

Agreement auxiliaries and transitivity in sign languages

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1 Introduction

- Sign language (SL) agreement differs in several respects from agreement in spoken languages.
- In this talk, we focus on SL agreement auxiliaries and discuss the question whether they provide evidence for a lexical/thematic or syntactic basis of agreement.
- We will argue that SL agreement is a hybrid category – a fact that may be related to the grammaticalization of agreement in SLs. As a consequence, SL agreement seems to be in the course of developing from iconic (lexical/thematic) towards more grammatical (syntactic).
- This talk is organized as follows:
 - verbal agreement in spoken and signed languages (Section 2);
 - phonological, morphological, and semantic restrictions on SL agreement (Section 3);
 - agreement auxiliaries (Section 4);
 - lexical and syntactic analyses of the syntax of verbal agreement (Section 5).

2 Background: Agreement in spoken and signed languages

- “The term agreement commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another.” (Steele 1978b:610; cf. also Moravcsik 1978; Lehmann 1982, 1988).
- In many spoken languages the particular form of the verb (the agreement target) depends on formal or semantic properties (of one) of its arguments (the agreement controller). Commonly, the verb agrees with its first argument (the subject) in person, number and/or gender/noun class.
- In spoken languages, subject-verb agreement has developed primarily from pronouns. Pronominalization and agreement appear to be related phenomena.
- In SLs, discourse referents are linked to referential loci in the signing space (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.
- In the German Sign Language (DGS) example in (1), the 1st person possessive pronoun POSS₁ points towards the signer’s chest, while INDEX_{3a} localizes MOTHER at location 3a (Figure 1b). This location is then used to pronominalize MOTHER in the second sentence.

- (1) POSS₁ MOTHER INDEX_{3a} BOOK++ LIKE.
 ‘My mother likes books.
 YESTERDAY INDEX_{3a} BOOK_{3a} GIVE₁
 ‘Yesterday she gave me a book.’
 [DGS]



Figure 1a:
Signing space

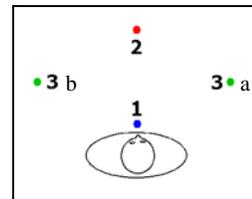


Figure 1b:
Localization of referents

- The agreement verb GIVE moves from location 3a towards location 1. Agreement verbs like GIVE show subject and object agreement, i.e. they agree with two of their arguments.

- Agreement in SLs is locus agreement. Agreement verbs express referential indices of their arguments by moving from a referential locus associated with the subject towards a referential locus associated with the object (cf. Aronoff et al. 2005).
- Hence, SLs, just like spoken languages, use the same means for pronominalization and agreement. However, unlike spoken languages, SLs express referential indices directly on the verb. SLs do not use agreement affixes expressing morphosyntactic categories like e.g. person.
- This type of agreement is very common across SLs. Just like many spoken languages, SLs have rich verbal agreement inflection (although it has been argued that SLs are topic-prominent).
- Other kinds of agreement phenomena 1: classifiers (cf. Glück & Pfau 1997; Zwitserlood 2003; Benedicto & Brentari 2004). The agreement controller of classifier agreement is either the internal argument (i.e. proto-patient (2a)) or the external argument (i.e. proto-agent (2b)). By contrast, subject-object agreement is controlled by the source/goal arguments.

[DGS]

- (2) a. INDEX₁ POPE INDEX_{3a} FLOWER_α GIVE_{CL:α=LONG/THIN} / APPLE_α GIVE_{CL:α=SMALL/ROUND}
 'I give a flower to the pope' 'I give an apple to the pope'
- b. CAR LOC_{CL:α=CAR++} / BIKE LOC_{CL:α=BIKE++}
 'Cars are standing next to each other' 'Bikes are standing next to each other'

- Other kinds of agreement phenomena 2: spatial verbs (3) (Padden 1983, 1990).

- (3) TABLE BOOK LOC-CL-INDEX_{3a}. GLASS LOC-CL-INDEX_{3b}. VASE LOC-CL-INDEX_{3c} [DGS]
 'A book, a glass, and a vase are next to each other on a table'

- Other kinds of agreement phenomena 3: role shift.

- (4) EMMA INDEX_{3a} LENA INDEX_{3b} ASK_{3b}: INDEX₂ TIRED (INDEX₂) [DGS]
^{3a < _____ Q > 3b}
 'Emma asks Lena, whether she is tired.'

3 Properties of agreement in sign languages

- Verbal agreement is one of the most thoroughly studied topics in SL research. For different analyses see Padden (1983), Johnston (1991), Janis (1995), Engberg-Pederson (1993), Liddell (1995, 2000, 2003), Meir (1998, 2002), Keller (1998, 2001), Cormier (1998), Cormier et al. (1998), Mathur (2000), Neidle et al. (2000), Rathmann (2000), Mathur & Rathmann (2001), Rathmann & Mathur (2002), Aronoff et al. (2005), among others.
- Verbs in SLs express subject and object agreement by path movement and/or facing of the hands (palm orientation or orientation of the fingertips, cf. Meir 1998).
- With the DGS verb GIVE, path movements begins at *x*, the location associated with the subject, and ends at *y*, the location associated with the object (5a). By contrast, INFLUENCE expresses agreement by facing of the hands (5b): the fingertips are oriented towards the object location, i.e. *y*. In some verbs, e.g. HELP (5c), both means of agreement marking are combined.

- (5) a. _xGIVE_y b. _xINFLUENCE_y [DGS]
 'to give something to someone' 'to influence someone'
- b. _xHELP_y
 'to help someone'

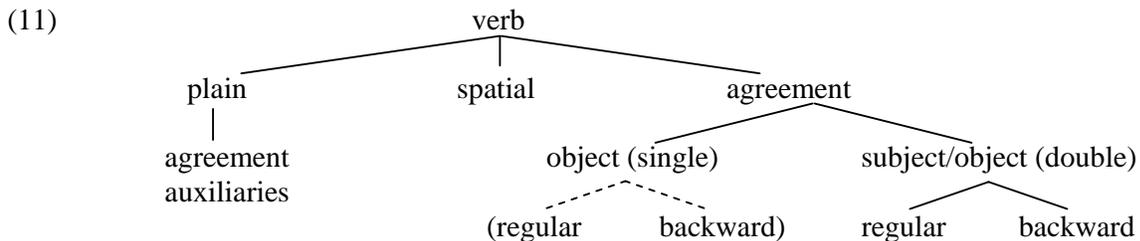
- Not all SL verbs are agreement verbs. SLs also have so-called plain verbs, that cannot show agreement (6a), and spatial verbs, whose beginning and endpoints are not determined by thematic arguments of the verb but by spatial referents (6b).

- (9) a. Regular verb: ₁HELP₂ [DGS]
 'I help you'
 b. Backward verb: ₂INVITE₁
 'I invite you'

- A further crucial difference between agreement in sign and spoken languages concerns the agreement controller: in spoken languages, object agreement is more marked than subject agreement, while in SLs it is the other way round.
- ASL single agreement verbs like SEE, YELL, or IGNORE are only marked for object agreement (cf. Padden 1983; Cormier 1998). In DGS, verbs of communication like ASK or TELL are used as single agreement verbs by some signers.
- Additionally, unlike object agreement, subject agreement is optional. The subject agreement marker can be omitted, as is illustrated by the ASL example in (10) (Padden 1983). Hence, in SLs subject agreement is less important (more marked) than object agreement.

- (10) WOMAN GIVE₁ NEWSPAPER [ASL]
 'The woman gives me a newspaper.'

- Recall that in SLs not all verbs can be inflected for agreement. Some SLs have developed means to overcome the agreement gap caused by plain verbs.
 - A SL may make use of agreement auxiliaries which are capable of expressing the agreement relation whenever the main verb is not capable of doing so.
 - A SL may use non-manuals to express the agreement relations with plain verbs.
- In addition, plain verbs may develop into agreement verbs. For instance, in DGS, for some signers the verb TRUST is a plain verb, while for others, it is an object agreement verb or even a subject-object agreement verb; cf. example (7) above.



4 Agreement auxiliaries

- Like agreement verbs, agreement auxiliaries express subject and object agreement by means of path movement and hand orientation.
- Agreement auxiliaries in SLs differ from spoken language auxiliaries in that they are not used for tense, aspect, modality, or voice marking (so-called TAM-auxiliaries; Steele (1978a)). Their basic function is to mark subject/object agreement (SOA-auxiliaries).
- While tense is never marked on SL verbs, SLs do have rich aspectual systems (Klima & Bellugi 1979; Rathmann 2005). They also use free aspectual markers, such as FINISH in ASL or READY in DGS and modal verbs (Ferreira Brito 1990; Massone 1994; Pfau & Quer 2007).
- Agreement auxiliaries in SLs developed from three different lexical sources: verbs, pronouns, and nouns (see Heine (1993) and Kuteva (2001) for spoken languages).

→ See Massone & Curiel (2004) for Argentine SL (LSA), Sapountzaki (2005) for Greek SL (GSL), Zeshan (2003) for Indo-Pakistani SL (IPSL), Bos (1994) for SL of the Netherlands (NGT), Fischer (1996) for Japanese SL (NS), Smith (1990) for Taiwan SL (TSL), and Rathmann (2000) for DGS. For a detailed discussion and comparison of SL agreement auxiliaries see Steinbach & Pfau (2007).

4.1 Verbal and pronominal agreement auxiliaries

→ In NGT, the auxiliary ACT-ON, which is regularly used with plain verbs (12b) and adjectival predicates, is grammaticalized from the spatial verb GO-TO (12a) (Bos 1994).

- (12) a. SCHOOL INDEX₃ BOY GO-TO₃ [NGT]
 ‘The boy is going to school.’
 _____^{top} _____^{/op/}
 b. INDEX₁ PARTNER INDEX_{3a} LOVE 3aACT-ON₁
 ‘My boyfriend loves me.’

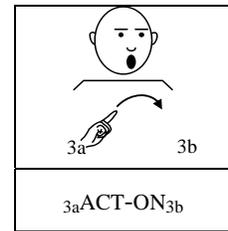


Figure 2:
Aux in NGT

→ TSL has three different agreement auxiliaries (Smith 1990), two of which are derived from lexical verbs: AUX-2 from the one-handed verb SEE (13a), AUX-11 from the two-handed verb MEET (13b). The third auxiliary is derived from concatenated pronouns (see (15) below).

- (13) a. 1AUX-2₃ INDEX₁ UNFAMILIAR [TSL]
 ‘I don’t know him.’
 _____^{top}
 b. THAT VEGETABLE, INDEX₁ 1AUX-11₃ NOT-LIKE
 ‘I don’t like that dish.’

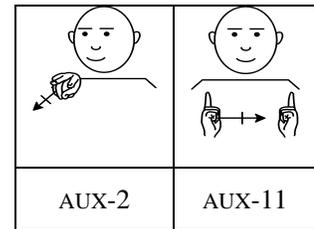


Figure 3:
Auxiliaries in TSL

→ In GSL, the lexical verb GIVE has been the source for the agreement auxiliary GIVE-AUX. Note that GIVE-AUX differs semantically from the NGT and TSL auxiliaries in (12) and (13) above. It can only be used with psych-verbs and it does not only marker agreement but also causativity (14) (Sapountzaki 2005).

- (14) a. INDEX₂ 2GIVE-AUX₃ BURDEN END [GSL]
 ‘Stop being a trouble/nuisance to him/her!’
 b. 3GIVE-AUX₁ BE-CALM BE-HAPPY
 ‘It (the sunset) makes me calm and happy.’

→ For some SLs (e.g. LSA, GSL, IPSL, NS, and TSL), an auxiliary has been described which is derived from two concatenated pronominal signs; cf. the TSL example in (15).

- (15) a. THAT FEMALE 3AUX-1₁ NOT-LIKE b. 1AUX-1₃ INDEX₁ KNOW
 ‘That woman doesn’t like me.’ ‘I know him.’

→ In all cases, the index finger points first towards the subject locus and then moves in a smooth movement towards the object locus. The short tense movement towards a locus which usually characterizes pronominal signs is lost

→ Note that most of the restrictions to be discussed in the next section hold also true for the agreement auxiliaries derived from verbs and pronouns.

4.2 Nominal agreement auxiliaries: The personal agreement marker PAM in DGS

→ The source for the DGS auxiliary PAM (*Person Agreement Marker*; Rathmann 2000) is the noun PERSON (cf. (16) and Figure 4). Hence, unlike auxiliaries in spoken languages, PAM has not developed from a verb but rather from a noun.

- (16) ^{top}CONFERENCE, MANY PERSON BE-PRESENT [DGS]
 ‘Many persons/people were present at the conference.’

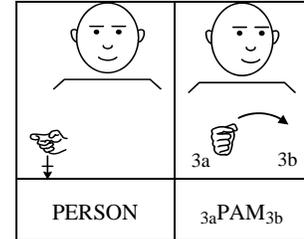


Figure 4: From noun to auxiliary in DGS

→ The noun PERSON does not exhibit a directional movement. Still, it has developed into an auxiliary which expresses the agreement relation by path movement and orientation of the fingertips.

→ Like verbal agreement, the use of the agreement marker PAM is restricted to [+human] arguments.

→ PAM is used with plain verbs (17a), with adjectival predicates (17b), and with verbs like TRUST, which cannot inflect for non-first person subject agreement and first person object agreement (17c). In addition, PAM also finds use in reciprocal constructions (17d) (Pfau & Steinbach 2003, 2005).

- (17) a. MOTHER INDEX_{3a} NEIGHBOR NEW INDEX_{3b} LIKE **3aPAM3b** [DGS]
 ‘(My) mother likes the new neighbor.’
 b. INDEX₁ POSS₁ BROTHER INDEX_{3a} PROUD **1PAM3a**
 ‘I am proud of my brother.’
 c. INDEX₂ TRUST **2PAM1**
 ‘You trust me’
 d. WE-TWO HATE **1PAM2-rec(1H)**
 ‘We(dual) hate each other.’

→ Optionally, PAM can also be used with the uninflected form of an agreement verbs, as is illustrated in examples (18a) and (18a’).

→ Recall that agreement verbs need not inflect for subject agreement (10). Likewise, PAM permits omission of subject agreement; compare (18b) with (18b’). By contrast, omission of object agreement is ungrammatical.

- (18) a. **3aTEACH3b** b. INDEX_{3a} KNOW **3aPAM3b** [DGS]
 a.’ TEACH **3aPAM3b** b.’ INDEX_{3a} KNOW **PAM3b**
 ‘S/he is teaching him/her.’ ‘S/he knows him/her.’

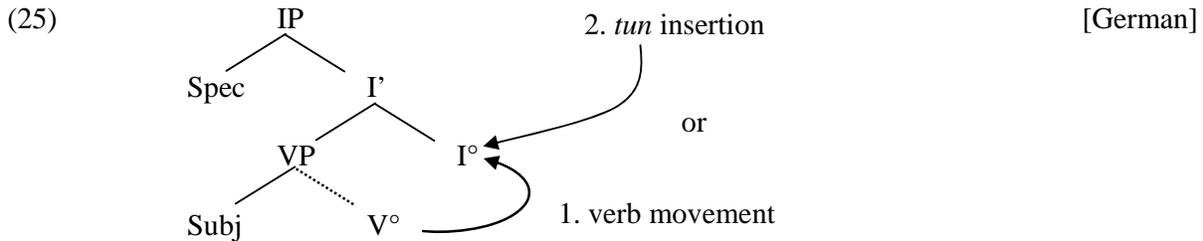
→ Interestingly, when used with backward verbs like INVITE in (19), PAM moves from the position of the subject to the position of the object. Obviously, as opposed to agreement verbs, PAM does not express agreement with source and goal arguments but with subject and object.

- (19) INDEX_{3a} INDEX_{3b} INVITE **3aPAM3b**
 ‘S/he invites him/her.’

→ Therefore, PAM can also be used with the plain verbs in (20), which do not select source and goal arguments, i.e. which do not involve any transition from a to b.

- (20) DGS plain verbs that express agreement by means of PAM:
 BE-PROUD, BE-ANGRY, KNOW, LIKE, TRUST, WAIT, BE-INTERESTED-IN, LAUGH, ...

→ Since strong features must be overtly checked, either the auxiliary *tun* is inserted in I° or the main verb moves to I° to check these features, as is illustrated in (25).



- The insertion of *tun* is not regulated by grammar but rather by style. Since German has many frequent irregular forms, *tun* is probably used to avoid inflection on the main verb.
- As opposed to German, in SLs only certain verbs can be inflected for agreement. Therefore, in SLs, the use of an agreement auxiliary is necessary to express agreement with certain verbs.
- Recall, however, that PAM can also optionally be used with uninflected agreement verbs. In this case, PAM-insertion in DGS is very similar to *tun*-insertion on German.

5 How to analyze sign language agreement

- The lexical (phonological and semantic) restrictions discussed above support a lexical treatment of verbal agreement in SLs. In particular, the thematic restrictions, which can be explicitly stated in the lexical entry, call for a lexical analysis.
- Lexical analyses of SL agreement: Meir (1998, 2002), Cormier (1998), and Cormier et al. (1998), among others.
- Meir (1998, 2002), for instance, distinguishes between two different kinds of agreement: (i) thematic agreement (26a) and (ii) syntactic agreement (26b).

- (26) Agreement morphology principles (AMPs):
- a. The direction of the path movement of agreement verbs is from source to goal [...]
 - b. The facing of the hand(s) is towards the object of the verb.

→ Thematic agreement marks the direction of the path movement whereas syntactic agreement is responsible for the facing of the hands. The AMPs account for both regular and backward verbs, which share the facing of the hands but differ in the direction of the path movement.

(27) Simplified lexical entry for regular (a) and backward (b) verbs

- a. *regular*

PHON	[direction ($x \rightarrow y$)]
	[facing (y)]
SEM	[CAUSE ([α], [GO ([γ], [PATH FROM [α] TO [β])])]]
	[AFF ([α^x], [β^y])]
SUBCAT	< subj $^\alpha$, ind.obj $^\beta$, dir.obj $^\gamma$ >

- b. *backward*

PHON	[direction ($y \rightarrow x$)]
	[facing (y)]
SEM	[CAUSE ([α], [GO ([γ], [PATH FROM [β] TO [α])])]]
	[AFF ([α^y], [β^x])]
SUBCAT	< subj $^\alpha$, ind.obj $^\beta$, dir.obj $^\gamma$ >

→ According to (27), the direction of path movement is controlled by the thematic roles source and goal (the arguments of FROM and TO) while the facing of the hands is controlled by the indirect (or dative) object.

$$(28) \text{ verbal agreement } \left[\begin{array}{l} \text{PHON } \left[\begin{array}{l} \text{direction (} \boxed{1} \rightarrow \boxed{2} \text{)} \\ \text{facing (} \boxed{3} \text{)} \end{array} \right] \\ \text{SEM } \left[\begin{array}{l} \dots [\text{GO} ([\gamma], [\text{PATH FROM } [\boxed{1}] \text{ TO } [\boxed{2}]])] \\ \text{AFF} ([\alpha], [\beta]) \end{array} \right] \\ \text{SUBCAT } \langle \text{subj}^\alpha, \boxed{3}, \text{dir.obj}^\gamma \rangle \end{array} \right]$$

→ Since backward verbs only differ from regular verbs in their spatial relations, the principles in (26) correctly predict that with regular verbs, the path movement begins at the position of the object and ends at the position of the subject.

→ One may argue that plain verbs require either non-manual agreement marking or PAM insertion since their manual features are lexically specified and hence not available for agreement inflection.

→ PAM can either be added to the lexical entry of the plain verb (for a lexical analysis of auxiliaries see Ackerman & Weibelhuth (1998)) or it subcategorizes for a plain verb and inherits all relevant selectional properties necessary to express agreement.

→ However, such an approach is faced with at least three problems:

- The use of PAM is not restricted to verbs of transition, i.e. unlike agreement verbs, PAM is not thematically but syntactically restricted (subject/object-agreement).
- With backward verbs, PAM does not express thematic but syntactic agreement.
- Sign language agreement does not seem to be a lexical property of certain verbs.

→ Therefore, agreement auxiliaries (as well as non-manual agreement marking) provide evidence for a syntactic analysis of agreement.

→ Syntactic approaches may assume that sign languages have ‘strong’ agreement features. Hence, sign languages equal spoken languages like German (cf. (25) above).

→ Bahan (1996) and Neidle et al. (2000) argue that syntactic agreement features occupying functional agreement heads must be overtly expressed in ASL (29). Since only agreement verbs are capable of realizing agreement features overtly, with plain verbs, the agreement features must be realized non-manually (that is, by means of head tilt and eye gaze).

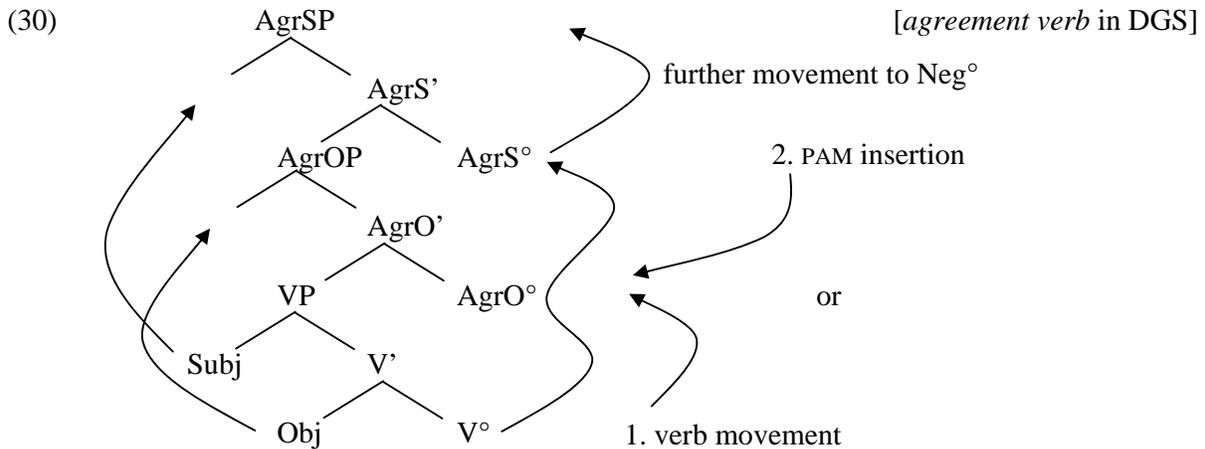
$$(29) [\text{TP T } [\text{NegP Neg } [\text{AspP Asp } [\text{AgrSP AgrS } [\text{AgrOP AgrO } [\text{VP } \dots \text{V} \dots]]]]]] \quad [\text{ASL}]$$

→ This analysis challenges the traditional distinction between agreement and non-agreement verbs and offers a uniform analysis of syntactic agreement (but see Thompson et al. (2006) for a critique on the basis of eye-tracking experiments).

→ Concerning agreement auxiliaries, one may argue that SLs use agreement auxiliaries to fill the agreement gap caused by plain verbs.

→ According to a syntactic account, agreement verbs overtly move to AgrO° and AgrS° to check subject and object agreement. Alternatively, PAM can be inserted in the head of the lower AgrP to check agreement (cf. structure (30) below). In this case, the uninflected verb stays in situ.

→ Actually, the second option resembles *tun*-insertion in German. However, it seems that signers prefer V-raising over PAM-insertion in this case. In DGS, verb-raising seems to be more economical than insertion of lexical material.



- Since plain verbs cannot check agreement features, PAM must be inserted to avoid a crash of the derivation. Again, the uninflected (plain) verb stays in its VP-internal base position.
- In DGS, PAM also finds use with agreement verbs like TRUST, which cannot be inflected for non-first person subject agreement and first person object agreement.
- This analysis can also explain the interaction of PAM with NOT (22) and READY, which both occupy right peripheral specifier positions. Since both functional heads c-command AgrS°, it is correctly predicted that the Neg sign NOT and the aspectual marker READY follow PAM.
- Moreover, PAM attracts the negative headshake because it is governed by Neg°. Probably, PAM moves to Neg° since the non-manual must be associated with lexical material (Pfau 2002).
- Note that DGS agreement DGS is still constrained by semantic properties of the arguments. PAM is only used with [+human] arguments. This may be either a general constraint on agreement in DGS (and probably other SLs) or it may be related to the semantics of PAM. Recall that the agreement auxiliary has developed from the DGS noun PERSON.
- One problem for purely syntactic analyses is the difference between agreement verbs and PAM. Syntactic analyses cannot explain the specific semantic restrictions on agreement verbs, which are not related to the notions of subject and object. Moreover, they cannot offer a unified account for regular and backward verbs.

6 Some speculations about the hybrid character of sign language agreement

- It could be argued that the hybrid character of SL agreement is a result of an ongoing process of grammaticalization of agreement. As a consequence, SL agreement seems to become more grammatical and less iconic.
- Prototypical agreement verbs like GIVE, which denote the (spatial) transfer of an object from one person (the source) to another person (the goal) represent the spatial relationship between two of their arguments iconically. They may have developed from spatial verbs or lexicalized spatial classifier constructions.
- More abstract agreement verbs like EXPLAIN also fit into this pattern. They also denote transfer, the difference to the first class of verbs being that the transfer is not concrete but abstract (cf. Meir 2002).
- Agreement verbs like HELP involve an even more abstract transfer-relation.
- Finally, agreement auxiliaries are not restricted to verbs denoting transfer.
- Note that Meir (1998) argued that all three classes of agreement verbs express thematic and syntactic agreement. Syntactic agreement may have paved the floor for the development of agreement auxiliaries like PAM, which only express syntactic agreement.

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