

Clicks, concurrency and Khoisan

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Supplementary materials

Appendix: Transcriptions

This Appendix lays out the complex detail and history of notations used for the sounds of !Xóǀ in the primary sources.

1 Initial non-clicks

The non-click initials are mostly familiar from other languages, and so there is little confusion in the notations. I give here the transcriptions used by Traill for the Eastern dialect, and by the DoBeS project for the Western – the latter transcriptions are being introduced as a practical orthography. As indicated in the tables, not all the sounds found by DoBeS were found by Traill.

this article	p	t	ts	k	q	ʔ	b	d	ɖ	g	ɠ
Traill	p	t	ts	k	q	'	b	d	dz	g	ɠ
DoBeS	p	t	ts	k	q	'	b	d	dz	g	gq

this article	p ^h	t ^h	ts ^h	k ^h	q ^h	b ^h	d ^h	ɖ ^h	g ^h	ɠ ^h
Traill	ph	th	tsh	kh	qh		dth	dtsh	gkh	ɠqh
DoBeS	ph	th	tsh	kh	qh	bh	dh	dzh	gh	gqh

Traill's notation for the voiced aspirates emphasises the pre-voicing and the voiceless release. As remarked, his notation is phonetically misleading for <dtsh>, as both in the surviving Traill recordings and in DoBeS data, the sibilant portion is voiced.

this article	p'	t'	ts'	k'	q'	ɖ'	g'	ɠ'	qχ'	ɠχ'	m	n	ʔm	ʔn	s	χ	h
Traill		t'	ts'	k'	q'				kx'	gkx'	m	n	'm	'n	s	x	h
DoBeS	p'	t'	ts'	k'	q'	dz'	g'	gq'	qx'	gqx'	m	n	'm	'n	s	x	h

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⟨pʰ⟩ is even more marginal than the other labials - DoBeS has one example. Traill did not recognise the simple voiced ejectives, and although he has ⟨gkxʰ⟩, for him this belongs in the clusters below.

this article	f	l	tqʰ	tsqʰ	dqʰ	ɕqʰ	tɕ	tsɕ	dɕ	ɕɕ
Traill	f		t'kx'	ts'kx'	dt'kx'	dts'kx'	tx	tsx	dtx	dtsx
DoBeS	f	l	tqx'	tsqx'	dqx'	ɕqx'	tx	tsx	dx	ɕɕx

Initial ⟨f l r⟩ occur only in loanwords in DoBeS, and only ⟨f⟩ in Traill. Traill's ⟨kxʰ⟩ reflects the question about whether ⟨qʰ⟩ belongs in the velar or uvular series, on which he vacillated; DoBeS views it as uvular. The 'double ejective' ⟨t'kxʰ⟩ is a compromise among the various pronunciations he heard for this series.

2 **Medial consonants**

The transcriptions are straightforward.

this article	b	m	n	ɲ	j	l	r
Traill	b	m	n	ɲ	j	l	r
DoBeS	b	m	n	ny	y	l	r

3 **Final consonants**

The transcriptions are similarly straightforward (Traill did not find or recognise ⟨ŋ⟩, which, as noted, is marginal in DoBeS.)

this article	m	n	ŋ	p	b	r
Traill	m	n		p	b	r
DoBeS	m	nn	ng	p	b	r

4 **Clicks**

Owing to the difficulty of distinguishing and identifying the many accompaniments, the transcriptions of clicks present a particularly knotty problem to the reader of the primary sources, and I go in to it in considerable detail, aiming also to elucidate some of the changes in Traill's analysis over the years.

I shall give the notation used by Traill and DoBeS, and also the notation used in the clicks chapter of Ladefoged & Maddieson 1996 (henceforth *SoWL*), which is based on Traill's analyses, but makes phonological assumptions that are disputed, as I discuss below. I also give the articulatory descriptions used by Traill (1994) and Naumann (forthcoming).

There are several confusing aspects of the Traill and *SoWL* notations, so I consider the clicks not in chart order, but grouped by their scope for confusion.

First, there are some fairly straightforward cases:

	Traill's description	Traill	this	<i>SoWL</i>	DoBeS	DoBeS description
			article			
1	basic	ɀ	ɀ	kɀ	ɀ	plain
2	voiced	gɀ	gɀ	gkɀ	gɀ	voiced
9	voiceless nasal	ɀ̃	ɀ̃	ɀ̃	nɀ̃	voiceless nasal
10	voiced nasal	ɀ̃	ɀ̃	kɀ̃	nɀ̃	voiced nasal
11	preglottalised nasal	'ɀ̃	ʔ̃	ʔ̃	'nɀ̃	glottalised nasal
14	voiceless uvular stop	ɀɁ	ɀɁ	ɀɁ	ɀɁ	plain + /q/
15	voiced uvular stop	gɀɁ	gɀɁ	gɀɁ	gɀɁ	plain + /q/ + voice
22	uvular fricative	ɀx	ɀx	kɀx	ɀx	plain + /x/
23	voiced uvular fricative	gɀx	gɀx	gkɀx	gɀx	plain + /x/ + voice

The main issue here is the *SoWL* notation. Ladefoged & Maddieson chose to notate clicks by combining a click symbol with a preceding velar stop symbol showing the accompaniment. However, in the (ɀɁ) clicks (rows 14–15), they simply change [k] to [q], suggesting that the difference is purely one of place, and ignoring the prolongation of the closure. As discussed above in §3.1, this is most likely wrong. In the case of the fricative clicks, *SoWL* opts for the affrication symbol, which I rejected on phonetic grounds as well as phonological, and they write it as velar rather than uvular. In order to emphasise the pre-voicing, they write [gkɀx] rather than just [gɀx].

Next, I consider the clicks that involve aspiration in some way. Traill's notations for these are confusing, as his understanding changed during his studies.

	Traill's description	Traill	this	<i>SoWL</i>	DoBeS	DoBeS description
			article			
3	aspirated	ɀqh	ɀ ^h	kɀ ^h	ɀ ^h	voiceless aspirated
4	voiced aspirated (1994)	gɀqh	gɀ ^h	gkɀ ^h	gɀ ^h	voiced aspirated
24	delayed aspiration	ɀh	ɀh	ɀ̃ ^h	ɀhh	plain + /h/
25	voiced aspirated (1985)	gɀh	gɀ ^h	–	nɀhh	plain + /h/ + voice
16	(uvular) aspirated stop	ɀqɁh	ɀ ^h Ɂ	–	ɀqɁh	plain + /qh/
17	voiced (uvular) aspirated stop	gɀqɁh	gɀ ^h Ɂ	gɀh	gɀqɁh	plain + /qh/ + voice

The DoBeS survey finds a set of six clicks involving aspiration: the simple aspirates in rows 3–4, the clicks I write as phonetic clusters with [h] in rows 24–25 and those I write as phonetic clusters with [q^h] in rows 16–17.

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At first, Traill (1985) recognised only three of these: two (⟨xh gɣh⟩) whose descriptions make them clearly rows 24–25, and one that is clearly described as sounding like [xq^h] (row 16), and consequently written ⟨xqh⟩.

In Traill (1994), he was less certain about this last click, describing it in ways suggesting that it is actually our ⟨ɣ^h⟩ (row 3). He also added its voiced counterpart, written ⟨gɣqh⟩; and moreover added a new ⟨gɣqh⟩, described so as to be our ⟨ɣq^h⟩ (row 17). He also no longer recognised the row 25 clicks, merging their words with the voiceless row 24.

What the true story is is hard to tell. It is obviously tempting to assume that the DoBeS version is correct, and that Traill conflated some of the clicks in different ways at different times. The small number of Traill's recordings available to me do not help.

Note that DoBeS has chosen to mark the (possibly phonetic, possibly phonological) nasalisation in the voiced delayed aspirate row 25. The *SoWL* notation again marks phonetic detail that blurs apparent phonological patterns.

Finally, I consider the clicks involving ejection or glottalisation.

	Traill's description	Traill	this	<i>SoWL</i>	DoBeS	DoBeS description
			article			
5		x'	x'	–	x'	voiceless ejective
6		–	ɣ'	–	gɣ'	voiced ejective
26	glottal stop	x'	xʔ	kxʔ	x''	plain + /'/'
27		–	ɣʔ	–	ɣx''	plain + /'/' + voice
18	uvular ejective	ɣb'	ɣb'	ɣb'	ɣb'	plain + /q'/'
19		–	ɣb'	–	gɣb'	plain + /q'/' + voice
20	velar ejective	kxkx'	xqɣ'	kx ^x '	xqɣ'	plain + /qx'/'
21	voiced velar ejective	gɣkx'	ɣb ^x '	gɣk ^x '	gɣb ^x '	plain + /qx'/' + voice

The story here is similar to the aspirated clicks, though not quite as complex. Traill recognised an accompaniment ⟨xq'⟩, which, it is clear (1985: 143), is our ⟨xq'⟩ with delayed posterior release. He did not recognise its voiced counterpart. He also did not distinguish it from a 'plain ejective' ⟨x'⟩, though he did distinguish it from ⟨xʔ⟩. DoBeS, however, finds all three of ⟨xq'⟩, ⟨x'⟩ and ⟨xʔ⟩, together with their voiced counterparts. Again, cross-comparison would be interesting – perhaps Traill conflated the two ejectives ⟨x'⟩ and ⟨xq'⟩. In the DoBeS examples for ⟨xq'⟩, the gap between the click burst and the ejected stop is sometimes quite easy to hear, but sometimes as low as 10 ms, even in the formal sentence-speaking context. In the examples for ⟨x'⟩, the gap is minimal, less than 2 ms – nonetheless, if one cuts away the click burst, the [q'] can clearly be heard. On the other hand, in Traill's recordings, there are examples of ⟨xq'⟩ (in a word that also has ⟨xq'⟩ according to DoBeS) where the only observable difference from ⟨xʔ⟩ is a slightly lower centre of gravity in the click burst.

In the ejective affricates (rows 20–21), Traill was again a little uncertain about the place of articulation. DoBeS considers this to be a cluster with a uvular affricate.

5 Vowels

The notations used in the various sources are as follows, taking ⟨a⟩ as an example:

this article	a	ã	Ḃ	Ḃ	a ^ç	Ḃ ^ç	Ḃ	Ḃ ^ç	Ḃ ^ç
Traill	a	ã	ah	a'	Ḃ	Ḃh	ah'	Ḃ'	Ḃh'
DoBeS	a	an	ah	a'	aq	aqh			

The notations for strident vowels reflect Traill's view that stridency is phonologically the combination of breathiness and pharyngealisation – Traill rather confusingly uses a tilde below to denote pharyngealisation, while DoBoS uses a fairly natural overloading of ⟨q⟩ (since /q/ does not occur postvocally).