ON THE MORPHOLOGICAL THREE-WAY PRONOMINAL DISTINCTION IN SIGNED LANGUAGES: A FACE-BASED ANALYSIS

SOBRE A DISTINIÇÃO MORFOLOGICA DE TRÊS PESSOAS PRONOMINAIS EM LÍNGUAS DE SINAIS: UMA PROPOSTA DE ANÁLISE BASEADA NA FACE

Anderson Almeida da Silva [1]

Universidade Federal do Delta do Parnaíba

Abstract: This paper presents a proposal for the segmentation of the horizontal plane in Libras that takes the face only as the basis from which all the formal distinctions between the frontal and lateral areas are delimited. This study refuses previous proposals that predicted combined strategies between eye-gaze and space and the contribution of the torso to be responsible for the abovementioned distinction. The methodology encompasses the analysis of free utterances, *role-shift* sentences, coordination of pronouns and the creation of a task of pronouns identification in order to collect comprehension/perception data. The results confirm the existence of a formal distinction between frontal and lateral areas, and as a consequence, the distinction between the second and third-person in Libras, and perhaps in all existing sign languages. The space, therefore, would function as a finitely composed spatial morpheme and exhibit a clitic-like behavior when it is found attached to indicating signs in order to assign them different person values.
Keywords: pronouns, sign languages, spatial morphemes, formal distinction, Libras

Resumo: Este artigo apresenta uma proposta de segmentação para do espaço do plano horizontal na Libras que considere a face somente como o ponto zero a partir do qual as diferenças formais entre o espaço frontal e laterais são demarcadas. O estudo refuta propostas anteriores que atribuam as diferenças entre os espaços frontal e laterais a estratégias combinadas entre o olhar e o espaço, e descarta completamente a contribuição do tronco para esta definição. A metodologia do trabalho compreende a análise de proferimentos livres, sentenças com uso de *role-shift*, coordenação de pronomes e a criação de uma tarefa de identificação de pronomes para coletar dados de percepção/compreensão. Os resultados confirmam a existência da distinção formal entre os espaços frontais e laterais, e como consequência, a distinção pronominal de segunda e terceira pessoa na Libras, e talvez em todas as línguas de sinais. O espaço, então, funcionaria como um morfema espacial finito em composição, e exibiria um comportamento clítico de se afixar aos sinais direcionais para atribuir-lhes diferentes traços de pessoa.
Palavras-chave: pronomes, línguas de sinais, morfemas espaciais, distinção formal, Libras

Submetido em 20 de novembro de 2020.

Aprovado em 15 dezembro de 2020.

Introduction

This article puts together some of my previous discussions and publications (ALMEIDA-SILVA, 2019; ALMEIDA-SILVA & TAVARES-SILVA, 2017) about the highly debated topic on whether or not signed languages exhibit a formal three-way

[1] PhD in Linguistics (UNICAMP), Assistant Professor at UFDPAR (Piauí, Brazil), e-mail: andersonalmeida@ufpi.edu.br.

pronominal distinction among persons. I propose a refinement of the previous proposals found in the literature, assuming an unforeseen or not explicitly assumed relevant aspect for this distinction, namely, that the face is the base from which all distinctions that operate in the horizontal plane are divided. Analyzing how the pronouns get their reference through pointing in space will shed light on how space is, to a certain degree, finitely limited in number of points, and not undefinable, infinite or unlimited as it has been already suggested.

In Section 1, I address the rather controversial question about the existence of spatial morphemes, in contrast to other types of sign and spoken language morphemes. In Section 2, I explain in detail the segmentation proposal that I pursue here for space boundaries in the horizontal plane in Libras and that are perhaps are extendable to all existing sign languages, as it is an attested crosslinguistic phenomenon. In Section 3, I present the task that I developed in order to show that the analysis I present here finds support in perceptibility tests. Eventually, in section 4, I briefly show the proposal's applicability and productivity.

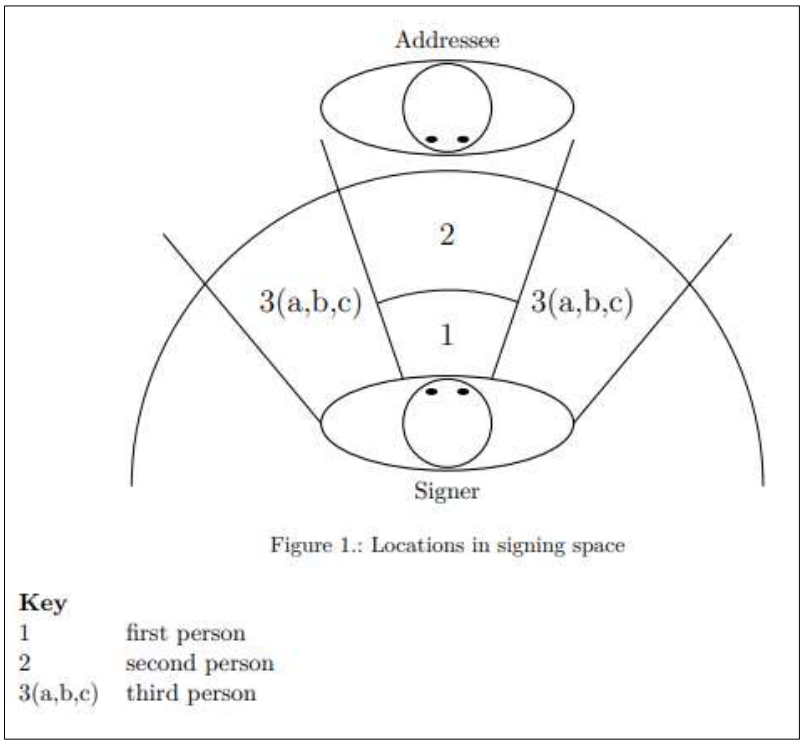
1. Spatial meanings and the concept of spatial morphemes

Studies on signed languages has shown that the space has more or less discrete limits and that, each area, therefore, can encode particular meanings. Despite being virtually unlimited, some parts of the space can function as a morpheme, which represents a real particle (a piece/part of space, but not all this) with some meaning available and that can be attached to specific lexical items. But the topic is far from having consensus in the literature and the main debate relies on the difficulty of formally defining its listability, separability and productivity, the fundamental conditions to have a genuine morpheme identified in any language (SANDLER & LILLO-MARTIN, 2006; LIDDELL, 2003).

In signed languages, the main instance of a spatial morpheme is found in the person marking, that is basically defined through the pointing to a specific space around the signer's body. As we can see in the scheme bellow (figure 1), the areas around the signer are delimited by virtual (invisible) lines that are established in relation to the position of the signer's body, and these areas are "activated" through the use of indicating signs, to use Liddell's term, which includes not only the pointing sign, realized with the index finger, but also indicating verbs, which are verbs that can be displaced towards the

area available to each person. Thus, the process would encompass the area being attached to the sign or *vice-versa*, resembling a cliticization process[2]. It is important to clarify that by using the expression "activate an area" I mean when an indicating[3] sign, which has the property of interrupting the latency status, or inertness of an area, is used, and the virtual limits between the areas become visibly implied. Metaphorically speaking, when you point towards that area, you "wake the area up" from the sleeping mode. Thus, if the signer directs an indicating sign towards the *ego-aligned* region of the signer's body (number 1) it encodes first-person, directing it towards the frontal or *ego-opposed* region (number 2) encodes second person and directing it towards the lateral regions (*ipsi and contralateral*, number 3) encode third person. We clearly have to separate the indicating signs which are purely demonstrative or that point to things in the real space, to the ones that obeys to spatially grammaticalized patterns. The formers do not obey the distinctions presented here, because they rely on contextual or mental mappings to get their meaning.

Figure 1. Person marking locations in signing space



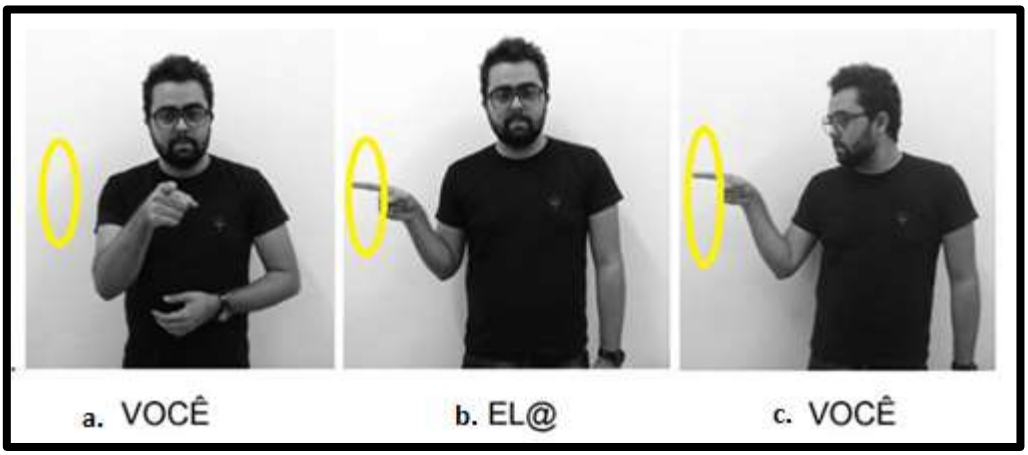
Source: BÖRSTELL (2017, p. 16)

[2] Cf. Nevins (2011) about agreement in ASL.
[3] Any sign that can be displaced in the signing area, generally all these signs are non-body-anchored signs.

There is a disagreement in the literature on whether or not the frontal and lateral space could be formally distinguished in terms of phonological composition (MEIR, 1990; LILLO-MARTIN & KLIMA, 1990; LIDDELL, 2003; BERENZ, 1996; LIMA, 2015; RATHMANN & MATHUR, 2006; MEIR & LILLO-MARTIN, 2013; ARONOFF et al, 2005 and others). It gave rise to the discussion on whether sign languages would formally distinguish between second and third person, respectively linked to the frontal and lateral areas. This disagreement has one of its origins in contexts of conversations or individual speeches in which there are more than two real or presumed (absent) interlocutors/referents and the signer needs to change the position of his body.

In these cases, as in the example below in (1) shows, if the signer is pointing to someone who is frontally located, as in (1 a), it is the frontal space that is being selected through the action of indicating, predicted to mean second person, according to the scheme presented above (fig.1). The same holds for the pointing in (1b), which points towards the lateral area and consequently selects it, presumably encoding the third person. However, if a change in the signer's face/body occurs, as we can notice in (1c), then the very same lateral area that meant third person in (1b) now encodes second person value. This has led many authors to question whether there were a real fixed set of pronouns in sign languages or there were only pronominal pointings realizations which would set their values contextually.

(1)



(ALMEIDA-SILVA, 2015, p. 61)

To the extent of my knowledge, all SLs use these very same areas to encode person marking crosslinguistically, and also mostly do it by using the index finger handshape

 . They only differ in the handshapes they use to encode possessive and reflexive pronominal forms, which are the only known case-marked handshapes in SLs.

McBurney (2002) explain that this typological homogeneity in which all SLs employ the same spatial *locus* to encode pronominal reference is an idiosyncrasy, because spoken languages employ distinct phonological chains to create their personal pronouns. So, according to the author, there would be a universal particular subgroup of phonemes (*locus*) that are only used to codify person reference in SLs, what is typologically uncommon.

Before I present my proposal of segmentation of space, I want to bring to the discussion some interrelated points that have been raised within this topic and state my positioning in face of these issues.

First, I want to address the question about the allophonic realization of pronouns in sign languages when compared to spoken languages. So, let's take the example of the citation form of the first-person singular pronoun in Libras in (2), which stands for the Portuguese first-person singular pronoun 'eu'. However, there are some recognized variable realizations of first-person singular pronouns in Libras as we see in (3) where the pointing can target not only one single point in the *ego-aligned* area as in (2), but, instead, it would allow for variable realizations. For some analysts, it would mean that the pronominal signs are not formed by a constant phonological chain, instead, every instance of the sign for first-person would have a different location.

One question calls my attention here, that is, how far are these landing areas to the pointing signs from each other? Could they be subsumed under one bigger major region?

I think there is still a lot to be investigated here, and I will roughly compare these variable occurrences of the first-person sign to the allophonic realizations of the first-person singular form in Portuguese 'eu' and 'ô' in a sentence like "Eu vô/Ô vô" ("I will go") below in (3). Most importantly, in (4) we see that the variation in the realization of pronouns in signed language is not unlimited, and therefore, as in the spoken Portuguese, there is a number of variations in the realizations which are possible in the languages, even if the number of variation in spoken languages are much smaller, clearly influenced by the modality in which each language is produced/perceived. The red arrows in (4) indicate the impossibility of the interpretation of first-person with those pointings in

Libras[4], as well as the phonological chains aside aren't recognizably variation of first-person pronoun in Portuguese.

(2)

LIBRAS	PORTUGUESE
	/EU/

'Word for first-person in Libras and in Portuguese'

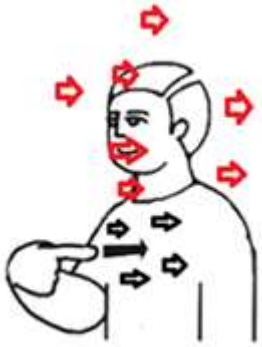
(3)

LIBRAS	PORTUGUESE
	/**EU**/ VOU /**Ô**/ VOU

'Variation in the items for first-person in Libras and in Portuguese'

[4] There are other sign languages, like Japanese Sign Language, in which the first-person pronoun can be realized on the nose, so, depending on the sign language, there will be different degrees of variation in the realization of the pronominal forms (SMITH & TING, 1979)

(4)

LIBRAS	PORTUGUESE
	/EU/ /Ô/ */UE/ */ÔU/

‘Impossible variation forms for the word for first-person in Libras and Portuguese’

These examples show that the fact the pronouns in sign languages can exhibit a wider variety of realization, which could be analyzed as allophonic versions of the signs, does not entail that pronouns in sign languages occurs freely and that they lack phonological content, as can be seen by the impossibility of the examples in (4).

Secondly, Cormier et al (2013) question the cases when the verbal agreement morphology is supposed to be encoding the same person marking in British Sign Language – BSL, but the signs move towards different locations. For example, in (5) the sign GIVE moves toward the chest of the signer, in order to express ‘to give **me**’, while in (6) the verb LOOK moves to the height of the eyes of the signer, in order to express “look at **me”**. They say that in these cases we would expect both signs to reach the exactly same location in the signer’s body (i.e: the chest), once both verbs are taking first-person singular as the object. However, given the lexical forms of each verb, each one of them will move to a different height in the body. That would mean that the lack of uniformity in sign language agreement morphology would indicate a more gestural/contextual based morphology than a grammatical one.

(5)

GIVE-1s (sign moves to the chest of the signer)

‘Give to me’

(6)

LOOK-1s (sign moves to the eye’s region of the signer)

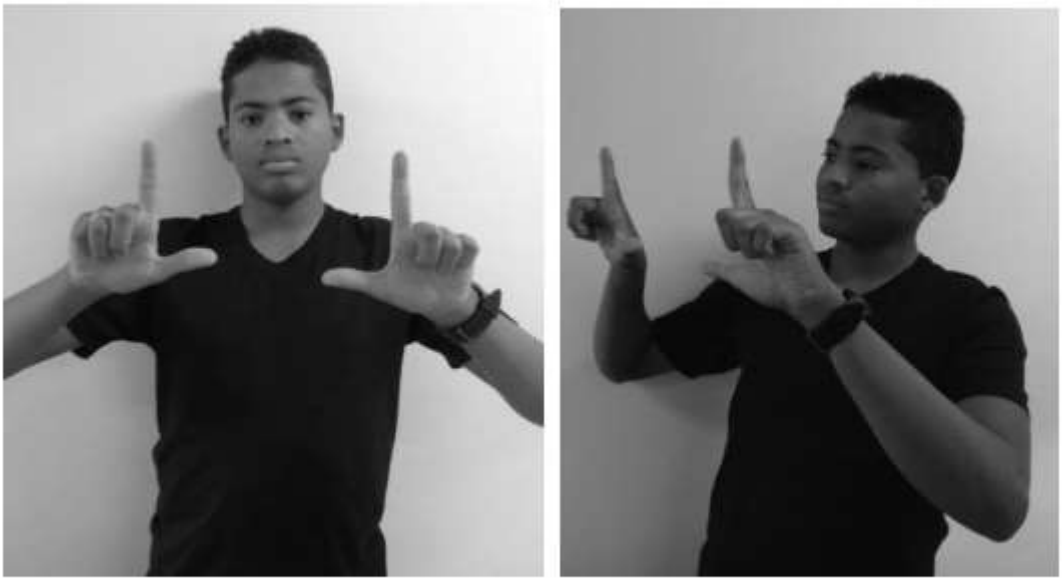
‘Look at me’

I agree that the questions raised by the authors about the variation in the agreement locations are relevant to the linguistic description, but we should also ask ourselves why, despite the existing variation in the final locations reached by the verbs, speakers always assign first-person value to their sentences? In this sense, I assume Quer (2011, p.190) when he claims that “In the case of sign languages, physical points in space are actually irrelevant as such: what counts for the linguistic system is how they can be interpreted categorically as referential locations or loci”.

Once we consider the space to be phonological, although it can only be perceived when activated through the directioning of a displaceable (non-body-anchored) manual sign, several studies assume that the space has a morphemic content in SLs, and as such, can be found affixed to a manual sign and assign a specific and invariant meaning to it. I will bring some of these studies to the acknowledgment of the reader.

Using the distinction between strong and weak definites proposed by Carlson & Sussman (2005), Sá et al. (2012) adapted the tests for Libras and showed that when bare nouns are displaced to the lateral area in the horizontal plane (number 3 in fig. 1), deaf participants get the strong definite reading, whereas the ones realized in the neutral region in the horizontal plane are interpreted as having the weak definite reading. So, the sign for TV in (7) is interpreted as a generic object in (7a), differently when it is laterally located (7b), that is interpreted as a specific television device, hence the strong definite reading.

(7)



a. TELEVISION on neutral space.

b. TELEVISION on determined space.

(SÁ et al, 2012, p. 34)

In a similar vein, Koulidobrova (2017) analyzes the anaphoric retrieval of subject and object nouns in topic position using agreeing and plain verbs in American Sign Language – ASL, and, skipping some syntactical theoretical details, she finds out that when nouns in topic position are assigned a locus as in the examples in (8), as we can see by the use of the letter "a-" before the noun, which stands for a displacement in the sign, the empty category isn't licensed to recover the noun in all the cases, as the ungrammaticality of the two b examples in (8) shows; however, if the noun in topic position is not assigned a locus, as we can see by the absence of "a-" in the glossas in (9), there is a uniform behavior, and now, both agreeing and plain verbs license the empty category to recover the topic.

Extending her results to our purposes, we see that by assigning a locus to a sign, it affects the licensing of anaphorical empty categories in ASL, and thus, it shows that again, lateral and frontal spaces are in opposite relation. It also evidences that the space solely, as a morpheme, is fixing a definite reading to the nouns, but no other morphosyntactic mechanism.

(8)

a. t
a-MOTHER$_i$, 1-IX DON'T-KNOW WHAT Ø a-SEND$_{agr}$-1
'Mother, I don't know what (she) sent me.'

b. t
a-MOTHER$_i$, 1-IX DON'T-KNOW WHAT {a-IX/*Ø} LIKE$_{plain}$
'Mother, I don't know what she likes.'

a. t
a-EXERCISE CLASS, 1-IX HOPE b-SISTER SUCCEED b-PERSUADE-c c-MOTHER TAKE-UP$_{agr.}$-c Ø
'The exercise class, I hope my sister manages to persuade my mother to take (it).'

b. t
a-THAT a-COOKIE, 1-IX HOPE b-SISTER SUCCEED b-PERSUADE-c c-MOTHER EAT$_{plain}$ {a-IX/*Ø}
'That cookie, I hope my sister manages to persuade my mother to eat it.'

ASL (LILLO-MARTIN, 1986)

(9)

a. t
MOTHER, 1-IX DON'T-KNOW WHAT Ø a-SEND$_{agr.}$-1
'Mother, I don't know what (she-) sent (-me).'

b. t
MOTHER, 1-IX DON'T-KNOW WHAT Ø LIKE$_{plain}$
'Mother, I don't know what she likes.'

a. t
EXERCISE CLASS, 1-IX HOPE b-SISTER SUCCEED b-PERSUADE-c c-MOTHER a-TAKE-UP$_{agr.}$ Ø
'The exercise class, I hope my sister manages to persuade my mother to take (it).'

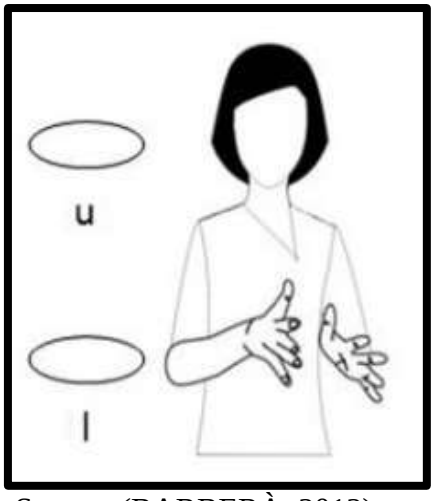
b. t
THAT COOKIE, 1-IX HOPE b-SISTER SUCCEED b-PERSUADE-c c-MOTHER EAT$_{plain}$ Ø
'That cookie, I hope my sister manages to persuade my mother to eat it.'

(KOULIDOBROVA, 2017, p. 402)

Another grammatical meaning that is spatially encoded is the difference between specific and non-specific indefinites in Catalan Sign Language - LSC. Barberà (2012) demonstrates that a difference in height, now in the vertical plane, namely, the upper space and the lower space, namely the *u* and *l* in the figure 3 below, respectively codifies the non-specific and specific reading to the nouns when they are realized in these areas.

Therefore, specificity in LSC is spatially encoded and bring forth the existence of spatial morphemes.

Figure 3. Specificity spatial marking in LSC



Source: (BARBERÀ, 2012)

For obvious reasons the vertical morpheme of height cannot be based on how tall the speaker is, but rather on some perceivable contrast to which the differences in specificity appears. In the same way, Davidson & Gagne (2014) analyzes the productivity of the vertical plane in ASL and find that there are striking differences in quantification, emphasis and specificity that are carried by the vertical axis.

To conclude this session, I hope I have shown that signers can produce and recognize differences that are encoded through the spatial marking, and it can shed light on how much of the space is being taken as a discrete and unique phonological chain that allows us to talk about spatial morphemes.

Next section, I am going to show how the space, despite of being claimed not to have a clear-cut distinction in the limits between the areas, is the only grammatical substrate sign languages can explore to define the meaning of grammatical pointing signs.

2. A New Proposal to Horizontal Space Segmentation in Libras

Trying to solve the appearing lack of formal distinction between the frontal and the lateral space in the horizontal plane, which would correspond to the areas generally associated with the second and third person markings in signed languages, authors like Berenz (1996, 2002) and Lima (2015) had already assumed that in Libras, eye gaze would be responsible for differentiating second and third person pronouns in the language.

It made sense and still does, once the only observable difference between (1b) and (1c) is that, while both point laterally, in (1b) eye gaze is misaligned with the pointing, whereas in (1c) eye gaze is aligned with the pointing. So, it would make sense to claim that eye gaze alignment with pointing would pin down the absence of formal distinction between second and third person in Libras, and maybe in all sign languages. However, assuming eye gaze to be responsible for the distinction, one could not claim, then, that the difference would rely on space solely, because the pronouns would get their values through the use of combined morphosyntactic strategies between the space, which is being selected by the indicating sign (a pointing, for example) *plus* the eye gaze alignment that is not straightforwardly spatial. Or, at least, one should have to clarify what is pointing to what, but it doesn't seem to be the right track to solve the problem, as I will show in the following paragraphs.

Differently of all the previous authors discussing this theme, here I will offer a new proposal that might ameliorate the formal analysis of sign language pronouns in descriptive terms, namely, having the face as the base from which all the limits between the horizontal spaces are set, and not the trunk or the eye gaze as it had been previously proposed in the literature.

2.1 A face-based analysis for horizontal space segmentation

Differently from other proposals, I will discard two things: (a) that the lateral space is defined in relation to the trunk; and (b) the influence of the eye gaze in pronominal distinction. The reader must have already noticed that these two phenomena are found interrelated, namely the problems with the space boundaries and the pronouns constituency. So, if we are able to explain whether there would be a formal distinction between the regions in space, it could benefit the study of pronouns and, as we saw in the previous section, and the issue of the number of grammatical phenomena related to the space boundaries in sign languages.

In order to discard the trunk and the eye gaze I will build my argumentation upon the following observations. The gaze itself is not fully accessible to the interlocutor in situations where there is a change in the position of the face. Apart from this, the gaze is not a spatial element and nor can it select the space, as are the pointing signs and the indicating verbs. And the trunk, as the eye gaze, is not always accessible in every situation of communication, for example, in phone calls we may lose most of the information

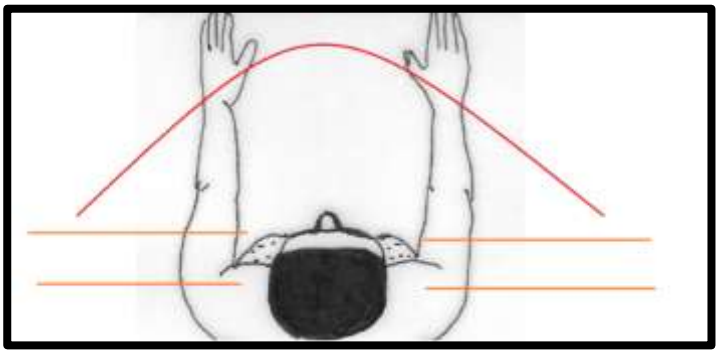
regarding body position; besides it, the trunk has no sufficient surface salience that is able to delimit the limits in space, as I will demonstrate in the next paragraphs.

The allure of assuming the trunk as the zero point that delimit all the spaces around the signer's body is a reflect of a typological fact, that is, most of the known sign languages encodes first-person pointing to chest of the signer; however, less common typological signed pronouns gives support to the analysis I foster here, as the pronouns in Japanese Sign Language (SMITH & TING, 1979), in which first-person pronouns are realized pointing to the signer's nose, instead of the trunk. Therefore, in this language, the role of the face is more salient than the trunk.

As I said before, there are many possibilities and settings in which a signed communication can occur, as it happens with any other language. So, deaf people can talk to each other in a bunk bed, on the cellphone using videocalls, sitting in a classroom and not only standing. The latter is the posture which mostly favor changes in the signer's trunk position. The majority of the analysis that assumes the trunk as the basis to operationalize the limits in space use data with the signers standing only, so it cannot render a sufficient analysis.

Going further with the argument about the insufficiency of the trunk to delimitate the spaces, I bring the following considerations. The trunk is a flat part of the body, and as such, is has a little or almost no lateral prominence; hence, the area that could be formally taken to be the lateral of the trunk is the one between the orange parallel lines in figure 4, which would require the signer to rotate their wrists almost 90º sideward in order to convey third-person meaning, and we do not find evidence for this in natural signing. Most commonly, a slightly sideward lateral rotation of the pointing sign is sufficient to encode third-person value. Moreover, everything that would not fit into the lateral of the trunk, would be automatically taken to be the frontal part of it, which presumably should be reserved only to the second person, but it contrasts with the examples given in (1b) and (1c). In my data (ALMEIDA-SILVA, 2019), the trunk is the part of the signer's body that presents the least rate of change in the utterances, and instead, deaf people preferably rotate the face when they want to change their reference basis.

Figure 4. Distinction of the frontal *vs* lateral space based on the trunk



Source: Almeida-Silva (2019, p.147)

The final argument I want to bring in favor of excluding the trunk for spatial delimitations is that, even in the context of role-shifts, which are the contexts where the body is mostly claimed to play a fundamental role in shifting the pronominal reference between the speaker and a reported direct speech (referent), depending on the position of the signer's body and the pronouns employed when producing a sentence, changes in the trunk are unnecessary in order to get the role-shift.

So, for example, we can coordinate two third-person pronouns in Libras, be it an ordinary sentence or a role-shifted one, without recurring to changes in the trunk or face as in (10a). Actually, what we see in (10a) is that alterations in the body or face positions *are not allowed* and are ungrammatical in this grammatical structure. On the other hand, one cannot coordinate two second person pronouns without *altering at least the face* position, as in (10b). It tells us that once the face has changed its position, *alterations in the trunk can, but must not* to happen. As the coordination of two first-persons is only apparently possible in the reported speech (*role-shift*), the rotation of both trunk and face seems to be obligatory in this case, as we see in (10c).

(10)

(*_____body-rotation) (*_____body-rotation)
(*_____face-rotation) (*_____face-rotation)
a. IX-3.sg<ipsilateral> ALSO IX-3.sg<contralateral>
VOTE *L-U-L-A*

'She and she voted for Lula'

(_____body-rotation) (_____body-rotation)

*(_____ face-rotation) *(_____ face-rotation)
b. IX-2.sg<frontal> ALSO IX-2.sg<frontal>
VOTE *L-U-L-A*

'You and You voted for Lula'

*(_____ body-rotation) *(_____ body-rotation)
*(_____ face-rotation) *(_____ face-rotation)
c. IX-1.sg<ego-aligned> ALSO IX-1.sg<ego-aligned>
VOTE *L-U-L-A*

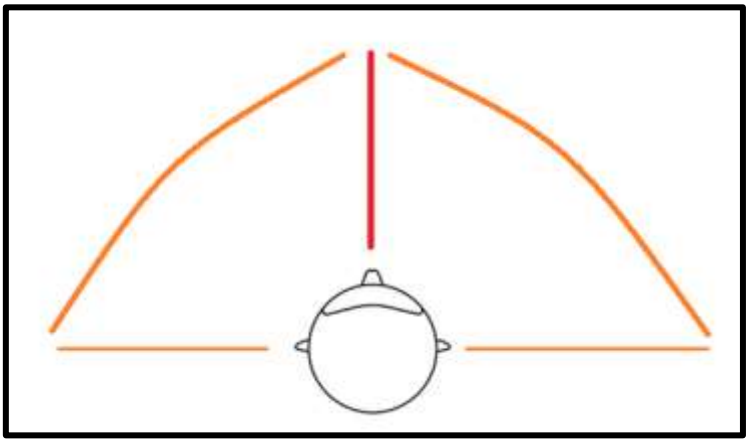
They spoke at the same time: 'ME and ME will also vote for Lula'

These linguistic facts seem to tell us that Libras, and maybe all sign languages, have two distinct third-person pronouns in its pronominal paradigm, because no *role-shift* strategy is needed to disambiguate them. That is different from what occurs in spoken languages in sentences like "*Larry voted for **her/you**, and not for **her/you**"* (SANDLER & LILLO-MARTIN, 2006), that can only have their references disambiguated by the use of a paralinguistic gesture of pointing.

In sum, the examples showed that the face is hierarchically higher at commanding the person marking in Libras, as trunk changes can be dropped with no serious effects to the meaning of the pronouns in the sentences. Of course, this is a topic that deserves to be investigated in depth, but it is not in the scope of this article to show how many pronouns there are in signed languages; instead, I want to show that the face has a more prominent function in fixing the value of the pointing pronouns, as the examples of coordinated pronouns seems to have shown.

Regarding the face, it is anatomically protuse, hence, the salience of its format is capable of delimiting more perceptibly the boundaries between the frontal space (represented by the red line in figure 5) and the lateral ones (represented by the regions circumscribed by the orange lines in figure 5).

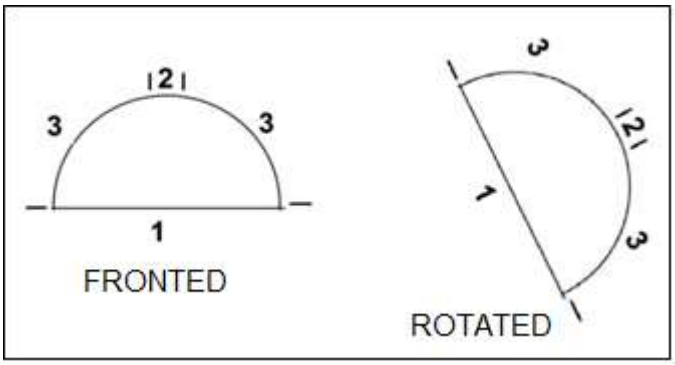
Figure 5. Distinction of the frontal *vs* lateral space based on the face



Source: Almeida-Silva (2019, p.148)

When the face changes its position during a conversation or a free speech it automatically redefines the zero point from which all the spaces related to the person morphemes are established, as in the figure 6 below. This observation explains why in the cases the trunk does not change its position, but the faces does, as in the initial examples in (1b) and (1c), the spatial morpheme apparently alterate its value. So, while moving the face to the side, all the virtual points are moved, repositioning the limits between the frontal and lateral areas, whenever the head changes its position.

Figure 6. Frontal and lateral areas alignment with the fronted and rotated face.



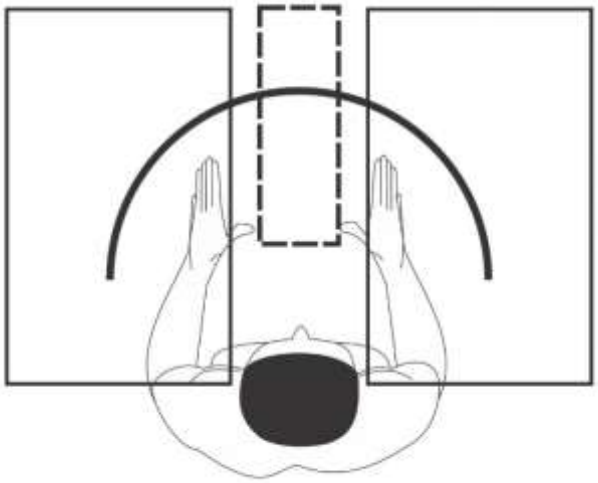
Source: Adapted from Meier (1990, p. 182)

The consequence to the pronominal system is that only signs directed to the frontal area will encode second person, but any minimal misalignment of the face from the frontal area is immediately perceived as selecting the lateral area, or the third-person value[5]. So, till now, no contribution from the eye-gaze is predicted or needed to codify person marking in Libras, given that the space has proved to be sufficient in this case.

[5] Future studies on sign language are necessary in order to confirm or refuse the productivity of this proposal.

Summarizing, in figure 7, the rectangles are presenting the space division based on the face, where the dotted lines stands for frontal area/second person, and the continuous lines stands for the lateral area/third person. The arc in the bottom represent the former view of horizonal plane division in which the trunk is not able to physically delimitate the frontal *vs* lateral distinction.

Figure 7. Face-based proposal for establishing horizontal plane limits



Source: Almeida-Silva (2019)

Authors like Alibasic & Wilbur (2006) also had criticized the trunk as being the base for the distinction between second and third-person pronouns in sign languages, and they add the head and eye-gaze to their analyses. However, here, I discard the eye-gaze and try to show that gazing and head movements are not dependent phenomena; on the contrary, they seem to operate independently from each other as we will see.

In the next section, I will show the results of a task that I developed aiming to confirm my hypothesis that the face position is more relevant than eye-gaze to encode second- and third-person distinction in Libras.

3. Task Methodology

In order to show that the analysis I propose here has advantages over the previous ones, I bring evidence from the results of a simple task that I developed and applied with bilingual participants aiming to elicit comprehension data about the pronominal signs in Libras. They were 20 deaf, undergraduate students who regard themselves as bilinguals

in Libras and written Portuguese. All the grammaticality judgments presented in this text is also based on their intuition.

If the space is in fact an independent morpheme, which is not defined in relation to the eye-gaze, or the trunk, it has to be recognized as a discrete phonetic chain that is codified only through the use of space. I presented to the participants via WhatsApp two sets of stimuli. In the first set, the alleged quotation forms of the pronominal signs are represented together with a change in the face position, in the figure 8, letters C and D do not allow for eye-gaze contact, as the reader can see in figure 8. In the second set of stimuli, the very same signs are now represented with a change solely in the eye-gaze, with the head fronted, as in the figure 9. Then, after presenting the two sequence of images, they were asked in Libras "Which sequence of pronouns is being reproduced in the images starting from A to D?" and they should answer using written Portuguese words for personal pronouns, namely, 'você'('you') and 'ele/ela' ('he/she').

Some of the participants answered using a signed video and pronouncing some words orally. I excluded the first-person of the test, as the dispute relies only on the distinction between second and third-person, so in the figures 8 and 9, the sequence of pointings from A to D is constant 'lateral, frontal, lateral and frontal' *based on the face position*, which would have to correspond to 'third-person, second-person, second-person and third-person'. The trunk is not involved in the stimuli and only changes in the face and in the eye-gaze were tested, so we do not expect participant's answers to rely on these unshown parts.

Figure 8. Stimuli 1 – changes in the position of the face

Source: Almeida-Silva (2019)

Figure 9. Stimuli 2 -changes in the position of the eye-gaze uniquely

Source: Almeida-Silva (2019)

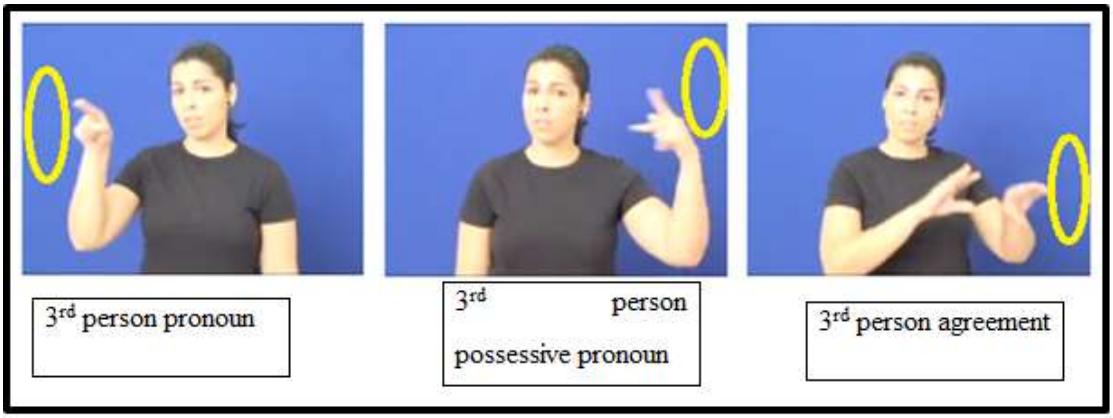
As a result, participants get to correctly predict the meaning of all the pronouns of the first stimuli in figure 8, but they report to get confused in relation to the signs C and D in the stimuli 2, in which the changes in the eye-gaze alone deform or anomalize the pronominal forms, making them unrecognizable, according to them. The results reinforce my hypothesis that no changes in the eye-gaze or trunk are obligatory to encode pronominal marking in Libras, as the changes in the face position proved to be sufficient.

4. Proposal Applicability

In this paper I brought evidences from theoretical discussions and tests that the horizontal plane in the signing space is found somehow limited and its segmentation can be better analyzed if we consider the face as the base from which frontal and lateral distinctions operates.

One major evidence that the lateral space of the face operates as a spatial morpheme for third-person in Libras is its productivity to be found attached to several indicating signs and assign them the same third-person value. In the examples in (10), the lateral area, which corresponds to the yellow circle, is virtually available to the signer, and the signer, so, can move a indicating sign to that area and 'couple' the spatial morpheme to the manual item. In the three examples given in (10), changing only the handshapes of the signs, but moving them towards the very same area, always encode the same predicted meaning, which is visibly defined by the place that the signs are directed towards to.

(10)



(Dicionário de Libras - ACESSO-BRASIL, 2018)

The examples above show that the space is productive, listable and displays an invariant meaning, hence, it fulfills the basic conditions to be a morpheme. One of the extensions of this analysis is that I consider the signs in (10) to be multi-morphemic items, hence, their phonological constitution would be the following:

ITEM	MANUAL MORPHEME	SPATIAL MORPHEME	GLOSSES
3rd person pronoun	INDEX-FINGER	LATERAL-3rd person=MORP.3	IX-MORP.3
3rd person possessive pronoun	P-HANDSHAPE	LATERAL-3rd person= MORP.3	P-HAND-MORP.3
3rd person agreement	TEACH (V)	LATERAL-3rd person= MORP.3	TEACH-MORP.3

Final considerations

This paper showed that the face creates a more salient segmentation pattern that delimitates the space around the signer's body, mainly considering the horizontal plane, due to its more prominent morphology (anatomy) if compared to the trunk. Also, I showed that eye-gaze alone is not an element that we can rely on in order to establish the distinction between frontal and lateral spaces, because as the tests showed, eye-gaze alone is not sufficient to pronouns identification.

Moreover, we found evidence to claim that the indicating signs, what includes

pointing signs and agreeing verbs in Libras, are in a more advanced level of grammaticalization, because the signs rely on the spatial morphemes to fix their values and less on contextualized strategies.

Therefore, we assume that the distinction between second and third-person pronouns in Libras does exists, and is highly expected to operate based on the face position, and not on the trunk or eye-gaze alone, as previous analyses argued. The frontal and lateral spaces, at least for the phenomena under discussion here, operates as discrete units in the language, and as such, are explored as spatial morphemes, allowing for different grammatical phenomena to exist through their exploration.

Acknowledgments

I want to thank Dr. Andre Nevins for his comments, suggestions and partnership, and I also want to thank Dr. Tarcísio de Arantes Leite for the careful reading and the fruitful commentaries in the previous version of the paper. Of course, the remaining errors are all my entire responsibility.

References

ALIBASIC, Tamara; WILBUR, Ronnie B. Pronominal system in Croatian Sign Language. *Sign Language & Linguistics*, v. 9, n. 1, p. 95-132, 2006.

ALMEIDA-SILVA, Anderson. *A (in)definitude no sintagma nominal em libras:* uma investigação na interface sintaxe-semântica. 2019. 351 f. Tese (Doutorado em linguística) - Universidade Estadual de Campinas, Instituto de Estudos da Linguagem, Campinas-SP. 2019.

ALMEIDA-SILVA, Anderson; TAVARES, Cláudia Roberta. Libras: uma língua de sujeito nulo parcial?. *Caderno de resumos da ABRALIN 2017*, Niterói, UFF, 2017. Comunicação oral no simpósio temático: Aspectos gramaticais da Libras.

ARONOFF, Mark; MEIR, Irit; SANDLER, Wendy. The paradox of sign language morphology. *Language*, v. 81, n. 2, p. 301, 2005.

BARBERÀ, Gemma. A unified account of specificity in Catalan Sign Language (LSC). In: *Proceedings of Sinn und Bedeutung*. 2012. p. 43-55.

BERENZ, Norine Frances. 1996. *Person and deixis in Brazilian sign language*. University of California, Berkeley dissertation.

BERENZ, Norine. Insights into person deixis. *Sign Language & Linguistics*, v. 5, n. 2, p. 203-227, 2002.

BÖRSTELL, Carl. *Object marking in the signed modality: Verbal and nominal strategies in Swedish Sign Language and other sign languages*. 2017. PhD Dissertation. Department of Linguistics, Stockholm University.

CORMIER, Kearsy; SCHEMBRI, Adam; WOLL, Bencie. Pronouns and pointing in sign languages. *Lingua*, v. 137, p. 230-247, 2013.

DAVIDSON, Kathryn; GAGNE, Deanna. Vertical representation of quantifier domains. In: *Proceedings of Sinn und Bedeutung*. 2014. p. 110-127.

KOULIDOBROVA, Elena. Elide me bare. *Natural Language & Linguistic Theory*, v. 2, n. 35, p. 397-446, 2017.

LIDDELL, Scott K. Real, surrogate, and token space: Grammatical consequences in ASL. *Language, gesture, and space*, p. 19-41, 1995.

LIDDELL, Scott K. Blended spaces and deixis in sign language. *Language and gesture*, v. 2, p. 331, 2000.

LIDDELL, Scott K. et al. *Grammar, gesture, and meaning in American Sign Language*. Cambridge University Press, 2003.

LILLO-MARTIN, Diane. Two kinds of null arguments in American Sign Language. *Natural Language & Linguistic Theory*, v. 4, n. 4, p. 415-444, 1986.

LIMA, Ediane Silva. 2015. *O fenômeno dêitico e a sua relação com os verbos simples e não simples na Língua Brasileira de Sinais*: uma abordagem sintático-semântica. Universidade Federal do Piauí. Dissertação de mestrado.

MATHUR, Gaurav; RATHMANN, Christian. Variability in verbal agreement forms across four signed languages. *Papers from Laboratory Phonology VIII: Varieties of phonological competence.* The Hague: Mouton, p. 285-314, 2006.

MCBURNEY, Susan L. Pronominal reference in signed and spoken language: Are grammatical categories modality-dependent. *Modality and structure in signed and spoken languages*, p. 329-369, 2002.

MEIER, Richard P. et al. Person deixis in American sign language. *Theoretical issues in sign language research*, v. 1, p. 175-190, 1990.

NEVINS, Andrew. Prospects and challenges for a clitic analysis of (A) SL agreement. *Theoretical Linguistics*, v. 37, n. 3/4, p. 173-187, 2011.

QUER, Josep. When agreeing to disagree is not enough: Further arguments for the linguistic status of sign language agreement. In Manfred Krifka & Hans-Martin Gärtner (eds.), *Theoretical Linguistics*. 2011. 189–196.

SÁ, Thaís Maíra Machado et al. Definiteness in Brazilian Sign Language: a study on weak and strong definites. *Revista Virtual de Estudos da Linguagem*, v. 10, n. 19, p. 21-38, 2012.

SANDLER, Wendy; LILLO-MARTIN, Diane. *Sign language and linguistic universals*. Cambridge University Press, 2006.

SMITH, Wayne H.; TING, Li-fen. Shou neng sheng qiao [*Your hands can become a bridge*], Vol. 1. Taipei: Deaf Sign Language Research Association of the Republic of China, 1979.