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Historical Change in Signed Languages

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Abstract and Keywords

Signed languages are natural human languages used by deaf people around the world as their primary language. This chapter explores the linguistic study of signed language, their linguistic properties, and aspects of their genetic and historical relationships. The chapter focuses on historical change that has occurred in signed languages, showing that the same linguistic processes that contribute to historical change in spoken languages, such as lexicalization, grammaticization, and semantic change, contribute to historical change in signed languages. Historical influences unique to signed languages, such as the educational approach of borrowing and adapting signs and an effort to create a system of representing the surrounding spoken/written language and of the incorporation of lexicalized fingerspelling are also discussed.

Keywords: signed language, historical change, methodical signs, lexicalization, grammaticization, gesture, ASL, LSF, Libras

Signed Languages

Signed languages are natural human languages used by deaf people around the world as their native or primary language. “Sign language” is a broad category that includes signed languages such as American Sign Language (ASL), which are used by a relatively large community often across multiple continents, and village sign languages, which arise when a number of deaf children are born into an insular indigenous community (Meir et al., 2010). A number of myths and misunderstandings have pervaded our understanding of the first class of signed languages, the natural signed languages of large communities of deaf people.

One pervasive misunderstanding, held throughout much of history, is that signed languages are merely depictive gestures and not linguistically structured. Signed

languages are not simply holistic gestures. There is, however, a complex relationship between signed languages and gesture that scholars are only now beginning to understand (Armstrong, Stokoe, and Wilcox, 1995; Wilcox, 2004; Wilcox, 2007; Wilcox and Wilcox, 2009). As we will see, this includes a diachronic relationship.

Another common misunderstanding is that signed languages are merely representations of spoken languages—that ASL, for example, is a signed representation of spoken English. Signed languages are independent languages with their own lexicons and grammars. Related to this misconception, many people believe that signed languages are invented languages. They are not. Signed languages, like spoken languages, are naturally developing human languages. There are, however, sign systems created to represent spoken/written language, and we will see that such a system used in early French deaf education influenced the historical development of ASL.

Following from the belief that signed languages are invented is the assumption that they are languages with a shallow historical depth. The full story of the age of signed languages is quite complex and depends on the language, the question of emergent village signed languages, and the region of the world in which the language is used. Since signed languages were not regarded as true languages for most of recorded history, it is quite difficult to ascertain their age. We know that signed languages are mentioned in Talmudic law, and in the writings of Aristotle, Quintilian, and many others. Quintilian, for example, wrote that “not only a movement of the hand, but even a nod, may express our meaning, and such gestures are to the dumb instead of speech.” Deaf people and signed language are mentioned in ancient Egyptian writings from the nineteenth dynasty, ca. 1350–1200 BCE: “Thou art not one that is Deaf, who cannot hear, and one speaketh unto him with the hand” (Erman, [1927] 1971: 192).

In addition, we have descriptions of signed language communities, such as that of Pierre Desloges (1779, as reported in Lane, 1980: 123–124). Desloges became deaf at the age of seven from smallpox. As an adult, he wrote a treatise describing how he learned to sign:

> Like a Frenchman who sees his language attacked by a German who knows only a few words of French, I felt obliged to defend my own language against the false imputations [that it is not a language].… For a long time I was unaware of sign language. I only used scattered signs, isolated, without an orderly sequence and without linkages. I was quite unacquainted with the skill of combining them to sketch clearly defined scenes whereby we can represent our various ideas, communicate them to our deaf companions, and converse with them in an orderly and extended discussion. The first person who taught me this very useful skill was a deaf-mute from birth, of Italian nationality, who knew neither how to read nor

> write; he was a servant in the home of one of the actors in the “Comédie Italienne.” … There are deaf-mutes from birth, workers in Paris, who know neither reading nor writing, and who never went to the lessons of the Abbé de l’Epée, but who were so well instructed in religion, solely through the medium of sign, that they were judged worthy of the sacraments of the church. There is no event in Paris, in France, and in the four corners of the world that is not a topic of our conversations. We express ourselves on all topics with as much orderliness, precision, and speed as if we enjoyed the faculties of speech and hearing.

To this day, deaf people commonly relocate from rural areas to large cities, congregating in clubs where they can socialize and communicate with other deaf people. Although Desloges was describing eighteenth-century Paris, it is reasonable to assume that communities of deaf people using their native signed languages existed in most large metropolitan areas throughout the world and dating back centuries.

Signed languages are not universal; each signed language is a distinct language. Just as for spoken languages, signed languages have historical connections to other signed languages. Signed languages, however, do not reflect the same historical relationships as the dominant spoken languages of the regions in which they are used. For example, while spoken English is the dominant language of the United States and Great Britain, deaf people in these countries use historically and grammatically unrelated signed languages. ASL’s closest relative is French Sign Language (LSF). Brazilian Sign Language (also called Libras) is also historically related to LSF, making ASL and Libras, as well as many other LSF-derived signed languages such as Langue des Signes Québécoise (LSQ) and Lengua de Señas Mexicana (LSM), genetically related.

While the exact number of signed languages is not known, the 16th edition of the Summer Institute of Linguistics ethnologue of the world’s languages (Lewis, 2009) lists 130 signed languages. This number is likely under-representative, as new signed languages are discovered every year, and there are still vast areas of the world, especially rural areas and remote villages where much more documentation is needed. Within the past year alone, linguists have described two new signed languages that were previously undocumented, Hawaiian Sign Language (Lambrecth, Earth, and Woodward, 2013) and Chatino Sign Language (Hou and Mesh, 2013), a village sign language of the indigenous villages of the Chatino in Oaxaca, Mexico.

Over the past half-century, linguists have demonstrated that signed languages are capable of being analyzed using the same units as spoken language. Modern research on signed language began in the late 1950s with the pioneering work of the American linguist William C. Stokoe (1960). A professor of English at Gallaudet College (now Gallaudet University) in Washington, DC, Stokoe noticed that far from being random and

unstructured, the communication system used by many of his deaf students was regular and systematic. He applied linguistic techniques borrowed from the structuralist tradition to study this language of the deaf—American Sign Language. Stokoe's detailed analysis inspired a new interest in the structure of ASL by linguists and initiated international research on the world's signed languages.

One of the most important discoveries made by Stokoe was that signed languages have sublexical structure and can be described phonologically. Before this, signs were assumed to be holistic articulations that were unanalyzable. Stokoe demonstrated that signs consist of analyzable units of structure which are roughly equivalent to the spoken language concept of phoneme. Stokoe named these units "cheremes" based on the Greek root *kheiros* meaning "of the hand." Stokoe determined that the phonological units of signs fall into three major classes: handshape (the configuration that the hand makes when producing the sign), location (the place where the sign is produced, e.g., on the chest), and movement (the motion made by the signer in producing the sign, e.g., a path movement away from the signer's body). Stokoe called these three *aspects* of a sign, recognizing that, unlike the sequential ordering of phonemes in spoken languages, cheremes occur simultaneously and cannot be produced independently: it is not possible to articulate a movement without also articulating a handshape to move or a place to make the articulation. Later these units came to be called sign parameters, and as more research was conducted, more parameters were identified. Battison (1978) recognized a fourth parameter, orientation (the direction the palm faces when a sign is produced). Changing a single parameter can create a minimal pair, for example, a sign may overlap with another sign in movement, orientation, and handshape and only differ in location. Such is the case with the signs MOTHER and FATHER.

The visual modality of signed languages is often reflected in their linguistic structure. Signed languages take advantage of the three-dimensional space and multiple degrees of freedom of the articulators for grammatical function. Locations in space can indicate verbal arguments, so that the path movement of a verb such as GIVE can begin at the body of the speaker and move to a point in space in front of the speaker, indicating that the speaker has given something to a second person, while the reverse movement, beginning in front of the speaker and moving back toward her body, means that a person has given something to the speaker (Fischer and Gough, 1978; Emmorey and Riley, 1995). Space can also be used in metaphorical constructions to create a temporal continuum where signs placed closer to the body are closer to the current moment, signs placed out in front of the speaker indicate a moment in the future, and signs behind the speaker indicate a point in the past (Engberg-Pedersen, 1993).

In addition to articulations made by the hands, the face and body also play a critical role in signed languages, expressing a range of grammatical information such as questions,

topic, adverbials, conditionals, prosodic boundaries, change in speaker, speaker subjectivity, and more (Meir et al., 2007). Overwhelmingly the evidence points to a number of similarities between signed and spoken languages that at the very least should encourage linguists to include signed languages in any linguistic analysis regarding typological universals or cognitive motivations of language.

Early Studies of Historical Change

After Stokoe's pioneering discovery that linguistic methods can be used to analyze and describe signed languages, a surge of linguistic research began to appear. One of the first works was the *Dictionary of American Sign Language on Linguistic Principles* (Stokoe, Casterline, and Croneberg, 1965). Other studies examined the historical relation between ASL and LSF (Erting and Woodward, 1975; Woodward, 1978, 1976). More recent contributions that have direct relevance to the study of historical change in signed languages include Supalla and Clark (2015) and Shaw and Delaporte (2014).

In order to understand this work, we need to briefly describe the history of these two languages. The story is typically told that Thomas Hopkins Gallaudet, an American minister living in Connecticut, met a young deaf girl, Alice Cogswell. Wishing to learn techniques for teaching deaf children Gallaudet traveled to Paris, where he observed the teaching methods used at the Paris Institute under the supervision of the Abbe de l'Epée. Gallaudet and a deaf instructor at the Institute, Laurent Clerc, adapted FSL for use in the United States. They jointly established the American School for the Deaf in Hartford, Connecticut, in 1817, the first school for the deaf in this country, using their modified signed language as the method of instruction.

As told in this way, the story is more folktale than historical reporting. For one thing, it suggests that deaf people in America, although they had no access to education, were not already signing with each other. Given the evidence of Desloges, this is highly suspect. In fact, we have evidence of a large community of signers on Martha's Vineyard in the early 1800s (Groce, 1985). Second, it assumes that Gallaudet and Clerc brought "French Sign Language" to America. In fact, what they brought for use in the Hartford classroom was what was being used in the Paris Institute, and this was not French Sign Language. Rather, it was a system of instruction based on what was called *methodical signs*.

Methodical signs were an invention of the Abbe de l'Epée. Consisting of an amalgam of signs borrowed from FSL and invented signs, methodical signs were an attempt to represent the morphology and grammar of spoken and written French. Three examples from the writings of the Abbe de l'Epée will make this clear. The first describes the

methodical sign for the French word *aimable* "lovable": "I make the radical sign [love], then the sign for an adjective, but one terminating in *-able* formed from a verb: To this I must add the sign for possible or necessary" (Lane, 1980: 122). The second describes the methodical sign for "believe," which was signed as the concatenation of "know" plus "feel" plus "say" plus "not see" plus a final sign indicating that the entire sign was a verb. Finally, gender of French words was indicated in methodical signs by adding a sign for a man's hat (masculine gender) or a woman's bonnet (feminine gender) to the root sign.

It was not long before deaf educators in France and in America realized that the system of methodical signs was more of a burden than a benefit in the education of deaf children. It also was not long before Gallaudet realized that a language already existed in America, and in fact he suggested that teachers of the deaf should learn this language. Writing only two years after the establishment of the Hartford school, he said:

> A successful teacher of the deaf and dumb should be thoroughly acquainted both with their own peculiar mode of expressing their ideas by signs and also with that of expressing the same ideas by those methodical signs which in their arrangement correspond to the structure of written language. For the natural language of this singular class of beings has its appropriate style and structure. They use it in their unrestrained communication with each other, [it is marked by] great abruptness, ellipses, and inversion of expression.
>
> (Gallaudet 1819: 785)

Gallaudet even provided a glimpse at what this "natural language" looked like: "To take a familiar example … 'You must not eat that fruit, it will make you feel unwell' … In [the deaf's] own language of signs, literally translated, it would be thus 'Fruit that you eat, you unwell, you eat no'" (785).

Two important conclusions emerge from these historical facts. First, the route from FSL to ASL certainly included a substantial influence from methodical signs. Second, the evidence is strong that a signed language, or languages, existed in America prior to the establishment of the Hartford school.

Two early sociolinguistic studies on ASL conducted under the rubric of pidginization and creolization expanded on this history. Examining linguistic evidence such as lexical differences, phonological restructuring, and grammatical restructuring, Woodward (1978) proposed that the differences between modern LSF and modern ASL were due to creolization of FSL and whatever signed language(s) existed in America in the early 1800s—although, as we now see, it was more likely creolization with FSL via methodical signs.

Fischer (1978) also argued for the historical process of creolization in the emergence of ASL, noting lexical and grammatical similarities between ASL and creoles, and the social context in which ASL is learned. She also pointed out, however, that even after 150 years ASL still has neither decreolized nor turned into a more “establishment” language. Fischer proposed two reasons why neither process ever completed: (i) influence from educators and the modality in which ASL is expressed, and (ii) the social context in which ASL is learned, with only 10% of deaf children born to deaf parents and thus with the opportunity to learn ASL as their native language. Her conclusion was that “150 years after the first creolization of ASL, most deaf children are forced to recreolize ASL in every generation” (329).

Perhaps the most comprehensive early discussion of historical change in ASL is Frishberg (1975). Using descriptions of LSF by French scholars in the mid-1800s, and from a glossary of ASL (Long, 1918), Frishberg examined a number of processes of historical change that have taken place when compared to ASL as documented in the Stokoe et al. dictionary.

Another source of data used by Frishberg and others is a series of films produced by the National Association of the Deaf (NAD) shortly after the turn of the twentieth century. These films featured respected deaf signers such as George W. Veditz (former president of the NAD), and hearing signers such as Edward Miner Gallaudet, then president of Gallaudet College and the son of Thomas Hopkins Gallaudet. The films were made because by this time, the use of signed language in schools for the deaf across the nation and all of Europe had been replaced with the oral method, which prohibited signing and permitted only the use of speech. The banishment of signing from schools for the deaf was swift and absolute. In 1867 there were 26 schools for the deaf in America using ASL; by 1907 there were 139 schools, and none of them permitted signed language. In France in 1845, 160 schools used sign; by 1900, none allowed the use of signed language (Lane, 1980). Deaf teachers of deaf children were released from their long-held positions as teachers and superintendents of schools.

Alexander Graham Bell, a long-time advocate of the oral method, went even further. Bell believed that schools for the deaf fostered a sense of identity among deaf people, which led to intermarriage and the development of a deaf community with a shared language, “a special language … used as the vehicle of thought, a language as different from English as French or German or Russian” (Bell, 1883: 218). Surveying this situation, Bell wrote, “Those who believe as I do, that the production of a defective race of human beings would be a great calamity to the world, will examine carefully the causes that lead to the intermarriages of the deaf with the object of applying a remedy.” His remedy consisted of repressive measures and preventive measures. Repressive measures called for forbidding deaf marriages by legislative enactment. Preventive measures focused on

the linguistic and social environment that led to deaf intermarriages. Bell endorsed closing schools for the deaf in favor of day schools where deaf children would be kept in a "normal environment" during the period of education, forbidding the use of signed language in these schools, and ceasing employment of deaf teachers.

Facing such a dire situation, deaf leaders in the NAD feared that ASL would become an endangered language, perhaps even lost entirely to future generations, and so they established a fund of $5,000 to film and preserve their signed language, "the noblest gift God has given to the deaf" in the words of George W. Veditz.

Some of the historical changes described by Frishberg involve the lexicalization of signs. Two examples illustrate this process. One example is the ASL compound TOMATO. In 1918, the ASL sign was clearly a combination of two signs, RED and SLICE. The modern form has modified the phonology by a process that Frishberg characterized as *assimilation* and *fluidity*: the orientation of RED anticipates the orientation of SLICE, and the sign maintains the 1-handshape throughout the production of the sign. As Frishberg (1975: 707) notes, "the resultant sign no longer resembles either RED or SLICE, but is a lexicalized, conventionalized, arbitrary linguistic symbol." Another example of assimilation and fluidity is the sign WE. In contemporary ASL, it consists of two sequential touches to the chest, the first ipsilateral and the second contralateral. At the turn of the twentieth century, as seen in the NAD films, the sign was a concatenation of ME + YOU_1 + YOU_2 ... YOU_n + ME.

Frishberg also described other processes of historical change involving both phonological and morphological restructuring of signs. One process, which Frishberg called *symmetry*, results in phonological change in both two-handed and one-handed signs. In two-handed signs, the change results in both hands assuming the same handshape configuration. For example, Frishberg points out that the sign LAST/FINAL as described by Long in 1918 was produced by striking the extended pinky finger of the non-dominant hand with the extended index finger of the dominant hand. In contemporary ASL, both hands assume the pinky finger configuration.

In signs that were previously one-handed, the symmetry process adds a second hand with the same handshape and movement. Earlier one-handed signs such as ANGRY and DIE are now produced with two hands, with the added non-dominant hand identical in handshape and using either identical or reciprocal movement (see also Padden and Perlmutter, 1987) for a discussion of the status of such signs as either underlying one- or two-handed). Frishberg points out that symmetry facilitates production by permitting the signer to program both hands at once and perception, "in that the viewer can predict many characteristics of the sign just from seeing the shape and the movement of one hand" (1975: 701).

Another process of historical change described by Frishberg is the *restriction of lexical content to the hands*. Signs which previously required body movement (i.e., movement other than the arms and hands), facial expression, or contact with environmental objects are in modern form restricted to movements of the hands alone. The old LSF sign for COMPARE was produced with two flat hands facing the signer. The signer's eyes moved from one hand to the other, and then the hands moved together, the eyes focusing on both at the same time. In its modern form, the sign is made only by rocking the hands (produced by a slight alternating supination and pronation of the forearms) in alternation. Such a change might be comparable to lenition, the weakening of a sound in spoken language, such as when the final /t/ of *wait* changes to a flap in *waiting.*

Another example appears in the 1918 NAD film "The Preservation of Sign Language" in which George W. Veditz signs ENVY/JEALOUS. The sign is produced with a bent index finger handshape at the mouth, but Veditz actually opens his mouth and bites down on the tip of the index finger (figure 1). Today, ENVY/JEALOUS is produced with the same bent index finger at the corner of the mouth, but it is never put into the mouth; instead, the handshape is rocked by slight supination/pronation of the forearm.

Click to view larger

Figure 1: ASL sign ENVY/JEALOUS

Frishberg discusses three old LSF signs described by the Abbe de l'Epée that required contact with an object in the environment, a table: ABLE, PRESENT, and THEREFORE. She notes that the modern ASL forms of these signs bear no relation to the older LSF forms, nor are there any vestigial forms of the older signs. However, there is at least one other old LSF sign described by l'Epée which does survive in contemporary ASL, phonologically restructured and without environmental contact. According to l'Epée (as reported in Lane, 1980: 121):

> Did [the pupil] mean to express a present action? He made a sign prompted by nature, which we all make in the same case without being conscious of it, and

> which consists in appealing to the eyes of the spectators to witness the presence of our operation; but if the action did not take place in his sight, he laid his two hands flat upon the table, bearing upon it gently, as we are all apt to do on similar occasions: and these are the signs he learns again in our lessons, by which to indicate the present of a verb.

The modern ASL sign NOW is produced with two hands in either a bent-B or Y-handshape, palms facing up, with a downward movement. We suggest that the two-hand configuration and the downward movement are vestiges of the old LSF sign described by l'Epée.

The final process of historical change described by Frishberg is *morphological preservation*. This historical process appears to rely on analogy. Signs are restructured in such a way as to align them with an existing morphological form. For example, there is a set of forms in contemporary ASL that use a bent-V handshape and have a general meaning associated with offensive behavior. Such signs include SELFISH, STRICT, and MISCHIEVOUS. The sign STEAL as described by Long in 1918 was produced by using a grasping motion of the full dominant hand underneath and behind the stationary non-dominant arm. In modern ASL, this sign uses the bent-V handshape.

Another example of morphological preservation as analogy is seen in the previously discussed sign WILL/FUTURE. A set of time-related signs in old LSF and 1918 ASL were produced near the side of the face or above the shoulder, including TOMORROW, YESTERDAY, PAST, and LONG-AGO. The sign WILL/FUTURE was displaced from its former location below the waist to near the shoulder, perhaps by analogy with the other time-related signs (Janzen, 2012).

At the time Frishberg was conducting her research, a great deal of debate centered on the question of arbitrariness and iconicity. Saussure, and later Charles Hockett ([1960] 1982), had argued that arbitrariness is a defining property of the linguistic sign. Many scholars questioned the linguistic status of signed languages precisely because they are characterized by extensive iconicity (Myklebust, 1957; for further insight into the debate, see also Armstrong, 1983). Frishberg framed her study in terms of arbitrariness and iconicity, proposing that historical processes erode iconicity and create arbitrariness. We should point out, however, that many of the changes in the morphological preservation category actually demonstrate that meaning and form influence each other in a non-arbitrary way. Bolinger (1949) argued convincingly against the fundamental arbitrariness of the sign, demonstrating that there is "an intimate connexion between form and meaning—sufficiently close at times for form to influence meaning and for meaning to influence form" (53). One set of examples offered by Bolinger is when two or more forms "coincidentally resemble one another in both form and meaning, thereby drawing closer

together and pulling other forms into their orbit" (59), such as *chary, wary*, and *scary*. This seems to be the case for the historical change that occurred with STEAL.

This dynamic historical process is not restricted to a single orbit of form and meaning. The contemporary ASL sign STEAL not only uses a bent-V handshape, having been brought into the orbit of other signs associated with offensive behavior; it also has hand-internal movement: the open-V handshape changes to a bent-V handshape during the sign's production. The V-to-bent-V handshape is also seen in signs such as ANALYZE and SNARE/SNATCH, suggesting the pulling apart or pulling in of an object.

Finally, we point out that the non-arbitrary relation of meaning and form in this example occurs at a level far smaller than the word. The restructuring of the handshape of STEAL from full grasping hand in old ASL to bent-V in contemporary ASL, and the hand-internal change of open-V to bent-V in the contemporary form, are changes in phonemic level units—units that are not supposed to take part in a form–meaning relation. As Bolinger noted, though, the non-arbitrary relation of form and meaning occurs not only in a few imitative forms but in the entire language, including "units of that language smaller … than anything which linguistic formalists have conceded to suggest or have meaning" (1949: 55).

Another type of historical change seen in signed language is *initialization*. Initialization is the substitution of a sign's native handshape with a fingerspelling handshape representing the initial (or, rarely, the final letter) of the written language word that typically glosses the sign. Initialization was used by Abbe de l'Epée in the development of French methodical signs. It has been suggested, for example, that the contemporary ASL sign SEARCH-FOR, which is produced with a C-handshape, was originally an initialization of the old FSL sign CHERCHER. Kowalsky and Meier (2013) discuss evidence for the nativization of initialized signs in ASL.

Supalla (2004) examines initialization as a historical process in ASL. He also describes an interesting competition between forms in ASL due to two different word formation processes. The current ASL sign CHURCH appears to have developed by initialization of the sign ESTABLISH (figure 2). Supalla suggests that this form competed with an older form that developed from constructions using a HANDS-RAISED component, such as ROOF HANDS-RAISED "church" and HANDS-RAISED DAY "Sunday." The initialized form is now the conventional sign for "church." The older constructions have disappeared, except, as Supalla (2004: 276) points out, in the relexicalization of HANDS-RAISED into the contemporary form SUNDAY.

Click to view larger

Figure 2: ASL sign CHURCH

Lexicalization, Grammaticization, and Semantic Change in Signed Languages

Grammaticalization and lexicalization are diachronic processes by which language changes (Bybee, Perkins, and Pagliuca, 1994; Brinton and Traugott, 2005). Both involve phonological, syntactic, and semantic changes that unfold over time. Lexicalization is the process by which new words are formed, including but not limited to derivational processes, compounding, and conversion. As Janzen (2012) points out, the question of what it means to be "lexicalized" in a signed language is quite complex. He offers a definition of lexicalized taken from Johnston and Schembri (1999: 126), who state that a lexicalized sign is one that:

> has a clearly identifiable and replicable citation form which is regularly and strongly associated with a meaning which is (a) unpredictable and/or somewhat more specific than the sign's componential meaning potential, even when cited out of context, and/or (b) quite unrelated to its componential meaning potential (i.e., lexemes may have arbitrary links between form and meaning).

While common lexicalization processes such as compounding and derivation occur in signed languages, we also find lexicalization processes that are unique to signed languages (although a similar process of lexicalization of certain written acronyms such as *radar* or *snafu* occurs in spoken languages). One such process is the emergence of

lexicalized fingerspelling. The first description of lexicalized fingerspelling was Battison's (1978) study of lexical borrowing in ASL. In non-lexicalized fingerspelling, a signer uses a set of handshapes to represent the letters of a written word. In ASL, for example, proper names such as "George Lakoff" would be fingerspelled as G-E-O-R-G-E L-A-K-O-F-F. Lexicalized fingerspelling occurs when common or frequently fingerspelled words become highly stylized and reduced in form. Lexicalized fingerspelling also may add morphological features that would not be seen in the non-lexicalized form. For example, the fingerspelled word B-A-C-K as a lexicalized form in ASL not only exhibits phonological reduction to B-K but also may add path movement from a distal neutral space location to a location near the signer's body, so that the lexicalized form becomes a directional verb meaning "to come back."

Another type of lexicalization seen in signed languages involves what has been called classifier handshapes (Supalla, 1986). As Janzen (2012) points out, classifier handshapes pose a problem for a clear distinction between productive, componential forms and lexicalized forms. Classifier handshapes, as well as their movement, manner of movement, and location, in general do not display an arbitrary link between form and meaning. Consider, for example, this description of the components of classifier constructions:

> The handshape is a classifier for the semantic category (e.g. human vs. animate nonhuman vs. vehicle) or size and shape of the moving object; the movement path (one of a small number of discretely different movements, e.g. straight vs. circular vs. arc) is a morpheme representing the path of motion of the moving object; the manner of movement is a morpheme for the manner of motion along the path (e.g. bounce vs. roll vs. random); a second handshape (typically produced on the left hand) is a classifier for a secondary object, with respect to which the primary object moves; and the placement of the second handshape along the path is a morpheme for the spatial relationship of the movement path with respect to this secondary object (e.g. from vs. to vs. past).
>
> (Newport and Meier, 1985: 885)

As Janzen (2012: 823) notes, fully lexicalized classifier forms often are the "very end point of a continuum of articulation possibilities from fully compositional to fully lexicalized and non-productive." Janzen concludes that productive and lexical categories may not be discrete categories. The gradient range from fully compositional to fully lexical may be used in synchronic time, for example, when signers create productive forms out of formerly "frozen" lexicalized forms. The process that leads to lexicalized forms, though, clearly is diachronic in nature, driven by repetition over time which leads to

entrenchment or fixation of patterns and reduction or attenuation of form and meaning (see, e.g., Bybee, 2001: 9–10).

Grammaticalization is “the change whereby lexical items and constructions come in certain linguistic contexts to serve grammatical functions and, once grammaticalized, continue to develop new grammatical functions” (Hopper and Traugott, 2003: 232). The study of grammaticization in signed languages is a productive field in its own right. In addition, it also offers a solution to two problems commonly faced by linguists interested in historical change: signed languages are unwritten languages, and signed languages were not systematically described using linguistic principles prior to Stokoe. Thus, it is extremely difficult to study the diachronic development of signed languages. The solution offered by grammaticization is that since the development of one meaning into the next does not require the disappearance of the first, grammaticized forms are commonly polysemous. Thus, one can use the polysemy of grammaticized signs to reveal their historical path of development (for an example, see Xavier and Wilcox, 2014).

An interesting example of historical change in the process of grammaticization that can be found in the NAD film “The Preservation of Sign Language” is the development of the so-called agentive suffix in ASL. Supalla (2004) mentions this example, but does not examine the data in detail. In the film, Veditz signs TEACHER as TEACH + BODY (figure 3).

Click to view larger

Figure 3: ASL sign TEACHER (TEACH + BODY)

The sign BODY is produced with two B-hands touching the torso twice, first at the top and then at the bottom. We also know that this sign for BODY is related to an older form of PERSON. In PERSON, the location and orientation have changed, with the same B-handshapes in neutral signing space in front of (and not touching) the body and oriented palms facing each other; the movement consists of a single downward stroke. The modern ASL sign PERSON uses an initialized handshape P, representing the initial letter of the English word “person.” We note that a related form,

in which the two B-handshapes oriented upward move downward, is often seen as an honorific in formal ASL settings, such as when introducing an important speaker at a large conference. The sense is that of saying, “And now I’d like to introduce to you this person.” Finally, as Supalla (2004) notes, in modern ASL the sign BODY has reduced to a suffix. In STUDENT, for example, the suffix form consists of a highly reduced downward stroke made only with the dominant hand, which never fully forms the B-handshape.

The formation of a bound grammatical morpheme from a prior free lexical morpheme exemplifies the process of grammaticization. Interestingly, this particular formation resembles the development of the English suffix *-ly*. This bound morpheme originated from Middle English *-ly, -li, -lich*, from Old English *-līċ*, and Proto-Germanic **-līkaz* “having the body or form of,” from **līkan* “body.” It appears in the modern German form *freundlich* “friendly.” Both the development of the English suffix *-ly* and the ASL agentive suffix exemplify the general features of grammaticization: phonological reduction, and bleaching or attenuation of meaning.

In many ways grammaticalization in signed languages functions the same as in spoken languages. Lexical items can grammaticalize to take on more grammatical functions which can then further grammaticalize to take on new grammatical functions. Where grammaticalization processes differ in signed languages is that the lexical elements may develop from manual gestural sources (Janzen and Shaffer, 2002). In an early study of grammaticization, Wilcox and Wilcox (1995) pointed out that the ASL evidential forms SEEM, FEEL, and OBVIOUS grammaticalized from lexical morphemes MIRROR, FEEL (used in the physical sense), and BRIGHT, respectively.

In the case of signed languages, the grammaticization process can also extend beyond the development of grammatical functions from lexical items, to include a gestural source. Each of these ASL lexical morphemes, for example, can be traced back to a gestural source. Thus, the full developmental paths for these forms are:

- [gesture enacting looking in a mirror] > MIRROR > SEEM
- [gesture enacting physically sensing with finger] > FEEL (physical) > FEEL (evidential)
- [metaphorical gesture indicating rays of light] > BRIGHT > OBVIOUS

Catalan Sign Language (LSC) exhibits similar grammaticization. The lexical forms EVIDENT, CLAR, PRESENTIR, and SEMBLAR have developed grammatical functions (Wilcox et al., 2000; Wilcox, 2004). As a lexical morpheme EVIDENT denotes visual perception, including intensity of color; prominence or salience, such as a person who stands out because of her height; “sharp, well-defined,” such as indicating sharpness of

an image; and “obvious,” as when looking for an object located in front of you. As a grammatical morpheme EVIDENT denotes evidential meanings such as “without a doubt,” “obviously,” or “logically implied.”

The lexical morpheme CLAR is used to mean “bright” or “light.” It may also be used in a more abstract sense to denote clear content, a person’s skill in signing or ability to explain clearly. As a grammatical morpheme CLAR expresses speaker subjectivity.

As a lexical morpheme, PRESENTIR denotes the sense of smell. The grammatical morpheme PRESENTIR expresses the speaker’s inferences about actions or intentions. When used as a lexical morpheme SEMBLAR denotes physical resemblance. The grammatical sense of SEMBLAR may be used to express the speaker’s subjective belief that an event is or is not likely to occur:

SEMBLAR PRO.3 AVUI VENIR NO It seems that she’s not coming today.

As we saw for the ASL data, these LSC forms have gestural sources in metaphorical or enacting gestures indicating the eyes and visual perception (EVIDENT), bright light (CLAR), the nose and the sense of smell (PRESENTIR), and physical, facial appearance (SEMBLAR). Once again, the full developmental path is from gesture to lexical morpheme to grammatical morpheme (figures 4–7).

Click to view larger

Figure 4: LSC sign CLAR

Click to view larger

Figure 5: LSC sign EVIDENT

Click to view larger

Figure 6: LSC sign PRESENTIR

Click to view larger

Figure 7: LSC sign SEMBLAR

Shaffer (2002) notes that the ASL deontic modal MUST is related to the LSF sign IL FAUT “it is necessary.” IL FAUT is also attested in mid-nineteenth-century LSF. It appears likely that these forms derive from a gesture used as early as Roman times to signal obligation. Dodwell discusses a gesture that he classifies an imperative: “It consists of directing the extended index finger towards the ground” (Dodwell, 2000: 36). The gesture was described by Quintilian in the first century AD: “when directed towards the ground, this finger insists” (36).

One robust finding from grammaticization studies is that the historical pathways of change are common across languages (Bybee, Perkins, and Pagliuca, 1994). Lexical words or constructions having spatial motion meaning such as English *BE going to* take on grammatical function as an auxiliary verb, losing their motion meaning and fusing or attenuating phonologically to become *be gonna* (Traugott, 2014). We also find common grammaticization pathways across different signed languages. Lexical words based in physical senses of perception grammaticize to take on more grammatical or subjective function.

Janzen and Shaffer (2002) identify the source of the ASL future morpheme as an ancient, pan-Mediterranean gesture (de Jorio and Kendon, 2001). The gesture is still in use among hearing people in the Mediterranean region to invite one to depart or note that one has departed (Morris et al., 1979). The gesture also appears in the 1855 lexicon of LSF (Brouland, 1855) as the lexical morpheme PARTIR “depart.” Thus, the complete grammaticization path appears to be:

[gesture signaling departure] > PARTIR “leave/depart” > FUTURE

We have discussed Bolinger’s claim that when two or more forms resemble one another in both form and meaning, they may pull other forms into their orbit, and we have suggested that this process is at work in historical change. This historical change also

appears in a group of phonologically and semantically related perception signs. Frishberg and Gough (2000: 9) write:

> One of the most productive kinds of hand configurations is what Stokoe calls “8” or ‘open eight’, because it corresponds to the numeral 8 as represented in the manual alphabet, minus the closure. The meaning this handshape carries relates to feelings, both sensation and emotion, with some interesting extensions along those lines. Along the chest we find DISCOURAGED, DEPRESSED, THRILLED, EXCITED, SENSITIVE, FEEL, LIKE, DISLIKE, HAVE-A-HUNCH, and INTERESTING. In some cases both hands use the configuration and in other cases just one hand does. On the forehead we find SICK, SICKLY (‘habitually sick’), differing only in that the second has characteristic slow repetition, which is used quite productively to show habitual, repeated action or plurality. Other signs which use this handshape include DELICIOUS, TASTE (at the mouth), TOUCH (on the back of the hand), FAVORITE (on the chin). GLORY and SHINING are variants of one another which both occur on a palm up base hand. BRILLIANT shows the same movement and handshape as SHINING except that it is made on the forehead, like many other words having to do with thought processes. The metaphor, which seems to work in English as well, that a ‘sensitive’, ‘bright’ mind is somehow perceptually equitable to the qualities ‘bright’ and ‘brilliant’ on the visual scale, is carried through by the 8 handshape and the movement. We have found in other work on grammatical processes that ASL condenses a lot of information into a short stretch of time. This metaphoric use of language seems to be another instance: where English or another oral language would have to use several words, as ‘brilliant mind’, ASL uses the movement and handshape for ‘brilliant’ but changes to a location evoking mental processes.

Wilcox and Wilcox (2013) examined the semantic extension of a sub-family of signs from this group, FEEL and TOUCH. They describe a path of development revealing a metonymic linking of the senses:

- Touching some external object results in feeling the object;
- Feeling an external object is similar to feeling an internal, metaphorical object such as feeling sick;
- Feeling can cause an emotion;
- Having a strong emotion can lead to physical action;
- Having a strong emotion can lead cognitive action (planning, considering, deciding).

These senses are the same as those seen in the historical development of perception words across many spoken languages, where we find that “the verb meaning ‘feel’ in the

tactile sense is the same as the verb indicating general sensory perception" (Sweetser, 1990: 35). Sweetser also notes that "the sense of touch is not only linked with general sense perception, but is also closely tied to emotional 'feeling'" (37). The one exception is that Sweetser claims that the sense of touch is not connected with intellectual activity. In the ASL data, at least, we do find a semantic extension into cognitive action.

Pfau and Steinbach (2007) review similarities and differences between grammaticization in signed and spoken languages, focusing on modality-specific properties of grammaticization. They conclude that "sign languages employ exactly the same grammaticalization paths as do spoken languages" (87), suggesting, they say, that the pathways are modality-independent. As we have just seen, while this may be true in general, the grammaticization of perception signs in ASL does show some differences.

Pfau and Steinbach also argue for two modality-specific properties of grammaticalization. First, they suggest that "signed languages exhibit very few (if any) instances in which a free morpheme becomes a bound grammatical morpheme" (2007: 87. We have seen, however, that the historical development of the agentive suffix in ASL is one such example. Pfau and Steinbach also suggest that the grammaticalization of gestures is different in signed and spoken languages. They argue that:

> Since the source gestures must belong to the same articulatory and perceptual domain as the target language, sign languages have the unique possibility of grammaticalizing manual and non-manual visual gestures. By contrast, spoken languages do not grammaticalize visual but acoustic gestures. Moreover, grammaticalized gestures seem to be more frequent in sign languages than in spoken languages.
>
> (Pfau and Steinbach, 2007: 87)

We would add that there is evidence for one further difference in grammaticization between signed and spoken languages. Unlike grammaticalization in spoken language, where a lexical item becomes a grammatical item, signed languages have an additional pathway in which a facial gesture or the manner of movement of a manual gesture first appears as part of the linguistic system of a signed language as prosody or intonation, which then develops into a grammatical morpheme (Wilcox, 2004, 2009; Wilcox and Wilcox, 2009). This is a type of grammaticalization unattested in spoken languages. An example of this second route of grammaticalization is the so-called "surprise gesture" in which the eyes are open wide, the eyebrows are raised, and the head may be tilted forward or the mouth may open. This facial gesture appears to grammaticize as a marker of polar questions, topics, and conditionals in ASL. The development of this facial gesture to a grammatical interrogative marker, following the second route as described by

Wilcox, appears in a large number of historically unrelated signed languages (Zeshan, 2004). Another example of a facial gesture grammaticizing along the second route is the negative headshake in German Sign Language (DGS), as described by Pfau (2002).

Finally, we should point out that researchers are beginning to explore the question of whether gestures themselves may grammaticize. Schoonjans (2013) reports that intersubjective deictics (a pointing gesture directed at the interlocutor, often made with an open, flat handshape) and pragmatic headshakes in spoken German display many of the features characteristic of grammaticization, including phonological reduction and semantic bleaching. This research suggests that historical processes of change such as grammaticization operate not only across spoken and signed languages but across all forms of communicative behavior, thus providing support for the claim that they are driven by domain general cognitive abilities (Langacker, 2008; Bybee, 2010).

Summary

Signed languages, as natural human languages, share many of the same processes of historical change that characterize spoken languages. While some features of historical change appear to be influenced by modality, these processes are largely driven by the same general cognitive abilities that underlie lexicalization and grammaticization (Bybee, 2010); by communicative pressures such as ease of articulation and perception; and by conditions of use such as repetition and frequency, that are common to both signed and spoken languages.

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