REGULAR ARTICLE

Cross-linguistic variation in space-based distance for size depiction in the lexicons of six sign languages

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This paper presents a semiotic study of the distribution of a type of size depiction in lexical signs in six sign languages. Recently, a growing number of studies are focusing on the distribution of two representation techniques, i.e. the use of entity handshapes and handling handshapes for the depiction of hand-held tools (e.g. Ortega et al. 2014). Padden et al. (2013) find that there is cross-linguistic variation in the use of this pair of representation techniques. This study looks at variation in a representation technique that has not been systematically studied before, i.e. the delimitation of a stretch of space to depict the size of a referent, or *space-based distance for size depiction*. It considers the question whether the cross-linguistic variation in the use of this representation technique is governed by language-specific patterning as well (cf. Padden et al. 2013).

This study quantifies and compares the occurrence of *space-based distance for size depiction* in the lexicons of six sign languages, three of Western European origin, and three of West African origin. It finds that sign languages differ significantly from each other in their frequency of use of this depiction type. This result thus corroborates that the selection and distribution of representation techniques does not solely depend on features of the depicted image, but also on language-specific patterning in the distribution of representation techniques, and it adds another dimension of iconic depiction in which sign languages may vary from each other (in addition to the entity/handling handshape distinction). Moreover, the results appear to be areally defined, with the three European languages using this representation technique significantly more often than the three African languages.

Keywords: typology of iconicity, African sign languages, iconic patterning in the lexicon, areal features in sign languages

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1. Introduction

Adamorobe Sign Language (AdaSL), a Ghanaian village sign language (Nyst 2007) differs from other sign languages in its expression of size and shape (Nyst 2007, 2016a).[1] One of these differences seems to concern the frequency of a particular representation strategy in the lexicon of AdaSL, that is, the frequency with which entities are depicted by showing their outline. The main aim of this study is to test the impression that outline depiction – defined more narrowly as *space-based distance for size depiction* later in this article – is less frequent in lexical signs in AdaSL than in Sign Language of the Netherlands (NGT).

The use of iconicity is a hallmark of the lexicons of many, if not all, natural sign languages. Despite this, the nature and patterning of iconic mappings in sign languages has only recently begun to be studied on a larger scale, predominantly looking at the distribution of two representation techniques (i.e. the selection of handling or entity/instrument handshapes) for the depiction of hand-held tools. Quantitative analysis of this complementary pair of representation techniques has revealed both inter- and intra-linguistic variation in patterning, also in comparison to the gestures of hearing non-signers. Singling out and quantifying the distribution of these two representation techniques has proven to be a fruitful approach. It should encourage us to systematically study the distribution of other representation techniques as well. This article seeks to do so by systematically quantifying and comparing the use *space-based distance for size depiction* in lexical items in NGT and AdaSL. To benchmark the variation between AdaSL and NGT, a further four languages are added to the comparison, i.e. Australian Sign Language, French Sign Language, Malian Sign Language, and Bouakako Sign Language.

Section 2 presents the background literature, including a discussion on the variation in representation techniques in Section 2.1, on size depictions in the lexicon of AdaSL in Section 2.2, and on a theoretical model of size and shape depiction in Section 2.3. Section 3 presents the methodology. The results are presented in Section 4 and discussed in Section 5. Finally, the conclusion is presented in Section 6.

1. For a list of abbreviations of sign language names used in this article, see Appendix II.

2. Background

2.1 Variation in representation techniques

In the past years, there is a renewed interest in how iconicity shapes sign languages (Perniss et al. 2010). A defining characteristic of linguistic iconicity is the mapping of linguistic forms on meanings, whereby the forms bear some resemblance to a sensory image associated to the meaning (see Taub (2001) for sign languages). In her Analogue-Building model of iconicity in sign languages, Taub (2001) states that the process of mapping iconic forms onto meaning includes the selection of an image associated to the referent, the schematization of that selected image, and the matching of the schematized image with the resembling language forms. One of the open questions is which factors determine the mapping of linguistic forms on sensory images, and to what extent these factors are language-specific.

Recently, a growing number of studies have addressed the question of systematic patterning in iconic forms in sign languages. A particularly fruitful approach has been to look at the representation techniques selected to depict hand-held tools, which are commonly either the use of a handling handshape handling the virtual tool, or an entity handshape embodying the tool. For the representation of a pen, this could mean a handshape with the index contacting the thumb and making a writing movement, or a straight index depicting the long cylindrical shape of a pen, respectively.

Different groups of signers are found to differ in their preference for one representation technique over the other. This difference may simply be a cross-linguistic difference, e.g. between New Zealand Sign Language and American Sign Language (Padden et al. 2013). The difference may also correlate with age, with deaf children (and their parents) using more handling depiction than deaf adults without deaf children (Ortega et al. 2014). Cross-linguistic differences in this respect have also been identified in the gestural representation of hand-held tools by hearing non-signers. Interestingly, a comparison of the gestural representations by hearing non-signers with the signed representations by deaf signers in the same area suggests a systematic mismatch between gestural and signed representations. Padden et al. (2013) interpret these results as an indication that emerging sign languages may restructure their gestural input and use the selection of representation techniques for a linguistic purpose, e.g. to mark the distinction between nouns and verbs.

Earlier studies have shown a similar exploitation of the distinction between handling and entity handshapes for linguistic purposes, that is, for signaling transitivity in the context of classifier predicates of motion. Thus, entity handshapes are used in predicates conveying intransitive motion and handling handshapes in those conveying transitive motion. This alignment of representation technique with the linguistic function of marking transitivity is found in NGT (Zwitserlood 2003) and German Sign Language (Perniss 2007) and seems to be common across sign languages (Zwitserlood 2012; Brentari et al. 2015). Note that AdaSL – again – provides an exception to this pattern, as motion signs expressing intransitive motion in this language typically have invariant handshapes. Thus, intransitive motion is typically conveyed by a closed set of so-called generic directionals, such as GO, COME, and ENTER, that do not morphologically agree with the moving referent, optionally embedded in a serial verb construction (Nyst 2007: Chapter 5).

If significant variation is found that is independent of grammatical function in the distribution of representation techniques in the lexicon, this sheds light on the mapping process as proposed by Taub (2001). It shows that this process is not solely defined by features inherent to the referent, such as its size and shape features. More research is needed to identify which additional factors influence the mapping process across languages. Identifying and charting cross-linguistic variation in representation techniques other than the handling/entity variation opens up new windows on the mapping process. A good candidate for variation in another type of representation technique concerns size depiction in the lexicon of AdaSL.

2.2 Avoidance of outline depiction in Adamorobe Sign Language

AdaSL appears to disprefer the use of outlining of a size and shape for depiction and to differ in this respect from European sign languages such as NGT as well as American Sign Language (ASL). This impression is based on the recurring observation that concepts for which NGT and ASL signs make use of space-based size depiction are represented differently in AdaSL. The AdaSL signs for these concepts in some cases make use of an entity handshape that substitutes or embodies an object, i.e. an embodied depiction, or they select an entirely different image to depict that concept. Examples of concepts for which an NGT sign depicts size by delimiting space while the equivalent AdaSL sign uses an embodied depiction include 'bottle', 'moon', 'cow', and 'child', as is illustrated in Table 1.

In the examples in Table 1, the NGT and the AdaSL signs depict the same image. Like in most iconic signs, multiple types of depiction are stacked to reach the intended depiction. The point here is that for the four concepts presented, AdaSL makes use of embodied shape depiction, whereas NGT does not. In AdaSL MOON, for instance, the curved index embodies the moon, while the path movement shows its trajectory. In NGT MOON, the index and thumb open and close while moving down, thus outlining its size and shape in space. Similarly, in AdaSL COW, the fists embody the horns depicting the perimeters of the horns, while the

Table 1. Signs depicting similar images in NGT and AdaSL, but with space-based distance for size depiction in NGT and embodied depiction in AdaSL

NGT	**AdaSL**
a. BOTTLE – depicted image: upright cylindrical shape	
	
1. Distance between fingers and thumb (space-based distance for size depiction) 2. Movement depicts extent of the cylindrical shape	1. The non-dominant hand delimits part of the arm (body-based distance for size depiction) 2. The forearm depicts shape and circumference of the shape (embodied shape depiction)
b. MOON – depicted image: moon-shape	
	
1. Distance between the tip of the index and the thumb shows the changing width of the crescent (space-based distance for size depiction) 2. Path and hand-internal movement depict extent of the crescent (movement for extent depiction)	1. Curved index depicts the curved shape of the crescent (embodied shape depiction) 2. Path movement depicts the path of the moon (movement for movement depiction)

Table 1. *(continued)*

NGT	AdaSL
c. COW – depicted image: (pointed) cylindrical cow horns	
	
1. C-hands depict the cylindrical shape of cow horns (space-based distance for size depiction) 2. The closing into fists depicts the pointed ends of the horns (movement for extent)	1. The fists and forearms depict the cylindrical shape of the horns (embodied shape depiction) 2. Path movement depicts the extent of the horns (movement for extent depiction)
d. CHILD – depicted image: upright cylindrical shape located on the ground	
	
1. B-hand depicts the height of a child (space-based distance for size depiction)	1. Fist and forearm jointly depict the cylinder shape of a person (embodied shape depiction) 2. The location of the fist depicts the height of a child (space-based distance for size depiction)

path movement shows their extent. In NGT COW, the hands trace the curved outline of the horns starting off with open hands that close into fists (Table 1). In AdaSL CHILD, the lower arm and the fist embody a person, whereas in the NGT equivalent, a flat hand purely delimits space to indicate the generalized height of a child, without embodiment (see Table 1).

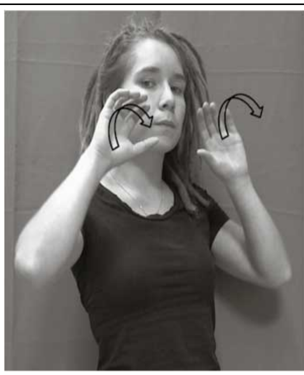
Thus, in some cases where NGT uses an outline (or space-based distance for size) depiction, AdaSL uses an embodied depiction. In other cases where NGT uses an outline (or space-based distance for size) depiction, AdaSL has selected an entirely different image[2] (an activity in the examples below) to depict the concept, as in the signs for FAECES, BEANS, and MAIZE in Table 2. Thus, the NGT sign for FAECES depicts the partial outline of a turd, whereas the AdaSL sign depicts the activity of producing faeces. Similarly, the NGT signs for BEANS and MAIZE each show the outline of the referent: BEANS by changing distance between the index fingers and MAIZE by the distance between the fingers and the thumb. In contrast, the AdaSL signs refer to how beans and maize are typically handled, that is, by stirring beans in a pot and by peeling an ear of maize, respectively. Note that in the latter case, the ear of maize is embodied by the non-dominant hand.

Table 2. Concepts depicted by space-based distance for size depiction in NGT, but by a different depicted image in AdaSL

NGT	**AdaSL**
	
FAECES	

2. By definition, iconic signs depict a sensory image (cf. Taub 2001). Sensory images depicted in signs include visual images, haptic images, and proprioceptive images (cf. Dingemanse 2011).

Table 2. *(continued)*

NGT	AdaSL
	
BEANS	
	
MAIZE	

The examples of the first kind – that is, the use of handshapes embodying the referent instead of space-based distance for size depiction – may be just coincidental. The examples of the second kind – that is, of image selection – may be coincidental, too, or they may reflect cultural and environmental differences. Alternatively, both types of variation may reflect a language-specific depiction pattern, such as a preference for body-based depictions (including body-based distance for size depictions and embodied shape depiction) over space-based ones.

2.3 Distance for size depiction

Taub (2001) proposes the representation technique of *size for size* depiction, in which the size of an articulation depicts a relevant size. This is a bit a mixed bag of strategies used to iconically convey size information. One of the strategies she discusses as being part of *size for size* depiction is indicating "[…] the object's general dimensions using flat B-handshapes or extended index fingers" (Taub 2001: 84). A similar representation technique was proposed earlier on by Mandel (1977: 69) as *measuring* to describe those signs that "begin by indicating something small […] and end by indicating something large within the same dimension […] such as the ASL signs BIG and RICH" (no description of these ASL signs is provided by the author).

The descriptions of size depicting strategies by Mandel and Taub do not overlap completely, nor do they go into much detail. What is clear is that both in Taub's *size for size* depiction and in Mandel's *measuring*, the distance between two elements (the two hands, in the examples given) represents the size of a referent.

In Nyst (2016a), I propose a new model for the depiction of size and shape in sign languages. The model distinguishes two main categories for the expression of size and shape, that is, *shape for shape* depiction, and *distance for size* depiction. The role of movement is seen as secondary to these two categories, and either signals extent (when combined with *shape for shape* depiction) or a change in it (when combined with distance for size depiction). Figure 1 presents the distance for size depiction part of the model.

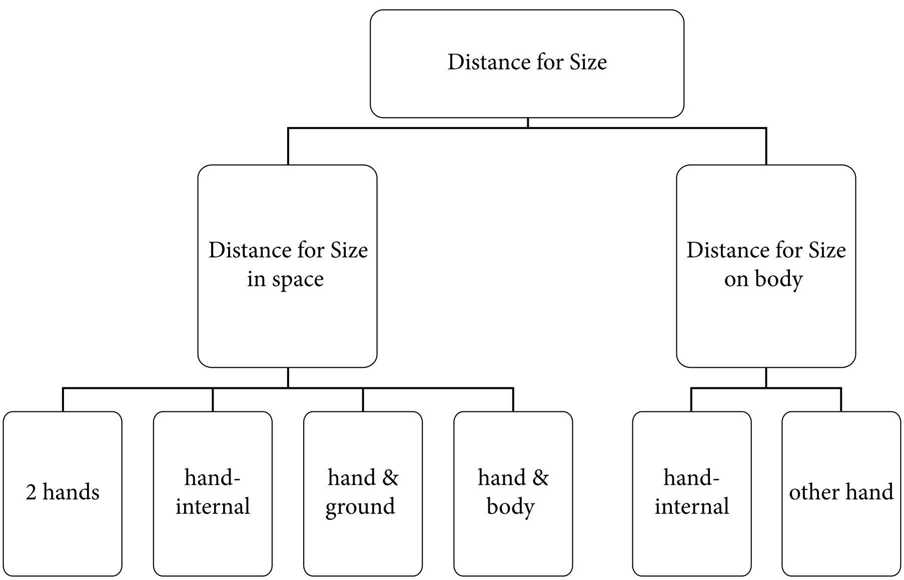


Figure 1. The model of size depiction in sign languages from Nyst (2016a)

Central to the model is the notion of distance for size depiction, which basically posits that the distance between two elements is understood as delimiting or depicting a particular size. I will first discuss the various types of delimitation of a particular distance in space, that is, space-based distance for size depiction. After that, I will discuss the use of delimitation of a particular distance on the body, that is, body-based distance for size depiction.

As for space-based distance for size depiction, four subtypes can be distinguished. Thus, in the NGT sign CUP (Figure 2), a stretch of space is delimited hand-internally, by the aperture between the fingers and the opposing thumb. In the NGT sign BIG (Figure 3), the two hands delimit a stretch of space that iconically depicts the size of the referent, in this case an abstract large size.

Figure 2. CUP (NGT)

Figure 3. BIG (NGT)

Finally, a stretch of space can be delimited between the hand and the ground, as in the sign for CHILD in NGT (see Table 1), or between the hand and the body, as in the sign PREGNANT in NGT (Figure 4).

In all the instances of distance for size depiction presented so far, the delimited distance concerns a stretch of space. However, distance for size depiction can also be located on the body, that is, body-based distance for size depiction. This is the case in the set of body-based size and shape specifiers. In AdaSL, these independent signs seem to have an adjectival function and are used to convey size and

Figure 4. PREGNANT (NGT)

shape information about a referent (Nyst 2007; Tano & Nyst 2018). Thus, in addition to signs delimiting a stretch of space, AdaSL uses an extensive repertoire of signs that delimit a part of the body to depict a specific size. Delimiting a relevant part of the arm, these signs can depict sizes ranging from an extent as short as the tip of the index, to the full extent of the arm, as illustrated in Figures 5 and 6. In these signs, the extreme end of the selected body part presents one delimiting point. The second point of delimitation is provided by one of the digits (as in Figure 5) or by the opposing hand (Figure 6). In addition to the size depiction, the shape of the selected body part is meaningful as well, embodying the relevant shape (or *shape for shape depiction* in terms of the model for size and shape depiction presented in Nyst (2016a)).

Figure 5. Tip of the index

Figure 6. Full arm length

The size and shape of the delimited part of the arm or hand are roughly equivalent to the actual size expressed. Thus, delimiting the tip of the index can be used to refer to a small object of about 1–2 centimeters (e.g. a small pepper, or a bead), whereas the arm, delimited at the shoulder, can refer to a larger, oblong entity of about one meter (e.g. a snake, or a long fish). This type of size signs is described in more detail in Nyst (2007).[3]

Finally, distance for size depiction can also be combined with a movement, be it a hand-internal and/or a path movement. Thus, in the AdaSL sign COW (see Table 1), the length of the path movement (or the distance between the initial and final location if you will) depicts the size or extent of the horns. Hand-internal movement may also contribute to the depiction of size, as in the NGT sign COW, where the closing of the C-hands depicts the pointed ends of the horns.

In brief, size is depicted by a distance between two elements. This distance is outlined in space in the case of space-based distance for size depiction, and on the body in the case of body-based distance for size depiction. In addition, movement can depict size as well, by reference to the initial and final location of a path movement, or by a changing distance between two (groups of) digits.

This study has two aims. The first aim is to investigate whether there is significant, cross-linguistic variation in the frequency with which sign languages use space-based distance for size depiction. The second aim of this study is to determine to what extent region of origin aligns with cross-linguistic variation in size depiction, i.e. whether sign languages of West African origin pattern differently in their use of space-based size depiction as compared to those with a Western European origin.

3. Methodology

3.1 Methodological challenges

To test the impression that space-based distance for size depictions are used relatively infrequently in AdaSL, quantitative, comparative data are needed. However, complications may arise at various levels. Firstly, complications arise at the level of assessing the iconic quality of a sign. Linguistic iconicity is commonly defined as

3. In addition to measure stick signs that aim to roughly express the absolute size and shape of an entity, AdaSL has a closed set of signs expressing relative size (i.e. BIG, SMALL, TALL, SHORT, see Nyst 2007). This set is used to express sizes that are larger than the arm. They also occur in simultaneous or sequential compounds with the measure stick signs. However, as the closed set of size signs does not directly contribute new insights for the current study, they will not be discussed further.

a *perceived* resemblance between a linguistic form and its meaning. As such, making judgments about iconicity is a subjective and impressionistic activity. Knowledge about the culture and environment in which a sign language emerged and/or is used increases the recognition of iconicity in its lexicon. On the other hand, in-depth knowledge of a sign language and particularly of the iconic character of its lexicon may also lead to the coining of new iconic readings of a sign that either has no iconic motivation or a different one.[4] Another issue is that some signs are clearly iconic and others more vaguely so, or only in one aspect. Singling out one representation technique facilitates coding in the sense that it reduces the decision-making process to whether or not that particular technique is present.

A second level at which assessing variation in the frequency distribution of representation techniques is challenging is the level of coding. Thus, to get a clear picture of the distribution of the use of space-based distance for size depiction, one would first of all like to code two equivalent sets of signs for whether they are iconic. Secondly, all iconic signs should then be coded for whether or not they depict size. Thirdly, the type of size depiction should then be distinguished, so that one can establish which percentage of all size depictions are realized through the delimitation of a stretch in space. As sign languages typically have multiple strategies for the depiction of size (for example squinting of the eyes, extension of the tongue tip, protrusion of the shoulders, and delimitation of a part of the body), coding a set of a considerable number of signs exhaustively for size depiction would be equally valuable as time consuming, even if done just for a single sign language. As such, such an all-encompassing approach is not feasible for the current study. A less comprehensive, but more feasible approach for the comparison of a large set of signs in a number of sign languages is to single out one representation technique and assess for each sign whether this strategy is present or not. Indeed, this is the approach taken in this article, in which I will focus on the presence of *space-based distance for size depiction* in a comparable set of lexical items of six sign languages.

Another challenge lies in the data used for comparison and hence in the data collection method. Notably, the difference between classifier predicates and lexical signs is important here, as in the former type of signs, the distribution of representation techniques is found to align with linguistic function in some sign languages, as noted above. How to distinguish between classifier predicates of motion and location and lexical signs is an issue that is far from resolved. As such, responses to picture tasks may contain classifier predicates or lexical signs and probably both. A relatively safe option for comparing sign language lexicons is by using

4. Re-interpretation of iconic motivations is a recurring theme in the etymological analyses of signs in ASL and LSF (see e.g. Shaw & Delaporte 2010).

sign language dictionaries as sources of data. Typically, sign language dictionaries aim at bringing together the lexical items of a particular sign language, excluding so-called productive forms or classifier predicates. Lexical signs typically consist of a fixed, free form coupled with a fixed – usually specialized – meaning. Sign language dictionaries are known to vary considerably in quality and nature, with some dictionaries being prescriptive, rather than descriptive, and others offering just one sign for each concept and leaving out variants. For a reliable comparison of lexicons, high quality dictionaries created on the basis of linguistic principles should be used. Ideally, these dictionaries should include information about the type of iconicity involved in the signs, but this rarely is the case. Another potential bias in the use of dictionaries as sources of data may be the methodology used for the creation of the dictionaries. Thus, in contrast to earlier dictionaries, newer lexical databases are increasingly based on discourse-corpora. Another challenge in using dictionaries for comparisons is the large difference between the concepts covered in dictionaries. Although there are various drawbacks in using dictionaries and lexical databases as a data source for comparison, it does not seem very likely that these biases would affect the use of a relatively abstract, representation technique such as the use of the delimitation of a stretch of space to depict size.

The first aim of this paper is to compare the frequency distribution of space-based distance for size depiction in over 350 lexical signs in AdaSL and NGT. The second aim of this study is to examine the extent of cross-linguistic variation in the depiction of size. To this end, two sign languages of Western European origin and two of West African origin were analyzed in addition to AdaSL and NGT. Interestingly, whereas AdaSL seems to pattern differently from sign languages of Western European origin in its size depictions, it appears to pattern quite similarly to other, unrelated sign languages of West African origin.

3.2 Selection of sign languages

The study was done in two parts. Firstly, relatively large data sets were compared for AdaSL and NGT, to test the impression that there was a significant difference in the depiction of size between these two languages. When this impression turned out to be correct, two more sign languages of Western European origin were added to the sample, as well as two more West African sign languages.

For the set of sign languages of Western European origin, French Sign Language (LSF) and Australian Sign Language (Auslan) were selected, in addition to NGT. These are the macro-community sign languages used by the deaf communities in France and Australia, respectively. Historically, LSF is assumed to have influenced the Groningen variety of NGT. Despite being used outside of Europe, Auslan has its roots in Europe, and is closely related to British Sign Language and New Zealand Sign Language (NZSL), together forming the BANZSL family (McKee & Kennedy 2000). This family is considered to be unrelated to NGT and LSF (Wittmann 1991). Signers of these three sign languages have had relatively easy access to each other's languages over the past decades during international encounters. Obviously, this access is becoming increasingly easy with the advance of video communication over the Internet.

For the set of West African languages, Malian Sign Language (LaSiMa) and Bouakako Sign Language (LaSiBo) were selected as representatives of West African sign languages in addition to AdaSL. The selection of locally evolved, West African sign languages was mainly driven by the availability of data sources, as only few West African sign languages have been documented so far. The LaSiMa variety analyzed here is used by a relatively large group of older members of the deaf community in Bamako, the capital of Mali. The language emerged outside the context of deaf education. Over the last 15 years, LaSiMa has been in contact with a local variety of ASL, which is used as the medium of instruction in deaf schools in Mali, and – though to a lesser extent – LSF. LaSiBo is a family sign language that emerged spontaneously in response to an increased incidence of hereditary deafness in Bouakako, a Dida village in Ivory Coast (Tano 2016). All deaf signers are under sixty. Both deaf and hearing consultants in Bouakako state that they are not aware of deaf people in previous generations. The signers have not been in contact with the Ivorian variety of ASL until very recently. Although the West African sign languages have been in contact with ASL and LSF, it is unlikely that they have been in contact with each other. Thus, distances of 500–800 kilometers between the three locations, the isolated location of both Adamorobe and Bouakako, in addition to the young age of LaSiBo make it unlikely that deaf signers of the three West African sign languages have been in contact.

3.3 Sampling of lexical items

Data were selected and coded in two shifts, whereby initially a relatively large set of data was coded for AdaSL and NGT to verify the impression that space-based distance for size depiction is more common in NGT than in AdaSL. Consequently, slightly smaller sets of data were coded for the remaining four languages to look at the use of space-based distance for size depiction in a larger set of sign languages from two different regions of origin.

Thus, the coding process started off with over 350 signs being coded for AdaSL ($n=367$) and NGT ($n=359$). The AdaSL signs comprised most of the lexical database compiled for the phonological analysis presented in Nyst (2007). The signs in this sample were not restricted with respect to sign type or grammatical category and included signs referring to actions, states, entities, qualities, and quantities.

No restriction was formulated on the basis of semantic field either. The NGT signs were taken from the online NGT dictionary of the *Nederlandse Gebarencentrum*[5] developed under the guidance of sign linguist Trude Schermer. To ensure comparability of the data, NGT signs were selected such that the resulting set of signs matched the AdaSL set as closely as possible. Thus, if the AdaSL set contained a sign for 'bread', the NGT sign for 'bread' was included in the set of NGT signs as well. In several cases, for example signs for local crops, dishes and ceremonies, an equivalent sign was not found in the NGT dictionary. In those cases, a sign was selected for a notion that was as closely equivalent to the AdaSL sign as possible, in semantics, size and shape, and in the image selected for iconic depiction. For example, the sign for 'Maggi cube' (bouillon powder in a cubical package) had no direct equivalent in the NGT dictionary. Instead, the sign BLOKJE was selected, which refers to a small, cubical form of any kind. For some notions, especially cultural activities, only rough semantic equivalents were found. For example, as an equivalent for the sign for 'Odwira', one of the largest annual festivals of the Akan calendar, the NGT sign for 'Christmas' was included.

Using the same selection criteria, smaller data sets of signs were compiled for three of the remaining four sign languages from dictionaries of LSF, Auslan, and LaSiMa. For LSF, signs were selected as much as possible from the *Sematos* dictionary for LSF.[6] If the equivalent concept did not have a sign in that dictionary, alternative dictionaries were consulted.[7] In total, 196 signs were coded and analyzed. For Auslan, all signs – 212 in total – were selected from the online SignBank,[8] which was developed under the guidance of sign linguist Trevor Johnston. For LaSiMa, 232 items were selected from the paper dictionary by sign linguist Dominique Pinsonneault (1999).

For LaSiBo, no dictionary was available. As the data available for this language are limited in number as compared to the sign languages mentioned thus far, no attempt was made to code (near) equivalent notions for this language. Sign linguist Tano Angoua Jean-Jacques kindly granted access to the lexical database that is part of the annotated corpus of LaSiBo (Tano 2014). A total number of 231 signs were extracted from this database.[9]

5. www.gebarencentrum.nl/gebaren/van-dale-ngt-uitgebreid/.

6. www.sematos.eu/lsf.html.

7. Alternative dictionaries consulted were the INJF dictionary (www.lsfdico-injsmetz.fr) and the WikiSign dictionary for LSF (http://lsf.wikisign.org).

8. www.auslan.org.au.

9. I am grateful to Tano Angoua for allowing me to use his lexical database of LaSiBo and for facilitating the coding process.

In the case of multiple variants in one sign language, the first sign presented in the dictionary was selected. Table 3 provides an overview of the number of signs analyzed per sign language, as well as the number of iconically motivated signs (see next section).

Table 3. Number of signs analyzed per sign language and number and percentage of iconically motivated signs per set

SL	Signs analyzed	Iconically motivated signs	Percentage of iconically motivated signs
AdaSL	367	272	74%
NGT	359	283	79%
LSF	196	177	90%
Auslan	212	171	81%
LaSiMa	232	188	81%
LaSiBo	231	184	80%

3.4 Coding

All signs were coded for whether or not they were iconically motivated. Iconic motivation was taken in a narrow sense, i.e. as a depiction of size and/or shape features of a mental image associated with the concept depicted by the sign (see Table 3). Signs considered iconically motivated under this definition, were additionally coded for presence or absence of the feature under study: the size of a delimited part of space depicts a size feature of a mental image.

Coded as making use of space-based distance for size depiction are those signs in which two elements depict size by delimiting a stretch of space between two tangible elements, whereby the latter elements can be:

- the two hands of the signer (as in NGT MONITOR in Figure 7),
- one or more fingers and the thumb (as in NGT WORD in Figure 8),
- the hand and the body (as in NGT PREGNANT in Figure 4), or
- the hand and the ground (as in NGT CHILD in Table 1).

For clarity, the examples below are selected such that the intended type of size depiction is the main or most salient type of depiction in the sign. Therefore, all the signs selected are static signs.

Not coded as containing space-based distance for size depiction are those signs in which the distance between two tangible elements depicts the distance between two joined parts combined into one (which should rather be labelled as *distance for distance depiction*). This is, for example, the case in the NGT sign for

Figure 7. MONITOR (NGT)

Figure 8. WORD (NGT)

TALKING (Figure 9), where the fingers and the opposed thumb open and close, depicting the opening and closing of the upper and lower jaw of a person talking. Similarly, signs in which the distance between two elements depicts the distance between two parts of one and the same object were not coded as using space-based distance for size depiction, for example in NGT SET-OF-TEETH (Figure 10), in which the index and the thumb embody the teeth. The space between the fingers and the thumb depicts the space between the molars.

Difficult cases are those signs in which the two elements depict two elements that form the boundary of hollow objects, for example containers as in NGT CUP (Figure 2) or NGT BOX. The distance between the boundaries of the container is typically determined by the size of the bottom of the container, such as the bottom of the cup, or the bottom of the box. Signs like CUP and BOX are therefore coded as having space-based distance for size depiction.

All data were coded by the author, a native speaker of Dutch, with intermediate knowledge of NGT, ASL, and LaSiMa, and good knowledge of AdaSL. On

Figure 9. TALKING (NGT)

Figure 10. SET-OF-TEETH (NGT)

some occasions, the author enquired with signers of the relevant sign language about possible iconic motivations of a particular sign, or had already done so in the past when learning the language. In case of any doubt, a sign was classified as 'not clear', both for whether or not the sign was iconically motivated, as well as for whether or not a delimited part of space represented the size and/or shape of a virtual entity. Signs not coded as iconically motivated in the narrow definition of this study were either (a) arbitrary signs, (b) signs where the motivation was not clear, or (c) signs with a motivation different from an iconic one, such as indexical or pointing signs, initialized signs (without any other motivated element – only in NGT), or directional signs (signs exclusively indicating a direction – only found in the AdaSL sample).

Inter-rater reliability was checked for the LaSiMa data with Tano Angoua, a hearing sign linguist from Côte d'Ivoire. This country has a border with Mali and shares many culture phenomena. A first attempt was made with 82 signs from the

LaSiMa sample. Comparison with the original coding showed agreement in 84% of the signs, disagreement in 9% of the signs, and doubt in one of the coders in 7% of the signs. A second attempt was made with a new set of 98 signs (5.9% of the entire sample) from LaSiMa, leading to agreement in 90% of the signs, disagreement in 7%, and doubt in one of the coders in 3%. In view of the high agreement rates, no changes were made to the original coding. For an example of the coding sheet, see Appendix I.

4. Results

Remember from the previous section that iconic motivation was interpreted in a narrow sense, i.e. as a depiction of size and/or shape features of a referent. Out of 367 signs coded for AdaSL, 272 were iconically motivated in this way. Out of 359 signs coded for NGT, 283 were iconically motivated. Out of the iconically motivated AdaSL signs, 4.4% involved space-based distance for size depiction. With over 22.6%, the frequency of space-based distance for size depiction turned out to be much higher in iconic signs in NGT, confirming the hypothesized generalization. Figure 11 represents the frequencies of space-based distance for size depiction in NGT and AdaSL. For each frequency, two values are given. The blue, left-hand bars represent the percentage of signs for which the size in space depiction is fully evident. The red, right-hand bars concern a larger number of signs, i.e. including those in which size and space depiction is very likely, but not fully evident. Moreover, for each sign language, the frequency of size in space depiction is given both for the entire collection of signs, as well as for the subset of iconic signs.

Figure 12 represents the frequencies of space-based distance for size depiction in the coded data sets of all six languages. Since there appeared to be no major difference between frequencies of space-based distance for size depiction in all signs as compared to in iconic signs only, only the frequencies for iconic signs are represented.

A Pearson Chi-square test was performed to test for a difference between the frequencies of the presence of 'the feature' in the two groups of sign languages. The effect was significant at the $p = 0.05$ level (χ^2 (1) = 69.8, $p < 0.001$). Including or excluding signs coded as doubtful or unclear in terms of using space-based distance for size depiction did not lead to a significant difference. The significance data presented here are calculated excluding the doubtful cases.

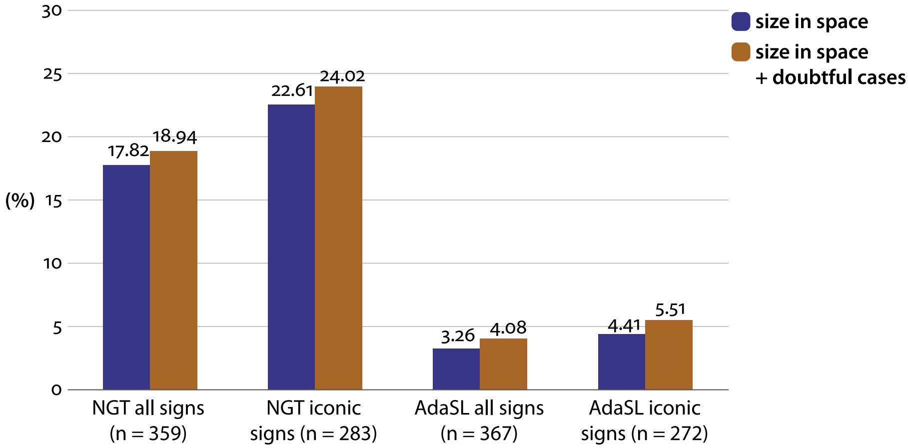


Figure 11. Space-based distance for size depiction in NGT and AdaSL in iconic signs and non-iconic signs

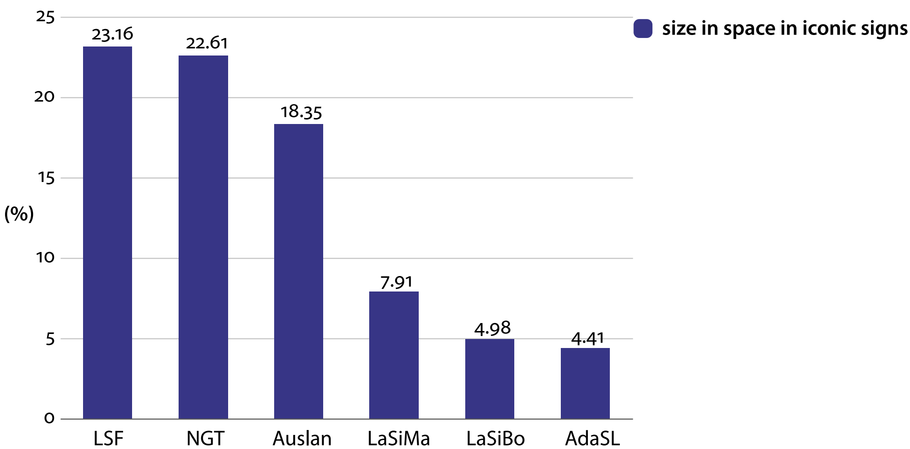


Figure 12. Percentages of space-based distance for size depiction in iconic signs in the six sign languages

5. Discussion

The results show a significantly more frequent use of space-based distance for size depiction in the NGT, LSF and Auslan data as compared to the AdaSL, LaSiMa and LaSiBo data. For various reasons discussed earlier in this paper, including the variation in the data sources and the challenges in coding iconicity, these results should be interpreted with caution. At the same time, most of the potential biases in this study are equally likely to affect the results of the African sign languages in the sample as the European sign languages in it. Also, the statistical analysis presented in this paper is not one of correlations, but merely addresses the frequency of a particular feature and the significance of variation in this frequency across languages. The results have two implications.

Firstly, they show that there are language-specific preferences in the distribution of representation techniques. This finding contributes to the new debate about patterning in representation techniques, which so far has focused on the alternation between using handling handshapes and instrument handshapes to depict an object. Comparing representation techniques in sign languages with co-speech gesture, these studies find that, across languages, signers tend to select their representation techniques in a different way from non-signers (Padden et al. 2013). Also, across sign languages, strong correlations can be found between representation technique and the semantics of signs, such as their semantic domain (Hwang et al. 2016) and semantic features like semantic plurality (Lepic et al. 2016). Similarity in patterning is also found across sign languages with respect to this alternation when it comes to distinguishing the representation of an instrument on its own as opposed to an action performed with the instrument (Padden et al. 2013).

In addition to the similarities in patterning observed across sign languages, differences between sign languages have been observed as well. Thus, Padden et al. (2013) compare three sign languages – ASL, Al Sayyid Bedouin Sign Language (ABSL), and NZSL – in their use of representation techniques for the representation of hand-held tools. Signers of ABSL and ASL appear to use instrument depiction more frequently than handling depiction, in contrast to signers of NZSL, who showed the reverse pattern. The authors conclude that "the similarities and differences across three sign languages in use of this particular iconic patterning provide a novel means of carrying out typological comparisons in sign languages" (Padden et al. 2013: 290). The comparison of the six sign languages presented in the current study supports this claim and shows that sign languages may also differ in their use of space-based distance for size depiction.

A second implication is that the frequency of space-based distance for size depiction across sign languages of European and West African origin reveals that the frequency of space-based distance for size depiction is not random or coincidental. Rather, it seems to be areally defined. NGT patterns strikingly similar in its size depictions to LSF and Auslan, despite being genealogically unrelated to the latter. Similarly, AdaSL appears to pattern very similar to LaSiMa and LaSiBo, again despite the absence of any shared history, be it in terms of a genetic relation or multilingualism.

Similarities in phonology, morphology, or at other linguistic levels are not uncommon in genealogically unrelated languages co-existing in the same region. They are referred to as areal features, which are assumed to have arisen as a result of a lateral diffusion of the shared feature. In other words, areal features are taken to have spread through contact. Although I have not come across descriptions of areal features in iconic depictions in the literature,[10] the difference in frequency of space-based distance for size depictions in the set of sign languages studied seems to present such a case. Although frequent contact between deaf signers of the (genealogically related) LSF and NGT on the one hand with deaf signers of Auslan on the other hand may be relatively recent, a contact scenario cannot be excluded as a reasonable explanation for the high frequency of space-based distance for size depictions in these three languages. However, a similar scenario of direct contact between signers is highly unlikely for the three West African sign languages at the time of data collection, due to the large distance between the signing communities, the isolated location of the two village sign languages, and the young age of LaSiBo.[11] Whereas direct contact between deaf signers is unlikely, it is clear that at a more general level, there has been and continues to be extensive contact between (mostly hearing) people living in Mali, Côte d'Ivoire, and Ghana. Historically as well as presently, extensive trade networks brought and bring people in contact. As the large majority of these people are hearing, most of these contacts are between hearing people who do not know a full-fledged sign language, but who of course use co-speech gesture. In addition, demographic patterns such as migration and nomadism led and still lead to contact. As West Africa houses several hundreds of spoken languages, these contacts between people often presented contact between languages as well. Language contact may be a factor triggering a heightened use of gestures in communication. The likely lack of direct contact between deaf signers of the three West African sign languages compared here, in combination with the extensive contact between mostly hearing speakers of their surrounding areas, implies a crucial role for gestures in explaining the similarities between the three sign languages. That is, the gestural substrates of these sign languages probably influenced their system of iconic depiction. If this is true, one would expect that space-based distance for size depiction is less

10. But see Westermann (1927), who finds recurrent sound-meaning pairings across a number of West African spoken languages. However, lacking a set of contrasting data in languages outside of West Africa, it is not clear to what extent the pairing is areally defined. In fact, some of these pairings have been claimed to be universal (cf. Ohala's frequency code (Ohala 1983, 1984) and the Bouba-Kiki effect first described by Kohler (1929)).

11. For an extensive description of the sociolinguistic settings of West African sign languages, see Nyst (2010, 2015). For a description of the sociolinguistic setting of LaSiBo, see Tano (2016).

frequent in gestures of hearing speakers of Dida, Akan, and Bambara as compared to speakers of Dutch, French, and (Australian) English. Indeed, a comparison of size and shape depiction in speakers of Dutch and Anyi, a language closely related to Akan, shows different patterns when it comes to the selection of representation techniques for the depiction of size and shape in object descriptions in these two languages (Nyst 2016b). Thus, all Anyi speaking participants in the study used delimited body part gestures to depict a particular size (and shape) on the body, whereas none of the Dutch speakers studied did. Although all speakers in the study used delimited space gestures to depict a particular size, clear differences were found in form and distribution. Also, the delimited space gestures of the Dutch speakers showed more variation. Thus, in the Dutch data, a larger number of different handshapes was used, both two-handed and one-handed delimited space gestures were used, and the role of movement was more varied in them. Furthermore, comparison of the delimited body part gestures of the Anyi speakers with measure stick signs in AdaSL shows considerable similarity.

Such a continuity of preferences for iconic depiction in sign languages and their gestural substrate contrasts with the discontinuity attested in the depiction of hand-held tools in ASL and ABSL and their gestural substrates. In the previously mentioned study by Padden et al. (2013) on the use of handling and instrument handshapes in ASL, NZSL and ABSL, equivalent gesture data were collected from hearing speakers of American English and of Arabic in a non-speech condition. Interestingly, the patterns found in the silent gesture data were very similar to each other, but opposite to the patterns found in ABSL and ASL.

Recent studies have pointed at differences in language age to account for structural differences (see e.g. Padden et al. 2010). However, it is unlikely that age is a factor in the distribution of size and shape depictions, as the set of African languages contains both very old (AdaSL) and very young (LaSiBo) sign languages. Similarly, the effect of community size on the use of space-based distance for size depiction seems to be negligible, as both the microcommunity (i.e. AdaSL and LaSiBo) and the macrocommunity (i.e. LaSiMa) sign languages in the African sample pattern alike.

Another variable that is found to influence sign language structure is whether or not a sign language is used in the context of deaf education. Indeed, European sign languages are all used in deaf education, whereas the African sign languages in the sample are not. LaSiMa is the only African sign language in the sample that has been used in deaf education for a few years in the past. However, it remains to be explained why and how the use of a language in formal education would change its expression of size and shape.

Irrespective of what causes the differences in patterning, this study reveals that in addition to language specific preferences in the distribution of handling and instrument handshapes for the depiction of hand-held tools (cf. Padden et al. 2013), sign languages may also differ in the frequency distribution of space-based distance for size depiction. As stated by Padden et al. (2013), the variation in frequency distribution of iconic features in the lexicon presents a new area for sign language typology. Furthermore, these findings point out an uncharted area in sign language linguistics, which is the schematization and encoding part of the mapping process of iconic lexical items. With a considerable part of the lexicons of sign languages being iconically motivated, sign languages provide ample opportunity to study the nature of the mapping process in iconic forms in the lexicons of human languages. The observed variation indicates that schematization and encoding is not solely determined by features of the depicted image. This raises questions about the other factor(s) influencing the mapping process. Taub (2001) indicates that the schematized image is mapped onto available linguistic forms with particular iconic uses, such as the use of a flat hand to depict flat objects through embodiment (substitution). To what extent are the image selection component and the schematization component of the mapping process influenced by the encoding component and the set of forms available in the language? Or are all components of the mapping process subject to language-wide preferences for particular representation techniques, such as a preference of embodiment over outlining in space, or of the use of handling handshapes over instrument handshapes?

Another question raised by the findings is how the sign languages with limited use of outline depiction compensate for this. Do they use other representation techniques – or other semiotic principles – more frequently? Is it the case that AdaSL makes more frequent use of embodiment instead? Or of pointing? Or is the burden equally divided over various alternatives? These are empirical questions that require further research to be answered.

Finally, the finding of an unusual type of productive SASS (size-and-shape specifier) signs in AdaSL (the so-called measure stick signs; Nyst 2007) and the relatively low frequency of space-based distance for size depiction in the lexicon suggests a correlation between structural features of productive SASS signs and the distribution of representation techniques in the lexicon. Such a correlation is perhaps not surprising in view of the fact that productive SASS signs themselves make use of representation techniques as well, but systematic studies looking at this relation are lacking. The cross-linguistic variation in productive SASS signs in AdaSL as compared to other sign languages shows that productive SASS signs should be studied from a typological perspective as well.

6. Conclusion

This paper provides statistically significant results confirming that the depiction of size is an iconic domain where differences are found across sign languages. Coding a sample of lexical items for six sign languages, three of West African and three of Western European origin, for the frequency of space-based distance for size depiction reveals a significant difference between the sign languages studied. This result sets apart the sign languages of European origin from those of West African origin, despite the considerable variation in sociolinguistic settings in the latter. Thus, the three West African sign languages make considerably less frequent use of space-based distance for size depiction, as compared to the three Western European sign languages. In other words, the frequency of representation techniques appears to be areally determined. Finding areal features in the three West African sign languages is surprising, as it is very unlikely that any of them have been in extensive contact prior to data collection. The vast distance between the locations (ranging between 500 to 1,000 kilometers) in combination with the relatively isolated location of Bouakako and Adamorobe and the lack of (observed) social ties between the hearing people of Bouakako, Adamorobe and Bamako make it unlikely that (deaf) signers of the sign languages of these communities have been in contact. This is confirmed by the deaf signers in Bouakako, who relate not having been in contact with deaf signers from other parts of Côte d'Ivoire or outside of it.

For similar reasons, it is even more unlikely that the three sign languages have diverged from a common ancestor sign language, transmitted by deaf signers. What is a more likely scenario explaining the similarities found, is a common gestural substrate for the sign languages. This hypothesis is supported by the observation that West African speakers differ from Western European speakers in not only using size and shape gestures in space to depict size and shape, but also gestures that delimit size on a body part. On the other hand, the hypothesized continuity between gesture and sign is not in line with the findings presented in Padden et al. (2013). They find that in the depiction of one type of objects, i.e. hand-held tools, sign languages systematically restructure their gestural substrate. More research on West African and Western European gestures is needed to test the relation between size (and shape) depictions in gesture and speech. Alternatively, or additionally, the difference between the West African and the Western European languages may be linked to the influence of formal education. Additional research on West African sign languages used in formal education is needed to evaluate the impact of formal education on the depiction of size and shape.

The variation attested in the distribution of space-based distance for size depiction and the areal patterns found in it prove iconicity to be another promising domain for the typological comparison of sign languages.

References

Brentari, Diane, Alessio di Renzo, Jonathan Keane & Virginia Volterra. 2015. Cognitive, cultural, and linguistic sources of a handshape distinction expressing agentivity. *Topics in Cognitive Science* 7(1). 95–123. https://doi.org/10.1111/tops.12123

Dingemanse, Mark. 2011. *The meaning and use of ideophones in Siwu*. Nijmegen: Radboud University PhD dissertation.

Hwang, So-One, Nozomi Tomita, Hope Morgan, Rabia Ergin, Deniz Ilkbaşaran, Sharon Seegers, Ryan Lepic & Carol Padden. 2016. Of the body and the hands: patterned iconicity for semantic categories. *Language and Cognition* 9. 573–602. https://doi.org/10.1017/langcog.2016.28

Kohler, Wolfgang. 1929. *Gestalt psychology*. New York: Liveright.

Lepic, Ryan, Carl Börstell, Gal Belsitzman & Wendy Sandler. 2016. Taking meaning in hand. *Sign Language & Linguistics* 19(1). 37–81. https://doi.org/10.1075/sll.19.1.02lep

Mandel, Mark. 1977. Iconic devices in ASL. In Lynn Friedman (ed.), *On the other hand: New perspectives on American Sign Language*, 57–107. New York: Academic Press.

McKee, David & Graeme Kennedy. 2000. Lexical comparison of signs from American, Australian, British and New Zealand Sign Languages. In Karen Emmorey & Harlan Lane (eds.), *The signs of language revisited: An anthology to honor Ursula Bellugi and Edward Klima*, 49–76. Mahwah, NJ: Lawrence Erlbaum.

Nyst, Victoria. 2007. *A descriptive analysis of Adamorobe Sign Language (Ghana)*. Amsterdam: University of Amsterdam PhD dissertation. Utrecht: LOT.

Nyst, Victoria. 2010. Sign languages in West Africa. In Brentari, D. (ed.), *Sign languages (Cambridge language surveys)*, 405–432. Cambridge: Cambridge University Press.

Nyst, Victoria. 2015. The sign language situation in Mali. *Sign Language Studies* 15(2). 126–150. https://doi.org/10.1353/sls.2015.0000

Nyst, Victoria. 2016a. Size and shape depictions in the manual modality: a taxonomy of iconic devices in Adamorobe Sign Language. *Semiotica* 210. 75–104.

Nyst, Victoria. 2016b. The depiction of size and shape in gestures accompanying object descriptions in Anyi (Côte d'Ivoire) and in Dutch (The Netherlands). *Gesture* 15(2). 156–191. https://doi.org/10.1075/gest.15.2.02nys

Ohala, John J. 1983. Cross-language use of pitch: an ethological view. *Phonetica* 40(1). 1–18. https://doi.org/10.1159/000261678

Ohala, John J. 1984. An ethological perspective on common cross-language utilization of F0 of voice. *Phonetica* 41(1). 1–16. https://doi.org/10.1159/000261706

Ortega, Gerardo, Beyza Sümer & Aslı Őzyürek. 2014. Type of iconicity matters: Bias for action-based signs in sign language acquisition. *Proceedings of the Annual Meeting of the Cognitive Science Society* 36(36). 1114–1119.

Padden, Carol, Irit Meir, Mark Aronoff & Wendy Sandler. 2010. The grammar of space in two new sign languages. In Diane Brentari (ed.), *Sign languages (Cambridge language surveys)*, 570–592. Cambridge: Cambridge University Press.

Padden, Carol, Irit Meir, So-One Hwang, Ryan Lepic, Sharon Seegers & Tory Sampson. 2013. Patterned iconicity in sign language lexicons. *Gesture* 13(3). 181–202.

Perniss, Pamela. 2007. Achieving spatial coherence in German Sign Language narratives: The use of classifiers and perspective. *Lingua* 117(7). 1315–1338. https://doi.org/10.1016/j.lingua.2005.06.013

Perniss, Pamela, Robin L. Thompson & Gabriella Vigliocco. 2010. Iconicity as a general property of language: evidence from spoken and signed languages. *Frontiers in Psychology* 1:227 (December).

Pinsonneault, Dominique. 1999. *Lexique des signes utilisés par les sourds au Mali*. Bamako: Editions Donniya.

Shaw, Emily & Yves Delaporte. 2010. New perspectives on the history of American Sign Language. *Sign Language Studies* 11(2). 158–204. https://doi.org/10.1353/sls.2010.0006

Tano, Angoua. 2014. *Un corpus de référence de la Langue des Signes de Bouakako (LaSiBo)*. Leiden University Centre for Linguistics, Universiteit Leiden.

Tano, Angoua. 2016. *Etude d'une langue des signes émergente de Côte d'Ivoire: l'exemple de la langue des signes de Bouakako (LaSiBo)*. Leiden: University of Leiden PhD dissertation. Utrecht: LOT.

Tano, Angoua & Victoria Nyst. 2018. Comparing body-part size and shape constructions in village sign languages with co-speech gesture. *Sign Language Studies* 18(4). 517–545.

Taub, Sarah F. 2001. *Language from the body: Iconicity and metaphor in American Sign Language*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511509629

Westermann, Diedrich. 1927. Laut, Ton und Sinn in westafrikanischen Sudansprachen. In *Sprachwissenschaftliche und andere Studien, Carl Meinhof gewidmet*, 315–328. Glückstadt & Hamburg: Augustin.

Wittmann, Henri. 1991. Classification linguistique des langues signées non vocalement. *Revue Québécoise de Linguistique Théorique et Appliquée* 10(1). 215–288.

Zwitserlood, Inge. 2003. *Classifying hand configurations in Nederlandse Gebarentaal (Sign Language of the Netherlands)*. Utrecht: University of Utrecht PhD dissertation. Utrecht: LOT.

Zwitserlood, Inge. 2012. Classifiers. In Roland Pfau, Markus Steinbach & Bencie Woll (eds.). *Sign language: An international handbook*, 158–186. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110261325.158

Appendix I. Extract of coding sheet

This is an extract of the coding sheet for the NGT data to illustrate the coding process. In the first column, the target sign from the AdaSL data is given, in the second column, the NGT equivalent. If no translation equivalent was found in the dictionary, a nearest equivalent was looked for and noted in the third column (e.g. *onderbroek* 'underpants' instead of *ondergoed* for 'underwear'). In the fourth column, it is indicated whether the sign depicts a size and/or shape, in the fifth column whether it does so by space-based distance for size depiction.

AdaSL	NGT	NGT alternative	Iconic	Size in space
BEANS	BONEN		Yes	No
EGG	EI		Yes	Yes +No[12]
FOREST	BOS		Yes	No
HALF	HALF		Yes	No
HAMMER	HAMER		Yes	No
HERE/NOW/TODAY	HIER		Yes	No
REMEMBER	HERINNEREN		Yes	No
SALT	ZOUT		Yes	No
SAME/SIBLING/FRIEND	HETZELFDE		Yes	No
TOWEL-1	HANDDOEK		Yes	No
UNDERWEAR	ONDERGOED	ONDERBROEK	Yes	No

Appendix II. List of abbreviations of sign language names

ABSL Al Sayyid Bedouin Sign Language (Israel)
AdaSL Adamorobe Sign Language (Ghana)
ASL American Sign Language
Auslan Australian Sign Language
LSF French Sign Language
NGT Sign Language of the Netherlands
LaSiBo Bouakako Sign Language (Côte d'Ivoire)
LaSiMa Malian Sign Language
NZSL New Zealand Sign Language

12. The NGT sign EGG is two-handed, with space-based distance for size depiction on the non-dominant hand, but not on the dominant hand.

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