was not impressed with us playing with Peter

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### Gestural Uses of Headshake

(McClave 2000, 2001; Kendon 2002)

- Headshakes signalling **uncertainty**

Subject A:

←—————→  
you throw it in some bucket or something  
to take home and cook and eat  
and stuff like that?

A: I don't know what date it would have been

<+++++++>  
eighteen twenties or eightee-e-n... something like that

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### Gestural Uses of Headshake

(McClave 2000, 2001; Kendon 2002)

- Headshakes signalling **intensification**

←—————→  
I had had such a great day.

←—————→  
She's totally she's so cool.

<+++++++> <++++>

C: Come in tutte le cose 'o napulitanè è il migliore  
As in all things the Neapolitan is the best

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## Gestural Headshakes in SLs

- Headshakes are used for similar functions in SLs; e.g. New Zealand SL (a) and Norwegian SL (b) (Zeshan 2004)

a.	INDEX <sub>3</sub> BEAUTIFUL INDEX <sub>3</sub>	<u>hs</u>
	'How beautiful that is!'	
b.	BEFORE SCHOOL WHERE INDEX <sub>2</sub>	<u>hs</u>
	'Where did you go to school?'	

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## Negative Headshakes

- However, when used as a marker of negation, headshakes appear to be tightly linked to the syntactic structure of the utterance they accompany.
- In addition, the use and distribution (scope) of the headshake is subject to language-specific constraints (Pfau 2002, 2008).

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## A Typological Division

- In all SLs studied to date, negation can be expressed by a manual sign and/or a non-manual marker, the headshake (Zeshan 2004, 2006a).
- In some SLs, the manual element is obligatory, i.e. a proposition cannot be negated by headshake alone → **manual dominant** SLs
- In these SLs, the headshake usually only accompanies the manual negator.

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## Manual Dominant Sign Languages

- E.g. Italian SL (1), Hong Kong SL (2), Turkish SL → note the ungrammaticality of b-examples

(1)	a.	PAOLO CONTRACT SIGN <u>neg</u> <b>NON</b>	
		'Paolo didn't sign the contract.'	
	b.	*PAOLO CONTRACT SIGN	
(2)	a.	INDEX <sub>3</sub> TOMORROW FLY <u>neg</u> <b>NOT</b>	
		'It is not true that he is flying tomorrow.'	
	b.	*YESTERDAY NIGHT FATHER FAX FRIEND <u>neg</u>	
		'Father didn't fax his friend last night.'	

(Geraci 2005; Tang 2006)

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## Turkish Sign Language (TİD)



(Zeshan 2006b)

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## Non-manual Dominant SLs

- In other SLs, the use of a manual negator is optional; sentences are commonly negated by headshake only → **non-manual dominant** SLs
- E.g. ASL, NGT, DGS, Indo-Pakistani SL; cf. the minimal pair from Flemish SL

a.	NOW GAME <u>neg</u> <b>NOT</b> START
b.	NOW GAME <u>neg</u> START
	'The game does not start now.'

(Van Herreweghe &amp; Vermeerbergen 2006)

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### New Zealand Sign Language



top neg  
NEXT MEETING, INDEX<sub>1</sub> GO INDEX<sub>1</sub>  
'As for the next meeting, I'm not going.'

(McKee 2006)

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### Intra-modal Variation

(Pfau 2002; Pfau & Quer 2002, 2007)

- Comparison of ASL, DGS, and LSC
- Scope of headshake in the presence of the manual negator NOT (ASL: Neidle et al. 2000)

a.	JOHN <sup>neg</sup> NOT BUY HOUSE	[ASL]
b.	SANTI MEAT EAT <sup>neg</sup> NOT	[LSC]
c.	* MOTHER FLOWER BUY <sup>neg</sup> NOT	[DGS]

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### Intra-modal Variation

- Scope of headshake in the absence of NOT; headshake must spread onto object in ASL (b)

a.	* JOHN BUY HOUSE	[ASL]
b.	JOHN BUY HOUSE	[ASL]
c.	SANTI MEAT EAT	[LSC]
d.	POSS <sub>1</sub> FRIEND MEAT EAT	[DGS]

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### Spreading of Headshake

- Spreading of headshake (in the absence of NOT) is optional in DGS and LSC.
- Spreading must target entire constituents (b) and usually excludes the subject (a).

a.	POSS <sub>1</sub> MOTHER FLOWER BUY	[DGS]
	'My mother doesn't buy a flower.'	
b.	* POSS <sub>1</sub> MOTHER RED FLOWER BUY	[DGS]
	'My mother doesn't buy a red flower.'	

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### German Sign Language



neg  
POSS<sub>1</sub> MOTHER FLOWER BUY  
'My mother doesn't buy a flower.'

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### Culture-specificity

- The headshake is a culture-specific gesture.
- Not surprisingly, in areas where head tilt is used as co-speech gesture, the same gesture is grammaticalized in the SL – in addition to the headshake; e.g. TİD and Greek SL (Antzakas 2006).

a.	INDEX <sub>1</sub> NONE LUCK BECOME <sup>neg-tilt</sup> NOT	[TİD]
	'I've had no luck at all.'	
b.	INDEX <sub>1</sub> AGAIN GO WANT <sup>neg-tilt</sup> NOT	[Greek SL]
	'I don't want to go (there) again.'	

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## Turkish Sign Language



neg-tilt  
INDEX<sub>1</sub> NONE LUCK BECOME^NOT

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## Summary

- Language-specific rules determine use and scope of the negative non-manual marker.
- Scope of the non-manual is constrained by syntactic structure.
- Analysis (DGS/LSC) (Pfau 2002; Pfau & Quer 2002):
  - these SLs have split negation: combination of (optional) particle and (non-manual) affix;
  - the two negative elements may occupy different positions within a negative phrase;
  - spreading targets c-command domain.

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## Processing Evidence

- Affective/gestural non-manuals are processed differently from linguistic non-manuals  
→ right hemisphere (Corina 1989)
- Comprehension and production of the two types of non-manuals can be selectively impaired (Poizner & Kegl 1992)
- Signers with brain lesion were not able to understand British SL sentences with only non-manual negation (Atkinson et al. 2004).

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**Conclusions**

## Conclusions

- Grammaticalization is an important aspect of diachronic change in SLs.
- Most of the attested pathways from lexical to grammatical element are modality-independent.
- In addition, SLs have the potential of grammaticalizing manual and non-manual co-speech gestures.
- Grammaticalized gestures are integrated into the linguistic structure of the respective SL.

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**Thank you for  
your attention!**

For a handout (incl. references) please  
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