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Gesture, Lexical Words, and Grammar: Grammaticization Processes in ASL

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1. Introduction¹

The ultimate source of more grammaticized forms in languages is understood to be lexical. Most commonly, the source categories are nouns and verbs. The development of a gram (Bybee, Perkins and Pagliuca 1994) may be traced along a grammaticization pathway, with vestiges of each stage often remaining viable in the current grammar, so that even synchronically, lexical and grammatical items that share similar form can often be shown to be related. Thus the origins of grammar, at least for spoken languages, are found in older lexical items.

While investigations of grammaticization in American Sign Language (ASL) are still scarce, we suggest that similar diachronic processes do exist for signed languages, but with one essential difference resulting from signed languages occurring within a visual medium, where gestures of the hands and face act as the raw material from which formalized linguistic signs emerge. A crucial link between gesture and more formalized linguistic units has been proposed by Armstrong, Stokoe and Wilcox (1995), for example. Further, the recent suggestion that mirror neurons may provide evidence of a neuro-physical link between certain gestural (and observed) actions and language representation (Rizzolatti and Arbib 1998) strongly supports the idea that signed languages are not oddities, but rather that they are in keeping with gestural origins of language altogether.

This proposal, that pre-linguistic hand and facial gestures are the substrate of signed language linguistic units, allows for the possibility that when exploring grammaticization pathways, we may look not only to lexical material as the sources of newer grams, but to even earlier gestures as the sources of the lexical items that eventually grammaticize. This is the case for the category of modality, which we will illustrate by proposing that the development of modals such as FUTURE, CAN and MUST take as their ultimate source several generalized pre-linguistic gestures. Topic marking, which we propose developed from an earlier yes/no question construction, has an equally generalized gesture as its source. In the case of the grammaticized modals, the resulting forms can be shown to have passed through a lexical stage as might be expected. The process from gestural substrate to grammar for the topic marker, however, never does pass through a lexical stage.

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We conclude that grammaticization processes do take place in ASL, a signed language. The evidence presented here suggests that the precursors of these modern day ASL grammatical devices are gestural in nature, whether or not a lexical stage is intervening. The study of ASL then, provides new perspectives on grammaticization, in exploring both the sources of grams, and the role (or lack of role) of lexicon in the developing gram.

2. Markers of modality

For the grammatical category of linguistic modality, the path proposed in Shaffer (in preparation) and described here is:

- (1) gesture > full lexical morpheme > grammatical morpheme

Markers of modality seen in ASL have been hypothesized as having developed along predictable grammaticization paths described for modality in other languages. Bybee, Perkins and Pagliuca (1994) state that future grams in all languages develop from a limited pool of lexical sources and follow similar and fairly predictable paths. Future grams may develop from auxiliary constructions with the meanings of >desire,= >obligation= or >movementtowards a goal.= We believe that ASL is among those languages whose main future gram developed from a 'movementtowards a goal' source.

2.1. FUTURE

The claim here is simple: the future gram in ASL, the sign glossed FUTURE, developed from an older lexical sign with the meaning >go.= Evidence of this sign is found as far back as 1855 in France where it was glossed PARTIR. The sign was used as a full verb with the meaning >to leave.= It was produced with two open handshapes, the non-dominant hand palm down, and the dominant hand thumb up. The dominant hand began just above waist level, then moved upward until it made contact (at the wrist) with the palm of the non-dominant hand. Note that the sign is a two-handed sign. Old ASL also shows evidence of this sign, but with one difference. There is evidence from 1913² of GO (as in PARTIR) being signed as described above, but there are also instances of GO being signed with only one hand.

E. A. Fay in 1913 signs the following:

- (2) 2-3 DAY PREVIOUSLY E.M.GALLAUDET GO TO TOWN
PHILADELPHIA³
'Two or three days before, (EM) Gallaudet had gone to Philadelphia.'

2 All references to the 1913 data indicate filmed (transferred to video) narratives available on *The Preservation of American Sign Language*, ©1997, Sign Media Inc.

3 ASL signs are represented as upper case glosses. Words separated by periods indicate single signs; hyphens indicate compounded signs; PRO.n = pronouns (1s, 2s, etc.); POSS.n = possessive pronouns; letters separated by hyphens = fingerspelled words; [...]-TOP = topic marking; [...]-Y/N-Q = yes/no question marking; CL = classifier; DEM = demonstrative index; subscript letters = spatial loci.

In this context the sign very clearly has the meaning >go.= The speaker is making a past time reference and stating that Gallaudet had gone to Philadelphia. What is striking is that GO is signed in a manner identical to the older form of FUTURE. Take for example another utterance filmed in 1913, given in (3).

- (3) WHEN PRO.3 UNDERSTAND CLEAR WORD WORD WORD OUR
FATHER SELF **FUTURE**(*old*) DO THAT NO MORE
'When he clearly understands the word of our father he will do that no more.'

This example, signed by R. McGregor, shows the same form, the one-handed GO, being used to indicate future time, suggesting that for a period a polysemous situation existed whereby the sign could be understood in certain constructions to mean either >go= or >future.=

A further grammaticization of FUTURE was also occurring at the turn of the century. Phonological reduction in the signing space is evident by this time. Note the following example, where G. Veditz produces two variants of FUTURE in the same utterance.

- (4) 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.'

While FUTURE is produced twice in this sentence, its articulation is markedly different. In the second instance the sign resembles FUTURE as produced by McGregor in (3), while in the first instance FUTURE is signed in a manner consistent with modern ASL FUTURE, which moves forward from the cheek.

In summary then, FUTURE began in Old LSF (French Sign Language) as a full verb meaning >to leave.= By the turn of the century Old ASL evidenced both GO as it was produced in 1855 with the non-dominant hand as an articulated >base= hand, and GO without the non-dominant hand. Further, in 1913 a similar form, without the base hand, was used to indicate future time reference, as was a newer form phonologically similar to the form used today. Note, however, that PARTIR as it was signed in 1855 still exists in modern LSF, and a related form commonly glossed as LET=S.GO is seen in ASL.

What we have described to date is in keeping with grammaticization theory as proposed by Bybee et al. (1994), Hopper (1991), Traugott (1989) and others. We have described semantic and phonological changes a morpheme (FUTURE) underwent as it grammaticized from a full verb to a grammatical morpheme. Here however, we must depart from traditional grammaticization theory. We claim now that the modern ASL (and LSF) sign FUTURE has an earlier origin than the lexical sign PARTIR, namely a gesture in use in France at the time, and one we suggest was

available to either deaf or non-deaf groups of language users. In fact the gesture is still in use among non-signers in France. It is a very common French gesture, known to most any member of the French speech community and has the understood meaning >go= or >let=s go.=

What we are claiming then is that the source of FUTURE in ASL was a gesture used in France, which entered the lexicon of LSF, and then proceeded down a common grammaticization path. The resulting path looks something like (5):

- (5) gesture >go= > full verb >go= >grammatical morpheme >future=

We suggest that gesture is in fact a common source of modern ASL lexical and grammatical morphemes. We will now provide several other examples of gestural sources for ASL grammatical morphemes.

2.2. CAN

In a discussion of markers of possibility, Bybee et al. (1994) note that there are several known cases of auxiliaries predicating physical ability that come to be used to mark general ability as well. Two cases are cited. English *may* was formerly used to indicate physical ability and later came to express general ability. The second case noted is Latin *potere* or *possum* >to be able,= which is related to the adjective *potens* meaning >strong= or >powerful= and which gives French *pouvoir* and Spanish *poder*, both meaning >can= (1994:190). Wilcox and Wilcox (1995) and Shaffer (in preparation) have suggested that a similar grammaticization path can be seen for markers of possibility in ASL. Evidence from Old ASL suggests that the lexical sign STRONG has grammaticized into the sign CAN which is used to indicate physical ability, mental ability, root possibility, as well as permission and epistemic possibility.

Here again we claim that the source can be traced further back, to a gesture indicating physical strength. Evidence from existing Old ASL sources supports the claim that CAN is a grammaticization of STRONG. McGregor, in a 1913 lay sermon, signs the sentences given in (6) to (8):

- (6) WE KNOW EACH OTHER BETTER AND WE CAN UNDERSTAND EACH OTHER BETTER AND FEEL BROTHER
'We know each other better and are able to understand each other better and feel like brothers.'
- (7) OUR FATHER STRONG OVER MOON STARS WORLD
'Our father has power over the moon, and stars and world.'
- (8) SELF CAN GET ALONG WITHOUT OUR HELP
'He can get along without our help/He is powerful without our help.'

In (7) it is unclear whether the signer was intending a strength or possibility reading. Either meaning is possible and logical in sentence (7). This provides good

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evidence for the development of CAN in ASL from STRONG. In each of the above articulations the sign STRONG and the sign CAN are signed in an identical manner.

Shaffer (in preparation) suggests the following path for modern ASL CAN:

- (9) gesture >strong= >lexical >strong= > grammatical morpheme >can= >
epistemic >can=

Evidence from 1913 suggests that by the turn of the century CAN had already undergone a great deal of semantic generalization from its physical strength source. The 1913 data contain examples of each of the following discourse uses of CAN: physical ability, non-physical ability (skills, etc.) and root possibility. Examples of permission uses of CAN are not found in this diachronic data, nor are epistemic uses seen. Shaffer (in preparation) suggests that epistemic CAN is quite new and is the result of a semantic extension from root possibility uses, in conjunction with its sentence-final placement and concomitant non-manual marking.

While there is abundant cross-linguistic evidence to support a claim that the core marker of possibility in ASL developed from a lexical sign with the meaning >strong= or >power,= the claim we make here is that STRONG, the lexical sign, does not represent the ultimate source of the grammaticization path described. Instead, we claim that STRONG entered the ASL lexicon as a gesture. STRONG in both Old ASL and modern ASL is highly iconic, the very gesture non-signers might use to visually represent physical strength. Our claim here is that a ritualized gesture in use among signers and non-signers alike entered the lexicon of Old LSF, and then grammaticized to indicate any kind of ability, both physical and non-physical. It then generalized further to be used to indicate permission, and even epistemic possibility.

2.3. MUST

Turning to ASL MUST, Shaffer (in preparation) posits another gestural source, namely a deictic pointing gesture indicating monetary debt. This pointing gesture entered the lexicon by way of Old LSF as a verb indicating monetary debt, DEVOIR, then underwent semantic generalization which resulted in uses where no monetary debt was intended, only a general sense of >owing.= Further reduction, which resulted in uses without a base handshake, led to the development of general necessity in ASL, and subsequently to the development of modern ASL MUST and SHOULD. The grammaticization path suggested for MUST is:

- (10) gesture >owe= > OLSF verb >owe= >LSF/ASL >must,= >should= >
epistemic >should=

The 1913 data suggest that by the turn of the century the ASL sign OWE (the counterpart to the OLSF sign DEVOIR) was still in use, with and without a financial component to its meaning. MUST was also in use, with discourse uses ranging from participant external necessity and advisability, to participant internal necessity and

advisability. Uses with deontic or authoritative sources are also evident. Epistemic uses of MUST (and SHOULD) are not seen in the diachronic data, but are fairly common in modern ASL (see Shaffer in preparation).

In summary then, a look at the grammaticization of FUTURE, MUST and CAN in ASL traces their sources to the point where gesture enters the lexicon. FUTURE, MUST and CAN, we argue, each have gestural sources, which, through frequent use and ritualization, led to the development of lexical morphemes, then to the development of grammatical morphemes indicating modal notions. Shaffer (in preparation) suggests gestural sources for other ASL modals such as CAN'T, while Wilcox and Wilcox (1995) hypothesize gestural origins for markers of evidentiality (SEEM, FEEL, OBVIOUS) in ASL as well.

3. The grammaticization of topic

As we have seen, several grammaticization paths can be described for ASL which follow conventional thinking regarding the development of modal meaning in language, save the important links to the source of the lexical items being grammaticized. For ASL these sources are pre-linguistic gestures.

Here we present an additional grammaticization path that also begins with such a gesture, and results in a highly grammaticized functional category, that of topic-marking. The significant difference, however, is that this path appears not to have an identifiable lexical word conventionalize from the gestural source, and thus intervene between the gesture and the final grammatical item. The pathway proposed, adapted from Janzen (1998), is given in (11).

- (11) communicative > yes/no > pragmatic > syntactic > textual
questioning > questions > domain > domain > domain
gesture > > topics > topics > topics

3.1. The communicative questioning gesture

The gesture proposed as the origin of the yes/no question marker, and eventual topic marker, is an eye-brow raise. Quite conceivably, when accompanied by deliberate eye contact with someone the gesturer intends to communicate with, this gesture suggests an openness to communicative interaction. In other words, the gesture invites interaction by displaying an interest in interaction.

This gesture, under the right circumstances, might invite a response to an obvious query about something. In fact, in modern North American society, holding an item in one's hand, such as a drink, and lifting it up while gesturing to a friend by raising the eyebrows, and perhaps nodding the head toward the friend, is easily recognizable as *Do you want a drink?* This iconic gesture, then, is seen as a motivated choice in being co-opted into the conventionalized, but still gestural, language system of ASL.

The ease of understanding such a signal might mean that it is a good candidate as an effective communication strategy, and thus a plausible beginning point from which to build more complex and symbolic constructions. Its conventionalization in yes/no constructions in ASL would suggest that this is the case.

3.2. Yes/no questions

The effectiveness of a communication strategy is likely to lead to repetition, and once ritualized (cf. Haiman 1994), can become obligatory. The raised eyebrows gesture has thus become the obligatory yes/no question marker in ASL, usually along with a forward head tilt, although the appearance of this accompanying gesture seems less obligatory (Baker and Cokely 1980, Liddell 1980).

In an ASL yes/no question, the entire proposition being questioned is accompanied temporally by raised eyebrows (and again the less obligatory, but frequent, forward head tilt) and continuous gaze at the addressee. An alternation in word order to indicate the question does not take place. Examples are given in (12) and (13).

- (12) [FINISH SEE MOVIE PRO.2]-Y/N-Q (Baker and Cokely 1980:124)
'Did you already see that movie?'
- (13) [SEE PRO.1 PRO.2]-Y/N-Q *pause* (Janzen 1998:93)
'Did you see me?'

The pre-linguistic raised-eyebrow gesture itself may not be particularly meaning-specific. Pragmatic considerations surrounding the communicative interchange may contribute to its being inferred as a gesture indicating interest or intentness, or that a question is being asked. The gesture as a yes/no question marker in ASL, however, is specific in meaning, marking any string as a yes/no question. A pre-linguistic gesture, then, has been recruited as a grammatical marker, and it would be difficult to claim that either is a lexical item. In this case, it appears that a grammatical marker, albeit a rather iconic one, takes as its source a more general communicative gesture, with no lexical word developing or intervening at this stage of grammatical development or later, as discussed in the section below.

3.3. From yes/no questions to topic marking

Topics in ASL essentially take the form of yes/no questions, but function very differently in discourse. It is not uncommon for yes/no question marking and topic marking to employ the same marker (see Haiman 1978). For ASL this is also apparent, and ASL topic marking may be seen as representing a later stage of grammatical development. The same gesture of raised eyebrows indicates a topic in ASL, but rather than a forward head tilt, the head may optionally tilt backward. This in itself is worthy of note. Whereas the forward head tilt in a yes/no question invites a response, and is thus highly interactive in design, the topic-marked construction has the form of a yes/no question, but the backward head tilt may be thought of as an iconic gesture away from such invitation. The signer does not wish for any response to the 'question' form. The addressee must read this construction as providing a ground for some ensuing piece of discourse, or as a 'pivot' linking some shared or

presupposed information to something new. One discourse example is given in (14).

- (14) a. [TRAIN ARRIVE_(extended movement, fingers wiggle) T-H-E P-A-S]-TOP
CL:bent V(*get off vehicle*)
'The train eventually arrived at The Pas, and we got off,'
b. OTHER TRAIN *pause* [T-H-E P-A-S]-TOP TO LYNN LAKE
DEM(*c vertical to d*)
'and took another train north from The Pas to Lynn Lake.'
c. THAT MONDAY WEDNESDAY FRIDAY SOMETHING THAT
DEM CL:A(*cɪ dɪ c*) THAT
'That train runs Mondays, Wednesdays, and Fridays-something like that.'
d. [1,3.DUAL.INCL]-TOP CHANGE CL:bent V(*get on vehicle*) TRAIN
'We changed trains,'
e. ARRIVE C-R-A-N-B-E-R-R-Y P-O-R-T-A-G-E
'and arrived at Cranberry Portage.'
f. [CL:bent V(*get off vehicle*)]-TOP TAKE.UP DRIVE GO.TO FLIN FLON
'We got off (the train), and took a car to Flin Flon.'

As this discourse segment shows, the topic-marked constituent may be nominal or clausal (other elements such as temporal adverbials are also frequently topic-marked), and has the same formal marking as do yes/no questions, but its function in the discourse is very different. The construction is emancipated from the true interactive function of yes/no questions, and has assumed a purely grammatical function. The marker now indicates a relationship between parts of the discourse text, that is, how one piece of information relates to the next. As mentioned, this is a grounding or 'pivot' function in the text.

In the grammaticization path given in (9) above, 'syntactic domain topics' are suggested as a later stage than 'pragmatic domain topics.' While the details of this differentiation are not addressed here (see Janzen 1998, 1999), it is thought that information from interlocutors' shared world of experience is available to discourse events before information that arises out of the discourse event itself is available as shared information. In other words, cognition precedes expression. Essentially, however, marked topics that draw presupposed information from interlocutors' shared world of experience or from prior mention in the discourse are marked in the same manner.

The gestural eyebrow raise in these cases does not mark the full range of yes/no question possibilities, but only one: *do you know X?* Notice however, that even though this may suggest that the construction described here as a topic still appears to be very question-like, it clearly does not function in this way. Consider the functional practicality of such 'questions' as those posed in (15), drawing on the text example in (14d and f) above:

- (15) a. Do you know 'the two of us'?
b. Do you know 'the act of getting off the train'?

These are not yes/no questions that make any communicative sense. Rather, they are grammaticized constructions marked in the same form as are yes/no questions, but with grammatical function.

3.4. Textual domain topics: A further grammaticization step

The most highly grammaticized use of topic marking appears in ASL not as marking constituents containing shared information, but as grammatical discourse markers. While the pragmatic and syntactic domain topics relate relevant pieces of presupposed and new information in the text, we propose that the construction form along with topic marking has further grammaticized to have a textual cohesion-marking function, following the semantic-pragmatic change Traugott (1989) suggests as propositional > textual (or > expressive). Here it is proposed that the primary motivation for this grammaticized function is the topic as pivot. In this case, the shared information-linking function of the topic has been lost; the examples below show that what is marked with the topic marker is not information from interlocutors' world of experience, nor anything previously mentioned, but is instead information about the text construction itself.

- (16) WHAT=S.UP GO.TO_a RESTAURANT EAT.CONT, [BE.FINISHED]-TOP,
TAKE.ADVANTAGE SEE [TRAIN ARRIVE]-TOP
'So then, we went to a restaurant, ate, and then got to see the train arrive.'
- (17) 1s [lh:3s POSS.1s GOOD.FRIEND]-TOP 3s SAY DEM ALCOHOL IN
[WHY]-TOP lh:POSS.3s MOTHER PREVIOUS WORK ALCOHOL
STORE
'(I...) my best friend said she knew there was alcohol in it because her mother
had worked in a liquor store before.'
- (18) [FIRST]-TOP, P-H-O-N-E-M-I-C S-H-A-D-O-W-I-N-G (...)
'The first (exercise) is called "Phonemic Shadowing". (...)'

In (16) and (17) the topic-marked connective acts as a discourse pivot, and can hardly be called a 'topic' at this point. In (18), similarly, the pivot is an ordering device. As mentioned, information about the world is not a factor here, but predictable text organization is. The addressee in these cases is assumed to be fluent in such ASL discourse strategies; the shared information is now about text structure.

Thus, this grammatical use of the brow raise gesture has arisen, likely as an analog of the whole construction functioning as a discourse pivot, having been emancipated first from the interactive function that a yes/no question has, and secondly abstracting away from the type of information contained in the topic-marked constituent. The result is a construction very similar in form, but a grammatical text-cohesion device.

Historically, there is little recorded evidence to suggest when these grammaticized stages have appeared in ASL, but by the time of some of the earliest recorded texts in 1913, this text-cohesion function was already in use. Example (19), in the Hotchkiss text, shows this marker on an event ordering construction, similar to (18) above.

- (19) ... HELP IN TWO WAY-REP [**FIRST**]-TOP LEAD POSS.3 WALK-REP ...
'...helped in two ways, first, by leading him (on his) walk...'

The examination of this grammaticization cline shows that for whatever reason, at least when linguistic conditions are apparent, a lexical stage along the pathway is not required for the grammaticization of an item. Whether or not the language modality (signed gestures as opposed to vocal gestures) is the factor that allows this phenomenon is open to question, but the fact that gestures of the hands and face are of the same medium as linguistic signals may be significant.

4. Conclusion

Grammaticization processes for spoken languages are well-understood to be systematic and pervasive. Diachronic research in the last few decades has brought to light a vast array of grammatical constructions for which earlier lexical forms can be shown as their source. The systematicity within grammaticizing categories is such that in many languages, polysemous grammatical and lexical items are often thought to be evidence of grammaticization, even in the absence of detailed diachronic evidence.

Grammaticization studies on signed languages are rare, but the examples we have outlined show the potential for signed languages to develop in like manner to spoken languages in this respect. In other words, how would grammatical categories in a signed language emerge, except by the very same processes?

Several studies have shown that components of generalized, non-linguistic gesturing are evident in ASL: in the phonetic inventory (e.g. Janzen 1997), the routinized lexicon (Shaffer, in preparation), and in syntactic and morpho-syntactic relations (Armstrong et al. 1995). The present study, however, shows that the role that gesture plays in the development of grammatical categories is also critical, and not opaque when viewed through the lens of grammaticization principles. This study offers something unique to grammaticization theory as well, for two reasons.

First, it is interesting to see the process of gesture > lexical form > grammatical form as illustrated by the development of modals in ASL. Not only can we see grammatical forms arise, but also lexical forms as an intermediate stage in the whole process. Second, we have seen an instance of grammatical form arising not via any identifiable lexical form, but directly from a more generalized gestural source. This does not cast doubt on the crucial and pervasive role that lexical items do play in the development of grammar, but suggests that under the right circumstances, this diachronic stage may be bypassed. How this might take place, and what the conditions are for such grammaticization phenomena, have yet to be explored. As well there is great potential for studying the development of additional modal and auxiliary forms in ASL and other signed languages as features of grammatical structure.

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