

On grammaticalization: Do sign languages follow the well-trodden paths?

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1 Introduction¹

- Language change is a crucial property of all languages. Changes (internal/external) are observed at the phonological (e.g. sound change & sound shift), syntactic (e.g. word order), and lexical level (e.g. borrowing, grammaticalization, and language politics).
- Not surprisingly, all of the above mentioned phenomena are also responsible for diachronic change in sign languages (SL):
 - change in phonological form, loss of iconicity (cf. Frishberg 1975; Woll 1987);
 - word order change due to external factors (Fischer 1975);
 - borrowing (Battison 1978; Brentari 2001), by means of fingerspelling and mouthings;
 - language politics, e.g. standardization of the lexicon of a SL (Schermer 2003).
- Here, we focus on an instance of internal change, which has only received little cross-linguistic (and cross-modal) attention so far, viz. grammaticalization in SLs.

2 Theoretical background

2.1 Grammaticalization paths

- Primary goal of grammaticalization theory: to describe how grammatical forms arise and develop over time (Aitchinson 1996; Traugott & Heine 1991; Hopper & Traugott 1993).
- Grammaticalization is defined as the development from lexical to free grammatical forms (functional elements) and from free grammatical forms to bound grammatical forms (affixes); cf. the exemplary grammaticalization paths in (1).

(1)	LEXICAL ELEMENT	→	FUNCTIONAL ELEMENT	→	AFFIX
	Noun	→	pronoun	→	agreement
	Verb	→	adverb	→	tense

- Grammaticalization involves the following interrelated mechanisms (Heine & Kuteva 2002a:378): (i) desemantization ('semantic bleaching'); (ii) decategorialization – loss in morphosyntactic properties; (iii) erosion ('phonetic reduction').

¹ For helpful comments and for supplying data, we are very much indebted to Heleen Bos, Bernadet Hendriks, Mélanie Joutiteau, Andrea Kaiser, Victoria Nyst, Pamela Perniss, Marijke Scheffener, Ulrike Zeshan, Sandro Zucchi, and Inge Zwitserlood. Note that the following abbreviations for sign languages are used:

AdaSL: Adamarobe Sign Language (Ghana)	LIU: Jordanian Sign Language (<i>Lughat il-Ishaara il-Urdunia</i>)
ASL: American Sign Language	LSC: Catalan Sign Language (<i>Llengua de Signes Catalana</i>)
DGS: German Sign Language (<i>Deutsche Gebärdensprache</i>)	NGT: Sign Language of the Netherlands (<i>Nederlandse Gebarentaal</i>)
GSL: Greek Sign Language	TID: Turkish Sign Language (<i>Türk İşaret Dili</i>)
IPSL: Indopakistani Sign Language	TSL: Taiwan Sign Language
ISL: Israeli Sign Language	
LIS: Italian Sign Language (<i>Lingua Italiana dei Segni</i>)	

- Grammaticalization is hypothesized to be prototypically a unidirectional process, but exceptions to this generalization have been noted (Ramat 1992; Newmeyer 1998:260ff).
- The newer grammatical form (the target) and the older lexical form (the source) may be co-existent. Moreover, one and the same item may give rise to more than one path of grammatical evolution (polygrammaticalization).

2.2 Methodology

- Since SLs lack a written form, the identification and comparison of earlier and later forms of structure on the basis of written records is impossible.
- Method of linguistic reconstruction commonly used is internal reconstruction (IR). IR is “the exploitation of patterns in the synchronic grammar of a single language or dialect to recover information about its prehistory” (Ringe 2003:244). Obviously, the methods of IR are generally less reliable than the standard methods of comparative reconstruction.
- Given that the lexical and the grammatical item are phonologically similar, given that grammaticalization is unidirectional, and given that we do know about common grammaticalization paths from the study of languages for which written records do exist, one may make inferences about grammaticalization on the basis of synchronic data.

3 The well-trodden paths: modality-independent aspects of grammaticalization

3.1 The grammaticalization of aspectual and tense markers

- Verbs in SLs do not inflect for tense. Rather, temporal information is conveyed by time adverbials and lexical tense markers (Aarons et al. 1995) or is inferred from the context.
- SLs have complex systems of aspectual marking; change of movement properties (stem-internal changes and/or reduplication; Klima & Bellugi 1979) or free aspectual markers.

3.1.1 Completive and perfective aspect

- The development of aspectual markers from verbs/adverbs in ASL (Fischer & Gough 1972/1999; Janzen 1995), ISL (Meir 1999), and LSI (Zucchi 2003). Aspectual meanings: consecutive (sequences of actions), the completive, and the perfective.
- In (2a), ASL FINISH is used as a lexical verb, in (2b) it marks sequences of actions (following the main verb), and in (2c), it serves as a marker of perfective aspect.

ASL (ex. (a,b) from Fischer & Gough (1999:68f); ex. (c) from Isenhath (1990:203))²

- (2) a. YOU **FINISH** EAT, WE GO SHOPPING
 ‘When you(‘ve) finish(ed) eating, we’ll go shopping.’
- b. YOU EAT **FINISH**, WE GO SHOPPING
 ‘After you eat, we’ll go shopping.’
- c. **FINISH** EAT YOU?
 ‘Have you eaten?’

- Similarly, Zucchi (2003) identifies two different aspectual uses of the LIS sign FATTO. Besides its verbal use (‘finish’), FATTO is used as completive and present perfect marker.

² Following common conventions, SL examples are given in capital letters. Whenever possible, the examples are given in the surrounding spoken language, in order to differentiate SLs from each other. Lines above the glosses indicate the scope (i.e. onset and offset) of a particular nonmanual marker, be it a lexical marker or a syntactic marker (e.g. negation or topicalization). Subscripts refer to points in the signing space (see figure 1b), i.e. localisations of present referents or localisations that have been established for non-present referents.

→ Spoken languages: ‘to finish’ has developed into a completive marker in Rama (3b); into a perfective marker in Lhasa (4b). Note that both lexical verbs developed into suffixes.

Rama (Chibchan, Nicaragua; Craig 1991:476)

- (3) a. tabulaak tkeeruk nsu-**atkul**-u
 evening grave 1:PL-finish-TNS
 ‘We finished (digging) the grave
 in the evening.’
- b. dor y-aakang-**atkul**-u
 door 3-shut-ASP-TNS
 ‘She shut the door *tight*.’

Lhasa (Tibeto-Burman, Tibet; Lord 1993:230)

- (4) a. khó chĩ-cææ **tsháa**-pa-re?
 he went-NONFINAL finish-PERF
 ‘He went and finished it.’
- b. ñà thóm-la chĩ-**tshaa**
 I market-LOC went-PERF
 ‘I’ve gone to the store.’

→ Two different signs in ISL to mark completive and perfective aspect: perfective marker ALREADY, the source of which is an adverb (5a); completive marker FINISH. The two signs can co-occur in one sentence, as illustrated in (5b).

ISL (Meir 1999:51f)

- (5) a. I **ALREADY** WRITE LETTER SISTER MY
 ‘I have written a letter to my sister (but have not finished it).’
- b. I **ALREADY** HOMEWORK **FINISH**
 ‘I have (already) completed my homework.’

→ Similarly, in DGS and NGT, the signs FERTIG and KLAAR (‘ready’), respectively, have developed into aspectual markers; both signs appear in sentence-final position.

3.1.2 Future tense marker in ASL

→ Lexical verbs can also give rise to tense markers. In ASL, e.g., a future tense marker (glossed as FUTURE) has developed from an older sign with the meaning of ‘to go’ (6a).

ASL (Janzen & Shaffer 2002:203f)

- (6) a. TWO, THREE DAY PREVIOUS E.M. GALLAUDET **GO** TO TOWN
 PHILADELPHIA
 ‘Two or three days before, (E.M.) Gallaudet had gone to Philadelphia.’
- b. YEAR 50 **FUTURE**_[new] THAT FILM **FUTURE**_[old] TRUE P-R-I-C-E-L-E-S-S
 ‘In fifty years these films will be priceless.’

→ In (6b), FUTURE is produced twice. The old form is identical to GO in (6a), while the new form is phonologically reduced and is signed like modern ASL FUTURE.

→ Spoken language: metaphorical derivation of temporal term from spatial term, e.g. lexical verb expressing movement (Bybee & Dahl 1989; cf. English *going to*). The Krao example in (7) exemplifies the same phenomenon.

Krao (Kru, Liberia; Marchese 1979:125)

- (7) a. ɔ̄ɔ̄ **mū** nī tó
 he:INC go LOC store
 ‘He is going to the store.’
- b. ɔ̄ɔ̄ **mū** nī kpâ
 he:INC FUT water hit
 ‘He will swim.’

3.2 From noun and verb to auxiliary

→ Agreement in SL is locus agreement. Discourse referents are linked to loci in the signing space (cf. figure 1a). These loci are either actual locations of present referents or locations that are assigned for non-present referents by means of the pointing sign INDEX.

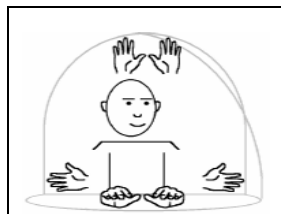


Figure 1a:
Signing space

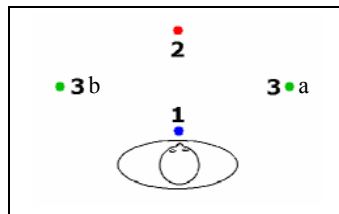


Figure 1b:
Localization of referents

DGS

(8) INDEX₁ FRAU INDEX_{3a} MÖG. GESTERN INDEX_{3a} BUCH_{3a}GEB₁
 I woman INDEX like yesterday she book 3.SG.S:give:1.SG.O
 'I like the/this woman. Yesterday she gave me a book.'

→ In (8), the 1st person pronoun INDEX₁ points towards the signer's chest, while INDEX_{3a} localizes FRAU ('woman') at location 3a (cf. figure 1b). This location is then used to pronominalize FRAU. Moreover, the verb GEB ('give') moves from 3a towards location 1, by that showing subject/object agreement (cf. Mathur 2000; Meir 2002 for analyses).

→ However, not all verbs in SLs are agreeing verbs. There are also plain verbs that cannot show agreement (e.g. the DGS verb MÖG ('like') in (8)).

3.2.1 Person Agreement Marker (PAM) in DGS

→ In DGS the source for the auxiliary is the noun PERSON (cf. (9a) and figure 2a). The auxiliary – which is glossed as PAM (Person Agreement Marker) – is used with plain verbs (9b) and adjectival predicates (e.g. STOLZ 'proud of').

DGS

(9) a. top KONFERENZ, VIEL PERSON++ /shh/ ANWESEND
 conference many person:PL be.present
 'There were many persons/people present at the conference.'
 b. MUTTER INDEX_{3a} NACHBAR NEU INDEX_{3b} MÖG _{3a}PAM_{3b}
 mother INDEX neighbor new INDEX like 3.SG.S:AUX:3.SG.O
 '(My) mother likes the new neighbor.'
 c. ₁WIR-BEIDE₂ VERTRAU ₁PAM₂PAM₁
 we-two trust PAM:REC
 'We trust each other'

→ PAM also finds use in reciprocal constructions with plain verbs. Agreement verbs realize their reciprocal form by means of backward reduplication, plain verbs either by zero marking or by insertion of PAM (9c) (Pfau & Steinbach 2003, in press).

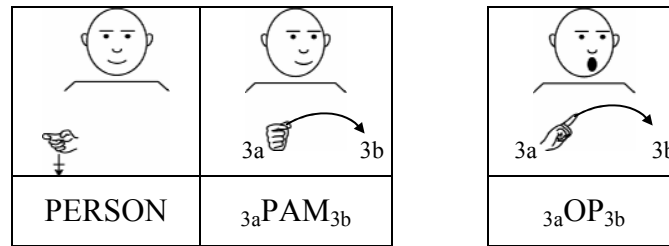


Figure 2a: From noun to auxiliary in DGS

Figure 2b: Aux in NGT

3.2.2 Auxiliaries in NGT and TSL

→ In NGT, the auxiliary OP is derived from a verb expressing movement. OP is phonologically reduced, its movement is short and tense; cf. (10b) and figure 2b.

NGT (ex. (b) from Bos 1994:39)

(10) a. SCHOOL INDEX₃ JONGEN **GAAN**₃
 school INDEX boy go.to:AGR.LOC
 ‘The boy is going to school.’

b. INDEX₁ PARTNER INDEX_{3a} HOUDEN-VAN 3aOP₁
 my partner INDEX love 3.SG.S:AUX:1.SG.O
 ‘My boyfriend loves me.’

→ For TSL, Smith (1990) describes three auxiliaries, two of which are derived from lexical verbs: one (AUX-2) from the verb SEE (11a); the other (AUX-11) from the verb MEET (11c). As in DGS, there are reciprocal forms of the auxiliaries (11b).

TSL (Smith 1990:219ff)

(11) a. ₁**AUX-2**₃ INDEX₁ UNFAMILIAR b. _{3a}**AUX-2**_{3b-recip} REMEMBER_(dual)
 ‘I don’t know him.’ ‘They remember each other.’

b. THAT VEGETABLE, INDEX₁ ₁**AUX-11**₃ NOT-LIKE
 ‘I don’t like that dish.’

3.2.3 A note on double and split inflection

→ SL auxiliaries are not used with all verbs; rather they are used predominantly with plain verbs. This, however, is not the whole story.

→ A remarkable property of the aux-constructions in DGS and NGT is that sometimes the auxiliary is also used with agreeing verbs, i.e. agreement can be doubly marked (12).

DGS (ex. (a)) and NGT (ex. (b), from Heleen Bos, p.c.)

(12) a. VATER_{3a} SOHN_{3b} PROBLEM _{3a}ERKLÄR_{3b} _{3a}**PAM**_{3b}
 father son problem 3.SG.S:explain:3.SG.O 3.SG.S:AUX:3.SG.O
 ‘The father is explaining the problem to his son.’

b. INDEX₃ ₃PLAGEN₁ ₃**OP**₁
 he 3.SG.S:tease:1.SG.O 3.SG.S:AUX:1.SG.O
 ‘He teases me.’

→ Note that there are also spoken languages in which both the auxiliary and the lexical verb inflect for the same categories, as illustrated by the Parengi examples in (13).

Parengi (Austroasiatic, India; Aze 1973, cited in Anderson 2000:14)

- (13) a. miŋ ne-gaʔ-ru ne-laʔ-ru
 I 1.SG-eat-PAST 1.SG-AUX-PAST
 ‘I ate vigorously.’
 b. miŋ ne-adaʔ-ru? ne-k-ru?
 I 1.SG-thirst-PAST 1.SG-AUX-PAST
 ‘I was thirsty.’

→ In addition, in all three SLs not all of the inflectional categories appear on the auxiliary. In particular, aspectual inflection (e.g. habitual, iterative) appears on the main verb.

→ Similar split phenomena are attested in spoken languages. In Evenki, e.g., agreement and tense suffixes attach to the negative auxiliary *e-* while other inflectional markers, such as valence, aspect, and modality markers appear on the lexical verb (14ab).

Evenki (Tungusic, Siberia & China; Nedyalkov 1994:11 ff)

- (14) a. Nuŋan nekun-mi e-che-n suru-v-re
 he younger.brother-REL.POSS NEG-PAST-3.SG go.away-CAUS-PART
 ‘He did not lead away his younger brother.’
 b. E-kellu iche-t-met-te
 NEG-2.PL.IMPER see-DUR-REC-PART
 ‘Don’t look at each other.’

3.3 From noun to pronoun

3.3.1 Indefinite pronouns

→ The development of indefinite pronouns from generic nouns, such as ‘thing’, ‘person’, ‘body’, and ‘man’, is a common process in spoken languages. See e.g. the English indefinite pronouns *something/somebody*; also see the Baka example in (15).

Baka (Ubangian, Sudan, Heine & Kuteva 2002:232)

- (15) a. nga **bo**, nga so ode b. **bo** ʔá kətðe
 1:PL:EXCL person 1:PL:EXCL animal NEG person 3:SG come:PAST
 ‘We are people, we are not animals.’ ‘Somebody has come.’

→ Similarly, in DGS and NGT, the noun PERSON, in combination with the (reduced) numeral ‘one’, is used as an indefinite pronoun (16)

DGS (a) and NGT (b)

- (16) a. INDEX1 EIN-PERSON SEH
 I someone see
 ‘I’ve seen someone.’
 b. EEN-PERSOON AFWAS DOEN MOET
 someone wash.dish do must
 ‘Someone has to do the dishes.’

3.3.2 A case-marked pronoun in ISL

- In general, pronominal forms in SLs do not show case distinctions, the only exception being the genitive which requires a different handshape in some SLs.
- However, in ISL, certain verbs mark their pronominal object by means of a special morpheme, which Meir (2003) glosses as PRO_[bC]. While INTERRUPT requires the usual object pronoun INDEX (17a), BE-IMPRESSED shows up with PRO_[bC] (17b).

ISL (Meir 2003:112ff)

- (17) a. INDEX₃ INTERRUPT INDEX₂ b. INDEX₁ BE-IMPRESSED PRO_[bC]₃
 ‘He interrupted you.’ ‘I am impressed with him.’
 c. TEACHER POSS₁ RECOMMEND PRO_[bC]₁ ROLE MAIN
 ‘My teacher recommended me for the main role.’

- Just like the DGS auxiliary PAM, the ISL sign PRO_[bC] is cognate with the sign meaning ‘person’ (cf. figure 2a); it can only refer to NPs which have human referents.
- In contrast to PERSON, PRO_[bC] is restricted to functioning as an object. Moreover, only PRO_[bC] shows person distinctions, e.g. first person in (17c).
- Meir does not analyze PRO_[bC] as an auxiliary (similar to the DGS sign PAM), since, in contrast to agreement verbs and auxiliaries, PRO_[bC] cannot co-occur with a full NP in the same clause. From this Meir concludes that PRO_[bC] occupies an argument position.
- While nouns denoting ‘person’ may be the source for various instances of grammaticalization in spoken languages, they are not usually the source for case markers.

3.4 From noun to complementizer

- In DGS, the noun GRUND (‘reason’) has developed into a complementizer introducing cause complements. Note that in (18b), there is no prosodic break following GRUND.

DGS

- (18) a. **GRUND** INDEX₁ ^{hs} VERSTEH
 reason I understand:NEG
 ‘I don’t understand the reason.’
 b. INDEX₁ TRAURIG **GRUND** POSS₁ HUND STERB
 I sad because my dog die
 ‘I’m sad because my dog died.’

- In contrast to DGS, NGT has a sign OMDAT (‘because’). Still, occasionally the sign REDEN (‘reason’) is used to introduce cause complements.
- Spoken languages: English *cause* > *because*; grammaticalization of cause- and purpose-complementizers from nouns such as ‘matter’ and ‘place’; cf. the Kikuyu example in (19).

Kikuyu (Bantu, Kenya, Heine & Kuteva 2002:211)

- (19) a. gu-ti-rĩ **ũndũ**
 C15-NEG-be matter
 ‘no matter’
 b. nĩ-n-gũ-igua ũũru nĩ **ũndũ** wa ũ-horo ũ-cio
 PART-1:SG-FUT-feel bad COP matter of C14-affair C14-that
 ‘I feel unhappy because of that affair.’

3.5 Grammaticalization of markers of intensification and emphasis

→ In a number of SLs, marker of intensification or emphasis have developed from adjectives or verbs. In ASL, e.g., the adjective TRUE (20a) is also used as an intensifier (20b).

ASL (ex. (b) from Fant 1994:42, cited in Sexton 1999:117)

- (20) a. $\overline{\text{STORY INDEX}_2 \text{ HEAR, TRUE}}$ b. I **TRUE** SICK
 ‘The story you heard is not true.’ ‘I am very sick.’

→ Similarly, in NGT the adjective STERK (‘strong’) has been the source for an intensifier.

→ In AdaSL (Ghana), the lexical verb HIT (21a) can be combined with a number of verbs in order to intensify the meaning expressed by the main verb (21b).

AdaSL (Victoria Nyst, p.c.)

- (21) a. TEACHER **HIT** CHILD
 ‘The teacher is hitting the child.’
 b. YESTERDAY FATHER WORK **HIT**
 ‘Yesterday my father worked very hard.’

→ Cf. English *very* the source of which is French *vrai* (‘true’). Similarly, in Baka, the adverb *ko* (‘truly, really’) developed into a marker of intensification (22).

Baka (Ubangian, Sudan, Heine & Kuteva 2002:302)

- (22) a. ?é **ko** lè-báka b. mo mèèlè bèlà **ko** síí
 3.SG truly child-Baka 2.SG do.PAST work very badly
 ‘He is a true Baka!’ ‘You have worked very badly.’

3.6 From adjective to negative existential

→ In spoken languages, lexical items with negative semantics (‘‘implied absence’’), e.g. the verb ‘to loose’, may turn into markers of negation. In Fula, for instance, the lexical verb *waas* (‘to loose’, (23a)) has developed into a clause negator (23b).

Fula (West Atlantic, Nigeria; Marchese 1979:311f)

- (23) a. o **waas-ii** debbo makko b. ko miin **waas-i** am-de
 3.SG lose-TNS woman his FOC me NEG-TNS dance-INF
 ‘He has lost his wife.’ ‘It’s me who did not dance.’

→ Apparently, in LIU the adjective EMPTY has undergone a similar change. This sign is not only used as an adjective (24a), but may also function as a negative existential (24b).

LIU (Bernadet Hendriks, p.c.)

- (24) a. CUP EMPTY b. MOTHER EMPTY
 ‘The cup is empty.’ ‘Mother is not there / not present.’

3.7 Serial verb constructions

- A serial verb construction (SVC) “contains two or more verb roots that are neither compounded [...] nor members of separate clauses” (Payne 1997:307). A SVC denotes a single, complex event, where the semantics of the secondary predicate are bleached.
- The secondary predicate expresses an extension or an aspect of the basic predicate; the verbs most frequently used in SVCs are ‘to go’, ‘to give’, and ‘to take’: the latter two find use in the Ijò SVCs in (25).

Ijò (Niger-Congo, Nigeria; Carstens 2002:3)

- (25) a. dúma tun-nì a-pírì
 song sing-PRT her-give
 ‘Sing her a song.’
- b. ayá bara-kì àkì dúma tun
 new way-EMPH take song sing
 ‘Sing a song in a new way.’

- Similarly, in NGT GAAN (‘to go’) may combine with verbs of movement, GEVEN (‘to give’) and NEMEN (‘to take’) with other transfer verbs (26a), and ROEPEN (‘to call’) with verbs of communication (26b). A similar SVC from IPSL is given in (26c).

NGT (ex. (a,b) from Bos 1996) and IPSL (ex. (c) from Ulrike Zeshan, p.c.)

- (26) a. VERZOEK INDEX₁ BETALEN INDEX₁ **GEVEN**₂
 please INDEX pay INDEX 1.SG.S:give:2.SG.O
 ‘Please, I want to pay you (for it).’
- b. MAN INDEX_{3a} VRAGEN ₁**ROEPEN**_{3a}
 man INDEX ask 1.SG.S:call:3.SG.O
 ‘I asked the man.’
- c. BA:P GA:R°I: PAISA: ^DENA: **LENA:**
 father car pay take
 ‘(My) father buys a car’

3.8 Instances of type 2-grammaticalization

- Analysis of agreement morphology as the result of phonological reduction of pronouns; possibly affixation (via cliticization) (Keller 1998; Wilbur 1999); also cf. 4.1.2.
- ASL: Grammaticalization of an agentive suffix from the noun PERSON and of a negative suffix from the numeral ZERO (e.g. TOUCH-ZERO ‘not use’) (Aronoff et al. 2000). A similar process has been observed in DGS and NGT; however, it is not clear whether we are dealing with derivation or compounding here.

4 Modality-specific aspects: the grammaticalization of gestures

- While communicating, speakers of spoken languages make extensive use of (culture-specific) gestures: hand and head movements and facial expressions (Kendon 1980).
- It is very common for culture-specific gestures to be lexicalized in a particular SL (e.g. LEKKER (‘yummy’) in NGT). In addition to that, manual and non-manual gestures may take over grammatical functions in SLs.

4.1 Manual gestures

4.1.1 From gesture to classifier

- Verbs of motion and location in SLs classify one of their arguments (the theme argument) by means of a handshape change (Supalla 1986).
- ENTITY (semantic) classifiers (CL) indirectly reflect shape characteristics of the subject of intransitive predicates, while HANDLE (object) classifiers directly refer to the way the object of a transitive predicate is handled/manipulated.
- While the shape of an entity CL may be more on the arbitrary side (figure 3a), handle CL are iconic and are clearly related to gestures used in the hearing community (figure 3b).

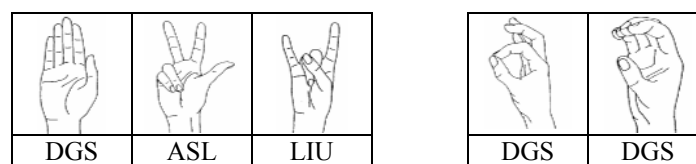


Figure 3a:
Entity CL for vehicles

Figure 3b:
Handle CL

- In fact, some authors have argued that CL handshapes are non-linguistic gestural elements or schematic visual representations (Cogill-Coez 2000).
- Others, however, have argued that CLs are clearly grammatical elements, i.e. (gender) agreement markers: they are obligatory, they form a closed paradigmatic set comparable to spoken language noun class systems (Zwitserslood 2003), they are not used creatively (van Dijken 2004), and they license pro-drop (Glück & Pfau 1998).
- Consequently, CLs can be seen as grammaticalized gestures which enter the language system at the morphology stage (i.e. as bound morphemes). That is, the morphology is directly created from non-linguistic input.
- The degree of grammaticalization of the gestural source may differ from SL to SL (cf. Zeshan (2003b) for IPSL).

4.1.2 From gesture to pronoun

- Similarly to CL, the status of pointing signs is debated. Liddell (2000, 2003), for instance, argues that at least the direction and the goal of movement constitutes a gestural component of these signs.
- However, some authors argue that the consistent linguistic patterns exhibited by pronouns (and agreement verbs) in SLs cannot be accounted for by assuming that the loci are non-linguistic (Aronoff et al. 2000; Mathur 2000).
- The use of pronominal forms is syntactically constrained (pro-drop, pronoun copy); furthermore, children acquiring a SL make errors that would not be expected if the system were essentially iconic rather than linguistic.

4.1.3 Other manual gestures

- A commonly used Jordanian gesture roughly meaning “Wait a second” has entered the LIU lexicon at the grammatical stage as a negative completive marker (figure 4a).

→ In India and Pakistan, the gesture illustrated in figure 4b is often observed in interrogative contexts. In IPSL, the gesture has grammaticalized into the general wh-sign KYA: which obligatorily appears in sentence-final position (Pfau & Zeshan 2003).



Figure 4a:
Negative completive in LIU



Figure 4b:
General wh-sign in IPSL

4.2 Non-manual gestures

4.2.1 Negative headshake and head tilt

→ A side-to-side headshake (hs) frequently accompanies spoken utterances (Kendon 2002). It is not only observed in negative contexts but also commonly used to signal uncertainty (27a) or to intensify affirmative sentences that have a negative connotation (27b).

American English (McClave 2001:61; 2000:873)

(27) a. hs
Where is he going?

b. what I needed to do was uh to clean it and uh (pause) it was real hs bad

→ Signers also make affective use of headshakes, that is, for signalling intensification, as in the ASL example (28a), or uncertainty, as in the DGS question (28b).

ASL (ex. (a) from McClave 2001:57) and DGS (ex. (b))

(28) a. hs
WOW SHOW-UP MANY
'Wow! Many (non-handed signs)
showed up.'

b. GESTERN INDEX₂ hs MACH WAS
yesterday you make what
'What did you do yesterday?'

→ But besides this affective function, a headshake can also fulfill a linguistic function in SLs in that it can be the sole marker of sentential negation.

→ The distribution of the negative headshake in SL is not random: scope and timing of the non-manual is linguistically constrained relative to the manual sign(s) it accompanies.

→ In DGS, the headshake has to accompany the verb even if the optional manual negation marker NICHT ('not') is present (29a). In the absence of NICHT, the headshake may either accompany the verb sign only or spread onto neighboring constituents (29b).

→ When spreading occurs it has to target entire constituents. Consequently, example (29c) is ungrammatical (Pfau 2002, in press).

DGS (Pfau 2002:273, 287)

- (29) a. MUTTER BLUME KAUF NICHT^{hs}
 mother flower buy:NEG not
 ‘Mother does not buy a flower.’
- b. MANN BLUME KAUF^{hs}
 man flower buy:NEG
 ‘The man does not buy a flower.’
- c. *MANN BLUME ROT KAUF^{hs}
 man flower red buy:NEG
 ‘The man doesn’t buy a red flower.’

- The exact distribution of the headshake is subject to language-specific variation. ASL, DGS, and LSC, e.g., differ w.r.t. possible position of the headshake (Pfau & Quer 2004).
- When ASL NOT is present, headshake may accompany NOT only, as indicated in (30a); the same is ungrammatical in DGS. LSC patterns with DGS w.r.t. basic word order, but it patterns with ASL, as far as headshake on the manual Neg sign only is concerned (30c).
- However, when the Neg sign is dropped, LSC patterns with DGS. Just like in DGS (29b), headshake on the verb only is possible in LSC (30d), while the same is ungrammatical in ASL (30b). In ASL, in the absence of NOT, the headshake has to spread over the VP.

ASL (ex. (a,b) from Neidle et al. 2000:44f) and LSC (ex. (c,d) from Pfau & Quer 2004)

- (30) a. JOHN NOT BUY HOUSE^{hs}
 ‘John does not buy a house.’
- b. *JOHN BUY HOUSE^{hs}
- c. SANTI CARN MENJAR NO^{hs}
 Santi meat eat not
 ‘Santi does not eat meat.’
- d. SANTI CARN MENJAR^{hs}

- The observed differences are clearly syntactic in nature and they strongly support the claim that the use of the headshake to signal negation is grammatical and not gestural.
- In cultures where a backward head tilt is used to signal negation, the same gesture is also observed in the SLs in the respective countries. The use of a backward head tilt in negative contexts is illustrated for TID in (31a) and for GSL in (31b).

TID (ex. (a) from Zeshan 2003a:57) and GSL (ex. (b) from Antzakas, in press)

- (31) a. PARA KENDİ DEĞİL^{head back}
 money self not
 ‘There is no money involved
 for ourselves.’
- b. WORK AFTER GO, HURRY^{head back}
 ‘Don’t be in a hurry,
 we will go (there) after work.’

- Finally, in neuropsychological studies, it has also been shown that the two types of facial expressions – linguistic vs. affective – are processed differently and can be selectively impaired (Corina et al. 1999; Atkinson et al. 2004).

4.2.2 Topic marking

- Another grammaticalization pathway that also begins with a nonmanual gesture and results in a highly grammaticalized functional category is that of topic marking. Janzen (1999) proposes the grammaticalization path in (32) (also cf. Janzen & Shaffer 2002).

- (32) communicative > yes/no question > topic constituent
questioning gesture (pragmatic/syntactic)

- The gesture proposed as the origin is an eyebrow raise; this conventionalized signal – in combination with a forward head tilt inviting a response – has become the obligatory yes/no question marker in ASL (and other SLs); cf. (33a).
→ The same eyebrow raise is observed in topicalization, where it may optionally be accompanied by a backward head tilt (33b).

ASL (ex. (a) from Liddell 1980:77; ex. (b) from Janzen 1999:288)

- (33) a. $\overline{\text{WOMAN FORGET PURSE}}_{\text{y/n}}$
'Did the woman forget the purse?'
b. $\overline{\text{WORLD CL:C}_{\text{globe}} \text{MANY DIFFERENT+ LANGUAGE INDEX}_{3(\text{on globe})}^{+++}}_{\text{top}}$
'In the world, there are many different languages used / There are many different languages used in all parts of the world.'

- Interestingly, a similar polysemy is also observed in some spoken languages. In Hua, for instance, interrogatives and topics are marked by the same morphological marker (34) (C.P. = connective particle).

Hua (Papuan, Papua New Guinea; Haiman 1978:570f)

- (34) a. E-si-**ve** baigu-e
come-3.SG.FUT-INT will.stay-1.SG
'Will he come? I will stay / If he will come, I will stay.'
b. Dgai-mo-**ve** baigu-e
I(emph.)-C.P.-TOP will.stay-1.SG
'As for me, I will stay.'

- Note that (34a) can also have a conditional reading. Janzen (1999) points out that in ASL, the brow raise is also used to mark conditionals.

5 Conclusion

- SLs employ exactly the same (i.e. the well-trodden) grammaticalization paths as do spoken languages. That is, the proposed pathways are modality-independent.
→ However, there are only very few (if any) instances of type 2-grammaticalization (from free to bound grammatical morpheme). This may either be due to the fact that SLs are comparably young languages or/and to the general scarcity of affixational morphology.
→ Moreover, SLs have the unique possibility of grammaticalizing manual and non-manual gestures. This is clearly a modality-specific aspect of grammaticalization (cf. Joutteau (2004) for discussion of a possible counterexample, i.e. the grammaticalization of vocal/manual gestures in preverbal subject position in Atlantic French).
→ Note that some of the grammaticalized gestures have been argued to be affixal in nature, for instance agreement and classifiers (Aronoff et al. 2000; Pfau & Glück 2000; Zwitserlood 2003), as well as the negative headshake (Pfau, in press; Pfau & Quer 2004).

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