AN EMERGING SELF: THE COPULA CYCLE IN AMERICAN SIGN LANGUAGE

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We question the commonly accepted assumption that American Sign Language (ASL) has no overt copula. We present evidence that one of the functions of the sign self in present-day ASL is as a copula. This sign evolved into its current function by way of a grammaticalization process called the ‘copula cycle’ (Katz 1996). The copula cycle consists of a deixic item transforming into a demonstrative pronoun and then into a copula by means of a series of syntactic reanalyses. We present corpus evidence from Old French Sign Language (LSF) in the 1850s, Old ASL in the 1910s, and present-day ASL dating to the 2000s and the late 2010s, and with these data analyze ASL examples of syntactic structures outlined by Li and Thompson (1977) that led to the increased use of self as a copula. We also find that self, which is not generally regarded as a pointing sign, follows the grammaticalization scheme for pointing signs outlined by Pfau and Steinbach (2006), indicating that the scheme may be used for signs that are derived from demonstratives. Ultimately, we conclude that ASL undergoes the same grammaticalization processes as spoken languages.*

Keywords: grammaticalization, copula, copula cycle, corpus linguistics, historical linguistics, American Sign Language

1. INTRODUCTION. American Sign Language (ASL) has traditionally been described in the literature as a language with no copular predication (Bellugi & Fischer 1972, Fischer & Gough 1978, Stokoe 1978, Woodward 1973). Essentially, the claim is that sentences in ASL expressing identity (A is B) and class membership (A is part of C) do not use an overt copula. While there is much anecdotal data regarding the use of null copula in ASL expressions such as K-A-T-E Deaf ‘Kate is deaf’, data analyses specifically demonstrating the syntactic and semantic contributions of the ASL null copula are lacking. Here we argue that ASL has an overt copula in addition to the null copula. It assumes the form of a familiar sign, ‘self’, and appears to be obligatory in some constructions. The ultimate goal of the current study is to describe a grammaticalization process in ASL that led to the copular function of self. Internal reconstruction methods have shown that most grammaticalization processes are not differentially affected by modality, whether signed or spoken (Pfau & Steinbach 2006). Here we use historical comparative reconstruction to provide further evidence for grammaticalization processes in a sign language. Along the way, we discover some intriguing features, such as the optionality of the copular self and predicate type patterns, that warrant further study.

We address two central questions in this article: (i) does self function as a copula, and (ii) how did the copular function of self emerge? To answer these complex questions we adopt a multifaceted approach in which we compare self to copulas and relevant grammaticalization processes across different modalities. First, we present a description of the copula and provide examples in both spoken and signed languages. This establishes a copula prototype with which we can then compare the copular function of self. Although there is no uniformity in the use of copulas crosslinguistically

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1 Words in small capital letters, like self, are English glosses for ASL signs. Even though the English gloss reads as self, the ASL sign self should not be considered solely a reflexive. The English gloss ‘self’ as used throughout this article is only a name for the actual sign.

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(Stassen 1994), copulas have similar characteristics that we can use to identify the copular function, as we discuss in §2. Second, we discuss in §3 a series of linguistic analyses of the ASL sign self, which provide evidence for our current proposal that the polysemous sign self includes a copular function. Third, we describe a grammaticalization process termed the ‘copula cycle’ in spoken languages in §4. Here we distinguish between the cycle focused on the grammaticalizing lexeme and its forms and functions (the lexical copula cycle) and the cycle of syntactic contexts that motivate grammaticalization (the syntactic copula cycle). Fourth, in §5 we analyze corpus data encompassing 150 years of ASL history to show the changing functional profile of self, from a demonstrative pronoun to an overt copula in contemporary ASL. Finally, in §6 we draw parallels between different grammaticalization processes in signed and spoken languages and discuss the implications of our findings with regard to copular expressions in ASL.

Before we proceed, we acknowledge the complexity of analyzing signed utterances, which consist of manually expressed signs and nonmanual markers (NMMs) taking place on the face and body. There are a range of structures that can be interchangeably expressed with different permutations of signs and NMMs, especially so with copular expressions. Following Sandler and Lillo-Martin (2006), we assume that NMMs are not a direct reflection of syntax, but rather are related indirectly via prosody (also see Reilly et al. 1990). We use NMMs in our analyses, but due to their imperfect correspondence with syntax, we primarily rely on the lexical and grammatical characteristics of the signs for syntactic segmentation of the utterances. Also, because we focus on the syntactic functions of self and its semantic composition across historical epochs of ASL, variations in phonological features, such as spatial location and number of iterations, fall outside the scope of this article.

2. The (pronominal) copula. To understand the copular function of self, it is first necessary to describe the linguistic function of a copula. There is no universally accepted definition of a copula, but the general consensus is that a prototypical copula is semantically empty, a linker of the subject and predicate, a syntactic ‘hitching post’ onto which verbal inflectional categories can be attached, and a verblike free morpheme that enables a nonverbal predicate to be verbal (Pustet 2003:4). The copula is most often used across languages as a link between two equal and symmetrical arguments in equative and identificational constructions, such as Santa Claus is St. Nick and This is my diary, respectively (Hengeveld 1992, Mikkelsen 2011, Pustet 2003).

In this section, we focus on pronominal copulas, or copulas with a pronominal form, because this is what we hypothesize self to be. The three characteristics described below are based on Katz’s (1996) analysis of pronominal copulas and their role in the copula cycle. First, pronominal copulas, like all other copulas, establish a universal symmetrical relationship expressing identity or class membership. Second, pronominal copulas often take the form of the third-person subject or demonstrative pronoun. Third, they are paired most often with individual-level predicates, as opposed to stage-level predicates. We first discuss these criteria with spoken language data, and then turn to copulas in sign languages other than ASL.

2.1. Pronominal copulas in spoken languages. First, pronominal copulas may establish relationships expressing identity and class membership. Identity expressions are derived from the uniqueness of the arguments, or whether there is only one such argument in the world. For instance, in Hebrew, shown in 1, the subject is a unique individual that is paired with the copula hi, which can also be a feminine subject pronoun, in an equative relationship with another unique individual, ha-'ostralit ‘the Australian’.
The copula cycle in American Sign Language

The pronominal copula is also used to express class membership, where it is used to identify an argument as a member of a certain set. In the Arabic example in 2, a definite referent, il-mudarris ‘the teacher’, is identified as being contained within the set of members who are nice by use of the pronominal copula huwwa (Eid 1983).

(2) Arabic

il-mudarris huwwa il-latīiif.
the-teacher is the-nice
‘The teacher is nice.’

Over time, the third-person pronoun can lose its interpretable phi-features, resulting in a grammaticalized copula that has fewer or no phi-features at all. This is true for Finnish, as shown in 3, as well as in the Hebrew and Arabic examples above. The copula on was once a third-person pronoun in older versions of Finno-Ugric; it can now also refer to nonhuman objects, like the sky (Katz 1996).

(3) Finnish

Taivas on sinienen.
sky is blue
‘The sky is blue.’

Alternatively, demonstrative pronouns can be used as pronominal copulas, as demonstrated in the seminal work of Li and Thompson (1977) with the Mandarin shì, shown in 4.  

(4) Mandarin

nèi-ge rén shì xuéshèng
that-CLF man be student
‘That man is a student.’

Katz (1996) proposes that demonstrative pronouns are recruited to be pronominal copulas due to their maximal unspecificity. We know that argument states can be characterized along a range of specificity and informativeness. On one end of the spectrum are nouns and verbs that are maximally informative and specify a fixed set of individuals and actions. On the other end are lexical items that are the least specific and informative, meaning that they do not denote a fixed set. Katz considers demonstratives to reside on this end of the spectrum. That is, demonstratives like this or that are words that

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2 Abbreviations used in glosses are as follows: CLF: classifier, DECL.PART: declarative particle, GEN: genitive, NMLZ: nominalizer.
do not vary as a function of the transitivity, transience, or dynamicity of their referred arguments. Demonstratives can refer to actions, objects, or concepts, in contrast to other forms of reference such as pronouns that have semantic restrictions on doing so. Therefore, demonstratives are an ideal candidate for a pronominal copula, alongside third-person subject pronouns, because they refer to a wide range of entities.

Third, copulas are used most often with predicates that are less transitive, transient, and dynamic (Pustet 2003). Carlson (1977) and Kratzer (1995) propose that such predicates be termed individual-level predicates, because they denote concepts that are inherent to an individual, such as being an electrician or having a chronic sickness. Most examples of individual-level predicates are nouns. Stage-level predicates, by contrast, which are composed mostly of verbs, denote concepts that are temporally mutable, such as sitting in a chair or being temporarily sick (Kratzer 1995). There are several diagnostics to determine whether a predicate possesses an individual-level or a stage-level property (Arche 2006, Carlson 1977, Kratzer 1995). First, individual-level predicates are restricted from the coda position in there-sentences, whereas stage-level predicates are allowed, shown in 5. Similarly, stage-level predicates are able to appear as a complement of a perception verb, while individual-level predicates are not, shown in 6. Lastly, for stage-level predicates, a plural subject is ambiguous between an existential and a generic reading, as in 7a. With individual-level predicates, there is only the generic reading, as in 7b.

(5) a. *There are firemen altruistic.
   b. There are firemen available.  (Kratzer 1995:5)

(6) a. John saw Mary in the backyard.
   b. *John saw Mary a mammal.  (Arche 2006:7)

(7) a. Dogs are in the backyard. (existential or generic)
   b. Dogs are mammals. (generic)  (Arche 2006:6)

We see that most predicates that are able to stand alone (i.e. do not need a copula) usually embody stage-level properties, which indicate temporal mutability. By contrast, predicates that need copular assistance are usually individual-level predicates due to their temporal immutability. For instance, in the Mandarin Chinese example shown in 8, the speaker has the individual-level property of being the father of the married woman, so the copula shì is used to predicate. This proposal aligns with the tendency of copulas to predicate expressions of identity and class-membership relations, which are composed mostly of individual-level predicates.

(8) Mandarin
   yú shì suǒ jià fū-ren zhī fù yě
   I be NMLZ marry woman GEN father DECL.PART
   ‘I am the father of the married woman.’  (Li & Thompson 1977:426)

To summarize, there are three common elements of copulas crosslinguistically: (i) they establish expressions of identity and class membership; (ii) they are often derived from the third-person subject pronoun, as in Finnish, Hebrew, and Arabic, or from demonstrative pronouns, as in Mandarin; and (iii) they pair most frequently with individual-level predicates rather than stage-level predicates. We next examine whether this is also true for copulas proposed in other sign languages, and with self in ASL.

2.2. Copulas in sign languages. To date there has been no conclusive evidence of fully developed copulas in sign languages. However, studies on Finnish Sign Language, Icelandic Sign Language, and Spanish Sign Language note the emergence of prototypical copulas. The common characteristic among copulas in these languages is that they
seem to arise from pronominal deixis and/or affirmation. Furthermore, in certain instances these copulas seem to be optional, which may have contributed to the generally held assumption that sign languages have no copulas.

In Finnish Sign Language (FSL), a lexeme labeled ‘pi’ was determined to be a certainty-expressing modal device, recreated in 9 (Jantunen 2007).

(9) **france own-2p head city pi paris**

‘The capital of France is Paris.’ (Jantunen 2007:131)

Pi appears to function as a verbal element in equative sentences where two arguments are coreferred. Jantunen further suggests that this marker appears to be undergoing grammaticalization from an affirmative marker into a copula. However, he claims that pi may not be considered a full copula because the manual sign has not been determined to be decoupled from the head nod, a grammatical NMM used to indicate affirmation. If the head nod as a morphological unit expressing modality/certainty is independent from pi, then pi could be considered a copula, using the traditional definition that copulas carry grammatical markers such as modality and tense. Jantunen proposes that pi carries more of a pragmatic function than a copular function. However, this may change over time.

In Icelandic Sign Language (ÍTM), there appears to be a similar nonverbal copular particle, ‘bidd’, which is found in specificational and equative sentences with adjectival and nominal predicates, shown in 10 (Jónsson et al. 2015).

(10) **father bidd policeman**

‘My father is a policeman.’ (Jónsson et al. 2015)

It is also used as an affirmative marker in responses to yes/no questions. Jónsson et al. postulate that bidd was derived from a third-person anaphoric pronoun referring to a topic, ‘det-er’, in Danish Sign Language (from which ÍTM originated), meaning that bidd was a third-person pronoun in early ÍTM. With a syntactic reanalysis of the initial phrase as a subject, bidd grammaticalized into a copular particle. The authors argue, however, that bidd is a particle rather than a verb in that it has a restricted syntactic distribution, due to its inability to be the complement of an auxiliary or a modal and its inability to follow the complement.

In Spanish Sign Language (LSE), the copula, glossed as there(i),4 is considered a predicating copula with the appearance of a demonstrative adverb (Herrero-Blanco & Salazar-García 2005). However, its use is restricted to verbless descriptive predications that are not deixically indexed. In other words, when the predicate does not function to present or establish a location, there(i) functions as a copula. The authors consider there(i) to have been grammaticalized from the deictic point.

We see that the sign language copulas described above align with the three characteristics of Katz’s analysis as to what constitutes a pronominal copula. First, all of the sign language copula examples provided in these studies are of equative and identificational constructions that express identity (A is B) and class membership (A is part of B) rela-

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3 Glossing conventions for sign language examples are as follows: the first, second, and third person are indicated with -1p, -2p, -3p, respectively (e.g. self-3p). Plural inflection is indicated with -pl. Because self is not always pronominal, if there is no person marker, it is articulated in the same way as the third-person self. Fingerspelling is indicated with hyphens (e.g. r-u-b-y). Compounded signs are indicated with a + (e.g. home+work). Reduplication is indicated with a ‘+’ indicating one reduplicated cycle. The use of the nondominant hand as an upright human-being classifier is indicated with -one (e.g. self-one). Handedness is indicated with (1h) and (2h) if it contrasts with the citation form (e.g. a typically one-handed sign that uses two hands would be given a (2h) gloss marker).

4 The ‘i’ in the gloss indicates that the sign conveys indirect deixis.
tions. Second, in ÍTM, the authors indicate that bidd may be derived from a third-person pronoun, while there(i) in LSE is proposed to be a derivative of the demonstrative. Hence, it appears that the third-person pronoun and demonstrative are ideal candidates for copula development in sign languages, as they are for spoken ones. Finally, all of the sign language copulas described to date appear in constructions with individual-level predicates or predicates that are verbless, which necessitates the copula. Much remains unknown about the circumstances surrounding the use of copulas in sign languages, but it appears that they have characteristics similar to those of spoken languages.

3. The ASL self. In this section, we turn to the linguistic properties of the grammaticalizing lexeme self, which we propose serves a copular function in present-day ASL (PDASL). We first describe its form, before turning to previous linguistic analyses of this sign. Self has been postulated to perform several functions, including a reflexive, emphatic, intensifier, and nominal marker, demonstrating its impressive polysemy. We then identify a gap in linguistic knowledge regarding the use of self in equative sentences that express identity relations. It appears that the role of self in equative constructions cannot be explained by any of the previously identified functions. On this basis, we conclude with our hypothesis that one function of self is as a copula, in addition to its many other uses.

3.1. Canonical articulation of self. As seen in Figure 1a, the ASL sign self is produced with an ‘open-A’ handshape, thumb pointing upward, with the distal phalanx bones facing toward the final phonological location specified by its syntactic function. It is canonically produced with double movement, meaning that the hand moves toward the referent or its associated locus in two quick, short motions. Since it is a reflexive, signers can modify the location and path movement of the sign to encode person and number. Signers may also opt to include the nondominant hand in a ‘1’ handshape depicting an upright human being, on which the dominant hand may tap once or twice, as seen in Figure 1b (Sandler & Lillo-Martin 2006). This variant is called self-one. As one of the subaims of this study, we track the diachronic use of both variants in ASL to determine whether there is a difference between the two.

![Figure 1. The citation forms of the signs self and self-one.](image)

3.2. Previous work on ASL self. Self has been understood to incorporate a variety of functions. Because of its position as the object in many transitive clauses, self has traditionally been defined primarily as a reflexive (Baker-Shenk & Cokely 1980, Kegl 2003, Sandler & Lillo-Martin 2006). This function is still in use today, shown in 11.
(11) **j-o-s-e** like self-3p
    ‘Jose likes himself.’

(12) **l-o-w-e-l** feel self/ix, intelligent
    ‘Lowel thinks that he/self is intelligent.’

(13) **j-o-h-n** hear mary, decide [pro + self] will come
    ‘Johni heard that Maryj decided that *he/shej will come.’


However, because there are instances where self is not in an object position but rather an embedded subject position, as in 12, Lillo-Martin (1995) postulated that self was a simplex long-distance anaphor similar to Icelandic sig or Mandarin ziji. But this was rejected on the basis that the antecedent of self can be the object of a matrix clause, a behavior that is unattested for long-distance anaphora in other languages, as seen in 13 (Koulidobrova 2009). Instead, Koulidobrova proposed that the long-distance behavior of self is explained by its ambiguity ‘between a true, himself-type local anaphor and a complex element, namely [pro + self] where self is an intensifier … modifying a [null] pronoun’ (2009:2). In short, Koulidobrova suggested that when self is used in the pronominal sense, there is a preceding null pronoun, which is allowable in ASL. This function is similar to an emphatic, which intensifies the preceding pronominal or nominal argument.

Wilkinson (2013a,b) similarly proposed that self primarily functions as an emphatic, a function that has been historically derived from the reflexive in many spoken languages (Kemmer & Barlow 1996). In a corpus study, Wilkinson categorized instances of self into groups of emphatics. The independent emphatic category is used to emphasize, as in *the Queen herself*. Other categories were headed and argument emphatics, which are used in sentences with overt verbs, where the former is paired with a subject head and the latter is not. Lastly, the predicate emphatic category is used in sentences without any overt verbs and consists of three subgroupings, given in 14–16.

(14) Nominal
    poss-1p mother self school teach+agent
    ‘My mother herself is a school teacher.’

(15) Adjectival
    e-v-a b-r-a-u-n self pregnant
    ‘Eva Braun is pregnant.’

(16) Oblique
    ix-1p don’t know much about self-1p
    ‘I don’t know much about myself.’ (Wilkinson 2013a:476–77, emphasis original)

Fischer and Johnson (2012) proposed another function of self—as a nominal marker licensing definiteness and specificity—based on several observations from data collected in 1982. Their first observation was that self often occurs in the first position of clauses, which is a trend found for definite markers crosslinguistically. Second, self is often observed in the first position in relative clauses, as in 17. Fischer and Johnson pointed out that, even if the head noun in a relative clause is indefinite, the shared noun phrase within the relative clause is definite.

(17) me want husband self-one respect me
    ‘I want a husband who will respect me.’
    ‘I want a husband; that husband will respect me.’ (Fischer & Johnson 2012:246)

Fischer and Johnson also proposed a spectrum of specificity along which demonstratives vary in their definiteness marking. This is shown in 18, beginning on the left side,
with CLASS being least specific, and progressing rightward, with POINT being the most specific. Only a generic reading is available for CLASS, and a mix of generic and specific readings is available for SELF, SELF-ONE, and THAT. POINT is indicative of a specific reading.

(18) CLASS — SELF — SELF-ONE — THAT — POINT
least specific ⇒ most specific

Finally, Liddell (2003) briefly noted that a sign he termed ‘SELF-CHAR’ was used as a descriptor of a referent’s characteristics. This sign, which is produced similarly to the reflexive SELF but with ‘a smaller repeated motion’ (p. 33), he classifies as a pronoun, as shown in 19. Additionally, he specifies that SELF-CHAR can be used only with present referents.

(19) LOOK, GIRL THERE, SELF-CHAR BEAUTIFUL.

‘Look at that girl over there. She is beautiful!’

(Liddell 2003:33)

To summarize, there has been no general consensus about the functions of the sign SELF. Analyses have classified SELF as a reflexive, anaphoric intensifier, emphatic, and nominal marker that licenses specificity and definiteness, as well as a referent descriptor.

3.3. SELF in ASL EQUIVATIVE CLAUSES. None of the previous analyses sufficiently explain the function of SELF in equivative sentences, which are constructions where two arguments corefer to a single entity (Mikkelsen 2011). An example is 20, where we assume that there is only one Bruce Wayne and one Batman in the world, meaning they both are specific and unique. With this construction, the signer is stating that they believe the unique referent Bruce Wayne to be the same person as another unique referent, Batman. The latter part of this sentence may be expressed without cooccurring NMMs except for a head dip and/or blink to indicate the end of a clause. The absence of cooccurring NMMs indicates that there are no supplementary grammatical elements that may potentially skew the interpretation of this sentence and the functions of the individual lexical items. According to our ASL informants, SELF is obligatory in this context; a pronominal point (ix), a null copula, or a head nod cannot substitute for SELF or SELF-ONE in this sentence, as seen in 20a–c.

(20) [Context: Two Gotham City citizens are discussing Bruce Wayne, who is a well-known philanthropist. One utters the following:]
IX-I FEEL B-R-U-C-E W-A-Y-N-E SELF(-ONE) BAT MAN.7
‘I believe that Bruce Wayne is Batman.’


`head nod`


5 All of the ASL examples in this article have been verified with three Deaf fluent signers who have Deaf parents, went to a Deaf school, and consider ASL to be their first language.

6 We acknowledge that other alternations are possible that can be used with the equivative construction. For instance, the anaphoric point (ix) may occur with a concurrent head nod in this example. However, we sense that using both forms in an utterance influences the other’s function and the overall interpretation of the sentence. Our ASL consultants agree that expressing this example with ix and an accompanying head nod conveys a different interpretation from expressing it with SELF. We also emphasize that SELF is the only form that can be expressed alone, without any cooccurring NMMs, signifying its syntactic and semantic contribution as a copula.

7 The equivative construction is embedded in a clause here, since this often gives more context than the equivative sentence alone and thus facilitates a more appropriate judgment (Mikkelsen 2011).
Clearly, the self in 20 is not a reflexive since there is no verb. Our ASL informants do not ascribe any form of emphasis to this sentence, which indicates that the intensifier and emphatic analyses cannot explain this instance of self. The informants explain that emphasis can be achieved by lengthening the movement, having faster acceleration/deceleration between transitions of movement, or having cooccurring emphatic NMMs. As for the proposal that self is a nominal marker licensing definiteness and specificity, we see that Bruce Wayne is already definite and specific because it is a unique argument. A pronominal point is incompatible with this equative construction, even though Fischer and Johnson (2012) classified the point as a nominal marker for specified arguments. Liddell’s (2003) suggestion that self is a characteristic descriptor of present referents comes the closest to explaining the structure in 20. However, this explanation is insufficient, because Bruce Wayne and Batman can be nonpresent referents when this construction is uttered. Thus, none of the above proposals regarding the function of self sufficiently describe this context where self is obligatory.

Another suggestion is that self functions as a topic marker. For instance, in 20 ‘Bruce Wayne’ could be the covert topic of an embedded sentence, and self could function to mark it as a topic. Counterevidence to this claim is the fact that topic markers in ASL can refer to either the subject or the object, because topics are moved, as shown in 21 and 22 (Aarons 1996). In these examples, traces have been inserted showing the original positions of the topic. Mary is expressed as the topic with conventionalized NMMs, which are raised eyebrows and the head tilted backward. So, if self were a topic marker, it would be able to topicalize moved subjects and objects. But as we can see with 23, moved objects cannot be topicalized with self without any accompanying NMMs. This suggests that self is not a topic marker but a copula, for reasons we explain in the next section.

3.4. Self as a Copula in Present-Day ASL. We hypothesize that in contemporary ASL, self is a copula when used in sentences with individual-level predicates, or predicates that are inherent and/or idiosyncratic to the individual (Kratzer 1995). Individual-level predicates are often used in expressions indicating identity or class-membership relations. The examples given below are from the PDASL corpus (the data-collection methodology is elaborated below in §5.3). In 24, we see that self is positioned between the subject and object noun phrases, expressing a class membership: Lester Holt is a member of the set of writers with NBC. If we omit self from this utterance, our ASL consultants consider 24 ungrammatical. We suspect this is derived from the fact that ‘writer’ is an individual-level predicate and verbless; thus self is obligatory here. And

\[ (21) \text{topic MARY, t LIKE JOHN} \]
\[ \text{‘Mary likes John.’} \]
\[ (22) \text{topic MARY, JOHN LIKE t} \]
\[ \text{‘Mary, John likes.’} \]
\[ \text{‘John likes Mary.’} \]
\[ (Aarons 1996:66) \]

\[ (23) \text{*MARY SELF JOHN LIKE} \]

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8 We thank an anonymous referee for bringing this alternative hypothesis to our attention.

9 If one raises their eyebrows on MARY as the topic, the comment clause (SELF JOHN LIKE) suggests an SOV word order, which is not the intended meaning. If one raises their eyebrows on MARY SELF, the sign SELF suggests emphasis and is considered strange by the ASL informants.
because it occurs between the subject and the individual-level predicate, making the sentence acceptable, we analyze \textit{self} as a copula here.

\begin{quote}

‘Lester Holt is a writer with NBC.’ (DTV News 2016, 0:24m)
\end{quote}

Further evidence that \textit{self} is a copula comes from utterances in the PDASL corpus where \textit{ix} precedes \textit{self}, as in 25. This utterance consists of a subject noun phrase ‘Karen’ (which may or may not be topicalized), a pronominal point presumably referring to the subject, the copular \textit{self}, and an individual-level predicate ‘deaf writer’. We observe here that whether or not the structure in 25 is topicalized, the pronominal point occupies the subject position in the comment clause, while \textit{self} occupies the position usually reserved for verbs. An acceptable alternative sentence is given in 26, where the lexical verb \textit{like} is substituted for \textit{self}. This fits our hypothesis that \textit{self} may function as a copula required for predication of nonverbal predicates.

\begin{quote}

‘Karen is a deaf writer.’ (RIT NTID 2017, 3:48m)
\end{quote}

\begin{quote}

‘Karen likes deaf writers/Karen likes a deaf writer.’
\end{quote}

To preview the evidence from the PDASL corpus, \textit{self} appears to be used most often with nominal predicates, as in 24 and 25, and less so with adjectival predicates. The high frequency of \textit{self} appearing with individual-level predicates and not stage-level predicates suggests that \textit{self} is functioning as a copula.\footnote{Aspectual modulation is a simple test to distinguish individual- and stage-level predicates in ASL (Klima & Bellugi 1979). If the predicate can be aspectually modulated, it is most likely a stage-level predicate; if it cannot be modulated, it is most likely an individual-level predicate. However, there is a gray area where lexical items can be both, as in briefly sick (stage-level) and chronically sick (individual-level).} Moreover, the few instances where \textit{self} occurs between a subject and a verb (i.e. stage-level predicates) align with our hypothesis that \textit{self} functions primarily as a copula to predicate individual-level predicates in ASL.

4. \textbf{Copula cycles.} We now turn to crosslinguistic grammaticalization processes that we find to be fundamental to the grammaticalization of \textit{self} in ASL. First, we describe cyclical grammatical change and the copula cycle as proposed by Katz (1996). Next, we explain the series of syntactic reinterpretations proposed by Li and Thompson (1977) that led to the use of the archaic Mandarin demonstrative \textit{shi} as a copula. We call these the \textit{lexical} and \textit{syntactic copula cycles}, respectively.

Many grammaticalization processes that occur in languages are cyclical. For instance, the form of an element in a language may undergo grammaticalization, as shown from left to right in 27. Once it reaches the end, renewal and periphrasis of new lexical items begin the process again. Effectively, this demonstrates that most cyclical change in language is unidirectional; the direction of the change does not reverse. This cycle is observed in many languages, with the differences across languages attributable to different stages of cyclic change (van Gelderen 2011). Moreover, the transitions between stages are often not immediate. A language usually shows overlap between two stages in its progression from one to the next (i.e. an element in a given language slowly grammaticalizes from clitic/affix to affix/zero).

\begin{quote}
(27) phrase > word/head > clitic > affix > zero
\end{quote}

\begin{quote}
\textit{van Gelderen 2011:6}
\end{quote}
The analysis of linguistic change is crucial, because some cycles, like those of subject and object agreement, are relevant to the typological classification of a language. One such cycle is the copula cycle, which we argue is occurring in ASL. We describe the lexical copula cycle, and then the syntactic copula cycle.

4.1. The lexical copula cycle. We use the term ‘lexical copula cycle’ because it directly relates to the functionality of the evolving lexeme. According to Katz (1996), the lexical copula cycle is a unidirectional grammaticalization process, outlined in 28. The lexeme goes along the grammaticalization pathway, undergoing functional changes into a copula. Throughout the process, the various functions are recruited for copular expressions in the language. For instance, at the beginning of the cycle, a deictic element in a given language can convey deictic as well as copular expressions. Next, this deictic element loses its deictic properties and grammaticalizes into a demonstrative that conveys expressions of identity and class membership, alongside its function as a demonstrative elsewhere. This cycle continues until the lexeme is fully realized as a copula, the sole function of which is to predicate individual-level predicates.

(28) deixis > demonstrative > pronoun > copula (Katz 1996)

The cycle begins with deixis that is rooted in the physical and temporal context: the deictic center upon which the gestural point depends is placed on the signer/speaker’s body (Diessel 1999, 2006, 2012, Kendon & Versante 2003, Kita 2003a). The point is produced in the here and now and refers to concrete objects and events in the surrounding physical situation. For instance, when a speaker utters a word (e.g. cat) while deictically pointing at an object (e.g. a cat), the word pairs with the object. This pairing can be expressed as either an identity statement (i.e. that [cat] is a cat) or a class-membership statement (i.e. that [cat] is a member of the set of cats).

In the next stage of the cycle, demonstratives, which are a subclass of deixis, are integrated to facilitate conveying expressions of identity and class membership. Demonstratives are partly rooted in both physical and linguistic contexts, meaning that they can refer to either present referents (exophoric) or previously established discourse elements (endophoric) (Diessel 1999, 2006, 2012). In short, the deictic center of exophoric demonstratives is located on the speaker/signer’s body, whereas the deictic center of endophoric demonstratives is located elsewhere.

Demonstratives in the copula cycle usually appear after the subject noun phrase and before the predicate, indicating that most demonstratives in this context are adnominals. Over time, as the subject noun phrase becomes less deictic, adnominal demonstratives increasingly refer to more abstract linguistic concepts. The decreased use of demonstratives to refer to exophoric referents highlights the starting point of the grammaticalization of demonstratives into a variety of grammatical elements, one of them being the personal pronoun, and later the copula.

With time and enough use in endophoric contexts, the deictic properties of demonstratives reduce. Demonstratives may then grammaticalize into anaphoric pronouns that do not require a contextual interpretation. Such pronouns may now refer to a previously mentioned referent or a topic. At this stage, personal pronouns may be used in expressions of identity and class membership, as in Semitic languages like Hebrew or Arabic (Eid 1983, Katz 1996). The direct referentiality of such personal pronouns also reduces with use over time, although to a lesser degree, as some phi-features may still be pre-
served (van Gelderen 2011). Some languages skip this stage altogether, as can be seen with Mandarin Chinese, elaborated in the next section (Li & Thompson 1977).

Finally, the pronoun or demonstrative eventually grammaticalizes into a copula. This occurs due to certain syntactic contexts where a phenomenon Katz (1996) calls the ‘flicker mode’ arises. The flicker mode occurs when the interpretation of a certain syntactic structure flickers back and forth between a pronominal and a copular analysis. It is essential that the language allows a null copula or a null pronoun. Take 29, for instance, repeated from 1 above, where the modern Hebrew copula *hi* is derived from the feminine third-person pronoun. If this example was encountered in archaic Hebrew, there would be a flicker mode because there are two possible syntactic interpretations: (i) *hi* can be interpreted as a pronoun with a null copula, or (ii) *hi* can be interpreted as a copula with a preceding null pronoun. It is possible to have one but not both of the interpretations. Because of feature economy (discussed in §6.2 below), language perceivers prefer the interpretation where the lexeme in question is a copula.

(29) Hebrew

Lynn *hi* ha-*ostralit.
Lynn is the-Australian
‘Lynn is the Australian.’

(Katz 1996:88)

Over time, as perceivers interpret the pronominal forms as copulas, these pronouns become less specific, meaning that their reference is no longer constrained by the phi-features of their referents. Effectively, the pronoun loses its pronominality and becomes a copula that functions to predicate nonverbal predicates, and which may be a ‘syntactic hitching post’ for grammatical operators such as modality, aspect, and tense (Pustet 2003). Later, the copula may cliticize and eventually cease to exist overtly, meaning that copular expressions in the particular language may continue with a null copula or the copula cycle may begin again with a different lexeme.

A similar grammaticalization scheme has been proposed by Pfau and Steinbach (2006) concerning pointing signs in sign languages, illustrated in Figure 2.12 They observe that demonstrative points have a tendency to grammaticalize into ubiquitous grammatical markers in sign languages, and they propose a scheme to map the grammaticalization pathway of such signs. There is considerable overlap between this proposal and Katz’s (1996) lexical copula cycle explained above. Both share the same deictic origins and intermediate stages of the demonstrative and the personal pronoun. The scheme in Fig. 2 does not include a final copula stage, however. Because self is not generally considered a pointing sign,13 we ask whether it can be incorporated into this grammaticalization scheme.

![Figure 2](image-url)

FIGURE 2. The grammaticalization scheme proposed by Pfau and Steinbach (2006:65) for pointing signs.

12 A similar grammaticalization pathway proposed by Wilcox et al. (2010) consists of an evolution from a gesture to a lexical element, then to a grammatical item.

13 However, self does share some characteristics with pointing signs in that it may be directed toward loci or physical referents.
The fact that the scheme proposed above overlaps with the lexical copula cycle aligns with Pfau and Steinbach’s analysis that most grammaticalization processes are not differentially affected by modality (signed or spoken). Thus, the lexical copula cycle provides a framework for the diverse but related functions of self observed throughout ASL history. We now turn to the syntactic copula cycle.

4.2. The Syntactic Copula Cycle. The syntactic copula cycle focuses on the syntactic contexts that drive the evolution of the grammaticalizing lexeme. The syntactic context is responsible for determining the function of the lexeme in question, as shown in the archaic Mandarin Chinese examples in Li & Thompson 1977. The syntactic copula cycle consists roughly of three structures, outlined in 30.

\[(30) \text{topic-comment} > \text{topicalized} > \text{copular}\]

(Li & Thompson 1977)

Each of these structures is a stage representing a certain syntactic context that motivates the grammaticalization processes, which drive the lexeme in question along the lexical copula cycle. As the cycle through these structures progresses, Katz (1996) notes a decreasing emphasis on clausal boundaries, and inversely, an increasing emphasis on clausal cohesion. The clausal boundaries vary in form, ranging from prosodic pauses to declarative markers. Clausal cohesion in this context manifests in the form of copulas. We show below the inverse relationship of clausal boundaries and cohesion and the effects they have on the grammaticalizing lexeme.

In archaic Chinese dating to around the fourth century BC, sentences did not have an obligatorily overt copula. This is reflected in the initial structure of the syntactic copula cycle, the topic-comment, which consists of a topic and a subsequent comment concerning the topic. Language users at that time used a declarative marker yě to indicate the sentence-final boundary of a topic-comment structure. An example is given in 31.

\[(31) \text{Archaic Chinese}\]

\[
\begin{array}{c}
\text{Wáng-Tái} \quad \text{∅} \quad \text{wú} \quad \text{zhě} \quad \text{yě} \\
\text{Wang-Tai} \quad \text{outstanding person} \quad \text{DECL.PART} \\
\text{‘Wang-Tai is an outstanding person.’}
\end{array}
\]

(Zhuáng-zì, 4th c. BC; from Li & Thompson 1977:421)

Effectively, two nominal arguments are paired together, along with the accompanying declarative particle. There are two interpretations, which depend on whether the construction is uttered with or without the declarative marker. With the declarative marker, the interpretation is of a class-membership expression, ‘Wang-Tai is an outstanding person’. Without the declarative marker, the interpretation is of a subject nominal phrase, ‘Wang-Tai the outstanding person’, which usually appears with a verbal element. Because this particular example has no verbal predicate, there is ostensibly a zero copula between the two nominal arguments, ‘Wang-Tai’ and ‘outstanding person’. The declarative marker signaling the clause boundary is an example of the emphasis on clause boundaries early in the syntactic copula cycle. This clause boundary, in the form of the declarative marker, is responsible for indicating the zero copula, and thus creates expressions of identity and class membership.

The second structure in the syntactic copula cycle is what we label ‘topicalized’, which consists of a topic and a clause containing a pronominal element referring to the topic along with a predicate. These structures were used alongside the topic-comment structures in archaic Mandarin. Topicalized structures were used with more complex predicates, so a demonstrative, shi, serves to increase the accessibility of the topic subject, as seen in 32.
Poverty and debasement, this is what people dislike.

(Analect, 5th c. BC; from Li & Thompson 1977:423)

Here the topic is the initial phrase (i.e. ‘poverty and debasement’), followed by a main clause consisting of a demonstrative pronoun and a nonverbal predicate. The topicalized structure contains one topic-comment structure that is embedded in another. The main clause with the demonstrative pronoun shì and the complex predicate comprise a topic-comment predicate with a zero copula, which is indicated by the declarative marker yě. This clause is then embedded in another topic-comment structure, with the referent of the demonstrative pronoun as the topic. In the topicalized structure, according to Li and Thompson, there is no zero copula between the topic and the pronominal element in the main clause.

This topicalized structure still demonstrates an emphasis on the clausal boundary, because the expression relies on the prosodic pause between the topic and clause as well as the declarative marker yě in the final position. The demonstrative pronoun shì figuratively crosses over the clausal boundary between the topic and the clause, thus increasing the accessibility of the topic. Note that the declarative marker is still added to the end of this construction, suggesting that shì does not have full predicating power. There also appears to be a flicker mode here, with shì possibly functioning either as a demonstrative or as a copula. In sum, the topicalized structure in 32 is intermediary between the topic-comment structure and the copular structure shown next.

Finally, in the fifth century CE, the third structure of the copula cycle emerged. The use of the topic-comment structure and the declarative marker yě in expressions of identity and class membership ceased, which resulted in canonical copular constructions with shì as a copula linking the two nominal arguments, shown in 33. The demonstrative pronoun shì has lost its deictic properties at this stage; it is now simply a copula. This is the end result of an increasing emphasis on clausal cohesion.

To summarize, these three structures, topic-comment, topicalized, and copular, reflect the grammaticalization processes underlying the copula cycle. We take the copula cycle in Mandarin as a model for ASL, as we describe in depth below.

5. Historical evidence of the copula cycle in ASL. We now provide an overview of self throughout history, using corpora of early and modern sign language dictionary entries and films of ASL. The goal of this section and the following is to describe the copula cycle that has been occurring in ASL over the past 150 years. We provide examples of the grammaticalization process of self from a demonstrative to a pronoun to a copula. The languages examined include Old Langue de Signes Française (LSF, a predecessor of ASL), Old ASL, and PDASL.

To preview our findings, self emerged initially as a demonstrative pronoun in Old LSF and evolved into a pronoun that was used in Old LSF and Old ASL. Later, self evolved into a copula that is used in contemporary ASL, the result of the grammaticalization processes of the copula cycle. There has also been a change in the syntactic structures used to express copular sentences. In the Old ASL films, we are able to observe the use of topic-comment structures in the 1910s. This transitioned into the use of topicalized structures and later into the copular structure observed in PDASL. The data also show that there are more copular structures with self than topicalized structures.
with self in PDASL, providing evidence for the ongoing transition in the syntactic copula cycle.

5.1. Old LSF. LSF is said to be one of Europe’s oldest sign languages, dating back to the 1760s when Abbé de L’Epée established the first school of the Deaf (Millet et al. 2015). It was in this school that LSF became standardized and used in the pedagogy of deaf students. In 1817 Laurent Clerc, a French deaf educator, came to the United States and helped establish the American School of the Deaf with Thomas Hopkins Gallaudet (Gannon 2011). It was here that the combination of LSF, Martha’s Vineyard Sign Language, home sign systems, and English creolized into ASL, which has since been used for the past 200 years (Neidle & Nash 2015). Because of this direct historical link, many pronominal signs in Old LSF also appear in PDASL. Bear in mind, however, that the Old LSF data analyzed here is dated to the 1850s, forty years after the inception of ASL. We assume that the signs shown here are representative of what was borrowed into ASL forty years earlier. Nevertheless, our analysis of Old LSF illuminates self’s role in the copula cycle as a demonstrative pronoun.

The Old LSF data were gathered by manually searching the Historical Sign Language Database (HSLDB; Supalla 2019) in the French section for pronominal signs and any signs that shared the same ‘open-A’ handshape as the contemporary self. This search yielded a series of relevant dictionary entries from two authors, Pélissier (1856) and Lambert (1865).

Pierre Pélissier was a deaf French lexicographer whose dictionary consists of ‘reduced signs’ that were actually used by the deaf population, in contrast to the laborious ‘methodical signs’ used by educators of the deaf such as Abbé de L’Epée (Lane 1989 [1984]). The majority of the entries in Pélissier’s dictionary are on the lexical level, although he did give some metalinguistic descriptions of certain signs. We start with the first- and second-person pronouns, je and tu, which are shown in Figure 3. The pronouns are articulated using a ‘1’ handshape, with the extended index finger pointing toward the entity. Because both the signer and perceiver are nearly always present in discourse, the signer effectively uses a deictic point to refer. These are deictic points because they are rooted in the context of the space and time in which they occur (Kendon & Versante 2003).

While the first- and second-person pronouns use the ‘1’ handshape, the Old LSF third-person pronoun uses the ‘open-A’ handshape shown in Figure 4, that is, the same handshape used by the present-day self sign.
In fact, Pélissier referred to the ‘open-A’ handshape as being the subject pronoun when expressed with the dominant hand and as the object pronoun when expressed on the non-dominant hand. For example, in the entry for lui (or to-him; entry ID 259), the index finger of the dominant hand points toward the ‘open-A’ handshape form of the nondominant hand, denoting the direction to a human object pronoun. The ‘open-A’ handshape represents the upright human-being classifier that was used predominantly in Old LSF to indicate spatial relations and interactions between humans (Fischer 1996). The Old LSF pronouns appear to employ deixis that is most often expressed by pointing at the referent (Butterworth 2003, Kita 2003a). We see this with the first and second person in that the index finger is directed toward the referent. As for the third-person pronoun, we suspect that the over-the-shoulder movement may have evolved from compounding the subject pronoun and a deictic point toward a location that is associated with that person, as seen in many emerging sign languages such as Nicaraguan Sign Language and Kata Kolok (a Balinese village sign language; Coppola & Senghas 2010, de Vos 2012, 2015). In this reconstruction, the signer expresses the subject pronoun as a static ‘open-A’ handshape on the dominant hand and then, using the same hand with the ‘open-A’ or ‘I’ handshape, directs it toward the referent’s associated location. We assume that this compound occurs primarily with nonpresent referents. Conversely, to refer to a present third person in Old LSF, we assume that the signer primarily uses a deictic point without an accompanying human-being classifier, as is seen in sign languages today.

If the point is directed toward an associated location, it is an exophoric demonstrative in that it refers to the physical context surrounding the deictic center that is the signer’s body. Effectively, the signer indicates that they are referring to a human being that is associated with, say, a bakery to the north, in order to refer to the baker. We interpret this deictic point as a recognitional demonstrative, which is ‘used to indicate that the [perceiver] is able to identify the referent based on specific shared knowledge’ (Diessel 1999:93). The use of the exophoric recognitional demonstrative presupposes shared knowledge that both the perceiver and signer are involved in constructing. Moreover, recognitional demonstratives are restricted to the adnominal position, which aligns with our reconstruction in which the point is expressed after the nominal human-being classifier.

---

14 Pélissier explicitly mentions this in the entry for le (or all; entry ID 244).
15 This classifier is vestigially used in many PDASL and LSF signs such as with, superior, and chase (Fischer 1996, Lillo-Martin 1995).
The point to an associated location could be a starting place for grammaticalization that results in a point construed as an endophoric demonstrative. This could be derived from a metaphorical construction depicting the space outside of the signing space as the converse of the here and now (Wilcox & Occhino 2016). This aligns with our reconstruction in that if a signer wants to refer to a nonpresent third-person referent with no associated location, they would express a version of the reconstruction with the human classifier and a locative point. We surmise that the eventual phonological fusion and phonetic reduction of the two components in the reconstruction resulted in the third-person pronoun having the path movement as shown in Fig. 4, with the ‘open-A’ hand-shape moving over the shoulder. This is essentially a lexical blend, a word that has been created through the fusion of parts of other words (Lepic 2016). Here we see the lexicalization of self, which is integral to its formation as a functional word. We propose that this blend of the human-being classifier and deictic point continued to grammaticalize into the ASL self we observe today.

The Old LSF signs and the reconstruction described above reveal the deixis and demonstrative stages of the lexical copula cycle. More specifically, the deictic point in the reconstruction embodies the deixis stage, and the Old LSF third-person pronoun (il; see Fig. 4) illustrates the demonstrative stage with its endophoric quality. In fact, there are already some indications of the Old LSF il grammaticalizing into a pronoun, which is the next stage of the lexical copula cycle.

5.2. Old ASL. Films of Old ASL in the HSLDB provide us with glimpses into the linguistic composition of ASL in the 1910s. The films were commissioned by the National Association of the Deaf (NAD) in order to preserve ASL. In the Old ASL films, there appear to be three main functions of self: a pronoun, an emphatic, and a reflexive. There is also evidence of an emerging copular form for self. However, it appears that self was used extensively as a third-person subject pronoun in Old ASL because it was used predominantly in sentences with verbal predicates.

We first describe the methodology and the data regarding grammatical roles of self in the Old ASL corpus. We give examples of the pronominal, emphatic, and copular functions of self and briefly discuss the forms of self used. We then present the first stage of the syntactic copula cycle, the topic-comment structure, which may have been used extensively for expressions of identity and class membership in Old ASL.

Methodology. The films were previously coded with English glosses, so instances of self in Old ASL were retrieved from the HSLDB using a search term: ‘self’. There were eighty-seven instances of self in total, produced by ten signers. One instance of self was removed prior to the analysis due to its being a classifier for person. The filmed instances of self are preserved in the sentence context, so the syntactic context was fully captured. With this data set, we are able to diagnose the function of self in those sentences using the conventions given in Table 1, which are also used for the PDASL corpus. In this table, the leftmost columns list the four functions and their respective syntactic structures. The rightmost columns are the counts and percentages of these structures in Old ASL and PDASL. The structures were not determined a priori; rather, signs in utterances containing self were analyzed with regard to their syntactic function. If the following sign was a verb or a modal, such as love or will, self was considered to be a pronoun, given that the immediately preceding sign was not its associated referent. Otherwise, the sign was considered an emphatic. Self was treated as a reflexive only if there was a transitive verb immediately preceding it (e.g. hurt self) and as a copula if there was no immediately following stage-level predicative verb, but
an individual-level predicate instead. In cases where there are two possible structures, the structure with more elements took precedence (i.e. the self in a verb + self + verb structure is considered pronominal, not reflexive, as with the structure verb + self).

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>STRUCTURE</th>
<th>OLD ASL</th>
<th>PDASL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRONOMINAL</td>
<td>begin + self + verb</td>
<td>57</td>
<td>66.3</td>
</tr>
<tr>
<td></td>
<td>begin + self + object + verb</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>verb + self + verb</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>topicalized self</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>begin + self[resumptive] + noun + verb</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>preposition + self (Old ASL)</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>EMPHATIC</td>
<td>noun + self + verb</td>
<td>13</td>
<td>15.1</td>
</tr>
<tr>
<td></td>
<td>noun + self + end</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>REFLEXIVE</td>
<td>verb + self</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>preposition + self (PDASL)</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>COPULAR</td>
<td>noun + self + noun</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>noun + self + adjective</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>86</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1. Coding features of the ASL corpora and functions of self in Old ASL and present-day ASL (PDASL). ‘Begin’ and ‘end’ indicate the beginning and the end of a phrase or a clause.

Another feature we coded was which variant of the sign was used: self (see Fig. 1a) or self-one with an accompanying nondominant hand (Fig. 1b). Accompanying NMMs, or facial expressions, were coded as well. Specifically, we annotated NMMs using the eyes, eyebrows, mouth, head, and torso that occurred with the immediately preceding sign, with the sign self, and with the following sign. We paid close attention to eyebrow raises, a marker that usually cooccurs with the topic, and head dips/tilts, which mark phrase boundaries. These NMMs would inform the general prosodic composition of the utterance, which would help determine the stage of the ASL syntactic copula cycle (topic-comment, topicalized, or copular; see §4) at that time.

Functions of self in Old ASL. There are four functions of self in Old ASL, shown in Table 1. Of eighty-six instances, sixty-eight are examples of self being used as a pronoun, constituting 79% percent of the data. The second most frequent function of self is the emphatic. The least frequent functions are the reflexive and the copular, suggesting that these functions of self were either emerging or nonexistent, or simply had a low frequency of use.

Self as a pronoun. To be classified as a pronoun, self needs to be in the subject (or nonreflexive object) position in a sentence containing a verb. Canonically, the pronominal self refers to its assigned referent, which would have been mentioned in a previous utterance. There are six structures in which the pronominal self is found, highlighting its variety.

Of sixty-eight instances of the pronominal self, sixty-six referred to a third-person referent, with the other two referring to the first person. All sixty-eight pronominal uses of self referred to human referents, indicating a highly restricted set of referents to which self can refer pronominally. The self + verb structure was the most common, accounting for fifty-seven of sixty-eight instances. An example is given in 34, which reflects a predominant use of SVO word order in Old ASL. There were five other structures, which were not common (eleven instances), but show the variety of structures in which the pronominal self was used. Moreover, in sixty-five of sixty-eight occurrences, the pronominal self was used with stage-level predicates. These analyses indi-
cate that self was used principally as a third-person subject pronoun, which is a stage of the copula cycle.

(34) SELF-3p CHOOSE TWO SENTENCE
   ‘He chose two sentences … ’
   (Hotchkiss 1913, segment 21)

**SELF as an emphatic.** The main difference between the pronominal and emphatic functions of self rests on whether the referent as a full noun phrase or a pronominal point was mentioned immediately before self was expressed. The referent and the accompanying emphatic self can occur as the subject or as the object of a sentence. An example of an emphatic self is provided in 35. Here we see a difference in that the referent was named before self, whereas a pronominal self would appear without any referent adjacent to it in the same sentence. Again, the sentence has to contain a verbal predicate, or self would be diagnosed as a copula, which is discussed next.

(35) ASK-2p JESUS SELF-3p APPROACH PRAY POSS-1p FATHER
   ‘Did Jesus himself approach God and pray “My Father”?’
   (McGregor 1913, segment 5)

**SELF as a copula.** There are two instances of self appearing in contexts that mark the emergence of a copula in 1910s ASL, as seen in the structures self + noun and self + adjective. Importantly, we observe the flicker mode in both examples, which is essential to the transition of self from a pronoun to a copula. First, as seen in Figure 5, the signer is expressing that Laurent Clerc, the referent, is the schoolchildren’s first teacher.

The first interpretation is that self functions as a subject pronoun with a zero copula, as in 36a. It is also possible that the possessive pronoun here functions as a verbal predicate of possession, or in other words, as a stage-level predicate (Abner 2013). The second interpretation is that self functions as a copula with a null pronoun, as in 36b. Thus the individual-level predicate ‘their first teacher’ is predicated by the copular self.

(36) a. SELF-3p Ø POSS-3p-pl FIRST TEACH + AGENT
    ‘He [was] their first teacher.’
   b. Ø SELF-3p POSS-3p-pl FIRST TEACH + AGENT
    ‘[He] was their first teacher.’

The flicker mode can also be seen in the second example, a self + adjective structure, illustrated in 37, which parallels the structure with the noun.

(37) a. SELF-3p Ø POWERFUL PROGRESS WITH-NEG POSS-1p-pl HELP
    ‘He [is] strong, and can progress without our help.’
   b. Ø SELF-3p POWERFUL PROGRESS WITH-NEG POSS-1p-pl HELP
    ‘[He] is strong, and can progress without our help.’
   (McGregor 1913, segment 41)
These two historical examples of the flicker mode suggest that the lexeme *self*, used extensively as a pronoun in Old ASL, is transitioning through the copula cycle and emerging as a copula in ASL.

**Form of the sign self.** A crucial observation is that all articulations of *self* in the Old ASL corpus were of the variant that uses only one hand. There were no observed uses of *self-one*, the variant that incorporates the nondominant hand. As for the characteristics of the referents, eighty-three of eighty-six uses of *self* referred to human entities (e.g. Clerc, pharaohs, families). One use of *self* referred to an abbey, and the other two referents of *self* were unclear. It appears that it does not matter whether the referent is singular or plural; *self* was used to refer to groups of people in twenty-one of eighty-three instances. Moreover, it does not seem that *self* patterns with specificity and/or definiteness, as *self* was used to refer to both specific and definite individuals (e.g. Lincoln, Clerc, the US Congress) and unspecific, indefinite individuals (e.g. takers of others’ items, a good man).

**Topic-comment structure.** In this section we analyze the topic-comment stage of the syntactic copula cycle in Old ASL, during which ASL did not use copulas with individual-level predicates. Recall the example of the archaic Mandarin topic-comment structure in 31 above: nominal and adjectival predicates are able to function as predicates with the declarative marker *yě*. Similarly, the topic-comment structure in ASL is made possible with the help of affirmative NMMs, like the head nod or dip, that are associated with null copular structures and similar nonverbal constructions (Liddell 1980, Neidle et al. 2000). The declarative marker *yě* and the head nod/dip both indicate that the truth value of the sentence is true and that the two nominal expressions share the same referent. We see this in Old ASL in Figure 6.

Two nominal arguments, ‘the Doone family’ and ‘nobility’, make up the topic-comment structure. There is no overt copula expressing a relation between these two nominal arguments. However, there are two instances of NMMs that come into play here. The first is the head dip immediately following *f-a-m-i-l-y*, which can be clearly observed when the signer signs ‘l’ versus ‘y’ (the last two stills of the fingerspelled word in Fig. 6). This indicates the phrasal boundary after the topic nominal phrase, ‘the Doone family’. The second NMM is the affirmative head nod, noted especially during the sign *noble*. Although this nonmanual expression is slight, it resembles the Mandarin *yě* in that it indicates that the truth value of the pairing of the two nominal clauses is true. Thus, the two arguments are deduced to refer to the same referent. These two NMMs are suggestive of Katz’s interpretation of the topic-comment structure as emphasizing clausal and phrasal boundaries in that the boundaries between the two nominal phrases and at the end of the sentence were emphasized. This is but one example.
More research into the composition of syntactic structures in Old ASL is needed. In conclusion, we assume that the topic-comment structure was used as the dominant strategy for expressing identity and class-membership relations in Old ASL.

**Interim summary.** Analyses of Old ASL utterances provide evidence for the pronoun stage in the lexical copula cycle in ASL. The utterances show that self was used in Old ASL predominantly as a subject third-person pronoun. It appears that only the variant of self expressed in Fig. 1a was used for this function. This illustrates a departure from endophoricity to indexicality characteristic of pronouns. There are also traces of an emergence of a copular self with nominal and adjectival predicates where we see the first instances of the flicker mode. This provided a context for potential reinterpretation and was essential to the rise of the copular structure in PDASL. We further surmise that identity and class-membership expressions in Old ASL used the topic-comment structure, which is the initial stage of the syntactic copula cycle. This would later be eclipsed by the topicalized structure, discussed in §5.3.

5.3. **Present-day ASL.** Fast forward one hundred years to the twenty-first century, and we find four syntactic categories of self used in PDASL: pronominal, emphatic, reflexive, and copular, all four of which were also present in Old ASL. However, we find that self in PDASL is most often paired with individual-level predicates, in contrast to stage-level predicates in Old ASL. This suggests that self’s dominant function as a pronoun in Old ASL has been superseded by its dominant function as a copula in contemporary ASL.

After describing the methodology and the data from the PDASL corpus, we focus on the copular function of self and the difference between variant forms. Next, we elaborate on the topicalized and copular structures of the syntactic copula cycle.

**Methodology.** In order to analyze the syntactic functions of self in PDASL, a small corpus data set was created from multiple sources. First, instances of self were extracted from narratives and sentential elicitations in the National Center for Sign Language and Gesture Resources corpus (NCSLGR) dating from the early 2000s and 2010s (Neidle & Opoku 2020, Neidle et al. 2012, Neidle et al. 2018, Neidle & Vogler 2012). We gathered additional instances from publicly available videos, mostly newscasts, found on social media platforms like Facebook and YouTube. The videos were scrutinized for the sign self in any form or function. The combined PDASL corpus contains 100 instances of self from eighteen fluent signers of varying backgrounds and age of ASL exposure. These utterances were coded and analyzed using the same coding procedure as used with the Old ASL database.

**Functions of self in present-day ASL.** The four functions of self in PDASL are shown in Table 1 above. The main finding is that, of 100 instances of self in the PDASL data, seventy-two are being used as a copula in sentences with individual-level predicates.

**Self as a copula.** The most frequent syntactic function of self is as a copula, accounting for 72% of the data. The copular self in the PDASL corpus appears in only two sentential structures: noun + self + noun and noun + self + adjective. The frequent use of the copular self in PDASL compared to Old ASL is striking and indicative of the lexical copula cycle in ASL.

The first structure is one in which two noun arguments are linked together with a copula, thus equating them, as in Figure 7. Here the signer establishes a class membership, stating that Freda is an actress who has been involved in many plays. There are fifty-seven instances (57%) of a copular self linking two noun arguments.
The second structure pairs a nominal argument with an adjectival predicate. There are only fifteen instances of this structure (15%), all with individual-level predicates. The smaller number of structures with adjectival predicates compared to those with nominal phrases suggests that other adjectives could function as stage-level predicates and therefore not need self as a copula. An example of an adjectival individual-level predicate can be seen in Figure 8.

**Figure 8.** A copular expression with an adjectival predicate and self as a copula (RIT NTID 2018b, 4:22m).

The second structure pairs a nominal argument with an adjectival predicate. There are only fifteen instances of this structure (15%), all with individual-level predicates. The smaller number of structures with adjectival predicates compared to those with nominal phrases suggests that other adjectives could function as stage-level predicates and therefore not need self as a copula. An example of an adjectival individual-level predicate can be seen in Figure 8.

**Figure 7.** An equative expression with two nominal arguments and self as a copula (Neidle 2021).

**Figure 8.** A copular expression with an adjectival predicate and self as a copula (RIT NTID 2018b, 4:22m).

Form of the sign self. In contrast to Old ASL, both variants of self are used in the PDASL corpus. The first variant, without an accompanying nondominant hand (self), appeared thirty-one times, and the second variant (self-one) appeared sixty-nine times. There is no clear pattern with respect to the grammatical function for one or the other variant. But regardless of their syntactic function, all thirty-one uses of self had a human argument, whereas self-one was split between eighteen uses with a nonhuman argument and fifty-one with a human argument. It appears that while grammatical function does not differ between the two variants of self observed in PDASL, there is a semantic distinction regarding human and nonhuman entities. Specifically, self appears to be exclusive to human entities, while self-one can be used for human as well as nonhuman entities (e.g. an event, a fair, alcohol). The use of self variants does not seem to pattern with specificity and definiteness, although this cannot be fully determined due to the nature of the corpus. A majority of the utterances in the corpus derive from news reports, in which arguments are typically specific and definite.

Topicalized structures and the flicker mode. In PDASL, there are instances of topicalized structures, or the intermediate stage of the syntactic copula cycle that is nec-

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16 What we classify as ‘adjective’ is according to parts-of-speech classifications in English, meaning that this may not be the best representation of such lexemes in ASL.
ecessary for the copularization of self. Topicalized sentences consist of a topic and a subsequent comment clause. The topic is first established as common ground and is followed by a clause with a pronoun referring to the topic and a predicate. In ASL, topics are most commonly expressed with raised eyebrows and head movements (Aarons 1996). We provide an example of a topicalized structure with a verbal predicate in Figure 9. Later, we discuss an example of a topicalized structure containing an individual-level predicate that exhibits the flicker mode.

![Figure 9. A topicalized structure with a verbal predicate in ASL (RIT NTID 2018a, 2:08m).](image)

The topic, ‘fair’, is indicated with the raised eyebrows and a head movement toward the side, and a slight nod after the sign. The nod indicates a clausal boundary, after which the comment clause is produced with the self in the subject position anaphorically referring back to the topic. This aligns with the Mandarin example in 32 that used the demonstrative shì to increase the accessibility of the antecedent. But in this example, self is a pronoun because there is a verbal predicate in the comment clause.

![Figure 10. A topicalized structure with an individual-level predicate in ASL (Neidle 2021).](image)

Of the seventy-two instances where self functions as a copula with individual-level predicates in the PDASL corpus, twenty-four occur in topicalized structures (as opposed to copular structures, discussed in the next section). This is exemplified in Figure 10, where the signer produces similar NMMs associated with topicalization—the topicalized subject, alcohol, is accompanied by an eyebrow raise and backward head tilt. The subsequent sign, self, is produced with lowered eyebrows, but the head has not returned to its original position, most likely because the signer anticipated shaking her head simultaneously with the subsequent negation sign, not. The eyebrow lowering marks the boundary between topic and clausal comment. Here we see again the flicker mode with the individual-level predicate; self can fulfill either a pronominal or copular function, shown in 38a and 38b, with a null copula or a null pronoun, respectively.
(38) a. $\text{ALCOHOL}_{i}$, $\text{SELF}_{i}$ $\emptyset$ NOT ALWAYS GOOD(1h)
   ‘Alcohol, it [is] not always good.’

b. $\text{ALCOHOL}_{i}$, $\emptyset$, $\text{SELF}$ NOT ALWAYS GOOD(1h)
   ‘Alcohol, [it] is not always good.’

The topicalized structure is crucial to the copula cycle because it provides two possible syntactic interpretations in a flicker mode. This is necessary for linguistic change in that the topicalized structure triggers the syntactic preference for clausal cohesion over clausal boundaries. This ultimately leads to the increased use of the copular structure.

**Copular structures.** Finally, the copular structure of the syntactic copula cycle consists of a subject and predicate, which is different from topic-comment and topicalized structures in that there is no clausal boundary. This means that we may not see any pauses or accompanying grammatical NMMs. Instead, we only see two arguments (nominal or adjectival) connected by $\text{SELF}$, as in Fig. 7. Of seventy-two instances of $\text{SELF}$ that occurred with individual-level predicates, forty-eight are copular structures (as opposed to topicalized). The frequency distribution of the two $\text{SELF}$ functions again suggests that the shift from topicalized structures to copular structures in PDASL is ongoing. In fact, the higher frequency of copular structures indicates that $\text{SELF}$ may be well established as a copula.

In addition, we present an example in which the copular $\text{SELF}$ is fully realized in a copular structure that is further embedded in a topicalized structure. In Figure 11, which shows example 25 from §3.4 above, the topicalized subject ‘Karen’ is expressed with raised eyebrows and a phrase-final eye blink. The following point (ix-3p) is a subject pronoun referring to the topic, and the $\text{SELF}$ is a copula that predicates the individual-level predicate.

With examples like these, we can observe that the structural emphasis in using $\text{SELF}$ as a copula is on clausal cohesion: $\text{SELF}$ functions to link the subject argument and the individual-level predicate as a copula. These structures clearly indicate that $\text{SELF}$ functions as a copula, and they provide evidence that the copular grammaticalization cycle is present and has been occurring for the past 150 years in ASL.

**6. Discussion.** The use of $\text{SELF}$ in PDASL syntax indicates that it currently functions predominantly as a copula to predicate nonverbal predicates. It conveys expressions of identity and class membership that can be seen most clearly in equative sentences with individual-level predicates. We hypothesized that $\text{SELF}$ originated as a blend of a human classifier and a deictic point. This later evolved into a demonstrative pronoun, as evidenced by its use in Old LSF. Later, $\text{SELF}$ was used as a third-person subject pronoun, which was its dominant function in Old ASL. Analyses of corpus data of contemporary
ASL indicate that self currently functions as a copula. The transitions between the functions align with the lexical copula cycle as outlined in Katz 1996. We also proposed that the syntactic copula cycle as described by Li and Thompson (1977) had a role in shaping self into what it is today. Essentially, the main method used to express identity and class-membership relations in ASL transitioned from topic-comment structures to topicalized structures and finally to copular structures.

6.1. Grammaticalization in sign languages. In the greater scheme of grammaticalization in sign languages, Pfau and Steinbach (2006, 2013) proposed that grammaticalization processes are not differentially modulated by modality, so signed and spoken languages undergo the same processes. The evidence presented here supports this proposal in that the copula cycle, which has been observed in many spoken languages, is also observed in ASL. It remains to be seen whether there are similar copula cycles occurring in other sign languages. An investigation into the variant forms of self showed evidence of periphrasis and renewal, both hallmarks of grammaticalization, taking place in sign languages as well. Next we discuss the involvement of self in the grammaticalization scheme proposed by Pfau and Steinbach (2006).

It clearly appears that self participates in the proposed grammaticalization scheme for pointing signs given in Fig. 2. Again, the beginning stages are observed with our reconstruction of the third-person pronoun in Old LSF, which consisted of a human-being classifier and a deictic point that later became a locative point. The resulting blend with the over-the-shoulder movement in Old LSF as shown in Fig. 4 is construed as the demonstrative pronoun. Next, we find that in the final stages, self is used predominantly as a personal pronoun in Old ASL, which later grammaticalized into the copula used in contemporary ASL.

One conceptual leap, however, that we struggle to explain is the transition from the over-the-shoulder movement seen in il in Old LSF to the double-forward movement in self in Old ASL. We reiterate that the Old LSF dictionary entries are dated to the 1850s, forty years after the emergence of ASL. This means that the form seen in Fig. 4 may not be the same form from which ASL originated. The phonological fusion and phonetic reduction in the Old LSF reconstruction of the human-being classifier and the point may have diverged into two discrete phonological forms, with a difference in their path movements. Despite this ambiguity, we maintain that the same grammaticalization process as shown in the copula cycle and in Pfau and Steinbach’s (2006) scheme in Fig. 2 still applies.

An important point that we make here is that the grammaticalization scheme presented in Pfau & Steinbach 2006 is not restricted to pointing signs. We have shown that self, which is not considered a pointing sign, has grammaticalized along this pathway as well. This indicates that the grammaticalization scheme could be extended to all signs that derive from demonstratives, such as self, regardless of whether they incorporate pointing. We recommend an amendment to this scheme that proposes a final copula stage. However, it remains to be seen whether self can be considered a copular auxiliary, which would align with Pfau and Steinbach’s proposed scheme; see stage 6 in Fig. 2. We also acknowledge the possible use of self as a relative pronoun in ASL relative clauses, as previously mentioned by Fischer and Johnson (2012). Based on our observation that there was very little use of self as a relative pronoun in Old ASL, the relative pronoun function appears to be derived from the personal pronoun. This parallels Dachkovsky’s (2020) analysis of pointing signs in Israeli Sign Language. She argued that the relative pronoun stage in the scheme should be modified to appear after
the personal pronoun stage. Nevertheless, the complex and ambiguous functions of \textit{self} we find here serve to highlight the substantial polysemy of \textit{self}. It is clear that more investigation of the ASL \textit{self}, as well as demonstratives and anaphors in sign languages, is needed in order to facilitate further calibration of the grammaticalization scheme proposed by Pfau and Steinbach (2006).

6.2. Feature economy. The feature economy principles proposed by van Gelderen (2004a,b) state that grammatical operators emerge from the grammaticalization process seen in 39, progressing from an adjunct to a specifier and then to a head. This aligns with Pfau and Steinbach’s (2013) proposal, which adopts Roberts and Roussou’s (2003) perspective that grammaticalization in sign languages is essentially reanalysis upward on the functional structure. More specifically, the \textsc{late merge principle} dictates that lexical items should merge as late as possible, and the \textsc{head preference principle} states that lexical items are preferably interpreted as heads, rather than phrases. Both principles are condensed into the \textsc{principle of feature economy}, summarized in 39.

(39) Minimize the semantic and interpretable features in the derivation, for example:
\[
\text{adjunct > specifier > head > affix} \\
\text{semantic > [IF] > [uF] > [uF]} \quad (\text{van Gelderen 2011:17})
\]

The head preference principle in particular guides perceivers, especially children, to interpret certain ambiguous structures so that items are heads (van Gelderen 2011). We see this with the flicker mode, where \textit{self} could be interpreted either as a pronoun with a null copula or as a copula with a null pronoun. In this case, perceivers would prefer to interpret \textit{self} not as a demonstrative or a pronoun, but as a copula that is a head of the predicate phrase (PrP; Lohndal 2009). Consistent reinterparations over time and across populations in using ASL would lead \textit{self} to acquire a copular function. The corpus evidence fits with the analysis of feature economy.

6.3. Optionality of \textit{self}. Optionality is the reason why the copular \textit{self} appears to evade almost every label assigned to it. Copular \textit{self} is not obligatory in every instance where a subject is linked with an individual-level predicate, as example 40 shows. Here, the use of the copular \textit{self} appears to individuate Lupita in that she is deaf, whereas if the copular \textit{self} is not used, the comment does not seem to do so.

(40) \textsc{my friend l-u-p-i-t-a (self) deaf}.
‘My friend Lupita is deaf.’

We have shown here that the copular \textit{self} is obligatory in equative sentences, where two noun phrases refer to the same entity, as in \textit{Bruce Wayne is Batman}. In the corpus evidence, we have found variations of the equative structure, corresponding to identity and class-membership structures where noun phrases are linked to individual-level predicates. This indicates that there are specific necessary uses of copular \textit{self} that facilitate these grammatical relationships. So, what drives the optionality of copular \textit{self}?

As mentioned above, ASL has been characterized as having no copulas. Other sign languages like British Sign Language (BSL), Australian Sign Language (Auslan), and German Sign Language (DGS) have also been characterized as having no copulas (Johnston & Schembri 2007, Pfau 2008, Sutton-Spence & Woll 1999). As with ASL, data analysis sufficient to determine that there are no copula-like elements in these sign languages is lacking. Nevertheless, if we consider the impact of optionality of copula use in sign languages, this would offer some explanation for why there are widespread descriptions of sign languages as having no copulas. There are several channels in sign
language through which linguistic information can be encoded, namely manual, non-manual, and a combination of the two. The nonmanual channel has had a dominant role in verbless predication, namely with the head nod that indicates affirmation (Johnston & Schembri 2007, Liddell 1980, Puupponen et al. 2015). It is possible that what was once the primary strategy of using the nonmanual channel in producing equative and identificational sentences has been superseded by using the manual channel or a combination of both, as we see in ASL and in FSL, respectively (Jantunen 2007). Similarly, the age, community, and registers of sign languages could have an impact on differential copula use in a sign language.

Jantunen (2007) and Jónsson et al. (2015) reported that the copulas in FSL and ÍTM were optional. Jantunen states that, with a proper modification of nonmanual expressions, $pi$ can be dropped from the sentence without any changes to its propositional meaning. Likewise, in ÍTM, the copula-like element $bidd$ can be omitted by substituting it with a head nod. Alternatively, the head nod may be coarticulated with $bidd$ in a sentence. This closely aligns with the FSL $pi$ in that both are considered to be pragmatic particles expressing affirmation, and thus are optional when a head nod is present. Here we see that these signs are optional and that there are concrete strategies for expressing such constructions without a manual sign. What role do the manual signs play in such constructions as these?

For this question, we look to McGregor’s (2013) optionality framework, which is based on the joint-attentional framework advanced by Tomasello (2003). Here, McGregor’s claim is that the ‘use of the item is associated with making it—or something nearby—prominent, drawing attention to that item, while non-use is associated with demoting it, and relegating it to the background’ (2013:1148). He elaborates, stating that the use or nonuse of an item may be coded to either positive and negative valences of either prominence or backgrounding. For instance, the use of a deemphasizing optional element could be associated with a positive valence for backgrounding an item, and the nonuse of an emphasizing optional element could code to a negative valence for backgrounding an item. In ASL, it appears that the signer uses $self$ to foreground a subject, namely ‘Lupita’ in example 40 above, and subsequently characterizes the subject with individual-level predicates, or ‘deaf’. This aligns with why $self$ often carries emphasis for many signers: it may actually be foregrounding, and thus individuating, the subject. Looking into the optionality of $self$ in differing contexts may reveal more about its function, but this requires further study.

Foregrounding subjects naturally lends itself to discourse contexts. $Self$ may play a prominent role in the introduction of referents and new information. We know that ASL signers prefer to use full noun phrases in order to introduce new referents into discourse (Frederiksen & Mayberry 2016), which aligns with the fact that $self$ rarely appears without a preceding subject noun. This means that if the copular $self$ appears with a preceding subject noun phrase, it does so with newly introduced referents. So, on the discourse level we suspect that the copular $self$ is primarily used to introduce new information about a newly introduced referent.

Another potential use of the copular $self$ in discourse is locus establishment. $Self$ is no longer reliant upon locus for production due to its decreased phi-features from semantic bleaching. However, it appears to retain some of its locative features because it seems to be capable of establishing loci for the subsequent use of the pronominal point, which is sometimes reliant on locus (Frederiksen & Mayberry 2021). This would explain our unattested observation that the use of $self$ drops dramatically after the initial introduction of a referent. It may be that $self$ is primarily used for the introduction of
referents and loci. Likewise, because self is often seen in the embedded subject position (see 13), we suspect that it is used to refer to the most recently mentioned referent, which is also seen in Fig. 5. Further study of discourse mechanisms modulating the use of self is needed to paint a fuller picture of copula use and pronominal focus in ASL.

6.4. Genre differences. The PDASL corpus consists of eighteen fluent signers of varying backgrounds, suggesting that the use of self is not idiosyncratic to certain language subpopulations. However, a key factor to consider with the corpus data is the context in which the signers produced the utterances. We acknowledge that genre differences have an impact on the use of self (Wilkinson 2013a,b). Wilkinson compared the total incidences of self ($n$) and the number produced per minute (self/min) across three genre categories: narratives, monologues (broken into presentations and vlogs), and dialogues. She found that the highest rates of use of self per minute were in vlogs, with a total of 104 selfs in 287.2 minutes, or 0.36 selfs per minute. Vlogs usually consist of one signer signing directly to a camera about a topic, which naturally includes maximal informativeness about that topic. Also, because the typical vlog is filmed without any audience, the signer may alter their pragmatic and spatial use of language in order to accommodate the lack of backchanneling as well as the possible lack of shared knowledge. The prevalence of self in vlogs over narratives (0.02 instances of self per minute) strengthens our proposal that self as a copula is somehow used to introduce new information or establish a common ground. This aligns with the informativeness of many equative sentences that are often used in newscasts and vlogs. Meanwhile, dialogues used self at a rate of 0.24 instances per minute, or a total of ten selfs in forty-one minutes, which suggests less pressure on signers to be maximally informative due to having a conversational partner who can backchannel. More study is needed to analyze the behavior of self in two-person conversations.

Finally, the copular function of self is a relatively recent phenomenon. Only two instances were observed in the Old ASL data set, which marked the beginning of the transition into the copula stage. Video data dating from the 1920s through the 1970s is required to help further confirm the copula cycle in ASL. According to our present hypothesis, the additional data would be predicted to include a number of instances of self in both topicalized and copular structures in the 1950s or so. Topicalized structures should be more frequent than copular structures from this time period, which could help explain linguistic descriptions from the 1970s of ASL having no copula. Moreover, if there is an ongoing copula cycle in ASL, as proposed and demonstrated here, there should be some future point where the copular self ceases to be used. In exchange, other lexical items will undergo the copula cycle to become copulas themselves.

In conclusion, the copula cycle in ASL is a grammaticalization process not previously described in a sign language. The presence of such a grammaticalization process demonstrates that sign languages undergo evolutionary processes similar to those of spoken languages (Pfau & Steinbach 2006, 2013). This means that the same forces of linguistic change observed in spoken languages also motivate linguistic change in sign languages.

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