

AN OUTLINE OF !GUI PHONOLOGY

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ABSTRACT Phonological contrasts of segments and tones are briefly described. In the course of the description, the characteristics of the click and non-click consonants of !Gui are discussed, and more general problems relevant to Khoisan phonological typology and historical investigations of the Central Khoisan Family are addressed with some new findings of !Gui. A tentative orthography is proposed for the linguistically adequate recording of !Gui material.

Key Words: Khoisan; Khoe; click; palatalization; orthography

INTRODUCTION

!Gui [glúi] is one of the less well-known Khoisan languages. It is classified as a member of the Central Khoisan (or Khoe) family (Köhler 1962, Vossen 1984). It is an unwritten language spoken mostly around the Xade area, in the Central Kalahari Game Reserve, Botswana, by about five hundred people who call themselves glúi-kò which can be literally translated as “bush-person”. A dialect of !Gui, which is called Khute (Traill 1986), is spoken in the Dutlwe and Takatokwane areas.

Like many of the Khoisan languages, !Gui lacks virtually any systematic linguistic description. !Gui materials have only been recorded by anthropologists, such as Tanaka (1978) and Silberbauer (1981), or reported as part of the historical linguistic study of the Central Khoisan Family, such as Köhler (1962), Vossen (1984, 1988) and Traill (1986).

This paper will present an outline of the phonological contrasts of this language providing an overview of the segmental distinctions and the tonal contrasts in citation forms. It briefly describes the phonetic features of segments and tones based on an adapted version of the International Phonetic Association (IPA) framework. In order to symbolize the click consonants I will use the systematic approach suggested by Ladefoged & Traill (1994). This study aims at characterizing the consonantal inventory of !Gui, and discusses a number of general issues concerning typological and historical studies of Khoisan languages. In addition I will propose a practical orthography which will enable a phonologically adequate documentation of !Gui materials.

The study is based on data of about two thousand words which have been collected by me on field trips to Xade since 1992 totalling about 12 months.

CONSONANTS

Two subclasses of consonants

This section concerns the phonological contrasts and some phonetic features of the two subclasses of !Gui consonants, clicks and non-clicks. This paper does not discuss the problem of the cross-classification and integration of these two classes, and deals with these two classes separately. In the course of the description of click consonants, however, I will point out some aspects of the cross-classification of click accompaniments and non-click consonants.

Click consonants

Clicks are described in terms of *click types* and *click accompaniments*. These are the terms used by Ladefoged & Traill (1994) in order to indicate the two aspects of click called *click influx* and *click efflux* in older terminology. I will apply many of the descriptive labels for click types and click accompaniments which are used in Ladefoged & Traill (1994) to the !Gui equivalents, and also employ their notational system for click transcriptions: the back closure is symbolized first followed by the click type which is followed by the different releases of the back closure when necessary.

!Gui has four click types and thirteen click accompaniments. As illustrated in Table 1, their combinations make fifty-two phonetic complexes, all of which form phonologically distinct syllable onsets, which we call click consonants in this paper. In the descriptive tradition of Khoisan linguistics they are assumed to be phonological units.¹

One of the characteristics of !Gui phonology is the complexity of the click accompaniments. Phonetic features of the !Gui click accompaniments have been described in Nakagawa (1995). Here I will put emphasis on the illustration of

Table 1. The click consonants of !Gui.

Click Type ⇒	Dental	Lateral	Palatal	Alveolar
<i>Accompaniment</i> ↓				
(1) <i>Voiced velar plosive</i>	g	g	g#	g!
(2) <i>Voiceless velar plosive</i>	k	k	k#	k!
(3) <i>Aspirated velar plosive</i>	k h	k h	k#h	k!h
(4) <i>Voiced uvular plosive</i>	ɠ	ɠ	ɠ#	ɠ!
(5) <i>Voiceless uvular plosive</i>	q	q	q#	q!
(6) <i>Aspirated uvular plosive</i>	q h	q h	q#h	q!h
(7) <i>Voiceless velar ejective</i>	k '	k '	k#'	k!'
(8) <i>Voiceless uvular ejective</i>	q '	q '	q#'	q!'
(9) <i>Voiceless uvular affricate</i>	q χ	q χ	q#χ	q!χ
(10) <i>Affricated uvular ejective</i>	q χ'	q χ'	q#χ'	q!χ'
(11) <i>Voiced velar nasal</i>	ŋ	ŋ	ŋ#	ŋ!
(12) <i>Aspirated velar nasal</i>	ŋ h	ŋ h	ŋ#h	ŋ!h
(13) <i>Glottal stop</i>	ʔ	ʔ	ʔ#	ʔ!

typological characteristics of the !Gui click accompaniments rather than their detailed phonetic description, summarizing some important points which Nakagawa (1995) makes on them.

Click accompaniments

Plosive Accompaniments

First, we see six plosive accompaniments shown in Table 1 from (1) to (6). The first three involve the back closure release in the velar position, and the latter three in the uvular position. Accompaniments (1), (2) and (3) are also attested in better documented Khoisan languages, such as !Xóǝ and Zhu (Ladefoged & Traill 1994). So I do not elaborate them here. The other three accompaniments, (4), (5) and (6), are uvular counterparts to (1), (2) and (3) respectively, and make their six-way distinctions which have not been found in other languages. As Ladefoged & Traill (1994) comment, clicks with this type of accompaniment “are found in only a very few languages such as !Xóǝ and !Ani” (p. 50). !Xóǝ has (4) and (5) together with the first three accompaniments (Ladefoged & Traill 1994), and !Ani seems to have only (5) in the uvular series (Vossen 1986), as illustrated in Table 2.

Four-way Distinction of Plosive and Ejective Accompaniments

The velar/uvular contrast extends to ejective accompaniments in !Gui: there are two unaffricated ejective accompaniments involving the velar/uvular distinction, namely (7) and (8). Accordingly, the set of features, “velarity” and “uvularity”, organizes the click consonants in a maximal way in !Gui: voicing, voicelessness, aspiration and ejection are found with both velar and uvular posterior closures. It is interesting that the identical distinctions are found in non-click stop consonants, as shown in Table 3.

Table 2. Velar and uvular plosive accompaniments of !Gui, !Xóǝ and !Ani.

	Voiced	Voiceless	Aspirated
!Gui	g! g!	k! q!	k!h q!h
!Xóǝ ²	g! g!	k! q!	k!h —
!Ani	g! —	k! q!	k!h —

Table 3. The velar/uvular distinctions in clicks and non-clicks.

	Voiced	Voiceless	Aspirated	Ejective
(i) Velar Click	g!	k!	k!h	k!’
(ii) Uvular Click	g!	q!	q!h	q!’
(iii) Velar Non-click	g	k	kh	k’
(iv) Uvular Non-click	g	q	qh	q’

The two features, [velar] and [uvular], thus, participate in the cross-classification of click accompaniments and non-click consonants: (i) and (iii) are specified as [+velar], while (ii) and (iv) as [+uvular].

There are two interesting cross-linguistic observations which reveal general properties of the velar/uvular distinction of the accompaniments. First, there is an audible difference in the timing of the release of the back closure: the uvular series (ii) being more delayed than the velar series (i). A similar delay of the uvular release is also seen in !Xóǝ, where g! and q! are distinguished from g! and k! respectively in the timing of release of the back closure (Traill 1985). Second, the voiced uvular plosive accompaniment g! tends to be prenasalized. The same prenasalization regularly occurs in !Xóǝ (Traill 1985). This prenasalization may be caused by the difficulty of sustaining voicing throughout a uvular stop, as Ladefoged & Traill (1994) interpret it, and this tendency is probably a general property of the voiced uvular click.

Uvular Affricated Accompaniments

There are two “uvular affricated” accompaniments, (9) and (10). Nakagawa (1995) has pointed out the problems of describing them as “uvular” and “affricate” and discussed the crucial difference between (10) and (8), so this is not repeated here. Here we provide some observations on these accompaniments with reference to certain non-click consonants.

Clicks with accompaniment (9) are similar to the non-click complex consonants, tɕ and tsɕ in that they are all followed by the same long “scrapey” uvular fricative and are phonetically consonant sequences from the auditory point of view. Analogously, clicks with accompaniment (10) are similar to the non-click consonants, tɕ' and tsɕ' in that they involve the ejective uvular release. This is optionally followed by a uvular plosive, i.e. [q], so, q!ɕ', tɕ' and tsɕ' may be represented in “narrow” transcription as [q!ɕ'q], [tɕ'q] and [tsɕ'q] in such variants, respectively. These observations are of relevance to theoretical issues, such as the cross-classification of click and non-click consonants and unitary or cluster analysis of clicks and complex consonants, topics which are currently being investigated.

Nasal Accompaniments

As the transcriptions in Table 1 indicate, the remaining three accompaniments, (11), (12) and (13), are here regarded as involving a velar nasal back closure, either voiced [ŋ] or voiceless [ɲ]. The nasal back closure [ŋ] of (11) does not give rise to any problem. This accompaniment is attested widely in other click-using languages, such as !Xóǝ (Southern Khoisan), Zhu (Northern Khoisan), Nama (Central Khoisan), Xhosa (Bantu) (Ladefoged & Traill 1994), Sandawe and Hadza (languages spoken in Tanzania) (Kagaya 1993, Sands et al. 1993), and even Damin (a kind of ritual “language” formerly used by Lardil speakers in Australia) (Dixon 1980).

Accompaniment (12) involves the nasal back closure which is regularly voiced when preceded by a vowel and usually voiceless in citation form. This nasality is auditorily evident. This accompaniment is different from the two aspirated

accompaniments (3) and (6) in that it involves the nasality and in that it has an inaudible release of the back closure, while in (3) and (13) the posterior release is audible (i.e. [kh] and [qh] respectively). As discussed in Nakagawa (1995), this accompaniment is fairly similar to so-called *delayed aspiration accompaniment* which is found in other Khoisan languages in the nasality and the inaudible back release, and is provisionally regarded as a variation of delayed aspiration accompaniment.

The nasal back closure in the glottal stop accompaniment (6) is less evident, and the nasality is only occasionally audible (in a subtle way) when preceded by a vowel. The similar accompaniment found in Nama (Ladefoged & Traill 1984) and Hadza (Sands et al. 1993) also involves nasality when postvocalic, but it is a consistent and clear feature: the vowel preceding a click with this accompaniment is nasalized in both languages and in addition the click becomes fully nasal in Nama. An aerodynamic study in progress will be used to establish the feature of nasality in the !Gui accompaniment. At the present stage we provisionally interpret this accompaniment as nasal based on the phonological evidence in Table 4.

This interpretation would make the feature “ejective” redundant and the two phonological features, “glottal” and “ejective”, would no longer be necessary. Ejective accompaniments would thus be specified [–nasal, +glottal], and the glottal stop accompaniment [+nasal, +glottal]. If this accompaniment were not specified [+nasal], then both features would be needed for the contrast between the glottal stop accompaniment (k!ʔ) and the velar ejective accompaniment (k!ʔ).

Ejective Accompaniments

!Gui has three ejective accompaniments, (7), (8) and (10). This triple distinction has not been reported in any other languages. As their descriptive labels in Table 1 indicate, they are distinct in the place and manner of the posterior release. Some other phonetic properties which make them distinct from each other have been discussed in Nakagawa (1995).

Table 4. An interpretation of the glottal stop accompaniment.

	<i>voiced</i>	<i>aspirated</i>	<i>glottalized</i>
<i>Nasal</i>	ŋ!	ŋ!h	ŋ!ʔ
<i>Velar</i>	g!	k!h	k!ʔ
<i>Uvular</i>	ɠ!	q!h	q!ʔ

Table 5. Minimal triplets for the three aspirated accompaniments and the three ejective accompaniments.

Accompaniment	Word	Gloss
(3)	k#hâm	“to beat”
(6)	q#hâm	“to make firewood”
(12)	ŋ#hâm	“to sharpen”
(7)	k!ʔâm	“buttocks (euphemism)”
(8)	q!ʔâm	“to soften by squeezing”
(10)	q!χʔâm	“to break”

Before ending this section it should be noted that contrasts among the three aspirated accompaniments and those among the three ejective accompaniments have not been attested in other languages. These distinctions are therefore unique features of the !Gui click system. The following shows complete and near minimal triplets for these contrasts. (For tonal transcriptions, see the section of TONE).

The following words exemplify all the 52 click consonants shown in Table 1:

- (1) Voiced velar plosive accompaniment.

g âa	a kind of tree (<i>Terminalia sericea</i> Burch. ex. DC.) ³
g âa	to spend a hard season
gɸaa	to move smoothly
g!âa	to hurt
- (2) Voiceless velar plosive accompaniment.

k aa	to skin
k âa	to crave for
kɸâa	to cover, to stick
k!âa	to miss
- (3) Aspirated velar plosive accompaniment.

klhâa	to put something into grass
kl hâa	to cultivate
kɸhaa	pan, dry lake-bed
klhâa	piece
- (4) Voiced uvular plosive accompaniment.

g âa	to open
g âa	to twinkle
gɸãã	spleen
g!âã	a kind of termite
- (5) Voiceless uvular plosive accompaniment.

q âa	dried river (Okwa)
q âa	to be dry
qɸâa	silver, transparent
q!âã	to raise the back (e.g. of a donkey)
- (6) Aspirated uvular plosive accompaniment.

qlhâa	to peep
q hâa	to spread
qɸhâa	lying
qlhâa	to spit out, to cough out
- (7) Voiceless velar ejective accompaniment.

k 'âo	to bend down
k 'âa	flower
kɸ'âa	to faint
k!'âã	to taste like giraffe (meat)
- (8) Voiceless uvular ejective accompaniment.

q 'âa	to carry
q 'âa	sitting upon one's heels
qɸ'âe	to spit
q!'âã	to smell like jackal

- (9) Voiceless uvular affricate accompaniment.
- | | |
|--------|--------------------|
| q χáa | meat |
| q χâa | during the daytime |
| q#χáa | to move something |
| q!χâa | diarrhea |
- (10) Affricated uvular ejective accompaniment.
- | | |
|---------|--------------------|
| q χ'áã | liquid, wet, moist |
| q χ'âa | to wash |
| q#χ'áã | a kind of termite |
| q!χ'áã | to pound |
- (11) Voiced velar nasal accompaniment.
- | | |
|--------|-----------|
| ŋ àa | stomach |
| ŋ làã | horn |
| ŋ#âa | to stare |
| ŋ!àa | to choose |
- (12) Aspirated velar nasal accompaniment.
- | | |
|--------|----------------------------------|
| ŋ haa | to find something in a container |
| ŋ háa | to cut anus and take intestines |
| ŋ#hãã | to go before |
| ŋ!haa | to lack horns |
- (13) Glottal stop accompaniment.
- | | |
|--------|-----------------|
| ŋ ʔáã | smell of sand |
| ŋ ʔaa | bat-eared fox |
| ŋ#ʔáa | to hide oneself |
| ŋ!ʔáã | to know |

Non-click consonants

We have seen that !Gui has a complex click consonant system with extensive distinctions some of which have not been found in other Khoisan languages. Like the click consonants, the !Gui non-click consonants also show some distinctive complexities. In this section we will illustrate the phonological contrasts of the non-click consonants, and discuss some interesting aspects of this consonantal class with reference to relevant sounds found in other Khoisan languages.

The non-click consonant inventory of !Gui is shown in Table 6. The two sounds in parentheses, namely t' and ŋ, may be regarded as marginal because they are only found in the following two peripheral words: t'aa “to carve”, which few !Gui speakers know, and ŋoã, which is an ideophone expressing the sound with which something is pulled off. The tap r and the alveolar nasal n do not occur in the root-initial position except for loan words. In the root-medial position only b, r, m, n, j and w may occur. (In a small number of trisyllabic roots t, g, k and s also occur medially; these are originally disyllabic roots affixed with a monosyllabic element.) The two nasals, m and n, may occur as syllabic in the final position of disyllabic roots and as a monosyllabic suffix.

Table 6. Non-click consonants of lGui.

	<i>Lb</i>	<i>Al</i>	<i>Pl</i>	<i>Vl</i>	<i>Uv</i>	<i>Gl</i>
<i>voiced</i>	b	d	dz	ʃ	g	ɠ
<i>voiceless</i>	p	t	ts	c	k	q
<i>aspirated</i>	ph	th	tsh	ch	kh	qh
<i>ejective</i>	—	(t')	ts'	c'	k'	q'
<i>affricated ejective</i>					kx'	
<i>voiceless with uvular</i>		tχ	tsχ			
<i>ejective with uvular</i>		tχ'	tsχ'			
<i>fricative</i>			s		χ	h
<i>nasal</i>	m	n		(ŋ)		
<i>tap</i>		r				
<i>glide</i>	w		j			

(*Lb*= labial, *Al*= alveolar, *Pl*= palatal, *Vl*= velar, *Uv*= uvular, *Gl*= glottal)

The following words illustrate the non-click consonants of lGui.

Root-initial non-click consonants:

b	băa	father, daddy
p	paa	to bite
ph	phăba	useless immature seed of melon
m	măă	to give
ŋ	ŋoă	ideophone (a sound of being pulled off)
d	dăi	crowned plover (<i>Vanellus coronatus</i>)
t	tăă	a kind of tree (<i>Rhigozum brevispinosum</i> Kuntze)
th	thări	dull (of edges)
t'	t'aa	to carve
tχ'	tχ'âm	a kind of termite
tχ	tχâm	to lace up
ʃ	ʃăa	owner
c	căn	to stand
ch	chém	soft, easy
c'	c'îbe	to cut clearly with a small knife
g	găă	duck
k	kăo	to promise
kh	khao	back of thigh
k'	k'ăe	to belch
kx'	kx'ăa	to drink
ɠ	ɠăba	to eat something on the palm
q	qăă	a kind of melon (<i>Acanthosicyos naudiniana</i> (Sond.) Jeffrey)
qh	qhăa	to error
q'	q'am	hot sand of a fire
dz	dzăa	to frighten

ts	tsāa	to disappear
ts'	ts'áa	squeeze in the hand to extract moisture
tsh	tsháa	water
tsχ	tsχāā	to hate
tsχ'	tsχ'āe	blue, green
s	saa	to miss a shot
χ	χae	to have sex
h	háā	to exist
ʔ	ʔāā	to wear
j	jāa	to step

Consonants which occur in the root-medial position:

b	k!āba	to spread and dry
m	k!āmā	to pass far from here
r	k!āra	a kind of tree (<i>Ochna pulchra</i> Hook.)
n	k!ānā	to twist
j	ʔāja	to govern
w	g!āwā	a dead person

Syllabic nasal consonants:

m	klam	the sun
m	-m̩	his
n	k!'án	to cut
n	-n̩	their

Below I will discuss some aspects of the non-click inventory of !Gui.

Stop System and Palatal Series

As shown in Table 6, !Gui has a large number of contrasts for stops. The four-way distinctions, namely voiced, voiceless, aspirated and ejective, are all represented in the four places of articulation, namely alveolar, palatal, velar and uvular. These full contrasts are not attested in other Khoisan languages, many of which do not have both palatal and uvular stop series. !Xóǀ and apparently !Xegwi (an extinct Southern Khoisan language) have both series, but the former lacks three palatals, c, ch and c' (Traill 1994), and the latter lacks one palatal c (Westphal 1971: 415). The existence of the distinctive alveolar-palatal-velar-uvular places of articulation with full members in the stop system, which is a characteristic of !Gui, is the result of an interesting sound shift which !Gui has undergone, as I will discuss below.

I will here provide some comparative data between !Gui, !Gana and Naro, a neighboring Central Khoisan language, which has apparently not undergone the sound shift. Naro words are cited from Visser (1994), the latest Naro lexicon, and are written in his transcription.

The list of cognates in Table 7 illustrates the palatalization that !Gui and !Gana have undergone, a sound shift in which the alveolar stops in some (not all) words change into the palatals (*d>j, *t>c, *th>ch, and *t'>c')

extents: the palatalization has affected all the eight words in |Gui but only the first four words in ||Gana, whereas Naro has preserved the alveolars. (There are small number of words in |Gui which have not undergone this palatalization.)

As these words show, this sound change is a kind of palatalization in the sense that it involves the raising of the tongue body, but it is not obvious what its motivation is: the front vowels in the first syllable of (1), (5), (6), (7) and (8) are results of the assimilation to the initial palatals, and not phonetic triggers. This palatalization therefore seems “unmotivated” in the conventional sense. Furthermore, this sound shift is typologically peculiar because alveolar stops are often viewed as unmarked while palatal stops are relatively marked, and it changes the unmarked series into the marked one without any obvious phonetic motivation.

The last four items in Table 7 show that the effect of the change is greater in |Gui than in ||Gana. Table 8 presents the comparison of the frequencies of alveolar and palatal stops which occur in the cognates of |Gui and ||Gana. It also shows the proportions of the palatal to the alveolar series. |Gui has clearly high palatal/alveolar proportions for all the four classes, i.e. voiced, voiceless, aspirated and ejective, whereas ||Gana shows a low proportion for the voiced, and

Table 7. The sound correspondence among Naro, ||Gana and |Gui.

	Naro	Gana	Gui	gloss
(1)	dàra	jíra	jíra	“to visit”
(2)	túú	cuu	cuu	“rain”
(3)	thōò	chōō	chōō	“to feel pain”
(4)	t’ōè	c’ôë	c’ôë	“beautiful”
(5)	dào	dão	jîo	“path”
(6)	tāá	taã	ciã	“different”
(7)	thám	thám	chém	“soft”
(8)	—	t’êbe	c’îbe	“to trim”

Table 8. The frequencies of the alveolar and palatal stops in |Gui and ||Gana cognates. The rows of frequency present the numbers of words with the relevant sounds, and those of proportion present alveolar/palatal proportions.

	Gui	Gana	(total)
voiced	d / j	d / j	
frequency	8 / 27	20 / 15	(35)
proportion	1 : 3.4	1 : 0.75	
voiceless	t / c	t / c	
frequency	12 / 38	20 / 30	(50)
proportion	1 : 3.2	1 : 1.5	
aspirated	th / ch	th / ch	
frequency	3 / 20	5 / 18	(23)
proportion	1 : 6.7	1 : 3.6	
ejective	t’ / c’	t’ / c’	
frequency	1 / 6	2 / 5	(7)
proportion	1 : 6	1 : 2.5	
all stops	d t th t’ / j c ch c’	d t th t’ / j c ch c’	
frequency	24 / 91	47 / 68	(115)
proportion	1 : 3.8	1 : 1.45	

less clearly high proportions than IGui for the other classes. This reflects the difference in the progress of the sound shift between these two languages.

A more specific comparison of the cognate words counted in Table 8 allows the further generalization that if a word in ||Gana has been affected by the palatalization, then its cognate in IGui will always be affected by the palatalization. In other words, a palatal stop in a ||Gana word implies a palatal stop in its IGui cognate.

It is worth mentioning here that this palatalization is blocked by a pharyngealized vowel which follows the alveolar stop⁴. This blocking shows a difference between IGui and ||Gana in the extent to which it applies. In ||Gana no palatal stop precedes a pharyngealized vowel, and in IGui I found three words in which a palatal stop is followed by a pharyngealized vowel (out of 94 words⁵ with a palatal stop), namely *châri* “dull”, *jòm* “braid” and *jàna* “marijuana”. Furthermore, the first two words involve an interesting phenomenon, as we will see in the following paragraph.

These two words have variants as shown in Table 9. A small number of IGui speakers use the forms with a palatal stop and others those with an alveolar stop (these two words are counted as those with an alveolar in Table 8 because fewer speakers use palatal sounds). By comparison with ||Gana cognates we can regard the variants beginning with *ch* and *j* as the result of the palatalization and that those beginning with alveolar stops are older forms. My four ||Gana consultants (two from Xade and the other two from Molapo) claimed that no ||Gana speakers say *châri* and *jòm*. The observation on these variations in IGui enables us to hypothesize that the “unmotivated” palatalization is still advancing in IGui and is entering into the new stage where its application breaks the block by pharyngealized vowels⁶.

Here I will provide additional data from an earlier phonetic account of ||Gana in order to see more about the dynamic aspect of the palatalization.

Maingard (1961: 119) reports that “||ganakwe has a number of words with initial dental, *t-* or *d-*, which have a variant form with palatalized initial”. This language is probably a different dialect of ||Gana. He recorded the material at the Uitkoms, 38 miles east of Ghanzi, in 1955 (Maingard 1957). Table 10 illustrates Maingard’s observation on the variation, which is shown with

Table 9. The palatalization unblocked by pharyngealized vowels.

IGui	Gana	gloss
<i>châri</i> ~ <i>thâri</i>	<i>thâri</i>	“dull”
<i>jòm</i> ~ <i>dòm</i>	<i>dòm</i>	“braid”

Table 10. Maingard’s observation on the palatalization in “||ganakwe”.

Naron (Visser)	“ ganakwe” (Maingard)	IGui; Gana (Nakagawa)	gloss
<i>dòro</i>	<i>doro</i> ~ <i>dʒuro</i>	<i>júro</i>	“to make fire with sticks” ⁷
<i>dùù</i>	<i>du</i> ~ <i>dʒu</i>	<i>jêu</i>	“eland”
<i>têè</i>	<i>te</i> ~ <i>tjê</i>	<i>cîê</i>	“thigh”

reference to Naro, |Gui and ||Gana counterparts. The variation of the alveolar and palatal stops indicates that the sound shift in question is, or at least was at the time of Maingard's recording, ongoing in the ||Gana dialect which he dealt with. The comparison in Table 10 clearly shows that alveolar stops in certain words are (or were) presently undergoing the palatalization in "||ganakwe" around Uitkoms and those sounds in |Gui and ||Gana have already undergone this change.

From the above discussions we can conclude firstly that |Gui and ||Gana have been in the process of a peculiar sound shift where the alveolar stop series changes into the palatal series, and secondly that this palatalization has affected |Gui, ||Gana and Naro to different degrees (it has proceeded further in |Gui than in ||Gana, and has not affected Naro), and finally that this change, the palatalization, is still ongoing. It seems that this sound shift, taking place in an unmarked stop system, leads to a peculiar stop system without the unmarked alveolar series.

In concluding this section I will raise a question concerning this sound shift. How can we explain this palatalization, which seems to lack the phonetic motivation in the conventional sense? Since the direction of the sound shift is from an unmarked stop system to a marked one, we would hope to find some causation for the change.

It is suggestive that the palatograms and linguograms of alveolar stops in other Khoisan languages show a much wider contact between the tongue body and the palate than is expected in alveolar stops, though this is auditorily not palatal (Traill 1996). If |Gui and ||Gana alveolar stops also have the similar property, they have a latent articulatory motivation within themselves rather than their environments. Furthermore, the palatogram of a palatal stop in ||Gana in Gope shows the contact in the much advanced region, indicating that this is a palatalized alveolar stop (Traill 1996). If the palatal stops in |Gui and ||Gana have the similar phonetic feature, the sound shift will seem less peculiar (more likely to happen). Palatographic and linguographic investigation in |Gui and ||Gana, therefore, is worth making, and I am planning to undertake it in the ongoing study.

We should here also pay attention to the point which Traill (1980) makes on Non-Khoekhoe languages of Khoe family that "there seems to be some sort of structural pressure in these languages to have a non-click palatal series of consonants." As he discusses, in some Non-Khoekhoe languages the non-click palatal series is generated as a result of the click loss of Ꞥ, while in |Gui and ||Gana, as we have seen, the palatal stops are derived from the non-click alveolar stops, and these two processes did not take place at the same time in one language. This structural pressure forms a background of the "unmotivated" palatalization. At this stage, however, I can not explain the mechanism of the "pressure" in these languages.

The Lateral Release of kx'

The affricated velar ejective is transcribed in Table 2 as kx', but this consonant involves a **lateral** release in |Gui and may be broadly transcribed as [kɭ'] in IPA. I have observed the same type of release with the affricated velar ejective in ||Gana (in the Xade and the Molapo dialects).⁸

This phonetic detail has not been described in phonetic accounts of Khoisan languages. The affricated velar ejective is widely found in other Khoisan languages, such as Nama, !Ani, !Xóǀ and Zhu (Beach 1938, Vossen 1986, Traill 1985, Snyman 1970), but the lateral release is not reported (the sound has been conventionally transcribed as [kx'] or [kxʔ]). However, it is possible that the lateral release of ejected velar affricate was observed in two other Khoisan languages. First, in an unpublished lexical collection of a Central Khoisan language recorded by the well-known explorer David Livingstone in around 1850, we can find the transcription **k'l** in one word **k'loo** “flesh, meat” (Maingard 1961: 118), of which the cognate in !Gui is [kɿ'loo] “to eat meat”. Maingard comments that the vocabulary by Livingstone is likely to be a sample of the Danisi dialect. The letter **l** in the transcription **k'l** may perhaps represent the lateral release. Second, Snyman (1980: 18) shows a table of Angolan !Xū consonants where he specifies **k'** as “lateral”. Unfortunately, he does not provide any further information on it.

The Realization of r

The tap r occurs root-medially, and is usually realized as lateral [l] when the root-initial consonant has the lateral click type (cf. [k!àra] *Ochna pulchra* Hook. and [kɿlâla] *Acacia erioloba* E. Mey). The latter realization involves a progressive distant assimilation caused by the click type. This shows that the articulatory feature of the click type “lateral” affects the liquid consonant of the following syllable. In other words, the assimilation by the click type of the initial consonant reaches as far as the following syllable onset while it does not seem to affect the following vowel.

However, the ejected affricated velar lateral kx' [kɿ'] above mentioned does not cause the same assimilation. This may be explained by interpreting the lateralness of kx' [kɿ'] as a phonetic detail and not an underlying feature.

The lateral realization of r also occurs after a pharyngealized vowel, ǀ, ǁ or ǁǁ (see examples in the section of pharyngealized vowels below). At the present stage, I can not present the phonetic explanation for this process.

VOWELS

This section simply outlines the !Gui vocalic segments by presenting the vowel inventory in broad phonetic transcriptions and their distributions in monosyllabic and disyllabic morphemes. Monosyllabics and disyllabics are approximately 97 percent of the !Gui morphemes that have been found. Here we will not concern the detailed discussion about the underlying representation of each vowel segment.

Overview

Table 11 shows the vowels found in !Gui. There are six plain vowels (five monophthongs and one diphthong), three nasal vowels and three pharyngealized

vowels (two monophthongs and one diphthong). The plain monophthongs involve three tongue heights and the nasal vowels two.

The vowels in monosyllabic morphemes

The vowels [i e a o u ē ā ò] occur in monosyllabic morphemes which consist of a vowel with or without an initial consonant (i.e. CV or V structure). The following examples are to illustrate the five plain vowels in this position.

kì	tense marker (today past)
kè	conjunction (reason)
kà	postposition (“of, in, by, with, than etc.”)
kò	derivational suffix “person, people”
ku	verbal suffix (reciprocal)

The nasal vowels in this position only occur when preceded by a nasal consonant.

nè	conjunction (“and then”, used with the imperative mood)
ŋ ē	“this” (deictic)
mā	nominal suffix (male singular accusative)
ŋ ā	“this” (anaphoric)
ŋ ?ō	“other”

The pharyngealized vowels do not occur in monosyllabic morphemes.

The vowels in disyllabic morphemes

The vowels shown in Table 11 all occur in disyllabic morphemes, but they show distributional constraints in relation to the syllable structure of morphemes, as stated in following sections. For convenience we classify the syllable structures of disyllabic morphemes into two types as illustrated in Table 12. In the position C1 all the click consonants and the non-click consonants except **n** and **r** may occur, and in C2 **b**, **m**, **r**, **n**, **j** and **w** may occur. C2 may be null (C1V1V2), in which case V1 and V2 will form connected vowels or a long vowel (CVV or CV: structure).

The vowels which occur in V1 of both syllable structure types are **i**, **e**, **a**, **o**, **u**, **o̠a**, **a̠**, **o̠** and **o̠ā**. Among these, six vowels, namely **i**, **e**, **a**, **a̠**, **o̠** and **o̠ā**, all occur in V1 of both types. The two rounded plain vowels **o** and **u** occur in V1 of (a) type, not of (b) type. The plain diphthong **o̠a** occurs in V1 of only (b) type. The three

Table 11. The vowels of lGui.

plain:	i	e	a	o	u	o̠a
nasal:		ē	ā	ō		
pharyngealized			a̠	o̠		o̠ā

Table 12. Two types of syllable structure of disyllabic morphemes.

C stands for a consonant, V a vowel and N a syllabic nasal, i.e. m or n.

(a)	C1V1C2V2
(b)	C1V1N

pharyngealized vowel, **ǎ**, **ǫ** and **ǫǎ**, are only found in the V1 position. In V2 five plain vowels, **i**, **e**, **a**, **o** and **u**, and three nasal vowels, **ẽ**, **ã** and **õ**, occur.

Vowel Distributions in C1V1C2V2-type Morphemes

(1) The unrounded plain vowels, **i**, **e** and **a**, in V1

The three unrounded plain vowels, **i**, **e** and **a**, all occur in V1 of CVCV-type morphemes, but their occurrences are constrained by C1, C2 and/or V2. The main constraints on **i**, **e** and **a** in this position are as follows.

If C1 is a non-click palatal, then the unrounded plain vowel in V1 is always **i**.

jǎ	“owner”
cie	“to stand”
jibu	“to cover”
c’ibe	“to cut clearly”
jíra	“to visit”
jina	“to please”

If C1 is neither a uvular consonant (a click with a uvular accompaniment or a uvular consonant including **tx**, **tsx**, **tx’** or **tsx’**) nor a non-click velar ejective (**k’** or **kx’**), and V2 is **i**, then the unrounded plain vowel in V1 is always **i**.

pǐi	“breast”
sǐi	“to gas”
?ǐi	“to seem”
kǐi	“song”
ŋǐi	“to learn”
ts’ibi	“to rain lightly”
dzǐri	“paralyzed”

If C1 is a non-click alveolar or a click of dental or palatal type with a velar accompaniment, and V2 is **u** or **e**, then the unrounded plain vowel in V1 is always **e**.

séu	“to weave”
tsēbu	“to snatch”
tséru	“funny”
gǝeu	“kori bustard”
ŋǝéu	“name of a place”
kleru	“to chat”
kǝēbu	“to bundle”
ŋǝheru	“to present to a visitor”
tsee	“to work”
ŋǝée	“fire”
kǝêbe	“Tswana (people)”

If C1 is a non-click alveolar or a click of dental or palatal type with a velar accompaniment, C2 exists, and V2 is **a**, **ā**, **o** or **ō**, then the unrounded plain vowel in V1 is always **e**.⁹

dzéra	“bird”
dzémã	“to glare”
ŋɛ̃?ero	“body, core”
gɛ̃enō	“to convey on the head”

If C1 is a uvular consonant (a click with a uvular accompaniment or a uvular consonant including **tx**, **tsx**, **txʼ** and **tsxʼ**), an alveolar or lateral click with a velar accompaniment, or a non-click velar ejective (**kʼ** or **kxʼ**), then the unrounded plain vowel in V1 is always **a**.

qhâe	“to smell bad”
tsxæe	“to turn one’s head”
gllǎe	“female”
kʼaě	“liver”
qhái	“quiet, still”
q χái	“a flat grassy place in a pan”
ŋ!ái	“lump”
qhǎri	“Kalahari (people)”
kxʼai	“far”
k!ânã	“winder (plant)”
q χʼāra	“to drop by”
q χʼáo	“snake”
qɛ̃xânō	“to praise”

(2) The rounded plain vowels, **o** and **u**, in V1

The two rounded plain vowels occurring in the V1 position of C1V1C2V2-type morphemes show the following distributional constraint.

If C1 is uvular, then the rounded plain vowel in V1 is always **o**.

qɛ̃xʼóa	“to go out”
q χóí	“bean of <i>Tylosema esculentum</i> (Burch.) Schreiber”
qoru	“to turn up”

Vowel Distributions in C1V1N-type Morphemes

(1) The unrounded plain vowels, **a** and **e**, in V1

These two vowels show the following constraint.

If C1 is a non-click palatal, then the unrounded plain vowel is always **e**. Otherwise, it is **a**.

jem	“tongue”
cěn	“to stand up”
chém	“to be soft, easy”
klam	“to get thirsty”
qhán	“to talk”

Obviously, **e** and **a** are in complimentary distribution in this position, and are not contrastive. Furthermore, these two vowels show morphophonological alternation: the vowel **a** in this position alternates with **e** in a verb morphological process when preceded by an alveolar or velar non-click consonant, or by a click of dental or palatal type with a velar accompaniment as exemplified below.

klémā-ha “to be thirsty” < klam “to get thirsty”

The complimentary distribution and the morphophonological alternation of the two vowels in this position suggest the possibility of the interpretation that **a** underlies **e** in V1 of C1V1N-type morphemes.

(2) The plain diphthong, **qa**, in V1

The other plain vowel that occurs in V1 of C1V1N-type morphemes is the diphthong **qa**.

ɣqam	“molapo (a place name)”
cqam	“to swallow”
kqam	“to hear”
qōan	“to move”
tshóan	“to pluck”
ts'óam	“beak”
k'òam	“long bag”
q'χóam	“to help”
q'χ'ōan	“name”
k òam	“short”
ɲ#ōam	“charcoal”
g!òam	“to blow”
ɲ!ʔoam	“arm”

This vowel is the diphthong [qa] and is pronounced shorter than the sequence of two vowels [oa]. The following examples illustrate the difference of their lengths.

- | | | | |
|-------|-----------|--------------------|---------------|
| (i) | [k'ám] | “penis” | (two morae) |
| (ii) | [k'qam] | “heavy” | (two morae) |
| (iii) | [k'oa] | “an open space” | (two morae) |
| (iv) | [k'oa m̩] | “of an open space” | (three morae) |

Auditorily, the diphthong with the syllabic nasal, [qam] in (ii) is as long as [am] in (i) and as the vowel sequence [oa] in (iii), and is shorter than the vowel sequence with the syllabic nasal [oa m̩] in (iv).

This diphthong is only found in the V1 position of C1V1N-type morphemes. This unique distribution may be explained by interpreting that this diphthong is a phonetic realization of either **u** or **o**, neither of which is found in this position as mentioned earlier. In other words, it is plausible to interpret either **u** or **o** underlies the diphthong [qa]. Here I provisionally interpret this diphthong as **o** underlyingly on the following morphophonological ground: this diphthong alternates with **o** in a verb morphological process as illustrated below.

cqam	“to swallow”	>	cōmā-ha	“to have swallowed”
kqam	“to hear”	>	kómā-ha	“to have heard”
qōan	“to move”	>	qōnā-ha	“to have moved”

I found one speaker who always uses [ḡḡ]. Thus his pronunciation is exemplified as follows:

gḡḡi	“a kind of grass”
gḡḡe	“bone arrowhead”
ḡḡḡu	“to drink water with a hand”
gḡḡā	“resin, gum”
gḡḡō	“to have a special good flavor”

In IGui cognates these pharyngealized vowels are more regularly realized as [o] with weaker pharyngealization. At the present stage it is difficult to answer the question why the rounded pharyngealized vowel has the diphthongal variant in IGui.

V2 and C2

As already mentioned, the vowels which occur in the V2 position are the five plain vowels, namely **i**, **e**, **a**, **o** and **u**, and the three nasal vowels, namely **ẽ**, **ã** and **õ**. Both plain and nasal vowels may occur if C2 is w, j or null. Only plain vowels may occur if C2 is b or r, and only nasal vowels may occur if C2 is m or n.

TONE

This section presents an overview of the tonal contrasts in IGui. For lack of space we will here limit ourselves to exemplification of the distinctive tonal melodies that occur in citation forms, and will not deal with tonal alternations found in morphological processes, such as verbal suffixations, verbal compounds and reduplications of various types. The tonal notations in the present paper imply a traditional contour tone analysis (a unitary analysis), under which the tone bearing unit is basically assumed to be a monosyllabic morpheme and a disyllabic root. This type of approach was used by Beach (1938) for describing another Central Khoisan language, Nama, and has recently been criticized by Haacke (1992), who proposes an alternative register tone analysis (a cluster analysis) under which tones occurring with disyllabic roots are analyzed as clusters of two register tonemes. In a full discussion it will be important to examine the adequacies of these two approaches since IGui tonology is similar to that of Nama in a number of points, such as the nature of the tone bearing unit and the tonal alternations, which are of direct relevance to Haacke's argument. However, we will not discuss this issue here, but will tentatively adopt a unitary representation for the present survey.

Tonal contrasts of monosyllabic morphemes

Monosyllabic morphemes are all grammatical elements except one noun, *χò* “thing, place, case”¹⁰, and are restricted in number in the IGui lexicon. Some of them are free forms, such as tense and aspect markers, and others bound forms, such as affixes, which are shown with “-”.

They contrast only two tonal melodies, namely “High” and “Low”. We only mark Low with a grave accent on the vowel, leaving High unmarked. The following minimal pairs illustrate the tonal distinctions found in monosyllabic morphemes.

morphemes	tone	meaning/function
ci	(high level)	“my”
cì	(low level)	habitual (aspect marker)
-ki-	(high level)	focus marker
kì	(low level)	today past (tense marker)
-ka	(high level)	verbal formative
kà	(low level)	postposition (multifunctional)

Tonal contrasts of disyllabic morphemes

Except for a small number of grammatical elements, disyllabic morphemes are lexical roots which predominate in the lexicon: over 90% of the !Gui morphemes that have so far been collected are disyllabic lexical roots. Also in other Khoisan languages, such as Nama, !lAni and !Xóǀ, their lexical roots are essentially disyllabic, and it is assumed that “the decisive tonological characteristics can be derived from the predominantly disyllabic roots” (Haacke 1991: 121).

Disyllabic morphemes show six contrastive tone melodies, which we label “high level”, “mid level”, “low level”, “high falling”, “falling” and “low rising”. These distinctions and their notations are illustrated by the following complete minimal sextuplet. (Tones are marked on the first vowel. If it is unmarked, it is high level.)

!Gui	tone melody	gloss
kllae	(high level)	“to teach”
klláe	(high falling)	“to chew”
kllâe	(falling)	“to brood”
kllãe	(mid level)	“to watch”
kllàe	(low level)	“to work as a shelter”
kllǎe	(low rising)	“to cause (a strange thing)”

Tonal contrasts of trisyllabic morphemes

Trisyllabic morphemes are quite limited in number and semantic field. They are only approximately three percent (about 70 samples) of the !Gui lexical morphemes that have been found so far, and more than half of them may be analyzed as historically “disyllabic root + monosyllabic suffix” (ending with -ri, -ne, -ba, -be, -te or -gu, whose semantic effects are unclear but perhaps kinds of diminutive), and many of them are names of animals, birds and plants.

Trisyllabic morphemes show fourteen distinctive tone melodies. I interpret twelve of them as sequences of two tones: a tone for a disyllabic morpheme plus a tone for monosyllabic morpheme, on the ground that their tonal manifestations are identical to those of all the possible sequences of a disyllabic morpheme and a monosyllabic morpheme. In other words, a trisyllabic morpheme with one of these tone melodies consists of the two tone bearing units, namely that of a disyllabic morpheme and that of a monosyllabic morpheme, in this order. The

interpretation of twelve types of tones on trisyllabic morphemes are illustrated below. Tonal notations can be made by the combination of the markers for disyllabic and monosyllabic morphemes.

lGui	tone sequence	gloss
kl'aari	H+H	a kind of bagworm
k!aribè	H+L	a kind of plant
ŋɛʔóori	HF+H	a kind of plant (<i>Ximenia caffra</i> Sond. var. <i>caffra</i>)
sáakù	HF+L	there
ŋlloori	F+H	grandchild
côorà	F+L	to be strong
q!'ābaté	M+H	serval?
?ābagù	M+L	belt for carrying a baby
glàari	L+H	a kind of beetle (<i>Anomalipus lemur?</i>)
glāōgù	L+L	running high jump (play)
glōōori	R+H	a kind of bird (Cape glossy starling?)
tshērerè	R+L	bug

The remaining two melodies are only found in two words, so the generalization is difficult. We may however interpret that they are also tonally analyzed as sequences: each consists of a monosyllabic element and a disyllabic element on some tonological level. A tentative interpretation of the two words is shown below.

kusūro	H+M	but rather
klōkūro	L+M	maybe

ORTHOGRAPHY

Based on the segmental and tonal contrasts which have been presented above, this section will propose a practical orthography for the purpose of documentation of lGui materials. This orthography is in principle “phonemic” and designed to represent all the phonological contrasts which have been identified, but at the same time it is “practical” in that in deciding some symbols it follows the transcriptional convention which has been practised and developed for communications among the researchers of our project.

Since the orthography is basically “phonemic” and shows a one-to-one correspondence between each contrastive segment and its symbol to a large extent, it will be sufficient here to illustrate their correspondences and to make some comments on their disagreements where necessary.

First, the four click types are represented by using the IPA symbols, namely ɓ, ɗ, ʄ and ǀ, but click accompaniments are transcribed as illustrated below with the alveolar click.

Secondly, non-click consonants are transcribed with the same symbols as phonological representations shown in Table 2 except for the segments in the right of Table 13.

Thirdly, some vowels are represented phonetically, some are treated

Table 13. Some correspondences between phonological and orthographical representations.

phonological	orthographical	phonological	orthographical
g!	!g	dz	z
k!	!k	ʃ	gy
k!h	!kh	tʃ	tx
ŋ!	!n	tsʃ	tsx
ŋ!h	!nh	tʃ'	tx'
ŋ!ʔ	!ʔ	tsʃ'	tsx'
k!'	!k'	ʃ	x
q!'	!q'	j	y
q!ʃ'	!qx'		
q!ʃ	!x		
ɔ!	!G		
q!	!q		
q!h	!qh		

phonologically and others are written in orthographically assigned letters in this orthographical system. Non-pharyngealized vowels in the V1 position are transcribed phonetically as **i**, **e**, **a**, **o** or **u**. Pharyngealized vowels are dealt with phonologically in orthography and are always symbolized as **ḡ** and **ḡ**. Oral vowels in the V2 position are always phonologically represented as **i**, **e**, **a**, **o** or **u**. Nasal vowels in V2, on the other hand, are represented as **ḡ**, **ḡ** and **ḡ** unless C2 is **m** or **n**, and are written using symbols for oral vowels, namely **e**, **a** and **o** when preceded by a nasal consonant, **m** or **n**. In the latter case the vowel letters are “read” as nasal vowels by the “phonic” rule that **e**, **a** and **o** are pronounced [ḡ], [ḡ] and [ḡ], respectively, after **m** or **n**. Likewise, nasal vowels which occur in mono-syllabic morphemes, **ḡ**, **ḡ** and **ḡ**, are written as just **e**, **a** and **o**, and their nasality is “predicted” by the preceding nasal consonants which include clicks with nasal accompaniment, such as ŋ!, ŋ!h and ŋ!ʔ, (a click with the glottal stop does not have any nasal markers in orthography). Finally, tonal contrasts are marked in the same way as we have seen in the previous section.

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NOTES

¹ Nonlinear phonology has provided a theoretical framework in which this assumption is justified (Sagey 1986, Lorensen 1992). Against this assumption, the cluster analysis has been argued by Traill (1985 and 1993). It is, therefore, of theoretical interest to examine these two views with !Gui data, but it is not our present concern.

- ² The aspirated accompaniment k!h is interpreted as phonetically uvular in Traill (1985). Under this interpretation the distinctions in !Xóô are illustrated as follows:

!Xóô	g!	k!	—
	g!	q!	q!h

- ³ Identifications of plants in this paper are based on Tanaka (1980).
- ⁴ It is interesting to explore the phonetic explanation for this blocking since Bhat (1978) notes “only two environments that could be specified as capable of blocking palatalization”, namely “1) an apical trill or tap, and 2) a retroflexed consonant. (p. 66)” In this paper, however, I will not concern this issue.
- ⁵ Table 3 shows that there are 91 words with a palatal stop. They do not include châri “dull” and jôm “braid” for the reason mentioned below, nor they include jâna “marijuana”, of which the cognate is not found in !Gana.
- ⁶ It is suggestive that among the words with which this new stage begins the word meaning “marijuana” has already undergone the sound shift completely while the other two are still undergoing it, indicating that jâna “marijuana” is the first to arrive at the new stage. This word may change historically in a special way because the !Gui people hesitate to refer to it directly: marijuana is often called euphemistically, such as daôgu-tsüu “donkey-dung”, ŋlütsha “hyena (meat)”.
- ⁷ The gloss given to this word in Maingard (1961) is “fire-sticks”, which is probably a mistranslation.
- ⁸ The similar velar lateral ejective is also found in some languages other than Khoisan, such as Zulu, Artchi and a dialect of Avar (Catford 1977).
- ⁹ It should be noted here that **a** in V1 alternates with **e** in a verb morphological process when preceded by an alveolar or velar non-click consonant, or by a click of dental or palatal type with a velar accompaniment as exemplified below.
- | | | | | |
|-----------|-----------------------|---|-------|----------------|
| tsêra-ha | “to have disappeared” | < | tsāa | “to disappear” |
| kéro-ha | “to have promised” | < | kāo | “to promise” |
| glénā-ha | “to have pillowed” | < | glāā | “to pillow” |
| tshéro-ha | “to have dug” | < | tsháo | “to dig” |
- It can be interpreted that the vowel **a** underlies the vowel **e** occurring in such derived forms. We do not deal with this issue in this paper any further.
- ¹⁰ This exceptional word can also be regarded as a “grammatical element” in the sense that its function is the situational reference like pronouns.

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