

# Phonology of hunting signs in two Kalahari Khoe-speaking groups (Ts'ixa and ||Ani)

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## 1. Introduction

While most sign linguistic research focuses on sign languages of the deaf, Kendon (1988) was first to set up a classification of alternate sign languages, i.e. sign languages developed by hearing people already competent in a spoken language. Since then, especially the sign languages of Aboriginal groups in central Australia have received increased attention (e.g. Kwek 1991; Green et al. 2011) and been compared to other well known alternate sign systems such as Plains Indian Sign Language (Davis 2006). Kendon (1988) and Pfau (2012), who conducted a rather thorough comparison of different alternate sign languages, mention hunting signs only in passing. Divale and Zipin (1977) analysed a relatively large sample of hunter-gatherer groups that could have developed a hunting sign language, from an anthropological point of view. They reported that all groups exhibited certain social characteristics like a small group size or hunting as their main source of livelihood. However, these features did not always result in the development of a hunting sign language. Although they had included some San groups in their sample, they did not find any indication of hunting signs in these communities.

The hunting signs of Kalahari Khoe-speaking groups in Southern Africa have not been linguistically investigated as yet. Recent studies exclusively focus on anthropological and methodological issues of the hunting sign languages (Brenzinger 2008; Sands & Güldemann 2009; Sands et al. forthcoming). The signs are used by men in order to avoid noises while stalking their prey in the bush. Due to socio-cultural changes of the past decades, hunting is no longer regularly pursued and the sign languages have become endangered.

The current investigation is concerned with select issues of phonology and morphology of hunting signs in two groups (*tshaukak'ui* among the Ts'ixa and *!'uen* among the ||Ani) in the Kalahari/Okavango region of Botswana. We have analysed handshape inventory, minimal pairs, handedness and complexity of signs in both languages.

## 2. Data and method

The data analysed for this study were collected during a fieldtrip to the Northwest District in Botswana. The Ts'ixa data were collected in the village of Mababe which is situated in the Chobe National Park, while the ||Ani data were recorded in the city of Maun.

The data consist of video recordings (approximately 50 minutes) of animal gestures collected using a list of local animals compiled for the Kalahari Basin Area Project (Humboldt University Berlin). This list provided pictures of the animals and their English and Latin names. A local research assistant, Tshiamo Kebuelemang, helped with the elicitation process and functioned as an interpreter. Subsequent to the recording, the videos were annotated using the ELAN software tool developed by the Max Planck Institute in Nijmegen (<http://www.lat-mpi.eu/tools/elan>). The annotations consisted of several tiers, including information on phonological parameters of the signs such as handshape or location, and English glosses. Moreover, all signs were transcribed using HamNoSys, a sign language annotation system developed at the Institute for German Sign Language and Communication of the Deaf at the University of Hamburg. It is a phonetic transcription system, thus enabling the researcher to notate the handshape, location, palm orientation and movement of signs.

## 3. Results

### 3.1 Handshape inventory

A phonological analysis of the collected signs revealed 16 phonetic handshapes in *tshaukak'ui*. Of those, three were found to be unmarked. These unmarked shapes are 1, 1-crooked and B-curved. They are shown in figure 1.<sup>1</sup>



Figure 1: Unmarked handshapes in *tshaukak'ui* – 1, 1-crooked and B-curved

<sup>1</sup> At this moment, it is not clear in how far laxness of articulation is meaning distinguishing, thus it was not considered for the current analysis.

Another short remark with regard to tshaukak'ui phonology seems in order. A handshape that is often mentioned as unmarked in sign languages is the A-handshape (Sutton-Spence & Woll 1999). Strikingly, this is not found at all in the language. Also the S-handshape that is similar to the A-handshape is very rare in the data (2.6%). This is different to |'uen, which will be outlined below.

Concerning the handshape inventory of |'uen, the data revealed 14 phonetic handshapes. Two of these are unmarked: 1 and 5. The 1-handshape was already shown in figure 1, the 5 handshape can be seen in figure 2 below.<sup>2</sup>



Figure 2: Unmarked 5-handshape in |'uen

Another issue that is noteworthy here is the frequency of the A-handshape. In contrast to tshaukak'ui, it occurred in |'uen, if only rarely (2.5%). Similarly, the S-handshape that was very rare in tshaukak'ui, is more frequent in |'uen (9.9%). However, both handshapes are still far from being unmarked.

### 3.2 Minimal pairs

According to the common phonological parameters in sign linguistics, hand configuration, palm orientation, location, movement and non-manuals, we tried to find minimal pairs in tshaukak'ui and |'uen. While the first three parameters were easily applicable to the signs, movement is rarely meaning distinguishing and non-manuals were not meaning-distinguishing at all. Below, examples of minimal pairs are given in Figures 3-5.<sup>3</sup>



Figure 3a: The sign GAI ('steenbok')



Figure 3b: The sign ||XOA ('antelope')

Figure 3: Minimal pair distinguished by handshape (tshaukak'ui)



Figure 4a: The sign ||XOA ('antelope')



Figure 4b: The sign DU ('eland')

Figure 4: Minimal pair distinguished by location (|'uen)

<sup>2</sup> Just as in tshaukak'ui, it could not yet be clearly determined whether laxness is actually meaning distinguishing or not.

<sup>3</sup> An example of a minimal pair distinguished by movement could not be depicted here. An example would be the signs DUU ('eland') and DOA ('kudu'). The first sign does not involve movement, while in the sign for 'kudu', the hands are moved upwards in a spiraling movement.



Figure 5a: The sign |xoo ('gemsbok')



Figure 5b: The sign DUU ('eland')

Figure 5: Minimal pair distinguished by palm orientation (tshaukak'ui)

### 3.3 Handedness of signs

Concerning the handedness of signs, tshaukak'ui and |'uen proved very different from each other. The great majority of signs in tshaukak'ui are one-handed. Thus, 78.4% of all signs are one-handed, while only 21.6% are two-handed. These were signs for 'elephant' (*t'xoa*), 'crocodile' (*ʃ'ona*), 'hippo' (*!xao*) or some of the bucks, for instance.

Most signs in |'uen are two handed (53.8%), while only 46.2% are one-handed. This might be due to the fact that many signs involve the two-handed indication of stripes of the fur or feathers or the iconic reference to birds' wings with both arms flapping up and down imitating a flying movement. The latter is used in the signs for 'guinea fowl' (*!xani*), 'ostrich' (*!garoo*) or 'vulture' (*kx'ai*), for example.

A comparison of handedness in both languages is shown in figure 6.

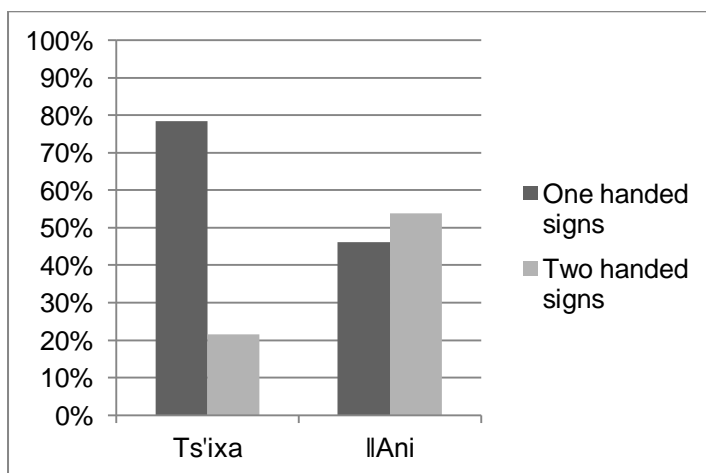


Figure 6: Handedness of signs in tshaukak'ui and |'uen

The overall tendency towards using one handed signs in tshaukak'ui and not in |'uen might be due to the fact that the signs are still used in a hunting context among the Ts'ixa, whereas they seem restricted to narrative and performance contexts among the ||Ani. The actual use of the sign system on the hunt requires the speaker to use one hand for carrying and firing weapons, which cannot be done when using both hands. In a narrative or performance context, both hands are free to form signs and it is hence not surprising that there are relatively many two handed signs in |'uen.

### 3.4 Complexity of signs

Another structural feature that relates to the practicality of signs is their morphological setup. Hence, the overwhelming majority of signs in tshaukak'ui are monomorphemic (97.3%), while only a small number of signs are compounds (2.7%)<sup>4</sup>. An example of a compound sign is MBIRI ('honey badger'), consisting of the classifying sign for small animals and the sign for 'angry'. In |'uen, approximately half of the signs are monomorphemic (51.9%), while the other half are compounds (48.1%). This relatively

<sup>4</sup> This distinction is comparable to the distinction into basic and derived signs in Cistercian Sign Language or unitary and compound signs in the Aboriginal sign languages of Australia (Kendon 1988). As we consider neither terminology appropriate, we resorted to the more standard linguistic terms 'monomorphemic' and 'compound'.

high number of compounds, especially if compared to the frequency of compounds in tshaukak'ui, is striking at first. However, it is in line with our findings concerning the handedness of signs. The signs apparently do not need to be practical anymore because they are not used in the context of hunting but rather in performative and narrative contexts. Consequently, longer “sequences” of signs are perfectly acceptable in the changed circumstances.

A comparison of the complexity of signs in tshaukak'ui and !'uen is shown in figure 7.

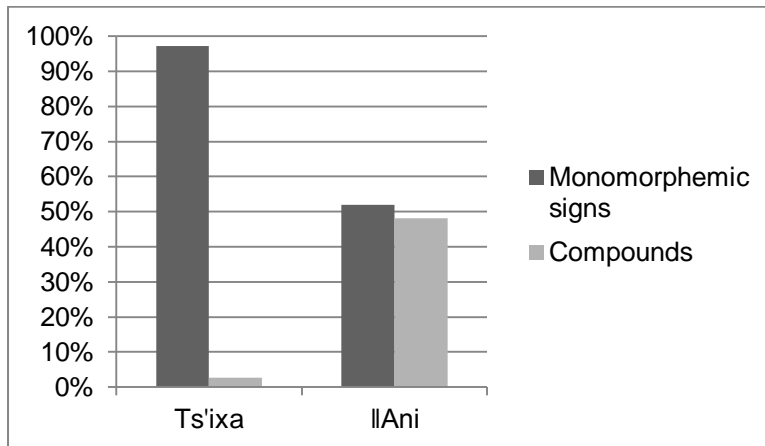


Figure 7: Complexity of signs in tshaukak'ui and !'uen

#### 4. Conclusion

As the hunting sign languages of the San people of Southern Africa have not been linguistically analysed so far, the current study provides a first step towards the documentation of the languages from a sign linguistic point of view. It could be shown that the signs are phonologically analysable and are thus comparable to other alternate and primary sign languages. Their phonological structure seems to be slightly simpler than that of primary sign languages though, as the inventory of handshapes is considerably smaller than that found in most primary sign languages. Compared to each other, the phonological systems of Ts'ixa and !Ani are rather similar.

Morphophonologically, tshaukak'ui and !'uen do not show the same similarities that they exhibit on the phonological level. In !'uen, there are many two handed signs whereas in tshaukak'ui the majority of signs are one handed. Moreover, the overwhelming majority of Ts'ixa hunting signs are monomorphemic while many of the !Ani hunting signs are compounds. This seems to be due to the different contexts of use (hunting vs. narration/performance respectively) which allow for different linguistic structures due to practical reasons.

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