

Constituent Order in Sign Languages

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Abstract: Sign languages have constituent orders that often resemble those of the spoken languages surrounding them, though signed and spoken language families do not coincide; order is fairly flexible, due to rule-governed factors such as rich agreement, zero anaphora, and processes such as topicalization. There are a few cases in which the channel of communication both constrains and enables differences in constituent order.*

Key words: constituent order, typology

1. Introduction

In every country, one or more sign languages co-exist with the spoken languages surrounding them. As in any contact situation, the grammars of sign languages are often influenced by the grammars of their matrix spoken languages. Sign languages vary most drastically from their surrounding spoken languages at the level of sublexical structure (phonology) and morphology. The assimilating influence from spoken language is strongest at the level of constituent order, but even there, differences remain, possibly due to the channel of communication. This paper discusses constituent order in sign languages from several distinct families, and addresses the influences and mechanisms that help to shape those orders.

2. The [Nearly] Unique Position of Sign Languages

Sign languages are human languages used by human beings with intact human cognitive abilities. Therefore, one can expect the same kinds of grammatical complexities and expressive power in a sign language as in spoken languages. That said, the first thing one notices about sign languages is that they are communicated in a visual-gestural rather than auditory-vocal channel. The difference in channel results in different constraints on the linguistic system. For example, the articulators for sign languages are orders of magnitude larger than those for spoken languages and therefore cannot move nearly as fast. Signs therefore take a great deal

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longer to produce than most spoken words. However, the visual system is strong in the perception of simultaneous patterns, and sign languages can compensate for the consequent slowness of the articulators by exploiting the strengths of the visual/gestural channel. For example, signers are able to use simultaneously not just their hands, but their faces, eyebrows, eyelids, mouths, head angle or movement, and body position. The result is that speech and sign take about the same time to convey equivalent messages (Bellugi & Fischer 1972). Obviously, how something is expressed will be different because the articulators are different; however, the fundamental constraints on grammar are basically the same.¹

In developed and many developing countries, deaf children are sent to school, where they are exposed to the spoken language[s] of their community, at least in written form. As a result, many deaf children are more or less bilingual in the signed and spoken/written language of their community. I say “more or less” because not all deaf children are exposed to a sign language from birth, and thus may not be fully competent in a sign language; furthermore, if deaf children are forced to learn a spoken language without the aid of signing, they may struggle to become competent in that language as well. The sign languages of deaf persons who lack formal education is less—or not at all—influenced by the spoken language of the community, due to lack of relevant contact (Marsaja 2008).

Another way in which sign languages are nearly unique is that the vast majority of signers receive input not from parents but from peers. Fewer than 10% of deaf children have deaf parents (Schein & Delk 1974). Although some hearing parents do learn to sign after their children are diagnosed, their signing constitutes late and usually imperfect second language learning, and children soon outstrip their parents in sign language competence. Furthermore, most parents do not learn a natural sign language such as ASL but rather the signed form of the dominant spoken language.² Thus, most deaf children start learning a sign language after they start school. Note that even if signing is not permitted in the classroom, children spread some form of signing in dormitories or on the playground.

In one way sign languages are not alone, but among rarefied company; some languages and dialects are stigmatized and sometimes even repressed through government policy, e.g., Languedoc in France, Catalan in Franco’s Spain, Hawaiian Creole English in Hawaii, or African American Vernacular English. Until quite recently in the US, and still in many countries, sign languages have also been heavily stigmatized. They have been viewed as primitive, limited to the iconic or concrete, and lacking grammar, among other things. Teachers rail against them, saying that signing prevents the acquisition of speech. There is, by the way, no truth to that myth. In fact, sign languages have some remarkable linguistic as well as social similarities to creoles; linguistic similarities would include, e.g., the use of intona-

¹ For more information on the relation between channel and grammar, see Meier, Cormier & Quinto-Pozos (2002).

² In Fischer (1998), I argue that signing to a child using spoken language grammar is better than nothing, and if done well, it provides a pathway to both signed and written language.

tion (or equivalent) for grammatical purposes, and no tense but a rich aspectual system, (Fischer 1978).³

Because sign languages are so young (the oldest on which we have documentation is roughly 250 years old), the gestural origins of some vocabulary as well as a few aspects of the grammar can be quite transparent. For example, the sign for “book” in most sign languages looks something like the way someone would open a book. In the grammar, sign languages often appropriate aspects of gesture and grammaticalize it. For example, in Japanese culture a fist with extended pinkie refers to females. In Japanese Sign Language (JSL), that handshape becomes a grammatical classifier for human females; it can be used by itself as a pronominal or anaphoric pronoun; if path movement is added, it becomes an incorporated anaphoric female subject attached to the verb, and it can be overlaid onto nouns and verbs to add the meaning of “female;” for example, if superimposed over the sign for “circle”, it means a group of women. Similarly, the gesture that Japanese hearing people use for “money” serves in JSL as a classifier that systematically adds the meaning of “money” to a sign, in verbs meaning “buy,” “sell,” “shopping”, and “pay;” in nouns meaning “bank”, “store;” and in adjectives meaning “rich” or “discount”.

I mentioned earlier that the channel of communication may constrain (or liberate!!) the grammars of sign languages. Except for so-called “village” sign languages⁴ (see de Vos & Zeshan 2012), virtually all sign languages share certain grammatical properties, many of which take advantage of the ability of a sign to convey a lot of information simultaneously; virtually all mature sign languages have verb agreement, which is indicated by the movement of the sign toward the semantic goal and the facing of the palm toward the object (Meir 1998); predicate classifiers, which use a handshape to indicate a class of objects that moves, or a handshape that shows how an instrument is handled. Most sign languages are also “topic-prominent”, where topic is more salient than grammatical subject, and all established sign languages make use of zero-pronouns that are related to either agreement or discourse topic (Lillo-Martin 1986).

3. Sign Language Families

Except for isolates, including village sign languages, sign languages can be grouped into families. It is important to note that these families are not congruent with spoken language families, in two directions: first, there are countries that share a common spoken language but have different sign languages. An example of this would be England and the US, which use distinct, basically unrelated, sign

³ With one exception: most creoles lack bound morphology for things like plurals or verbal aspect; almost every mature sign language has it.

⁴ A village sign language often emerges when the incidence of deafness in a community is significantly higher than average such that every family is likely to have a deaf member. In these communities, both deaf and hearing persons learn the sign language, and deaf persons are fully integrated into the community. See de Vos & Zeshan (2012).

languages despite the fact that English is spoken in both countries.⁵ Similarly, Mandarin Chinese is spoken in both China and Taiwan, but although there has been some “seepage” from post-1949 immigrants from China, Chinese Sign Language (CSL) and Taiwan Sign Language (TSL) are not mutually intelligible.

In the other direction, countries whose spoken languages are different can have substantially the same or related sign languages. This was originally the case with ASL. Instead of being related to British Sign Language (BSL), American Sign Language (ASL) is in fact descended from French Sign Language (LSF), as are Brazilian, Russian, and Danish sign languages, to name a few. JSL, TSL, and Korean Sign Language (KSL) are members of the same family, due to the Japanese colonization of Taiwan and Korea in the first half of the 20th century. Zeshan (2000) argues that there is only one sign language in India (except for the pockets that have introduced ASL), which she terms Indo-Pakistani Sign Language (IPSL); yet many different unrelated (e.g., Indo-European vs. Tamil) languages are spoken in South Asia.

In spoken languages, we traditionally speak about family trees, e.g., English descended from an older Germanic subfamily, which in turn is descended from Indo-European. However, even in spoken languages, there are many examples of areal influences; typologists note that aspects of phonology, morphology, and syntax will often cross language family boundaries when two families are in contiguous areas. So, for example, English borrowed heavily from French starting in 1066, in vocabulary, morphology, and eventually phonology. In sign languages, the contiguity of the sign language and the spoken or written language in a country is almost unavoidable. Just as sign languages exploit and grammaticalize the gestures of the surrounding hearing culture, it is also no accident that sign languages often come to resemble the surrounding spoken language, particularly in terms of basic constituent order. Thus, ASL, like English, is head-initial (SVO), and JSL, like Japanese, is head-final (SOV). We shall return to this phenomenon in greater detail later in this paper.

4. Contact with Spoken or Written Language

I mentioned above that fewer than 10% of deaf children have deaf parents who expose them to a sign language from birth. In any case, in developed countries, regardless of educational philosophy, one goal of deaf education is for deaf children to master the spoken or written language of the community.⁶ No matter

⁵ There were deaf people on Martha’s Vineyard off the coast of Massachusetts who were descended from people who had used a variety of British Sign Language (BSL). About 200 years ago, these deaf children attended the first deaf school in the US in Hartford, Connecticut, and a few of their signs made it into ASL. That said, the bulk of US signs come to us from France.

⁶ Educators differ on the means to that goal, which has been the subject of linguistic wars over the last 200 or more years. Some believe that acquiring a first language early is important while others believe in the primacy of speech.

what the medium of instruction, the spoken or written language of the country is introduced into the curriculum quite early. In many instances, this is done via some form of signing, supplemented by written materials. I have discussed (Fischer 1998) the notions of *natural sign languages* (NSL), *natural sign systems* (NSS) and *artificial sign systems* (ASS). A NSL is the kind of signing that is passed from generation to generation in deaf families. A NSS is a signed version of the spoken language that utilizes signs from the NSL in the order of the surrounding spoken language, supplemented both by fingerspelling (or character signs, see below) and those grammatical mechanisms from the NSL that are consistent with the constituent order of the spoken language. NSSes arise naturally in interactions between deaf and hearing, or native and non-native, signers. An ASS attempts to represent every morpheme of the spoken language with a sign; originally ASSes did not use fingerspelling, since they were intended for use with very young children. However, research has shown that deaf and hearing children exposed to signing very early also attempt to fingerspell almost as soon as they start signing; (Akamatsu 1982). We can loosely call NSSes and ASSes “signed X” where X represents a spoken language. For example, various ways of doing English on the hands could be called signed English. Since signing is a channel of communication like writing, it is possible to sign in English, Japanese, or other spoken languages. This is of course distinct from signing in ASL, JSL, or other NSLs. I have argued that this is very analogous to creoles, but in contrast to other types of creole systems, in signed versions of spoken languages, the vocabulary comes from the basilect (NSS), while the grammar comes more from the acrolect (Fischer 1996).

Deaf children in deaf families or in schools are exposed to fingerspelling by about age 4. Fingerspelling provides entrée into the written system, at least in terms of decoding words.⁷ In some Asian sign languages (specifically CSL and JSL), although fingerspelling may be used, character signs, traced or depicted, provide similar entrée into the writing system. In the case of TSL and Hong Kong Sign Language (HKSL), there is no fingerspelling alternative to characters and character signs.

5. Are There Word/Constituent Order Restrictions in Sign Languages?

When we look at the syntax of sign languages, the constituent order looks at first glance to be remarkably variable. One might conjecture that this could be for two reasons, one linguistic and one psycholinguistic. Psycholinguistically speaking, although the visual system is very good at recognizing patterns, it isn't nearly

⁷ The problem that many deaf children have with reading is not at the level of decoding words, but rather at the level of processing vocabulary and grammar. This is probably due to lack of knowledge of the spoken/written language as a result of insufficient or inaccessible exposure. It is not the “fault” of exposure to sign language; indeed, some research has shown that deaf children of deaf parents exposed to signing early are better at reading than deaf children not exposed to signing early in their childhoods; presumably this is because having acquired one language, it is easier to learn another.

as good as the auditory system at remembering order. Linguistically speaking, it could be that there are compensatory mechanisms that permit some flexibility in constituent order. But how flexible in fact is that constituent order? I found (Fischer 1974/2008) that ASL obeys all of the standard constraints on movement that have been posited, so while on the surface word order might look free, it isn't just that anything goes.

Leeson & Saeed (2012) summarize what is generally known about word order in a number of well-studied sign languages. The two main orders they consider are SVO (subject-verb-object) and SOV (subject-object-verb).⁸ Examples of SVO sign languages are ASL, LSB (Brazilian Sign Language), and HKSL. I would also add Taiwan Sign Language (TSL), for reasons to be discussed later. Examples of SOV sign languages include DGS (German Sign Language), JSL (Japanese Sign Language) and LIS (Italian Sign Language). Just as two spoken languages can be genetically related but differ in basic word order (e.g., English and German), the same is possible for two sign languages. For example, TSL and JSL are members of the same sign language family, yet differ typologically in some fundamental ways.

It is important to emphasize that these are underlying orders, as circumstances can conspire such that even in an SVO language such as ASL, the verb ends up in final position. How can that happen? One way is elision of an argument, e.g., an object argument. This occurs especially if the argument has been mentioned previously in the discourse as a topic. A second reason for the verb becoming final in a sentence is when a locus for an argument is established, either within a sentence or outside the sentence but within the same discourse. Consider an utterance like (1)⁹:

- (1) *GIRL IX_a BOY IX_b _bPUSH_a*
 'The boy pushes the girl.'

In (1), what I am calling the indexes IX_a and IX_b set up loci for the two arguments, and the verb PUSH moves between them to show agreement. If we wished to have the sentence mean that the girl pushes the boy, we can merely switch the indices on PUSH from _bPUSH_a to _aPUSH_b.¹⁰ Whether we call a verb like

⁸ One can find OVS and VOS orders, but these are clearly cases where the subject has moved to the end of the sentence, often as a pronoun.

⁹ A note on notation: Following established conventions, signs are written as glosses in capital letters. Subscripts designate distinct spatial loci used for agreement. IX is an abbreviation for "index", a pointing gesture to a locus, which is subscripted to show location. Superscripts are used to show aspectual inflections or classifiers, which occur simultaneously with verbs. A line over a sequence of signs shows the scope of a non manual behavior such as eyebrow raise for topic (marked with "t" or the scope of operators like "wh" or negation).

¹⁰ Padden (1983) argues that an utterance like (1) constitutes three sentences. While this might be in dispute, it could more easily be argued that it constitutes three clauses, where the first two that set up the loci are predicates of location, so that the final clause consists only of the verb with agreement marked with the two previously stated arguments.

_aPUSH_b agreement or incorporation, in any case the process is an anaphoric one; the arguments need to be placed before the verb can move between the two loci.

Just as locus establishment is an anaphoric process, so is the setting up of antecedents for predicate classifiers. Consider a signer's wish to describe birds sitting on a telephone wire. Both the classifier for the wire in the nondominant hand and the classifier for the birds on the dominant hand require nominal antecedents and are thus anaphoric. A typical way of expressing this is as shown in (2), where the left hand represents the ground, i.e., the wire, and the right hand represents the figure, i.e., the bird:

- (2) *WIRE BIRD SIT* [*lh:CL:Long thin flexible*][*rh:CL:small animal*]
 'A bird sits on a wire.' (*lh=left hand, CL=classifier, rh=right hand*)

An order in which SIT precedes either BIRD or WIRE is infelicitous.

Another type of distortion of basic word order occurs when an inflection is too heavy to stay put. This happens in the verb sandwich construction (Fischer & Janis 1990). Following are examples of what is presumably the underlying order, and the resulting structure, which has the inflected copy of the verb at the end (it is the aspectual inflection that leads to the heaviness):

- (3) **GIRL TYPE*^[*asp:continuous*] *PAPER*
 (4) *GIRL TYPE PAPER TYPE*^[*asp:continuous*]
 'While the girl is typing her paper...'

Fischer & Janis argue that the verb has to split apart so that the first verb can assign Case to the object and the second can take on the heavy aspect.

One of the common ways in which underlying structure can be distorted is with *wh*-movement. Although there is some controversy about whether fronting of a *wh*-word can take place without a copy at the end of the sentence (see Petronio & Lillo-Martin 1997 for some discussion), there are some incontrovertible cases where it is possible. Here's one; both orders are acceptable, but (6) is more common:

- (5) $\frac{\quad}{\text{YOU FROM WHERE?}} \text{wh}$
 'Where are you from?'
 (6) $\frac{\quad}{\text{WHERE YOU FROM?}} \text{wh}$

The way to tell if an order is the basic or underlying one involves looking at a whole range of phenomena in a language, not just the position of three constituents. Since at least the time of Greenberg (1966), linguists have known that some order phenomena are correlated with others. For example, relative clauses in SOV languages tend to precede their heads, while in SVO languages, relative clauses tend to follow their heads. Also, SVO languages tend to have prepositions while SOV languages have postpositions. In SVO languages, auxiliaries generally precede the verb, while in SOV languages they generally follow the verb. Similarly,

complement clauses generally follow the verbs that select them in SVO languages but precede them in SOV languages. It has thus become common in generative linguistics not to talk about the positions just of verbs and objects but about the position of heads and complements. So we talk about a language as being basally head-initial or head-final.¹¹ Indeed, if it is difficult to determine the basic constituent order of subjects, verbs, and objects, one can use these other constructions as diagnostics.¹²

In determining basic word order, it is important to note that the basic order of constituents may not be the most frequent. One radical example comes from Hilda Koopman's work on Vata as well as German (Koopman 1985). She found compelling evidence for a basic word order in Vata that never showed up on the surface. She also provided evidence for why main clauses in German have a radically different order from that in subordinate clauses.

The basic constituent order in a language is generally what one finds in simple pragmatically neutral declarative sentences with minimal morphological complexity. In example (1) above, we have morphological complexity in the verb, which could then be said to license a freer word order than would otherwise be the case. What this means concretely for sign languages is that in looking for the basic word order, one needs to look at sentences containing only plain verbs (that do not inflect for either space or person: Padden 1983). Furthermore, the arguments need to be reversible, meaning that the subject and object could switch and the sentence would be equally grammatical or acceptable. Sentence (1) contains reversible arguments, but example (7) does not:

- (7) *TEACHER EAT COOKIE.*
'The teacher ate the cookie.'

TEACHER and COOKIE are not reversible in sentence (7), since cookies don't eat teachers.

A second diagnostic for basic word order is whether it can felicitously begin a discourse or conversation. Later in a conversation, one can have all sorts of elisions and movements based on discourse topic. Note also that constituent order in subordinate clauses is often more constrained than in main clauses, so when in doubt, that too can be used as a diagnostic for underlying order.

Topicalization, which is used quite extensively in sign languages, tends to distort constituent order. An object can be topicalized within a sentence as in (8) (German) or (9) (ASL), and can even move out of a subordinate clause, as in (10)

¹¹ The real situation is often more complicated. Some languages exhibit mixed-headedness. For example, Romano (1991) has argued for lexical heads being initial in ASL while functional heads are final. I am not convinced that this question has been definitively decided for ASL.

¹² Unfortunately, Leeson & Saeed (2012) do not generalize to heads and complements, so one can only conjecture that the SOV languages they cite are more broadly head-final and the SVO languages they cite are head-initial.

or (11) (ASL).

- (8) *Das Buch lese ich.*
 the book read I
 ‘Talking about the book, I read it.’
- (9) _____*t*
BOOK, ME READ e.
 ‘Talking about the book, I read it.’
- (10) _____*t*
BOOK, ME THINK MOTHER READ e.
 ‘Talking about the book, I think Mother reads it.’
- (11) _____*t*
MOTHER, ME THINK e READ BOOK.
 ‘Talking about Mother, I think she reads the book.’

All of these sentences distort the basic word order of the sentence, and note that none of them could felicitously be used as the first sentence in a discourse.

6. Syntactic Change in Sign Languages¹³

Like many languages, sign languages can change their typological characteristics. The sign languages for which we have historical documentation go back at most 250 years, often less; yet during that short time some drastic changes have occurred. I will talk here about two sign language families: the one whose ancestor is LSF (langue de signes français: French Sign Language) and the Japanese sign language family. ASL is a direct descendant (with some side influences: see above) of LSF, as it was literally brought over to the US by Laurent Clerc, an early deaf graduate of the first school in France. As I have documented elsewhere (Fischer 1975), there are transcriptions of ASL from the 1870s that are uniformly head-final. Also, there are films recorded by the National Association of the Deaf in 1913 of Deaf elders that are also consistently head-final: verbs are clause-final, sentence negation occurs after the verb, and auxiliaries are mixed. The age of the signers would put them in their youth at about the same time or a little earlier than the published transcriptions. Films from 1942, however, are uniformly head-initial, so some time between the 1870s and the 1940s there was a radical typological shift in ASL from head-final to head-initial. The current negator in ASL generally precedes the predicate (unless one is topicalizing the entire predicate, which can occur), auxiliaries generally precede verbs, and demonstratives generally precede nouns. Relative clauses with indefinite heads follow their heads (Fischer & Johnson 2012), while relative clauses with definite heads can follow their heads as well, or be head-internal (Liddell 1978).

A similar shift can be inferred to have occurred in Taiwan Sign Language (TSL). As mentioned earlier, TSL is an offshoot of JSL, with some side influences from CSL. JSL is quite strictly head-final (even more head-final than spoken

¹³ See Fischer (2015) for more detail.

Japanese, since determiners generally follow their heads). However, TSL appears to be head-initial. This is probably due to the influence of Mandarin (possibly mediated by CSL), which is predominantly head-initial. The Japanese occupation of Taiwan lasted from 1895–1945, and the first schools for the deaf in Taiwan were established by educators from Japan who introduced JSL into the curriculum. One can infer, though it needs to be somehow confirmed, that TSL changed from head-final to head-initial some time after 1945, so that too is a fairly quick and recent change. (See Fischer 2015 for more details.)

7. Conclusions

The underlying constituent order within sign languages tends to be rather consistently either head-initial or head-final, and is often influenced by the spoken languages surrounding them. The perturbations of constituent order we have been discussing all happen for a reason: discourse cohesion, topicalization, elision, and requirements for licensing anaphors and classifiers. In most sign languages, there are usually nonmanual cues such as pauses or eyebrow raising or lowering, that tell the viewer that the order is different from the underlying canonical order. Naïve viewers are unaware of these cues, and thus get the erroneous impression that word order is variable. However, native and very experienced signers pay attention to those cues and are thus in no doubt about underlying structure.

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【要 旨】

手話における構成要素の順序

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手話における構成要素の順序は、その手話の周りで話される音声言語のものとはしばしば類似する。このことは、手話の言語的系統と、音声言語の系統が異なる場合にも起こりうる。構成要素の順序は、豊かな一致要素やゼロ照応といった、手話の文法規則に関わる要因、あるいは主題化などのプロセスに因り、必ずしも固定していない。本論文では、視覚によるコミュニケーションによって、構成要素の順序の違いが制約されたり、可能性が増えたりする場合をいくつか取り上げて論じる。