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Marjorie G. Herbert

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Abstract

Like many other spoken and signed languages, German Sign Language (Deutsche Gebärdensprache, DGS) displays variation in surface form of the plural marker. This allomorphy is phonologically conditioned, triggered by particular phonological properties of the lexical sign to which the plural marker attaches (Pfau and Steinbach 2005, 2006). Since the overt realization of this marker is licensed to a small set of nouns in the language with the proper phonological properties, the majority of lexical signs are left bare, or zero-marked, when the simple plural is formed (2005, 2006).

According to Pfau and Steinbach (2005), there are a number of what they call “alternative pluralization strategies” available in DGS as a repair for this underspecification in the simple plural, including classifier constructions, spatial localization, and number phrases. These constructions are available for use with any lexical sign, regardless of whether the canonical plural marker can be overtly realized with that noun. When used in conjunction with a zero-marked plural, they argue, these constructions serve as alternative means for expressing a plurality of referents.

I propose that a new morpheme for plural marking is entering into the language and that it is drawn from the classifier system already available in DGS. This new morpheme attaches only to nouns with phonological features blocking the realization of the canonical plural in some way. For this reason, I conclude signers are beginning to use the classifier-based morpheme as a repair for this underspecification.

A New Classifier-Based Morpheme in German Sign Language (DGS)

Marjorie G. Herbert*

1 Introduction

Like many other spoken and sign languages, German Sign Language (Deutsche Gebärdensprache, DGS) displays variation in surface form of the plural marker. This allomorphy is phonologically conditioned, triggered by particular phonological properties of the lexical sign to which the plural marker attaches. Since the overt realization of this marker is licensed to a small set of nouns in the language with the proper phonological properties, the majority of lexical signs are left bare, or zero-marked, when the simple plural is formed (Pfau and Steinbach 2005, 2006).

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I propose that a new morpheme for plural marking is entering into the language and that it is drawn from the classifier system already available in DGS. This new morpheme attaches only to nouns with phonological features blocking the realization of the canonical plural in some way. For this reason, I conclude signers are beginning to use the classifier-based morpheme as a repair for this underspecification.

The paper is structured as follows. In Section 1, the language community this analysis draws on and the formation of the canonical simple plural, as well as its relevant syntactic and semantic properties, are described. Section 2 briefly outlines alternatives to the simple plural for expressing plurality, whereas Section 3 presents the new classifier-based morpheme and how it differs crucially from classifier constructions. Finally, Section 4 discusses the possible implications this new proposal might have for future research on the language.

1.1 The Language

DGS is the indigenous sign language of Germany. It is a minority language, with approximately 50,000 native signers (Lewis 2009). Like most sign languages, the precise origins and genealogy of DGS is unclear. It shares commonalities with French Sign Language (LSF) and other European sign languages, including Polish, Swiss German, and Austrian Sign Language. On account of the very small amount of historical documentation of DGS, it is unclear whether its relation to these other European sign languages is incidental or genetic (Lewis 2009).

The historical development of DGS is intimately related to the deaf education system in Germany (List 1994). After 1880, the “German Method”, or oralism, dominated in Europe and especially in Germany. This method required deaf children to learn to communicate in the oral-aural modality and actively suppressed signing of any kind. Oralism did not cause DGS to cease to exist, but the fact that little is known about the historical development of DGS is a consequence of this oppression. The degree of standardization of DGS, the participation and/or acceptance of it by deaf people in Germany, and the consolidation of language levels around the country cannot be compared with that of more well-described and recognized sign languages, like American Sign Language (ASL) (Zeinert 1994). The consequential diversity of sign language used by deaf Germans has been an impediment to DGS becoming the national language of the deaf in Germany. In any case, the present study focuses on the Berlin variety of DGS, as informed primarily by two hearing signers born to deaf parents (CODAs). Further research is needed to determine whether the findings in this work are representative of a general trend within the language.

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1.2 The Canonical Plural in DGS

1.2.1 Formation

DGS displays three different allomorphic forms of the plural marker. Multiple realizations of the plural are common in the world's languages, both signed and spoken. In many languages, the morphological realization is entirely determined by phonological properties of the noun to which it affixes. For example, in English, the plural suffix sometimes assimilates characteristics of the final sound of the noun to which it is attached, as seen in (1).

(1)	singular	plural	gloss
a.	[bʌ:z]	[bʌ:zɪz]	'buzz'
b.	[bʌ:d]	[bʌ:dʒ]	'bud'
c.	[bʌ:t]	[bʌ:tʃ]	'butt'

The plural /s/ marker has three different realizations, based on the phonetic environment into which it is inserted. It assimilates the [voice] feature of the sound it follows, becoming voiced when it follows voiced sounds (1a–b) and voiceless when it follows voiceless sounds (1c), and a vowel is epenthesized when it attaches to a noun whose final consonant is a sibilant (1b). Thus, the voicing feature, as well as the manner of articulation of the final consonant, determine the realization of the plural marker.

Similarly, in DGS, sideward reduplication is considered the underlying form of the plural, but the surface realization of that marker often differs from this form. The more reduced form of this plural, simple reduplication, is an alternative realization. The final realization of the plural marker is no realization, or zero-marking; the plural form is identical to the singular form of the noun (Pfau and Steinbach 2005, 2006).

Signs in which the base form is specified for a location in the lateral signing space (i.e., the space on or near the periphery of the body on the signer's dominant side), such as CHILD in Figure 1a, display sideward reduplication in the plural. To complete sideward reduplication, a signer must first articulate the noun as it would appear in the singular form, i.e., the citation form of the lexical sign is produced. Next, the sign is rearticulated at a location slightly further out laterally from the body in the signing space, meaning the signer moves the hand(s) away from the body. Finally, the sign is rearticulated a third time at a location even further away from the body laterally to complete the articulation of the plural form. Thus, the sign is reduplicated twice, for a total of three articulations of the base sign.

For example, Figure 1 illustrates the singular and plural forms of the sign CHILD. To articu-

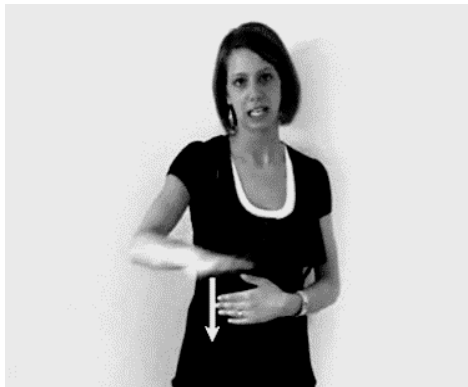


Figure 1a: CHILD.



Figure 1b: CHILDREN.

ate CHILD, the signer uses a 'B' handshape, in which all fingers are together and extended, with the palm facing downwards. She then moves this hand (the primary articulator; H1) down vertically, coming to rest at hip level. In the plural sign CHILDREN, the citation form of the singular noun (Figure 1a) is produced; Then H1 moves in an arc-like motion to a location laterally dis-

played away from the body and slightly downwards from its original position. This move is then repeated; H1 moves in an arc-like motion from position 2 to a third position, which is laterally further away from the body and slightly lower than position 2.

This movement pattern is particular, in that it is executed without internal pauses. The signer transitions from one articulation of the sign to the next, forming one fluid movement. Furthermore, the path of the movement between the articulations of CHILD is highly arced, such that H1 appears to ‘bounce’ between the articulations of CHILD. This motion is in contrast with how a signer would articulate three separate instances of the singular form of the sign CHILD in a row. To accomplish this, the signer would need to pause at the bottom-most point of each successive articulation of CHILD before moving on to the proceeding articulation. Furthermore, the movements between each articulation would display a straighter path than in the plural sign CHILDREN. This is to say the simple plural as articulated through sideward reduplication is distinct from other expressions of plurality not only in meaning, but also in form.

The second realization of the canonical plural marker, simple reduplication, is executed through three articulations of the base noun. In this way, it is similar to sideward reduplication, in that three total articulations of lexical sign are typically observed. Nouns that are specified for a location on or about the midsagittal plane, such as BOOK in Figure 2a, display simple reduplication in the plural. Simple reduplication is distinct from sideward reduplication because it is not specified for movement. Whereas a signer moves her hands laterally through the signing space in between articulations within sideward reduplication, simple reduplication requires the articulators to maintain a fixed position throughout the reduplication process.

For example, to articulate BOOK, the signer begins his articulation with two ‘B’ handshapes,



Figure 2a: BOOK, initial position.

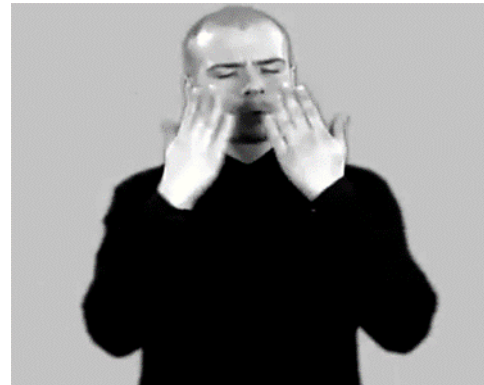


Figure 2b: BOOK, final position.

palms oriented towards one another in the middle of the chest (Figure 2a). Next, he rotates the hands at the wrist away from one another ninety degrees, coming to rest with the palms facing the body (Figure 2b). To form a simple plural with BOOK, the signer would articulate the singular form of BOOK (Figure 2a, b), then reduplicate that form twice, while maintaining the same position in the signing space, for a total of three articulations.

All other lexical signs, or signs that do not fall into the category of lateral nouns or midsagittal nouns, display zero-marking in the plural. Neither sideward reduplication nor simple reduplication are available to these signs.

1.2.2 Semantic Properties

Sideward reduplication and simple reduplication serve a grammatical, not a lexical purpose. When a signer reduplicates the base noun in these noun phrases, the lexical meaning of the noun is not repeated; rather, the simple plural is expressed. For example, in example (3b), the semantics expressed by three articulations of CHILD is not ‘three children’, but ‘children’, more generally. This type of grammatical reduplication is attested in signed and spoken languages alike. For example, Walpiri makes use of reduplication for plural marking in a very similar way. The reduplic-

- (2) a. kurdu
 ‘child’
 b. kurdu-kurdu
 ‘children’
- (as cited in Pfau and Steinbach 2006)

ation of ‘child’ in (2b) gives a simple plural interpretation, ‘children’, rather than a reduplicated lexical interpretation. In fact, DGS does allow for a type of lexical reduplication, referred to as spatial localization (Pfau and Steinbach 2005). In this type of construction, a signer will articulate a lexical sign at several different locations within the signing space, and the number of articulations corresponds directly to the number of referents the signer is referring to. For example, if the signer in Figure 2 articulated CHILD three times, within the context of a spatial localization construction, she would be referring to three children. Crucially, however, spatial localization introduces an added semantic meaning that the simple plural does not; it indicates a spatial relationship among referents and introduces a predicative interpretation that is not available to the simple plural (2005). In the CHILD example, if the signer articulated CHILD three times while moving H1 laterally through space, as described above, the interpretation would be ‘three children standing next to one another’. This distinction is illustrated in example (3). In (3a), the simple plural interpretation is achieved; however, in (3b) the spatial relationship among referents and a predicative semantic are implied.

- (3) a. CHILD CHILD CHILD simple plural and simple reduplication
 ‘children’
 b. CHILD CHILD CHILD spatial localization
 ‘There are three children standing next to one another.’

Examples (3a) and (3b) are distinct in form, as well as meaning. Example (3a) would be articulated just like Figure 1b, with a fluid, bouncing movement pattern. Example (3b), on the other hand, requires the more disjointed reduplication described for separate articulations of the singular form of CHILD. The signer would need to pause at the bottom-most point of each successive articulation of CHILD before moving on the proceeding articulation.

2 Alternative Constructions for Expressing Plurality

2.1 Classifier Constructions

The restrictions on the overt realization of the plural marker leave the majority of nouns bare in the plural, for it is a small subset of lexical items that allow the canonical plural morpheme to attach in the plural form. Consequently, classifier constructions are often used to express plurality in conjunction with both nouns that display zero-marking in the plural and nouns that have the overt realization of the plural marker available to them (Pfau and Steinbach 2006).

2.1.1 Form

Many if not all sign languages make use of classifier constructions. In sign languages, classifiers are handshapes that can be used to represent a noun in the signing space (Sandler and Lillo-Martin 2006). According to Sandler and Lillo-Martin, classifiers display characteristics of the referent they stand in for within a discourse. Once a signer has articulated a particular nominal sign, she can then use a classifier construction to represent how that person or thing moves, what he, she, or it looks like, and/or where the noun is located in space. Furthermore, a classifier cannot represent a sign that has not already been introduced into the discourse (Keller 1998).

The morphological composition of a classifier construction is not arbitrary but meaning-bearing; the form and function of the classifier varies according to what object or action it is meant to represent (Supalla 1982). Classifier constructions tend to represent the most visually salient characteristics of the objects they are meant to represent, like flatness or roundness, orientation in space, and characteristic movements or actions of that object (Hong 2008). Accordingly, no one

classifier can represent all referents in DGS. Each type of classifier has a group of nouns that it could potentially represent, while all other nouns are excluded from representation by that classifier.

Supalla divides the set of classifiers in American Sign Language (ASL) into two categories: size-and-shape specifiers (SASSes) and “semantic” classifiers. SASS constructions represent a referent by mimicking its physically most salient characteristics. SASSes represent the physical dimensions of their referents in two ways: by moving the articulators to trace the outline of an object or by arranging the hand into a configuration that is physically reminiscent of the referent. Semantic classifiers represent the whole entity of the referent they are meant to represent, rather than just parts of it (Supalla 1982). For this reason, semantic classifiers are sometimes referred to as ‘whole entity classifiers’. I have adapted Supalla’s classification system for DGS because it seems to describe the data I have seen well.

An example of a semantic classifier is the classifier for human or person arguments, the Personal Agreement Marker (PAM). PAM in sign languages is a morpheme that can be used to represent the whole category of lexical referents that denote human entities (Herrmann 2010). In DGS, this marker appears to have been grammaticalized from the noun PERSON (Figure 3).



Figure 3: Personal Agreement Marker (PAM).

It also patterns similarly to the other whole entity classifiers, and the patterns emphasized within the paradigm of the PAM construction can be applied to the remaining whole entity classifiers in DGS. PAM is articulated with a handshape in which the index finger and thumb are selected and slightly bent. This handshape is moved vertically downwards to the upper abdomen level to complete the sign. To use PAM in a plural construction, a signer first articulates the base noun. Then, he articulates PAM a certain number of times, according to how many referents are being represented. For example, to articulate three men using a PAM construction, a signer would first articulate the citation form for the singular sign MAN, then follow this sign with three articulations of PAM.

2.1.2 Semantic Properties

Though classifiers in DGS are versatile in their ability to describe the NPs to which they correspond, they invariably assign a definiteness and a location in the signing space to those NPs. For example, if the [+FLAT] classifier (CLFLAT) used for flat objects were signed two times in a similar location in the signing space, the interpretation in (4) would follow.

- (4) BOOKS CLFLAT CLFLAT
 ‘There are two books lying next to each other.’

Similar to spatial localization constructions, classifier constructions define a spatial relationship among the referents represented, as well as a predicative semantic.

2.1.3 Syntactic Properties

In DGS, classifier constructions are unlike numeral classifiers for several reasons. Numeral classification is the marking of a number of entities by combining a number or quantifier with a noun that is countable (Pfau and Steinbach 2006). For example, two numeral classifier constructions can be seen in (5).

- (5) a. TWELVE BOOK
 'twelve books'
 b. MANY BOOK
 'twelve books'
 c. THREE BOOK CL_{FLAT} CL_{FLAT} CL_{FLAT}
 'There are three books lying next to one another.'
 d. BOOKS CL_{FLAT} CL_{FLAT} CL_{FLAT}
 'There are three books lying next to one another.'

As (5a) and (5b) illustrate, DGS does not have NP-internal number agreement (Pfau and Steinbach 2006). BOOK is a midsagittal noun that would normally allow the realization of the plural marker in the form of simple reduplication, but it is left bare in both examples. Therefore, it seems the introduction of a numeral or a quantifier blocks the realization of the plural marker on the midsagittal noun BOOK. On the other hand, numerals do not affect the reduplication of classifier, as illustrated in (5c) (Pfau and Steinbach 2006). Since the reduplication of the classifier is not blocked, the classifier construction must be external to the NP. Furthermore, not only are classifiers NP-external, they also do not form a NumP with nominal signs, for in (5d), the realization of the internal plural on BOOKS is not blocked by the reduplication of the classifier CL_{FLAT}. Thus, classifier constructions clearly fulfill a syntactic function that is different from that of numeral classifiers.

With this discussion, it is important to note that the classifier construction can be used in combination with any of the five noun classes. It is not confined to the set of nouns for which overt realization of the plural marker is blocked, and therefore it is not used for the sole purpose of expressing plurality where the overt realization of the plural marker is blocked. Example (5) shows that the midsagittal noun BOOK can be used in conjunction with classifier constructions even though it already displays the internal plural marker.

3 New Proposal

3.1 The New Classifier-Based Plural Morpheme

I argue, based on my original fieldwork, that DGS signers can make use of a new classifier-based morpheme, in conjunction only with nouns that have no overt realization of the plural marker. I argue that signers are adopting the classifier-based morpheme in the plural as a repair for underspecification of the canonical plural marker.

This classifier morpheme takes the form of a sideward reduplicated version of a classifier handshape already available in the language. For example, the noun WOMAN displays zero-marking in the plural. To pluralize this noun using the new classifier-based morpheme, a signer would use one of the classifiers licensed for the class of human animate entities, such as the personal agreement marker or PAM. In this instance, the reduplicated PAM is articulated in one fluid motion (Figure 4). There are no internal pauses between each successive articulation of the singular sign PAM, as there would be in a classifier construction, and the path movements between each articulation are arced, similar to the path movement internal to the articulation of the laterally reduplicated canonical plural marker (Figure 1b).



Figure 4: Motion pattern, new classifier-based morpheme.

The signer would first articulate the noun, WOMAN, followed by three rapid articulations of PAM. As a signer executes these articulations, she moves her hand laterally in the signing space. A typical classifier construction involves disjointed productions of the classifier, similar to the movement pattern described for spatial localization constructions.

By contrast, in a classifier construction, internal pauses would occur between each successive articulation of PAM. At the bottom-most point of the motion that defines each singular articulation of PAM, the signer pauses slightly before continuing on to the next repetition of PAM. Accordingly, the path movement between each articulation is not arced like the path movement internal to the articulation of the laterally reduplicated plural marker. In this instance, the path movement between articulations of PAM is more or less straight (Figure 5).



Figure 5: Classifier, disjointed reduplication.

In the example above, each articulation of PAM represents a particular woman in the phrase ‘three women’, so in this respect, the classifier construction behaves like a conjunctive phrase. While the articulation of the internal plural marker (i.e., sideward reduplication or simple reduplication) represents the plurality of referents as a group, one individual in the classifier construction is represented by one articulation of PAM. In turn, each PAM morpheme is connected to the same base nominal sign, so it seems that the three are connected to one another conjunctively.

At the same time, the new classifier-based morpheme is not as restrained in its form as the canonical plural marker. It can reduplicate a greater or lesser number of times than the triplication that the canonical marker prescribes. In fact, the number of times the new classifier-based morpheme is articulated within this paradigm is used productively. If a signer wishes to emphasize the fact that the number of referents being represented is large, she might articulate the classifier-based morpheme four or five times (Figure 6).

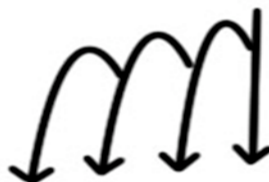


Figure 6: Large plurality of referents represented by the new classifier-based morpheme.

Therefore, one might argue that the new classifier-based morpheme can reduplicate freely, since it

does not seem to be constrained by the same kind of phonological rules that govern the internal plural marker. Further research is needed to test what constraints on reduplication, if any, apply to this new morpheme.

3.2 Evidence for the Classifier-Based Morpheme

In the data analyzed for this work, whenever the reduplicated PAM morpheme appeared, characterized by this fluid motion, the individuals designated in that phrase were always referred to as a group. Furthermore, the number of articulations of the PAM handshape did not necessarily correspond to the number of referents designated, and no special spatial relationship among these referents seemed to be implied.

Examples (6a) and (6b) illustrate the ambiguity that obtains between the singular and plural forms of a noun with zero-marking in the plural, such as WOMAN. In (6d), we see a traditional classifier construction, which can serve as a potential repair for the underspecification in (6b), and the expected reading for a classifier construction is achieved. The phrase is predicative, and it conveys a spatial relationship among the referents. However, this rapid articulation of PAM is represented with underscores to indicate that the production of each successive PAM is much more fluid than it would be in a typical classifier construction.

- (6) a. WOMAN
 ‘woman’
 b. WOMAN
 ‘women’
 c. WOMAN PAM_PAM_PAM
 ‘women’
 d. WOMAN PAM PAM PAM
 ‘There are three women standing next to each other.’

Example (6c) represents an instantiation of the new classifier-based morpheme. Here, in contrast with (6d), the expected classifier reading is not available.

To reiterate, classifier constructions can be used in conjunction with any noun, although they are commonly used in conjunction with nouns that display zero marking. Interestingly, the new classifier-based morpheme was unattested with midsagittal nouns. Whenever a classifier construction was applied to a midsagittal noun, it was always the disjointed reduplication form of that classifier, and the simple plural reading of the midsagittal noun plus a reduplicated classifier. Finally, no lateral nouns were observed in conjunction with classifier constructions, though the combination could very well be possible. My consultants could not agree on whether a lateral noun with a classifier would be grammatically acceptable.

I argue that this classifier-based morpheme is a new morpheme and not a classifier construction because it is not available in certain contexts where a typical classifier construction would be allowed to occur. For example, when a noun is embedded within a quantifier or numeral phrase, plural marking on the head noun is blocked (7a), but a classifier construction may appear after the noun has been articulated (7b). Similarly, even if a classifier construction is conjoined to a numeral or quantifier phrase, the canonical plural marker (represented by the plural form WOMEN in 7c) may not appear within that phrase.

- (7) a. MANY CHILD
 ‘many children’
 b. MANY CHILD PAM PAM PAM
 ‘There are many children standing next to one other.’
 c. *MANY WOMEN PAM PAM PAM
 ‘There are many women standing next to one another.’
 d. *MANY WOMAN PAM_PAM_PAM
 ‘many women’

Finally, when a noun with properties that block overt realization of the canonical plural marker is

embedded within a quantifier or numeral phrase, the new classifier-based morpheme is also not allowed (7d).

4 Discussion

DGS, like any other natural language, must balance ease of articulation on the one hand with the clarity of that articulation on the other. In the case of plural marking, the difficulty of interpreting underspecified, bare nouns in the plural might be motivating the introduction of the new classifier-based plural marker in cases where phonological constraints block the overt realization of the canonical plural marker.

With respect to classifiers, it has been demonstrated that the classifier handshape can be used in a variety of productive ways. It can be used to represent a definite number of referents, in which case the path movement between articulations of the classifier is disjoined by pauses, or it can be used to represent a more ambiguous number of referents, in which case the articulation of the reduplicated classifier is one continuous motion. The former usage is representative of a canonical classifier construction, while the latter usage represents a new classifier-based plural marker construction. Thus, nouns that traditionally display zero-marking in the plural (when the canonical plural marker is affixed to them) now have two alternatives to the canonical plural marker construction, a new classifier-based plural marker construction and a canonical classifier construction, from which the former is derived. Constructions with the new classifier-based plural marker have the added benefit that they seem almost identical semantically to constructions in which the canonical plural marker is overtly realized.

With respect to midsagittal nouns, something unexpected occurs. While the classifier can be used to represent a finite number of referents, it also can be and is used to represent a non-finite plurality of referents with no implied spatial relationship, in a new classifier-based morpheme construction. This is surprising because the overt realization of the canonical plural marker is not blocked to these nouns, so they already have a strategy available to them that allows them to pluralize with overt marking. Furthermore, when this type of laterally reduplicated classifier is used in conjunction with a midsagittal noun, it blocks the realization of the morphological plural marker on that noun. Thus, in this instance, it seems that the classifier is replacing the function of the plural marker that is licensed to these nouns. Table 1 summarizes these findings.

Noun class	Plural Realization	New CL-based morpheme	Classifier Construction
Lateral	Sideward reduplication		√
Midsagittal	Simple reduplication	(√)	√
Body-anchored	Zero marking	√	√
Complex movement	Zero marking	√	√
Compound	Zero marking	√	√

Table 1: Plural marking and phonological noun class.

Notice, nouns specified for a lateral place of articulation, for which the canonical plural marker is freely realized, can co-occur with classifier constructions. They cannot co-occur with the new classifier-based morpheme, characterized by a fluid, bouncing movement pattern and the simple plural reading. Midsagittal nouns, for which the lateral movement of the canonical plural marker is blocked, display simple reduplication in the plural, and can co-occur with both the classifier-based morpheme and more traditional classifier constructions. All other phonological noun classes, body-anchored nouns, nouns with complex movement, and compound nouns, for which the realization of the canonical marker is blocked, can co-occur with both the classifier-based morpheme and classifier constructions.

5 Conclusion

As demonstrated in this paper, there are many strategies for expressing plurality in DGS. In addition to the plural marker that occurs overtly on some nouns, there is a rich classifier system that signers use to express plurality and spatial relationships among referents. In the case of nouns that are bare in their plural form, a morpheme based on classifier handshapes seems to be emerging in order to overtly realize plural without implying a particular spatial configuration of referents.

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Department of Linguistics
 University of Michigan
 Ann Arbor, MI 48104
 mgherb@umich.edu