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A Phonology Sketch of Tchourama (Turka)

COLIN J. SUGGETT

SIL, Burkina Faso
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1   Introduction

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Tchourama [cuuramã] is a Gur language spoken by the *tchouraba*, a people group numbering about 40,000 people living in the south-west of Burkina Faso. Both the *tchourama* language and its people are commonly called *Turka* by French or Jula speakers. Other spellings include *Tyurama* and *Tourka*. Since speakers of Tchourama do not object to the use of the term "Turka", and because of its widespread use, I will employ the term "Turka" to describe both the people and the language.

Major Turka towns include: Bérégadougou, Moussodougou, Toumoussenni and Douna. There are also significant numbers of *tchourama* speakers living in the town of Banfora. Like many other Burkinabè people, there are also a significant number of Turka living in Ivory Coast in order to gain employment.

Gabriel Manessy[1] (1978) classifies Turka as belonging to the South Central subgroup of Gur. It is most closely related to *Cerma* (also called *Kirama* or *Gouin*). There are two main dialects of Turka: the west, spoken in the villages of Douna, Niofila and Tourni; and the east, spoken in the villages of Bérégadougou, Mondon, Kolokolo, Malon, Toumousseni, Fabédougou, Wolonkoto, and Moussodougou. The eastern dialect is the majority dialect. Within the two broad dialect distinctions, there are further distinctions from one village to another. The dialect described in this study is restricted to the village of *Fabédougou*.

This phonology sketch is based on a period of field work which began in 1995 until 2000. Previous studies include a general description by Prost in "Langues Voltaïques", and a social-linguistic report by John Berthelette (unpublished document, SIL/ANTBA, 1995).

I wish to express my indebtedness to Mamadou SOURABIE (Fabédougou) and Jean-Paul SOURABIE (Bérégadougou) for providing the bulk of language data described herein. I also thank Rod Casali (SIL linguistics consultant, West Africa) who gave of his time to examine the Turka vowel system.

1.1   Conventions Used

- Transcriptions are written using the standard I.P.A. notation with the exception that long vowels are written as double vowels (e.g. [u:] is written as [uu]) and geminate consonants are written as double consonants. In the case of vowels, this deviation from I.P.A. standards permits easier and more accurate transcription of tone (given the lack of tone diacritics in the I.P.A.). As for long consonants (either [l:], [n:] or [m:]), in practically every occurrence the long consonant crosses a morpheme boundry; most typically, it represents the coda of a stem *and* the onset of a suffix. And so, for example, [hũm:ã] 'water' is morphologically [hũm+mã] = [STEM] + [NounClassSuffix]. Writing the long [m:] as [m+m] facilitates greater reader understanding of the underlying word structure.

- A nasalized lateral [ɫ] —a predicable allophone of /l/ —(see 2.2.6), has simply been written as [l] since [ɫ] is rather awkward to write and may be confused with the lateral fricative [ɬ].

- Rather than marking each and every tone bearing unit for tone, I have chosen to mark *tone change*. And so, if both syllables of a two syllable word are high, then only the first syllable is marked high, the other is left unmarked.

- The vast majority of base verb forms are underlying toneless and consequently their pitch depends entirely on the preceding subject pronoun (see **Tone in tchourama**). As a result, I felt it

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would be rather meaningless to mark tone on these toneless units and therefore I have left these unmarked.

1.2   Interpretation Issues not treated

At the advice of my consultant, Rod Casali, I have tried to place my main emphasis on presenting the phonetic data as accurately and clearly as possible in a more-or-less theory-neutral manner. Thus, for example, I have not made any attempt to describe the consonant or vowel "system" in terms of minimum binary features of points and manners of articulation. Readers are welcome to interpret the data as they see fit.

This sketch does not purport to provide a complete phonological description of the language. I will note, however, that I have recorded and organized in digital (computer) format hundres of nouns and verbs in the language and therefore, for this standpoint, I hope that the language is well documented.

Lastly, and again at the advice of Rod Casali, I have avoided certain interpretation issues which are otherwise labouriously debated in phonology sketches. I cite reasons below:

- Vowel length. (This issue has been debated for years by scholars with the consensus that "phonologists generally assume that these behave, in all languages, as sequences in some respects and units in others."[2]
- [ɡb] and [ŋm]. There is a clear default expectation that these behave as single segments in a Niger-Congo language.[3]
- Nasal vowels as deriving from VN sequences.

2. Casali, Rod. 1997. Some Guidelines for Phonological Descriptions. Unpublished paper. GILLBT.
3. ibid.

2 Consonant System

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2.1 Summary of Consonant Inventory

Turka has a total of 19 consonant phonemes at the following places of articulation: labial, alveolar, palatal, velar, labio-velar, glottal. Evidence of contrast among these consonant phonemes is given in section 5. To avoid confusion, readers should note that /c/ and /ɟ/ are palatal plosives in Turka and not affricates. (Occasionally these symbols are used to represent affricates in phonological descriptions.)

	labial	alveolar	palatal	velar	labio-velar	glottal
vl. plosive	p	t	c	k		
vd. plosive	b	d	ɟ	g	gb	
vl. fricative	f	s				h
vd. fricative	v					
nasal	m	n			ŋm	
lateral approx.		l				
trill		r				
glides	w		j			

2.2 Allophonic Variations and points of Interest

2.2.1 The phonemic status of [r]

There is good reason to believe that [r] is an allophone of /d/ since the [r] and [d] occur in complementary environments in *simple* morphemes. Consider the following:

- (1) /d/ is pronounced as [d] in initial positions.
- (2) /d/ is pronounced as [d] in medial positions which are proceeded by /n/.
- (3) /d/ is pronounced as [r] (or sometimes [ɾ] in rapid speech) in other medial environments.
- (4) /d/ is pronounced as [r] in final positions.

(1) Initial		*(2) Medial Preceeded by /n/*		*(3) Medial—Other*		*(4) Word Final*	
dáāgù	'wood'	dẽndárì	'clay plate'	biɛriɛ	'to gather'	car	'to deny'
duu	'to bite'	kondo	'bowl'	bìrúu	'baboon'	suur	'to sell'
duɔsə	'to sleep'	ɲāndi	'hatred'	gəəraa	'to hurry'	bər	'to cut'
dii	'to put'	dānsāndi	'dream'	sɨraga	'farming'	bar	'skin'

The complementary distribution described above is clearly not accidental. Not only are very similar facts found in other *Gur* languages, but the phonetic motivation for /d/ to be pronounced as [r] inter-vocalically is quite natural. Thus, on the one hand, there appears to be clear evidence that [r] is an allophone of /d/. There are, however, a few difficulties with this analysis.

First is the problem of consonant clusters of the type: [plosive] + [r]. Thus we have words such as [brabraagu] 'woven cord' and [drɔgu] 'high place' and [kra] 'to place'. If [r] is indeed /d/, this would yield the sequences: /bd/, /dd/, and /kd/. Such sequences would be both highly marked and unexpected and would clearly lead to a level of abstractness not tolerated by certain phonological theories. As a possible rejoinder to this problem, one could

posit an underlying (but historically deleted) vowel between the two consonants; and in fact it is true that some speakers pronounce an extra-short, nondescript vowel between the plosive and the [r]. Thus, a given speaker might pronounce 'woven-rope' as [bĕrabĕraagu]. What, however, might be the phonemic status of this extra-short vowel? My data shows a clear phonetic difference between this extra-short vowel and a normal length vowels found in words such as [bər] 'to cut'; [bəraa] 'to cut into pieces'; [bir] 'terrace'; [bar] 'skin'; [birɪ̃ɛ̃] 'to be raw'; [buruɔ] 'to separate'. Furthermore, long and short vowels distinctions are phonemic in Turka which rules out the interpretation that the extra-short vowel is underlying short (otherwise we would have a three-way length distinction.) Moreover, these extra-short vowels never carry contrastive tone. Finally, it is impossible to identify, based on phonetics alone, what the height or backness features this extra-short vowel might have; it is simply a nondescript schwa. Thus, even if one could make a plausible case for a historically deleted vowel between /b/ and /r/, such an analysis would not be tenable synchronically.

The second argument which can be made against calling [r] an allophone of /d/ concerns the similar distribution of [r] and [l]. Two common consonant clusters allowed in Turka are (1) [plosive] (or [m]) + [l] and (2) [plosive] + [r]. Furthermore, there are only four consonants found in syllable final position: [r], [l] [n] and [m]. In these environments we find [r] grouping among liquids and nasals. If indeed [r] is underlyingly a plosive, why would it group with sonorants? For theories which tolerate a high degree of abstractness, these considerations would, of course, be irrelevant.

Turning to the theory of lexical phonology for a moment we are reminded that it distinguishes between two types of rules—lexical and postlexical—which have different characteristics. Postlexical rules usually have a direct phonetic motivation, apply without exception, and do not make reference to the internal morphological composition of words. They tend to be more productive than are lexical rules which can have idiosyncratic exceptions and are often historical relics of processes that were more productive in the past. Also, what is most relevant for our purposes is that only lexical rules can refer to the internal composition of words, and thus only lexical rules can distinguish between a word-internal segment which is at the edge of a root and one which is not. Thus, since a rule of complementary distribution for [d] and [r] in Turka would have to treat compounds differently, it follows that this would have to be a lexical rule. Furthermore, lexical phonology would predict that phonological phenomena covered by lexical rules would tend to be far removed from native speakers' (conscious or subconscious) intuitions about their language. This is, in fact, the case in Turka—native Turka speakers do not conceive of [r] as an allophone of /d/; that is, [r] represents a distinct psychological reality from [d]. Because of the above difficulties I will be treating /r/ as a separate phoneme.

2.2.2 **The Lateral Fricative**

The lateral fricative [ɬ] exists phonetically in Turka. Verb morphology strongly suggests that the lateral fricative is underlyingly the consonant cluster /h/ + /l/.

Verbs have three main forms, a base (unmarked) form, and two derived forms. There are various strategies for forming the derived forms (for a fuller description, see **Guide d'orthographe du Turka** (2003), one of which involves the transformation of a single consonant into a consonant cluster C+/l/. (In *Turka*, all labials, except /w/ can co-occur with /l/ in a consonant cluster. For fuller details refer to the section on *Segment Co-occurrence Restrictions*.) The /l/ insertion strategy applies only for CV verbs (i.e. single open syllable with a short vowel). What is of particular interest is that verbs of this type beginning with /h/ become [ɬ] in the derived forms. Thus we have:

Verb	Base	Form 2	Form 3
'to stay put'	bá	bla	bláȁ
'to pay'	pã́	plã	pláȁ
'to pull'	fá	fla	fláȁ
'to back up'	vã́	vlã	vlã́ȁ
'to build'	mã́	mlã	mlã́ȁ
'to give'	hã́	ɬã /hlã/	ɬã́ȁ /hlã́ȁ/
'to anoint'	ha	ɬa /hla/	ɬáȁ /hláȁ/

This analysis corresponds with native speaker intuition.

2.2.3 Labialized Consonants

Labialized consonants (tʷ, dʷ, sʷ, cʷ, ɟʷ, kʷ) contrast with non-labialized consonants before /a/ and /ã/. Before round vowels, these same consonants are labialized by some speakers, but this is not contrastive. Thus we have:

kʷàagù	'pond'	káagù	'daba'
kʷásərì	'lie'	kásaarì	'thigh'
sʷal	'hoe'	sálūugù	'wind'
jʷar	'to be tired'	jágà	'cold'
ɟʷal	'daba'	ɟagà	'millet'
tʷàárì	'orkra'	tar	'to slip'
lʷáagù	'river'	laaba	DEM:FAR
cʷáabà	'people'	cáalaa	'to lighten'

[CuV] sequences contrast *phonetically* with [CʷV] sequences in which the round vocalic segment represented by [w] is not syllabic. This holds true in slow (careful) speech as well as normal speech. What is the best phonemic representation of [Cʷ]? Turka allows consonant clusters, /C + l/ and /C + r/. /C + r/ is potentially ambiguous since there is sometimes an extra-short intervening vowel between the two consonants (see previous discussion on the phonemic status of 'r'.) However, /C/ +/ l/ is not susceptible to any intervening extra-short vowels and as such is an unambiguous consonant cluster. Given that /w/ and /j/ are well attested phonemes in Turka, and given that languages in general tend to favour consonant clusters in which the second consonant is more sonorous than the first (Clements 1990), it is not unreasonable to analyze [Cʷ] as a consonant cluster /C/ +/ w/, and similarily [Cʲ] as /C/ + /j/. This is the analysis adopted for this paper. Alternatively, [Cʷ] and [Cʲ] could be analysed as unitary labialized/ palatalized consonant phonemes. The third alternative, that of analysing [CwV] as /CuV/ sequences and [CjV] as /CiV/ sequences, I reject as being unnecessarily abstract since it entails positing underlying sequences which never show up on the surface.

2.2.4 Palatalized Consonants

That [CjV] is not /CiV/ can be also demonstrated from verb morphology. As already mentioned in 2.2.2 verbs in Turka have three forms. There is also a nominal form of the verb similar to the English gerund, 'Verb+ing'. The derived forms are derived according to very distinct rules based on syllable structure, and, in particular, one-syllable *short*-vowel verbs differ from one-syllable *long*-vowel verbs. But one-syllable verbs with [CʲV] follow the pattern of the one-syllable *short*-vowel verbs and not that of one-syllable *long*-vowel verbs. Below are some examples which illustrate this.

Verbs	Base	Form 2	Nominal
1a – lengthening; 'li' suffix	CV	CVV	CVlli
'to measure'	fí	fíī	fíllì
'to resound'	dú	dúū	dúllì
1b – C+l cluster; 'li' suffix	CA	ClV	CVlli
'to sting'	fá	fláā̃	fállì
'to pull'	fá	fláā	fállì
1c – 'i' insertion; 'li' suffix	CV	CiV	CVlli
'to urinate'	fʲá	fíē̃	fʲállì
'to soak'	fʲέ	fíē̃	fʲέllì
'to help'	pʲέ	píε	pʲέllì
1d – 'la' suffix; 'ma' suffix	CVV	CVV+la	CVV+ma
'to hold a child on one's lap'	fíὲ	fíεlà	fíεmã̀
'to squeeze out water'	fíi	fíīlà	fíimã̀

As for demonstrating that [CwV] is not /CuV/ I do not have any morphological evidence to offer.

For a full listing of consonant clusters, see section on *Phonotactics*.

2.2.5 Velar Fricative

The velar fricative [x] exists, but very rarely. A complete listing of instances is given below. Native speakers are quite aware of this sound, so that, [kxáā] 'to break'–f2 is clearly distinct in the native speakers mind from [kaa] 'to draw water'. Given the lack of examples, it is difficult to interpret [x]. The only possible explanation that I have is that [kx] is underlyingly [kl].

Verbs	Base	form 2	form 3	gloss	Nouns		
1.	kã	kxáā̃	kxáã̀	'to go'	1.	kxə̃	'monkey'
2.	ka	kxáā	kxáa	'to break'			
3.	kxə̃ə̃l	kxə̃́ə̃lã̃	kxə̃́ə̃lÍã	'to perce'			
4.	kxɨ	kxírə̄	kxírə̀	'to bind'			

2.2.6 Minor Allophonic Variants

- [ɲ] is an allophone of /j/ occurring before nasal vowels.
- /l/ is always nasalized following a nasal vowel. There is also a tendency for /l/ to become retroflexed [ɭ] in word final position following a nasal vowel. These phonetic distinctions have not been written in this paper.
- There is a tendency for [r] to partially or fully devoice word-finally following +ATR vowels. This phonetic distinction has not been written. (see also Kuch 1993 on Birifor.)
- Word-internal syllable-final nasal consonants assimilate to the point of articulation of the following consonant.

3 Vowel System

Turka has nine phonemic oral vowels as shown below. Examples of contrasts are given in Appendix B.

	front	central	back
high, +ATR	i	ɨ	u
mid, +ATR	e		o
mid, –ATR	ɛ	ə	ɔ
low, -ATR		a	

3.1 Minor Allophonic Variations

- /e/ is moderately centralized in CV# contexts.

3.2 Vowel Sequences

V₁ \ V₂	i	e	ɛ	ɨ	ə	a	u	o	ɔ	Legend
i	c/l	d	r		d	d	c			r – appears in roots
e	c						c			c – caused by a V clitic
ɛ	c						c			d – appears in derived forms
ɨ	c						c			l – long vowel in roots
ə	c				l		c			
a	c					l	c			
u	c		r		d	d	c/l	r	r	
o	c					d	c			
ɔ	c					d	c			

The above chart shows the various oral vowel sequences permitted in Turka. The following vowel sequences are the most common and have the least morphological constraints associated with them: [iɛ], [ĩɛ̃], [uɔ], [ũɔ̃]. Verbs have more constraints on vowel sequences than nouns. In verbs, *only* the above four vowel sequences are found in *base* forms of CV_1V_2 verbs. The sequence [uo] occurs in noun roots but is relatively rare. The sequences [ie], [iə], [ia], [ĩã], [uə], [ua], [ũã], [ɔa] and [oa] occur in derived verb forms.

In addition to these sequences which occur in roots and derived forms, Turka has three enclitics [ì] 'yes/no question marker', [í] 'copula / emphatic', and [u] 'exclamatory', which can attach to the right edge of any CV or CVC root to form a diphthong. In all such sequences, both vocoids are fully syllabic. Note in particular that [CuV] sequences contrast phonetically with [CwV] sequences (see discussion on labialized consonants above) in which the round vocalic segment represented by [w] is not syllabic. Similarly, [CjV] sequences contrast with [CiV] sequences. On the other hand, there is no phonetic contrast between [CuV] and [CuwV] (where V is not u), or between [CiV] and [CijV] (where V is not i). In the absence of such contrasts, it is of course difficult or impossible to tell based on auditory impressions alone which of these two possibilities we are in fact dealing with. However, we note that sequences such as [ɔa] and [oa] in which neither vowel is high constitue fairly unambiguous vowel sequences. But these examples are quite rare, and only occur in derived forms. If $[CV_1V_2]$ were a bonafide pattern in Turka, we might expect to find a higher frequency of such "unambiguous" sequences.

The absence of such sequences suggests that CV_1V_2 sequences should not in fact be recognized in Turka but that all such sequences are in reality [CVGV].

3.2.1 Morphological Patterns in Verb Forms

There are, however, significant arguments which can be levelled against this interpretation. The first involves morphological patterns in verb forms. Consider the following verb chart:

	Base Form	Form 2	Nominal Form
1a – lengthening; 'li' suffix	CV	CVV	CVl+li
'to steal'	ŋmã	ŋmã́ã̄	ŋmã́l+lì
'to measure'	fí	fíī̄	fíl+lì
'to resound'	dú	dúū̄	dúl+lì
1b – C+l cluster; 'li' suffix	CA	ClV	CVl+li
'to pay'	pã́	plã́ā̄	pã́l+lì
'to pull'	fã́	flã́ā̄	fã́l+lì
1c – 'i' insertion; 'li' suffix	CV	CiV	CVl+li
'to do'	cé	cíē	cél+lì
'to help'	pɛ/pʲɛ	píɛ̄	pɛ́l+lì
'to soad'	fɛ̃/fʲɛ̃	fíɛ̃	fʲɛ̃l+lì
'to see'	dá	díɛ̄	dál+lì
1d – 'u' insertion; 'li' suffix	CV	CuV	CVl+li
'to skim'	sɔ	súɔ̄	sɔ́l+lì
'to fear'	sõ	sṹɔ̃	sṍl+lì
'to plant'	só	súō	sól+lì
1e – 'la' suffix; 'ma' suffix	CVV	CVV+la	CVV+ma
'to bite'	dúu	dúulā̄	dúu+mã̀
'to attack'	cií	ciílā̄	cií+mã̀
2a – tone change; 'ma' suffix	CV.CV	CV.CV	CV.CVm+ma
'to breastfeed'	ŋmã́sã̄	ŋmã́sã̄	ŋmã́sãm+mã̀
'to loose'	váalaa	váalāa	váalam+mã̀
'to insult'	túuraa	túurāa	túuram+mã̀
'to pour'	tṹnũū	tṹnũū	tṹnũm+mã̀
2b – 'rA' suffix; 'ma' suffix	CV.CV(V)	CV.CV+rA	CV.CVm+ma
'to show'	pígà	pígarā̄	pígàm+mã̀
'to climb'	júgo	júgorā̄	júgom+mã̀
'to pile'	tígìi	tígɨrè̀	tígɨm+mã̀

The above verbs have been grouped by number of syllables—one or two. (Since no vowel sequences are present in the above examples there is no ambiguity in the number of syllables.) A further subdivision is made based on the morphological strategy for deriving verb form #2 and also the nominal form of the verb. Note the differences in the nominal form between one-syllable verbs with a short vowel (1a-d) versus one-syllable verbs with a long vowel '1e'. Also note the clear distinction between type '1e' and the two syllable verbs. In type '1e', the perfective form is realised by the addition of the suffix '-la' at the end of verb. In verbs of type '2a' however, the marked form is realised by a tone change. Type '2b' verbs represent a fairly rare exception to the pattern of '2a'. Form 2 is realised instead by the addition of the suffix 'rA' (where 'A' is either [a] or [ə].) Type '2a' accounts for over 80% of the two-syllable verbs.

It is instructive to examine the morphology patterns for verbs for which the number of syllables is ambiguous since they contain vowel sequences:

	Base form	*Form 2*	*Nominal*
'la' suffix; 'ma' suffix	CV₁V₂	CV₁V₂+la	CV₁V₂+ma
'to heal'	búɔ	búɔlá	búɔ+mã̀
'to take'	hű̃ɔ̃	hű̃ɔ̃là	hű̃ɔ̃+mã̀
'to respond'	síɛ	síɛlà	síɛ+mã̀
'to cook'	hí̃ɛ̃	hí̃ɛ̃là	hí̃ɛ̃+mã̀

We note that the four examples cited above clearly follow the pattern of '1e' – that is, they group with one syllable long vowel verbs. If, however, the vowel sequences of [iɛ], [ĩɛ̃], [uɔ], [ũɔ̃] were indeed underlying /CVGV/ then one would expect the marked form of the above verbs to be realized by a tone change as is seen in the unambiguous two-syllable verbs in pattern '2a' or possibly by the pattern of '2b'. Since the above verbs clearly follow the pattern of '1e', this is an argument in favour of interpreting these vowel sequences as a single syllable.

3.2.2 Long mid-vowels

It is unusual for vowel sequences to behave as a unit in West African language. This leads us to ask why might Turka deviate from this general tendency? In looking for an answer, we note that even though phonetically long vowel variants exist for several oral and nasal vowels, [ɛɛ], [ɛ̃ɛ̃], [ɔɔ], [ɔ̃ɔ̃], [ee] and [oo] are absent in all contexts except (possibly) following liquids [r] and [l] or following consonant clusters [plosive]+[r] and [plosive]+[l], e.g. [blɛɛ] or [bliɛ] 'beans'. (It seems that in these environments, it is more difficult to pronounce the vowel sequences and speakers will differ in their pronunciation—sometimes sounding like a long vowel, sometimes sounding like a diphthong.) Regardless of this, I have found no contrasts between [iɛ] and [ɛɛ] , [ĩɛ̃] and [ɛ̃ɛ̃], [uɔ] and [ɔɔ] and finally [ũɔ̃] and [ɔ̃ɔ̃]. It is conceivable, therefore, that these four common vowel sequences are, in fact, the phonetic realizations of phonologically long mid-vowel sequences, i.e. /ɛɛ/, /ɛ̃ɛ̃/, /ɔɔ/, and /ɔ̃ɔ̃/ respectively. In this hypothesis, the verb derivations seen in *1c* and *1d* of type [ɛ] [iɛ]; [ɛ̃] ĩɛ̃ ɔ] [uɔ]; and [ɔ̃] [ũɔ̃] would be re-analyzed as belonging to group *1a*, namely the vowel lengthening pattern. Furthermore, it is entirely plausible to also consider [ie] as underlyingly /ee/ and [uo] as /oo/.

Finally, a recent discovery about another dialect of Turka further supports this hypothesis. In particular, the dialect of the village called Mondon does not have vowel sequences, but rather has long mid vowels. Although a detailed examination of this dialect cannot be untaken at this time, it well appears that these long mid vowels correspond lexically to the vowel sequences in this study.

3.3 Vowel Length

	front	central	back
high, +ATR	ii, ĩĩ		uu, ũũ
mid, +ATR	ee	əə, ə̃ə̃	oo
mid, –ATR	ɛɛ, ɛ̃ɛ̃		ɔɔ, ɔ̃ɔ̃
low		aa, ãã	

Vowel length is contrastive in Turka among eight oral vowels and four nasal vowels (see above). Two other long nasal vowels, [ũũ] and [ĩĩ], exist commonly in verb and noun roots alike. The instances of these vowels occur in unambigous environments and contrast with long *oral* counterparts [uu] and [ii] (see next section for examples.) Yet, strangely enough, among verbs roots there are no clear contrasts between [ĩĩ] and [ĩ]. That is, there are no CV verb roots where V is [ũ] or [ĩ] which then becomes lengthened to [ũũ] / [ĩĩ] in their derived forms. Among nouns, however, there is a minimual pair between [dũlli] 'race' and [dulli] 'noise'. All other examples of [ĩ] and [ũ] appear in suspect environments, i.e. beside nasal

consonants. I do not have an answer as to why a phonetically long nasal vowel would not contrast with a short counterpart.

Examples of length contrasts are shown below:

(1) /i/   /ii/
   hĩ   'to arrive'   híī   'to arrive'–f2
   fĩ   'to measure'   fíī   'to measure'–f2

(2) /e/   /ee/
   pe   'to be crazy'   píē /péē/   'to be crazy'–f2
   be   'to call'   bíē /béē/   'to call'–f2

(3) /ɛ/   /ɛɛ/
   pɛ / pʲɛ   'to help'   píɛ̄ /péɛ̄/   'to help'–f2
                  piɛ /pɛɛ/   'to increase'

(4) /ɛ̃/   /ɛ̃ɛ̃/
   pɛ̃ / pʲɛ̃   'to wrap around' píɛ̃̄ /péɛ̃̄/   'to wrap around'–f2
   fɛ̃ / fʲɛ̃   'to soak'   fíɛ̃̄ /fɛ̃́ɛ̃̄/   'to soak'–f2

(5) /ə/   /əə/
   gbə   'to meet'   gbə́ə̄   'to meet'–f2
   cúgur+ə̄   'to open'–f2   jirəə   'to lean on'
   hul+lə   'to shave'   kuləə   'to kneel'

(6) /ə̃/   /ə̃ə̃/
   nə̃   'to have'   nə̃ə̃   'to scatter'

(7) /a/   /aa/
   da   'to see'   daa   'to be long'
   sa   'to dance'   saa   'to sift'
   ta   'to leave'   taa   'to cook by boiling'

(8) /ã/   /ãã/
   ŋmã   'to steal'   ŋmã́ã̄   'to steal'–f2
   kã   'to go'   kxã́ã̄   'to go'–f2

(9) /u/   /uu/
   nu   'to be deep'   núū   'to be deep'–f2
   du   'to begin'   dúū   'to begin'–f2
   ku   'to die'   kúū   'to die'–f2
   hu   'to wipe'   húū   'to wipe'–f2

(10) /o/   /oo/
   ɟo   'to come'   ɟúō /ɟóō/   'to come'–f2
   co   'to reform'   cúō /cóō/   'to reform'–f2

(11) /ɔ/   /ɔɔ/
   tɔ   'to spit'   túɔ̄ /tɔ́ɔ̄/   'to spit'–f2
   cɔ   'to spend the night' cúɔ̄ /cɔ́ɔ̄/   'to spend the night'–f2

(12) /ɔ̃/   /ɔ̃ɔ̃/
   kɔ̃   'to cultivate'   kṹɔ̃̄   'to cultivate'–f2
   hɔ̃   'to smell'   hṹɔ̃̄   'to smell' –f2
   nɔ̃   'to hear'   nṹɔ̃̄   'to hear'–f2

3.4   Nasal Vowels

	front	central	back
high, +ATR	ĩː		ũ, ũː
mid, +ATR		ə̃, ə̃ː	
mid, –ATR	ɛ̃, ɛ̃ː		ɔ̃, ɔ̃ː
low		ã, ãː	

Four of the oral vowels have phonemic long and short nasal counterparts and two have long realizations only. Theses are exemplified below:

(1)   /ii/   /ĩĩ/
        híĩ   'to arrive'–f2   híĩ   'to swallow'
        tíi   'to light'   tíĩ   'to plaster'
        gbərii   'red monkey'   gbɨrĩĩ   'musical arc'

(2)   /ɛ/   /ɛ̃/
        pɛ /pʲɛ   'to help'   pɛ̃ / pʲɛ̃   'to wrap around'

(3)   /ɛɛ/   /ɛ̃ɛ̃/
        píɛ̄ /pɛ́ɛ̄/   'to help'–f2   píɛ̃̄ /pɛ́̃ɛ̃̄/   'to wrap around'–f2
        tíɛ̄ /tɛ́ɛ̄/   'to leave'–f2   tíɛ̃̄ /tɛ́̃ɛ̃̄/   'to commission'
        fiɛ /fɛɛ/   'to place on knees'   fíɛ̃̄ /fɛ́̃ɛ̃̄/   'to urinate'–f2

(4)   /ə/   /ə̃/
        núgurə̄   'to mix'–f2   ŋmə́̃ə̃rə̃̄   'to hide'–f2
        tuulə   'to froath'   tə̃ə̃lə̃   'to bind'
        ɬə   'to exit'   ɬə́̃ə̃̀gù   'nere tree'

(5)   /əə/   /ə̃ə̃/
        gbə́ə̄   'to meet'–f2   gbə̃̀ə̃   'to be able'

(6)   /a/   /ã/
        pa   'to shell'   pã   'to pay'
        ta   'to leave'   tã   'to finish'
        hanãã   'to be big'   hãnãã   'to melt'

(7)   /aa/   /ãã/
        pláà   'to shell'-f3   pláã̀   'to pay'–f3

(8)   /u/   /ũ/
        dulli   'noise'   dũlli   'race'

(9)   /uu/   /ũũ/
        duu   'to follow'   dũũ   'to sew'
        kúugù   'thing'   kũũ   'to return home'

(10) /ɔ/   /ɔ̃/
        tɔ   'to spit'   kɔ̃   'to go'
        sɔ   'to skim'   sɔ̃   'to fear'
        cɔ   'to spend the night'   hɔ̃   'to smell'

(11) /ɔɔ/   /ɔ̃ɔ̃/
        suɔ /sɔɔ/   'to pound'   sũɔ̃ /sɔ̃ɔ̃/   'to fear'

huɔ /hɔɔ/   'to lift up'   hũɔ̃ /hɔ̃ɔ̃/   'to take'
kuɔl /kɔɔl/   'to loose weight'   kũɔ̃l /kɔ̃ɔ̃l/   'to gather'

huɔ /hɔɔ/   'to lift up'   hũɔ̃ /hɔ̃ɔ̃/   'to take'
kuɔl /kɔɔl/   'to loose weight'   kũɔ̃l /kɔ̃ɔ̃l/   'to gather'

4 Phonotactics

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4.1 Syllable Structure

In addition to the unmarked syllable type, CV, *Turka* has the following syllable types: N, V, CVː, CCV, CCVː, CVC, CVːC.

Type N, although lexically very restricted is nevertheless common in speech because type N occur in high frequency grammatical clitics. I cite the exhaustively the supporting examples: [ǹ] the second person singular pronoun (subject or possessive), this is almost certainly a clitic; [m] and [n] first and second person direct object pronouns (my tone study reveals that these are definitely clitics since the otherwise obligatory down-step tone boundry between verb and direct object is not realized in this case); [n] the genitive functor, also a toneless clitic inserted between two nouns to create a partitive or possessive association; [ǹ] verb infinitive functor, also a clitic; [ń] conditional mood functor clitic. Finally, there are few special words such as the number five [ǹdii] (which could possibly be derived from the the pronoun 'you' [ǹ] and the verb [dii] 'to put'). In other words, type N syllables are probably all clitics which attach themselves to verb and noun stems.

Type V is also very rare with less than ten examples in verbs and nouns and only occurs in word-initial position. (Phonetically, these words actually begin with an initial glottal stop before the vowel, but since the glottal stop is not found in any other environment, this consitutes a predictable allophonic variant of the vowels in question.) I consider this type V to be highly marginal.

Types CCV and CCVː are discussed and illustrated in section 4.3.

Types CVː and CVC and CVːC are fairly common. Statistics are provided in the following page.

In verbs, syllable final consonants can be either /l/ (accounting for 50% of the data), /r/ (39%) and /n/ (11%). Among nouns, /n/ is a much more common syllable coda since all plural forms of noun gender 2 terminate with /n/. In addition to these, nouns of class 4 always terminate with an /m/, e.g. [hũm+mã] 'water' (NounRoot + NounSuffx). Note that the surface form of the root [hũm] cannot be the result of a hypothetical abstract noun root /hũn/ assimilating to a noun class suffix /mã/ since all noun roots in *Turka* can be used in natural speech without the noun suffix, as in [hũm sə] 'it is not water' which always come out as [m] and not [n]. From this I conclude that the noun root does in fact terminate with an /m/.

For a full listing of phonetic data, the reader is invited to consult Appendix A. Here, a few examples are given of the different syllable types.

V		CVː	
ʔə́rə̄ə̄gu	'iron'	dũũ	'to bite'
ʔɨrii	'to belch'	bíɛ̄ /bɛ́ɛ̄/	'son'
ʔə̄ə̄lā	'to learn/teach'	bṹõgù /bɔ́õgù/	'neck'
ʔàfláagù	'Ébénacée tree'	hīī	'to swallow'
ʔālũũgu	'a local tree (unknown)'	dii	'to put'

CVC		CVːC	
bər	'cut'	fiɛl /fɛɛl/	'ladle'
cāl	'panther'	gbĩɛ̃l /gbɛ̃ɛ̃l/	'elephant'
fom	'fonio'	suur	'to sell'
hul	'to shave'	maar	'to go'
ɲāl /ɣāl/	'termite'	kũɔl /kɔɔl/	'to gather'

4.2   Word Structure

4.2.1   **Number of Syllables in Verbs**

Treating vowel sequences as one syllable rather than two (see interpretation of vowel sequences in previous chapter), a list of 349 verbs (base forms), reveal the following statistics of syllables type frequencies :

Number of Syllables	Syllable Type	Frequency Statistics		
		Type Count	Type Percentage	Number of Syllables Percentage
One-open	CCV,CCV:	4	1.7	67.1
	CV	71	30.3	
	CV:	80	34.2	
One-closed	CVC	59	25.2	
	CV:C	20	8.5	
			100.0	
Two-open	CCV.CV	1	0.3	29.2
	CV.CV	14	13.7	
	CV.CV:	36	35.3	
	CV:.CV:	46	45.1	
Two-closed	CV.CVr	5	4.9	
			100.0	
Three	CV.CV.CV	11	84.6	3.7
	CV.CCV.CVV	1	7.7	
	CV.CV.CVV	1	7.7	
All Words		349	100.0	100.0

4.2.2   **Consonant Phoneme Restrictions**

Apart from /r/ (see interpretation issue in section 2.2.1), all consonant phonemes can occur in word-initial position. Word-initial contrasts are exemplified in chapter 5.

There are, however, significant limitations on which phonemes can occur in non-initial syllables in simple (non-compound) roots. The greatest restriction occurs in verb roots. The following are the only phonemes which appear in the syllable-intial position of the second syllable of a two-syllable verbs (for a full list of these verbs, see Appendix A).

2nd Syllable Onsets of 2-syllable Verbs	Phoneme	Frequency Count	Frequency Percentage
plosives	/g/	13	12.8
nasals	/n/	16	15.7
fricatives	/s/	19	18.6
laterals	/l/	21	20.5
trill	/r/	33	32.4
TOTAL		102	100.0

Among nouns, there are much less restrictions than verbs. In a detailed count of 80 2-syllable words of noun class 3, the following statistics arise:

2nd Syllable Onsets of 2-syllable Nouns. Class 3			
	Phoneme	Frequency Count	Frequency Percentage
plosives-vl	All	9	11.2
plosives-vd	/b/, /g/, /gb/	25	31.2
nasals	/m/, /n/	7	8.8
fricatives	/s/, /f/, /h/	10	12.5
laterals	/l/	9	11.3
trill	/r/	20	25.0
TOTAL		80	100.0

4.3 Segment Co-occurrence Restrictions

Turka allows four types of consonant clusters. These are enumerated and illustrated below:

	labial				alveolar				palatal				velar & glottal			
	r	l	j	w	r	l	j	w	r	l	j	w	r	l	j	w
vl. plosive	pr	pl	pj		tr			tw				cw	kr			kw
vd. plosive	br	bl	bj		dr			dw				ɟw	gr			
vl. fricative		fl	fj					sw						hl	hj	hw
vd. fricative		vl	vj													
nasal		ml	mj													

	C + [r]		C + /l/		C + /w/		C + /j/	
/p/	pruɔgù	'knife'	pluugu	'tail'			pjar	'pig'
/t/	tráāgù	'flute'			twámmà̰	'blood'		
/c/					cwáabà	'people'		
/k/	nã́kruɔgù	'arm'			káāgù	'pond'		
/b/	brábragù	'rope'	blaagu	'funeral'			bjaarì	'war'
/d/	drɔgù	'up high'			dwal	'please'		
/ɟ/					ɟwal	'daba'		
/ɑ/	graagù	'frame'						
/f/			flâ	'to be good'			fjã	'urinate'
/v/			vlâ̰	'to back up'–f2			vjan	'feet'
/m/			mlã̄mmā	'pus'			mjaarì	'nose'
/h/			ɬúūgù	'road'			hyaarì	'liver'

4.4 Nasality

4.4.1 Oral Vowels before Nasal Consonants

The oral vs. nasal vowel distinction is completely retained before nasal consonants. To illustrate this, I cite a few examples of noun forms from gender 2, with and without the noun class suffix (which can be dropped in natural speech). Note the plural root forms:

	Singular		Plural		Gloss
	Root	Root w/ Suffix	Root	Root w/ Suffix	
a.	júù	júù+gù	jún	jún+ɲà̰	'head'
	ɬũ̄ũ	ɬũ̄ũ+gù	ɬũn	ɬũn+ɲà̰	'road'
b.	buɔ	buɔ+gù	/bɔn/ bon	bɔn+ɲà̰	'neck'
	tũɔ̃	tũɔ̃+gù	tõn	tõn+ɲà̰	'ear'

Other examples which could be cited are the high frequency use of the genitive clitic in associative constructions. This nasal clitic attaches itself to the right edge of any noun root yet it does not cause any process of nasalization to occur on the noun root.

Vaa n   yúùgù.   Guu n   yíɛgù.
dog GEN   head   rat   GEN foot
'dog's head.'   'rat's foot'

4.4.2 Oral Vowels after Nasal Consonants

Nasal syllable onsets do not necessarily neutralize the oral vs. nasal vowel distinction, but it would appear that it probably does in most cases; in other words, it is relatively rare to find an oral vowel following a nasal consonant, and, in the case of [ŋm], oral vowels are never found in this environment. Nevertheless, there are several clear examples—even minimal pairs—where the oral vs. nasal distinction has been retained following nasal consonant onsets. Although I do not have any detailed statistical evidence at this point, my impression is that long vowels or vowel sequences are much likely to resist the influences of the nasal onset than short vowels.

nu	'be deep'	nũũ	'to hang up'
núū	'be deep'–f2	mã́ã̄	'to build'–f2
maa	'to overtake'	mã́ã̄	'to build'–f2
máarā	'to go'–f2	mã́rrã̄	'to sit down'–f2
naliɛ	'to swallow'	nãlĩɛ̃	'to scold'
nuɔl	'scoop out'	nṹɔ̃l	'to stop crying'–f1
nìɛ	'be there'	nì̃ɛ̃	'how many'

Vowels which do not have nasal vowel phoneme counterparts—/e/, /o/ and /ɨ/—are never nasalized.

4.4.3 Suffix Assimilation

The verb suffix /la/ (seen in verb forms two and three of CVV verbs) is realized as either [la] or [lã] depending on the nasality of the verb root. Native speakers perceive the difference between these two surface forms of the suffix. However, the surface form of the nominal suffix /lli/ of CV verbs where V is a nasal vowel, does not differ significantly in nasality from its oral counterpart. To be sure, there is slight difference in the degree of nasality but not strong enough to be perceived by native speakers. Perhaps the most natural explanation of why the verb suffix /la/ of CVV verb roots assimilates whereas the /lli/ suffix of CV verb roots does not can be attributed to the fact that long nasal vowels are stronger and more prominent than short nasal vowels.

4.4.4 Nasality in Roots

Nasality does not operate on the word level in *Turka*, that is, there exist two-syllable roots in which the two syllables clearly demonstrate independence of nasality:

Syllable #1 Oral: Syllable #2 Nasal		Syllable #1 Nasal: Syllable #2 Oral		Syllable #1 Nasal: Syllable #2 Nasal	
Word	Gloss	Word	Gloss	Word	Gloss
purnĩĩ	'gourmand'	pʲãluu+gu	'strength'	ɟẽ̃ẽ̃lẽ̃ẽ̃	'to sun dry'
hutũɔ̃+gu	'igname'	taasẽ̃ẽ̃nẽ̃ə+gũ	'outside'	ɲũrũɔ̃	'to swell'
tapẽ̃ẽ̃+gu	'infection'	hẽ̃ẽ̃gə+gu	'diarrhea'	dẽ̃ẽ̃nã	'to borrow'
ɟimãã+gu	'today'	hẽ̃ẽ̃sə	'to linger'	flãgãã+gu	'lung'

5 Consonantal Contrasts

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All contrasts presented here are *simple* (i.e. non-compound) roots. In the case of nouns, even though the noun class suffix represents a distinct morphological boundary, the suffix is nevertheless presented with the root but separated with the symbol '+'. I felt that this would facilitate greater reader understanding. Non-base verb forms are indicated in the gloss –*f2* (for verb form 2) or –*f3* (for verb form 3).

Simple roots surpassing two syllables are relatively rare in Turka. Furthermore, there are significant restrictions on which phonemes can occur in non-initial syllables of simple roots, especially among verbs (see chapter on **Phonotactics**). Because of this, word-medial phoneme contrasts of *simple* roots are often difficult to find.

5.1   Phoneme   /p/

(a)   /p/   /b/

word-initial	páˊ	'to shell'	báˊ	'to rest'
	péˋ	'to be crazy'	béˊ	'to call'
pre-cons.	pláàˊ+gùˋ	'table'	blàáˋ+gùˋ	'funeral'
	plɔ̀ɔ́+gù	'rônier branch'	blɔ̀ɔ́+gù	'kapok tree'
	pəplɔ	'white'	bəblu	'black'
word-medial	pũmpər	'young man'	dɨbɨr	' grainery'

(b)   /p/   /t/

word-initial	pa	'to shell'	ta	'to leave'
	pã	'to pay'	tã	'to finish'
	piiˋ	'to trim (a tree)'	tiiˋ	'to light (a fire)'
word-medial	pùpùgúu+gù	'rubbish heap'	bútùu+gù	'mortar'

(c)   /p/   /c/

word-initial	pa	'to shell'	ca	'to bathe'
	pã	'to pay'	cã	'to reheat (tôh)'
	pù	'to garden'	cu	'to carry-on-back'
word-medial	pùpùgúu+gù	'rubbish heap'	húcùú+gù	'hat'

(d)   /p/   /k/

word-initial	pa	'to shell'	ka	'to break'
	pu	'to garden'	ku	'to die'
	páˊ	'to pay'	kãˋ	'to go'
	púu+gù	'ficent tree'	kúu+gù	'thing'

(e)   /p/   /f/

	pa	'to shell'	faˋ	'to pull'
	pii	'to trim (a tree)'	fíīˊ	'to measure'–f2
	píɛ̄	'to help'–f2	fiɛ	'to place on knees'
	píɛ̃̄	'to wrap around waist'–f2	fíɛ̃̄	'to soak'–f2
	púu+gù	'ficent tree'	fúu+gù	'hole'

(f)   /p/   /v/

word-initial	paˊ	'to shell'	vaa	'to tie'
	púū	'to garden'–f2	vuu	'to flatter'
	píɛ̄	'to help'–f2	víɛ+gùˋ	'foot'
	pã	'to pay'	vã	'to back up'

(g) /p/   /m/

word-initial	pã	'to pay'	mã	'to build'
	páa+lā	'to plane'–f2	máa+lā	'to surpass'–f2
	pĩɛ̃	'to wrap around'	mĩɛ̃	'to get used to'

(h) /p/   /w/

word-initial	pu	'to garden'	wuu	'to eat'
	pa	'to shell'	waa	'to speak'

5.2   Phoneme /t/

(a) /t/   /p/
    see /p/   /t/ page 17.

(b) /t/   /c/

word-initial	ta	'to leave'	ca	'to bathe'
	tii	'to light (a fire)'	cii	'to wait'
	tã	'to finish'	cã	'to reheat'
	túù	'to carry'	cúū	'to carry-on-back'–f2
	to	'to tread'	co	'to regain strength'
	tɔ	'to spit'	cɔ	'to spend the night'

(c) /t/   /k/

word-initial	ta	'to leave'	ka	'to break'
	tã	'to finish'	kã	'to go'
	to	'to tread'	ko	'to kill'
	túɔ̄	'to spit'–f2	kuɔsə	'to dig'
	túù	'to carry'	kúū	'to die'–f2
	tʷáam+mã̀	'blood'	kʷáà+gù	'pond'

(d) /t/   /d/

word-initial	túù	'to carry'	duu	'to bite'
	tíi	'to light (a fire)'	dii	'to put'
	tíɛ	'to leave'–f2	díɛ	'to see'–f2
	taa	'to cook in hot liquid'	daa	'to be tall'
	tĩĩ	'to plaster'	dĩĩ	'to extinguish'

(e) /t/   /s/

	ta	'to leave'	sa	'to danse'
	tíɛ	'to leave'–f2	síɛ̄	'to danse'–f2
	taa	'to cook in hot liquid'	saa	'to sift'
	to	'to thread'	so	'to plant'
	tuu	'pull a bow-string'	suu	'to cover'

(f) /t/   /n/

word-initial	taa	'to cook in hot liquid'	naa	'to be obligated'
	tu	'to announce'	nu	'to be deep'
	tĩĩ	'to plaster'	nĩĩ	'to awaken'

(g) /t/   /l/

word-initial	túɔ̄	'to spit'–f2	luɔ	'small rat'
	tɔ	'to spit'	lɔ	'slave'
	tə	'father'	lə	focus marker

5.3   Phoneme /c/

(a) /c/   /p/
    see /p/   /c/ page 17.

(b) /c/ /t/
    see /t/ /c/ page 18.

(c) /c/ /k/

word-initial	caā	'to want'	kaa	'to draw water'
	cárā	'to deny'–f2	káar+ā	'to place on'–f2
	cə̃ə̃	'to remove kernels'	kə̃ə̃l	'to perce'
	cã	'to reheat (tôh)'	kã	'to go'
	cáa+gù	'forge'	káa+gù	'daba'
	cúu+gù	'ashes'	kúū+gù	'death'
	secier	'farmer'	cikiɛ	'invisible bird'

(d) /c/ /ɟ/

word-initial	caa	'to want'	ɟaa	'to be sick'
	co	'to regain strength'	ɟo	'to come'
	car	'to deny'	ɟar	'to judge'
	ca	'to bathe'	ɟa	'to show'
	cii	'to wait'	ɟii	'to separate'
word-medial	húcùu+gù	'hat'	ɟijum+mã	'cowry shell'
	cicuɔ+gu	'tomorrow'	ɟajuɔ	'stool'

(e) /c/ /j/

word-initial	caa	'to want'	jaa	'to leave-alone'
	cúɔ̄	'to spend the night'–f2	juɔ	'to share'
	co	'to regain strength'	jo	'also'
	cúu+gù	'ashes'	yúù+gù	'head'
	cii	'to wait'	jii	'to weave'
word-initial	cã	'to reheat'	ɲã	'to laugh'
	cə̃ə̃	'to remove kernels'	ɲə̃ə̃	'to chase'
	mãcem+mã	'work'	cũɔ̃yə	'fly'

5.4   Phoneme /k/

(a) /k/ /p/
    see /k/ /p/ page 17.

(b) /k/ /t/
    see /k/ /p/ page 18.

(c) /k/ /c/
    see /k/ /p/ page 19.

(d) /k/ /g/

word-initial	kúū	'to die'–f2	guu	'to sprain'
	kúul+ā	'to dry'–f2	gúu+lā	'to sprain'–f2
	káa+lā	'to draw water'–f2	gaala	'to disorder'
	káa+gù	'daba'	gàa+gù	'clay water bucket'
	kúù	'fetish'	gúu	'sewer rat'
	ké̃ə̃	'green monkey'	gé̃ə̃	'courtyard opening'
word-medial	cikiɛ	'invisible bird'	tɨgiɛ	'partridge'

(e) /k/ /h/

word-initial	ka	'to break'	ha	'to anoint'
	ku	'to die'	hu	'to rub'
	kã	'to go'	hã	'to crush'
	kű̃ɔ̄	'to cultivate'–f2	hũɔ̃	'to take'
	kuul	'to dry'	hul	'to shave'
	kaal	'to cry'	haal	'to empty'

5.5   **Phoneme** /b/

(a)   /b/   /p/

    see /p/   /b/   page 17.

(b)   /b/   /d/

word-initial	búu+gu	'mortar'	dúu+gù	'hut'
	bṹũ	'to be large'	dũũ	'to sow'
	búɔ́	'to heal'	dúɔ́+gù	'rain'
	bìi	'what'	dii	'to put'
	ba	'to become'	da	'to see'
	bɛ́ə̃lã̀	'to ruin'–f2	dɛ́ə̃+lã̀	'to taste'–f2

(c)   /b/   /ɟ/

word-initial	ba	'to become'	ɟa	'to show'
	bə̃ə̃lã̀	'to ruin'	ɟə̃ə̃+lã̀	'to sun-dry'
	bṵ̀ɔ̃́+gù	'neck'	ɟṵ́ɔ̃+gù	'hollow'
	búu+gu	'mortar'	ɟuu	'boa constrictor'
	bóbô	'blind person'	jo	'to come'
	bíĩ́	'mosquito'	jíɲ+ɲã̀	'money'

(d)   /b/   /g/

word-initial	búu+gù	'mortar'	gúu	'to sprain'
	báa	'they-EMP'	gáalà	'to disorder'
	bṵ̀ɔ̃́+gù	'neck'	gũɔ̃lũɔ̃	'cat'
	bə̀ə́+gu	'sun'	gɛ́ə̀	'courtyard opening'
	bútùu+gù	'pot'	gúlaa+gù	'balaphone'

(e)   /b/   /gb/

word-initial	bár	'skin'	gbár	'to detach'
	bál+lì	'staying'	gbál	'to be rich'
	bɛ́ə̃lã̀	'to spoil'–f2	gbã́lã̀	'to twist'–f2
	bàagə̀+gù	'Bauhinia tree'	gbaasə́+rì	'fear'

(f)   /b/   /f/

word-initial	bà	c2:SUJ	fa	'to pull'
	bii	'what'	fíĩ́	'to measure'–f2
	bobo	'deaf person'	fo	'to unearth'
	bɛ́ə̃lã̀	'to spoil'–f2	fə̃ə̃+lã̀	'to know'–f2
pre-cons	bláà	'to stay'–f3	fláà	'to pull'–f3

(g)   /b/   /v/

word-initial	bàa	'they-EMP'	váa	'to attach'
	bṵ̀ũ	'to be large'	vúu	'to flatter'
	bíɛ	'son'	víɛ+gù	'foot'

(h)   /b/   /m/

word-initial	bɛ́ə̃lã̀	'to spoil'–f2	mɛ́ə̃lã̀	'to play music'–f2
	bar	'skin'	maar	'to go'
	bṵ́ɔ̃+gù	'neck'	mṵ́ɔ̃rì	'chief'
	bũũ	'to be much'	mũũ	'to hit'

(i)   /b/   /w/

word-initial	waa	'to speak'	bàā	3pl:c2:DEM
	wà	citation marker	bà	3pl:c2:SUJ
	buruɔ̀	'to separate'	wuruɔ̀	'goat'
	búu+gù	'mortar'	wúur+ì	'food'

5.6   Phoneme   /d/

(a)   /d/   /b/
   see /b/   /d/   page 20.

(b)   /d/   /ɟ/

word-initial	duu	'to bite'	ɟuu	'to push'
	da	'to see'	ɟa	'to show'
	dii	'to put'	ɟii	'to separate'
	də́ə̃+lã̄	'to taste'	ɟə̃ə̃+lə̃	'to welcome'
	dĩĩ	'to extinguish'	ɟĩɛ̃	'to touch'

(c)   /d/   /g/

word-initial	duu	'to bite'	guu	'to sprain'
	dáa+lā	'to be tall'–f2	gáalā̀	'to mix'–f2
	dũũ	'to sow'	gṹũ̀+gù	'knee'
	də́ə̃̀	'to visit'	gə́ə̃̄	'courtyard'

(d)   /d/   /n/

word-initial	daa	'to be long'	naa	'to be compelled'
	dìɛ	'there'	nìɛ	'there'
	du	'to begin'	nu	'to be deep'
	dã́mũɔ̃+gù	'sauce'	nã̄n	'to lick'
	dáraa	'to have vision'	nár+rā̄	'to wrestle'–f2

(e)   /d/   /l/

word-initial	dúɔ+gù̀	'rain'	luɔ̀	'small rat'
	də́l+lì	c5:POSSED	lə́+rì	'village'
	də	c5:OBJ	lə	focus marker
pre-cons.	dʷáar+ì	'goodness'	lʷáa+gù̀	'bark'

5.7   Phoneme   /ɟ/

(a)   /ɟ/   /b/
   see /ɟ/   /b/   page 20.

(b)   /ɟ/   /d/
   see /d/   /ɟ/   page 21.

(c)   /ɟ/   /g/

word-initial	ɟuu	'to push'	guu	'to sprain'
	ɟa	'to show'	ga	FUTURE
	ɟasə	'to crush'	gasə	'to forage'
	ɟə̃ə̃+lə̃	'to welcome'	gə́ə̃̄	'courtyard'

(d)   /ɟ/   /j/

word-initial	ɟal	'to meet'	jal	'to write'
	ɟuu	'to push'	júù	'to fly'
	ɟii	'to separate'	jii	'to weave'
	ɟo	'to come'	jon	'to miss'
nasal vowel	ɟã	'to cut'	ɲã	'to laugh'
	ɟĩɛ̃	'to touch'	ɲĩ́ɛ̃̄	'to laugh'–f2
	ɟĩɛ̃sə	'to pinch'	ɲĩɛ̃sə	'to blink'
	ɟə̃ə̃+lã̄	'to welcome'	ɲə́ə̃̄+lã̄	'to chase away'

5.8   Phoneme   /g/

(a)   /g/   /b/
   see /b/   /g/   page 20.

(b) /g/ /d/

see /d/ /g/ page 20.

(c) /g/ /ɟ/

see /g/ /b/ page 21.

(d) /g/ /gb/

word-intial				
	gɨ̀	c3:SUJ	gbɨrĩĩ	'musical bow'
	gáalā	'to mix'–f2	gbáal+ā	'to be rich'–f2
	gɛ́ɛ̃̄	'courtyard'	gbɛ̃ɛ̃	'to be strong'

(e) /g/ /w/

word-initial				
	gáalā	'to mix'–f2	wáa+lā	'to speak'–f2
	guu	'to sprain'	wuu	'to eat'
	ga	FUTURE	wù	c1:SUJ

5.9   Phoneme /gb/

(a) /gb/ /b/

see /b/ /gb/ page 20.

(b) /gb/ /g/

see /g/ /gb/ page 22.

(c) /gb/ /w/

word-initial				
	gbáalā	'to be rich'–f2	wáalā	'to speak'–f2
	gbaal	'to be rich'–f2	waal	'snake'
	gbar	'to detach'	wɔr	'to scratch'

(d) /gb/ /ŋm/

word-initial				
	gbɛ̃ɛ̃	'to be strong'	ŋmɛ̃ɛ̃	'to produce fruit'
	gbãl	'to twist'	ŋmã	'to steal'

5.10   Phoneme /f/

(a) /f/ /p/

see /p/ /f/ page 17.

(b) /f/ /b/

see /f/ /b/ page 20.

(c) /f/ /v/

word-initial				
	fã	'to sting'	vã	'to backup'
	faal	'to complete'	váa+lā	'to tie'–f2
	fíɛ̃̄	'to urinate'–f2	vĩɛ̃	'to toss coins'
	fiɛriɛ	'to bend down'	víɛ+gù	'food'
	fuu	'to shelter'	vuu	'to flatter'
	fɛ̃ɛ̃	'to know'	vɛ̃ɛ̃	'to age'

(d) /f/ /m/

word-initial				
	fáal+ā	'to complete'–f2	máa+lā	'to unload'
	fíɛ̃̄	'to urinate'–f2	mĩɛ̃	'to get used to'
	fɛ̃ɛ̃+lã	'to know'–f2	mɛ́ɛ̃+lã	'to play music'–f2
pre-cons.	flã	'to sting'–f2	mlã́	'to build'–f2

(e) /f/ /w/

word-initial				
	fáalā	'to complete'–f2	wáa+lā	'to walk'
	fuu	'to shelter'	wuu	'to eat'

(f) /f/ /s/

word-initial				
	fuu	'to shelter'	suu	'to close'
	fa	'to pull'	sa	'to dance'
	fíĩ̄	'to measure'–f2	sii	'to divine'

| | fiɛ | 'to place on knee' | siɛ | 'to respond' |

5.11 Phoneme /v/

(a) /v/ /p/
see /p/ /v/ page 17.

(b) /v/ /b/
see /b/ /v/ page 20.

(c) /v/ /f/
see /f/ /v/ page 22.

(d) /v/ /m/

word-initial	váalā	'to tie'–f2	máa+lā	'to unload'
	vĩɛ̃	'to toss coins'	mĩɛ̃	'to get used to'
	võə̃+lə̃	'to age'–f2	mə́ə̃+lā	'to play music'–f2
pre-cons.	vlã	'to backup'–f2	mlɑ́	'to build'–f2

(e) /v/ /w/

| word-initial | váalā | 'to tie'–f2 | wáalā | 'to walk' |
| | vuu | 'to flatter' | wuu | 'to eat' |

(f) /v/ /s/

word-initial	vuu	'to flatter'	suu	'to close'
	vaa	'to tie'	saa	'to sift'
	vã	'to backup'	sãl	'to jump'
	vĩɛ̃	'to toss coins'	sĩɛ̃	'to conserve'

5.12 Phoneme /s/

(a) /s/ /t/
see /t/ /s/ page 18.

(b) /s/ /f/
see /f/ /s/ page 22.

(c) /s/ /v/
see /v/ /s/ page 23.

(d) /s/ /n/

word-initial	saa	'to sift'	nàa	BE:NEAR
	sə̃ə̃	'to buy'	nə̃ə̃	'to scatter'
	suu	'to cover'	núu	'to be deep'–f2
	sĩĩ	'to dampen'	nĩĩ	'to awaken'
	saar	'to wash'	nar	'to wrestle'
	siɛ	'to respond'	nìɛ	BE:FAR

(e) /s/ /l/

word-initial	sɔ	'to remove water'	lɔ	'slave'
	sə	NEG:EXIST	lə̀rì	'village
word-medial	ŋmãsã	'to nurse'	ŋmɑ́l+lì	'stealing'
	fíìsà	'to rest'	fíi+lā	'to squeeze'–f2
	káasā	'to cough'–f2	káa+lā	'to draw water'–f2

5.13 Phoneme /h/

(a) /h/ /k/
see /h/ /k/ page 19.

(b) /h/ /w/

| word-initial | ha | 'to anoint' | wà | CITATION |
| | | | waa | 'to speak' |

huu	'to give birth'	wuu	'to eat'
hal	'to be far away'	waal	'snake'
hãnãã	'to melt'	wãnãã	'to talk much'
háarā	'to be high'–f2	wárāa	'to stroll'

(c) /h/   /ŋm/

word-initial	hã	'to give'	ŋmã	'to steal'
	hə̃ə̃	'to defecate'	ŋmə̃ə̃	'to produce fruit'

5.14   Phoneme   /m/

(a) /m/   /p/
     see /p/   /m/ page 18.

(b) /m/   /b/
     see /b/   /m/ page 20.

(c) /m/   /f/
     see /f/   /m/ page 22.

(d) /m/   /v/
     see /v/   /m/ page 23.

(e) /m/   /w/

word-initial	máà	'to surpass'	wáà	'to walk'
	máar+ā	'to go'–f2	wáarā	'to stroll'
	màaláà	'frog'	waal	'snake'

(f) /m/   /n/

word-initial	màã	1s:PLU:SUJ	nàã	2s:PLU:SUJ
	máã	1s:DEM	náã	QUESTION
	maa	'to surpass'	naa	'to be obliged'
	mũũ	'to hit'	nũũ	'to hang'
	maar	'to go'	nar	'to wrestle'

(g) /m/   /ŋm/

word-initial	mã	'to build'	ŋmã	'to steal'
	mə́ə̃l+ā	'to play music'–f2	ŋmə̃ə̃+lã	'to produce fruit'–f2

5.15   Phoneme   /n/

(a) /n/   /t/
     see /t/   /n/ page 18.

(b) /n/   /d/
     see /d/   /n/ page 21.

(c) /n/   /s/
     see /s/   /n/ page 23.

(d) /n/   /l/

word-inital	nélli	'looking'	léri	'village'
word-medial	də́ə̃nã̄	'to borrow'	də́ə̃lã̄	'to taste'–f2
	sīnə̃ə̃	'to forget'	sīĩlã	'to dampen'–f2
	tũnũ	'to pour'	tə̃ə̃lã	'to tie'
	sãnũ̃ũgù	'forehead'	pʲãlũ̃ũgù	'power'
word-final	fʲãn	'to greet'	fʲãl	'to tighten'

(e) /n/   /m/

word-initial	nũũ	'to hang'	mũũ	'to hit'
	nãn	'to lick'	mã	'to build'
	nar	'to wrestle'	maar	'to go'
	nàa	BE:NEAR	máa	'to surpass'

| | nṹɔ̃ | 'to hear'–f2 | mũɔ̃ | 'to suck' |

(f)   /n/   /ŋm/

word-initial   nɵ̃ɵ̃   'to scatter'   ŋmɵ̃ə   'to produce fruit'
                nã   LOCATIVE   ŋmã   'to steal'
                nɑ́nnɑ̃̄   'to lick'–f2   ŋmãsã   'to nurse'

(g)   /n/   /r/

word-final   tɨn   'ladder'   jɨrjɨr   'shadow'
                dugɔben   'sesame'   bər   'to cut'

5.16   Phoneme   /ŋm/

(a)   /ŋm/   /m/
       see /m/   /ŋm/   page 24.

(b)   /ŋm/   /n/
       see /n/   /ŋm/   page 25.

(c)   /ŋm/   /gb/
       see /gb/   /ŋm/   page 22.

5.17   Phoneme   /l/

(a)   /l/   /t/
       see /t/   /l/   page 18.

(b)   /l/   /d/
       see /d/   /l/   page 21.

(c)   /l/   /s/
       see /s/   /l/   page 23.

(d)   /l/   /n/
       see /n/   /l/   page 24.

(e)   /l/   /r/

word-final   jil   'to spin'   jir   'to be blind'
                ciil   'to winnow'   ciir   'to be upright'
                ɟal   'to meet'   ɟar   'to judge'

5.18   Phoneme   /r/

(a)   /r/   /n/
       see /n/   /r/   page 25.

(b)   /r/   /l/
       see /l/   /r/   page 25.

5.19   Phoneme   /w/

(a)   /w/   /p/
       see /p/   /w/   page 18.

(b)   /w/   /b/
       see /b/   /w/   page 20.

(c)   /w/   /g/
       see /g/   /w/   page 22.

(d)   /w/   /gb/
       see /gb/   /w/   page 22.

(e)   /w/   /f/
       see /f/   /w/   page 22.

(f)   /w/   /v/
       see /v/   /w/   page 23.

(g) /w/   /m/
     see /m/   /w/ page 24.

(h) /w/   /h/
     see /h/   /w/ page 23.

5.20   Phoneme   /j/

(a) /j/   /c/
     see /c/   /j/ page 19.

(b) /j/   /ɟ/
     see /ɟ/   /j/ page 21.

6   Vowel Contrasts

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6.1   Phoneme /i/

(a)   /i/   /e/

word-final	pii	'to trim (a tree)'	pe‾	'to be crazy'
			píē /péē/	'to be crazy'–f2
	jì	1p:SUJ	je	'to burn'
	bìi	'what'	be‾	'to call'
			bíē /béē/	'to call'–f2
word-medial	pisɨ	'to squeeze'	pesə	'to harvest'
	ɟisũ̃	'grasshopper'	cesə	'to carve'
	cir	'giant tortoise'	cìcéruu+gù	'commerce'
	hiraa	'to stop'	ver	'to return'

(b)   /i/   /ɨ/

word-final	hi	'to arrive'	ɬɨ	'to skin'
	tɨgii	'to pile up'	pigɨ	'to fold'
word-medial	bir	'terrace'	dɨbɨr	'granery'
	pisɨ	'to squeeze'	dɨsɨ	'to be heavy'
	pisɨ	'to squeeze'	tɨsii	'to sneeze'

(c)   /i/   /ə/

word-final	hi	'to arrive'	ɬə	'to exit'
	tɨsii	'to sneeze'	cesə	'to carve'
	pigɨ	'to fold'	pəəblɨ	'young girl'
	bir	'terrace'	bər	'to cut'
	biiru	'baboon'	gəəraa	'to hurry'

6.2   Phoneme /e/

(a)   /e/   /i/

(b)   /e/   /ɛ/

word-final	pe‾	'to be crazy'	pɛ/pʲɛ‾	'to help'
	píē /péē/	'to be crazy'–f2	píɛ̄ /péɛ̄/	'to help'–f2
	cíē /céē/	'to do'–f2	ciɛ /cɛɛ/	'to de-weed'

(c)   /e/   /ə/

| word-final | be | 'to call' | gbə | 'to meet' |
| word-medial | per | 'to sweep' | bər | 'to cut' |

6.3   Phoneme /ɛ/

(a)   /ɛ/   /e/

(b)   /ɛ/   /ə/

(c)   /ɛ/   /a/

word-final	pʲɛ / pɛ	'to help'	pa	'to shell'
	ciɛ /cɛɛ/	'to weed'	caa	'to want'
	siɛ /sɛɛ/	'to respond'	saa	'to sift'
word-medial	ciɛl /cɛɛ/	'to grill'	kaal	'to cry'

6.4   Phoneme   /ɨ/

(a)   /ɨ/   /i/

   see /ɨ/   /i/   page 27.

(b)   /ɨ/   /u/

word-final	dɨ	c5:SUJ	du	'to begin'
	kxɨ	'to bind'	ku̠	'to die'
word-medial	dɨsɨ	'to be heavy'	dúdusə+rì	'seed'

(c)   /ɨ/   /ə/

word-final	ɬɨ	'to skin'	ɬə	'to exit'
	dɨsɨ	'to be heavy'	duɔsə	'to sleep'
	gɨ̀	3sg:c3:SUJ	gə	3sg:c3:OBJ
	sɨ	NEG:FUT	sə	NEG:EXIST
	kxɨ	'to retie'	blə	'to catch'
word-medial	blɨ́rì	'year'	blə́r+ā	'to trap'–f2
	ɟìsɨ́+rì	'thread'	kʷásə+rì	'hair / fur'
	jisɨ+rì	'eye'	jirsə+rì	'blindness'

6.5   Phoneme   /ə/

(a)   /ə/   /i/

   see /i/   /ə/   page 27.

(b)   /ə/   /e/

   see /e/   /ə/   page 27.

(c)   /ə/   /ɛ/

   see /ɛ/   /ə/   page 27.

(d)   /ə/   /ɨ/

   see /ɨ/   /ə/   page 28.

(e)   /ə/   /a/

word-final	blə	'to catch'	bla	'to be ugly'
	pléə̄	'young woman'	pláā̀	'to shell'–vf3
	duɔsə	'to sleep'	fíìsà	'to rest'
	háàsə̀	'to fish'	húùsà	'to vomit'
	káàsə	'to cry out'	káàsà	'to cough'
word-medial	blə́r+ā	'to catch'–f2	blá+rā	'to be ugly'–f2
	déllì	c5:POSSED	dál+lì	'seeing'
	fúɔgə̄gù	'shell'	fúgagū	'field'
	gbəríi	'red monkey'	gbarā	'to detach'–f2

(f)   /ə/   /u/

word-final	kùlúù	'chicken'	kuləə	'to knell'
	gbə	'to meet'	ku	'to die'
word-medial	bər	'to cut'	hur	'to threaten'
	gəraa	'to hurry'	ɟuraa	'to rush'

(g)   /ə/   /o/

word-final	ɬə	'to exit'	ɬo	'again'
	sə	NEG:EXIST	so	'to plant'
	tə	'father'	to	'to thread'
word-medial	bər	'to cut'	kor	'to save'

(h)   /ə/   /ɔ/

word-final	tə	'father'	tʷɔ / tɔ	'to spit'
	sə	NEG:EXIST	sɔ	'to skim'
	ɬə /hlə/	'to exit'	lɔ	'slave'

word-medial

6.6   Phoneme   /a/

(a)   /a/   /ɛ/
     see /ɛ/   /a/   page 27.

(b)   /a/   /ə/
     see /ə/   /a/   page 28.

(c)   /a/   /ɔ/

word-initial	ta	'to leave'	tʷɔ / tɔ	'to spit'
	ca	'to bathe'	cɔ	'to spend the night'
	díilā	'to put'–f2	lɔ	'slave'
	saa	'to sift'	suɔ /sɔɔ/	'to pound'
word-medial	káāsà	'to sneeze'	kuɔsə /kɔɔsə/	'to dig'

6.7   Phoneme   /u/

(a)   /u/   /ɨ/
     see /ɨ/   /u/   page 28.

(b)   /u/   /ə/
     see /ə/   /u/   page 28.

(c)   /u/   /o/

word-initial	tu	'to announce'	to	'to thread'
	ɟuu	'to push'	ɟúō /ɟoo/	'to come'–f2
	ku	'to die'	ko	'to kill'
	cu	'to carry on back'	co	'to reform'
	jugu	'to ask'	jugo	'to climb'
word-medial	suro	'to get up'	sora	'to get up'–f3
	kul	'to forge'	fol	'to rip out'

6.8   Phoneme   /o/

(a)   /o/   /u/
     see /u/   /o/   page 29.

(b)   /o/   /ə/
     see /ə/   /o/   page 28.

(c)   /o/   /ɔ/

word-final	to	'to thread'	tʷɔ / tɔ	'to spit'
	co	'to reform'	cɔ	'to spend the night'
	so	'to plant'	sɔ	'to skim'
word-medial	nugola	'to be embarrassed'	nugɔla	'to muddy'

6.9   Phoneme   /ɔ/

(a)   /ɔ/   /o/
     see /o/   /ɔ/   page 29.

(b)   /ɔ/   /ə/
     see /ə/   /ɔ/   page 28.

(c)   /ɔ/   /a/
     see /a/   /ɔ/   page 29.

7   Orthography Proposal

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7.1   Consonants

7.1.1   Simple Consonants

Simple consonants are written with their respective IPA symbols with a couple of exceptions:

- /ɟ/ is written as /j/
- /j/ written as /y/
- [ɲ] despite it being the phonetic realization of /j/ in nasal contexts will be written as ɲ. The language committe felt that many people were already used to the idea that this is a phoneme in Jula and would therefore prefer to have it overdifferenciated in the Turka orthography.

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
p	/p/	pa	payer	to pay
t	/t/	ta	passer	to pass by
c	/c/	ca	se doucher	to bathe
k	/k/	ka	casser	to break
b	/b/	bà	ils	they
d	/d/	da	voir	to see
j	/ɟ/	jaa	être malade	to be sick
g	/g/	gaalaa	mélanger	to mix
gb	/gb/	gbə	se recontrer	to meet
f	/f/	fa	être bon	to be good
s	/s/	saa	tamiser	to sift
h	/h/	ha	oindre	to annoint
v	/v/	viɛgu	pied	foot
m	/m/	maalaa	crapaud	toad
n	/n/	nu	être profond	to be deep
ŋm	/ŋm/	ŋmã	voler	to steal
l	/l/	luɔ	esclave	slave
r	/r/	suur	vendre	to sell
w	/w/	waa	parler	to talk
y	/j/	yendi	corne	horn
ɲ	/j/	ɲãl	termite	termite

7.1.2   Consonant Clusters

- Palatalized and labialized consonants have been interpreted as consonant sequences and are written as digraphs Cj and Cw respectively.
- The lateral fricative [ɬ] has been interpreted as a consonant cluster and is written as **hl**.

- C + r and C + l sequences are written as consonant clusters.
- The affricate [kx] is written as **kh**.
    A few examples are given below:

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
pr	[pr]	pruɔgu	couteau	knife
py	[pʲ]	pyar	cochon	pig
pl	[pl]	pluugu	queue	tail
tr	[tr]	traagu	flute	flute
tw	[tʷ]	twammã	sang	blood
cw	[cʷ]	cwaaba	gens	people
dr	[dr]	drɔgu	en haut	up high
dw	[dʷ]	dwal	plaire	to please
jw	[ɟʷ]	jwal	daba	daba
gr	[gr]	graagu	cadre	frame
fl	[fl]	fla	être bon -f2	to be good - f2
fy	[fʲ]	fyã	uriner	to urinate
vl	[vl]	vlã	reculer - f2	to back up - f2
vy	[vʲ]	vyaɲã	pieds	feet
ml	[ml]	mlã	construire -f2	to build - f2
hl	[ɬ]	hlũũgu	chemin	road
hy	[hʲ]	hyaari	foie	liver
hw	[hʷ]	hwar	pourrir	to rot

7.2   Vowels

7.2.1   Short Oral Vowels

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
i	/i/	dii	mettre	to put
e	/e/	pe	être fou	to be crazy
ɛ	/ɛ/	pɛ	aider	to help
ɨ	/ɨ/	hlɨ	dépouiller	to skin
ə	/ə/	blə	attraper	to catch
a	/a/	da	voir	to see
u	/u/	nu	être profond	to be deep
o	/o/	jo	venir	to come
ɔ	/ɔ/	sɔ	nager	to swim

7.2.2 Short Nasal Vowels

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
ɛ̃	/ɛ̃/	pɛ̃	enrouler	to wrap around
ə̃	/ə̃/	gbə̃	pouvoir	to be able
ã	/ã/	pã	payer	to pay
ũ	/ũ/	dũlli	espece, ethnie	race
ɔ̃	/ɔ̃/	sɔ̃	courir	to run

7.2.3 Long Oral Vowels

Long mid-vowels are written in their phonetic form rather than their phonemic form since the phonemic form is too abstract for literacy classes.

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
ii	/i:/	dii	mettre	to put
ie	/e:/	pie	être fou - f2	to be crazy
iɛ	/ɛ:/	piɛ	aider - f2	to help
əə	/ə:/	gbəə	être fort - f2	to catch
aa	/a:/	daa	être long	to see
uu	/u:/	nuu	être profond - f2	to be deep
uo	/o:/	juo	venir - f2	to come
uɔ	/ɔ:/	suɔ	nager - f2	to swim

7.2.4 Long Nasal Vowels

Orthographic Representation	Phoneme	Example	Glosse - Français	Gloss - English
ĩĩ	/ĩ:/	dĩĩ	éteindre	to extinguish
ĩɛ̃	/ɛ̃:/	pĩɛ̃ndi	cadavre	corpse
ə̃ə̃	/ə̃:/	sə̃ə̃	acheter	to buy
ãã	/ã:/	kãnãã	se rappeller	to remember
ũũ	/ũ:/	dũũ	semer	to sow
ũɔ̃	/ɔ̃:/	mũɔ̃	sucer	to suck

Appendix A — List of Base Verb Forms and Derived Forms

The following is a fairly comprehensive list of verbs in Turka. Along with the base form are the two derived forms and the nominal. For reference purposes, I have sorted this list by computer file code which refers to digital recordings which have been made for all of these verbs. The reader should note that this list is not intended as a lexicon since Turka verbs are typically rich in meaning and therefore the one simple gloss given here is not adequate.

File Code	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb001a		buɔ	búɔlā	búɔ̄là	búɔmà̃	guérir	heal
Vb002a		būũ	búũlā	búũlà	búũmà̃	grossir	gain weight
Vb002b	Vbc014	bín̄ə̃ə̀	bín̄ə̃ə̄	bínn̄ə̃ə̀	bín̄ə̃mmà̃	grossir	put on weight
Vb003a		caa	cáalā	cáalà	cáamà̃	1.vouloir 2.allumer	want
Vb003b	Vbc029	caalaa	cáalāa	cáalàa	cáalammà̃	éclairer	brighten
Vb004a		cə̃ə̄	cə́̃ə̄lā	cə́̃ə̄là	cə́̃ə̄mà	enlever grains de maïs avec le droigt	remove corn kernels with one's thumb
Vb005a		cii	cíilā	cíīlà	cíimà̃	attendre	wait
Vb006a		ciɛ	cíɛlā	cíɛlà	cíɛmà̃	désherber	remove weeds
Vb007a		ce	cíē	cíāà	célli	faire	do
Vb008a		da	díɛ̄	díāà	dállī	voir	see
Vb008b	Vbc032	daraa	dárāa	dárāà	dárammà̃	avoir vision	have vision
Vb009a		də̃ə̄	də́̃ə̄lā	də́̃ə̄là	də́̃ə̄mà̃	goûter	taste
Vb010a		də́̃ə̀	də́̃ə̄lā	də́̃ə̄là	də́̃ə̀mà̃	rendre visite	visit
Vb011a		dii	díilā	díīlà	díimà̃	mettre	put
Vb012a		duu	dúulā	dúūlà	dúumà̃	mordre	bite
Vb013a		dūũ	dúũlā	dúũlà	dúũmà̃	semer	sow
Vb014a		fa	flâ	fláà	fálli	tirer	pull
Vb015a		fi	fíī	fíāà	fílli	measurer	measure
Vb016a		fə̃ə̄	fə́̃ə̄	fə́̃ə̄lā	fə́̃ə̄mà̃	connaître	know
Vb017a		fʲɛ	fíɛ̄	fíāà̃	fʲɛ́lli	tremper	soak
Vb018a		hā	ɬâ	ɬáà	hállì	moudre	crush
Vb019a		hə̃ə̄	hə́̃ə̄lā	hə́̃ə̄là	hə́̃ə̄mà̃	déféquer	defecate
Vb020a		hi	híī	híāà	hílli	arriver	arrive
Vb021a		hĩĩ	híĩlā	híĩlà	híĩmà̃	avaler	swallow
Vb022a		hĩɛ	híɛ̄lā	híɛ̄là	híɛmà̃	preparer à manger	cook
Vb023a		hu	húū	húəə̀	húlli	essuyer	wipe
Vb024a		ɟa	ɟíɛ̄	ɟíāà	ɟálli	montrer	indicate
Vb025a		ɟaa	ɟáalā	ɟáalà	ɟáamà̃	être malade	be sick
Vb026a		ɟĩɛ	ɟíɛ̄lā	ɟíɛ̄là	ɟíɛmà̃	toucher	touch
Vb027a		ɟo	ɟúō	ɟóāà	ɟólli	venir	come
Vb028a		ka	kxâ	kxáà	kálli	casser	break
Vb028b	missing	karaa				casser en morceau	break into pieces
Vb029a		kaa	káalā	káalà	káamà̃	puiser	draw water

File Code	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb030a		kã	kxáā̰	kxáà̰	kálli̧	aller	go
Vb031a		ko	kúō	kóaà	kólli̧	tuer	kill
Vb032a		ku	kúū	kúəə̀	kúlli̧	mourir	die
Vb033a		kũũ	kúū̃lā	kúū̃là	kúũmà	rentrer	go home
Vb034a		mã	mlá̂	mláā̰	málli̧	construire	build
Vb035a		mũũ	múū̃lā	múū̃là	múũmà	frapper	hit
Vb036a		nàa				être:là	be there
Vb037a		ne	níē	níaà	nélli̧	regarder	look
Vb038a		nə̀				avoir	have
Vb039a		nə̃ə̃	nə́ə̃̄lā	nə́ə̃̄là	nə́ə̃̄mà	éparpiller	scatter
Vb040a		nĩĩ	níĩ̄lā	níĩ̄là	níĩ̄mà	réveiller	wake up
Vb041a		nɔ̃	nṹɔ̃̄	núã̰à̰	nɔ́lli̧	entendre	hear
Vb042a		nũũ	núū̃lā	núū̃là	núũmà	accrocher	hang up
Vb043a		pa	plá̂	pláà	pálli̧	décortiquer	shell
Vb044a		pã	plá̂	pláā̰	pálli̧	payer	pay
Vb045a		pʲɛ / pɛ	píɛ̄	píaà	pʲɛ́lli̧	aider	help
Vb046a		sa	síɛ̄	síaà	sálli̧	danser	dance
Vb047a		saa	sáalā	sáalà	sáamà	tamiser	sift
Vb048a		sə̃ə̃	sə́ə̃̄lā	sə́ə̃̄là	sə́ə̃̄mà	acheter	buy
Vb049a		siɛ	síɛlā	síɛlà	síɛmà	répondre	respond
Vb050a		so	súō	sóaà	sólli̧	planter	plant
Vb051a		sɔ	súō	sóaà	sólli̧	enlever de l'eau	skim
Vb052a		sɔ̃	súɔ̃̄	sɔ́ã̰à̰	sɔ́lli̧	craindre	fear
Vb053a		suɔ	súɔlā	súɔlà	súɔmà	piler	pound
Vb054a		taa	táalā	táalà	táamà	préparer dolo	prepare beer
Vb055a		tii	tíilā	tíilà	tíimà	allumer	light
Vb056a		tĩɛ̃	tíɛ̃̄lā	tíɛ̃̄là	tíɛ̃̄mà	accompagner	accompany
Vb057a		túù	túulā	túulà	túùmà	porter	carry
Vb058a		vaa	váalā	váalà	váamà	attacher	attach
Vb058b	missing	vanãã	vánã̄ã	vánnã̄à̰	vánãmmà	être égal	be equal
Vb059a		wáà	wáalā	wáalà	wáamà	marcher	walk
Vb059b	Vbc019	wáarà̰ā̰	wáarāa	wáāràa	wáarāmmà̰	se promener	stroll
Vb060a		waa	wáalā	wáalà	wáamà	parler	talk
Vb060b	Vbc064	wanãã	wánã̄ã	wánnã̄à̰	wánãmmà	bavarder	chat
Vb061a		wuu	wúulā	wúulà	wúumà	manger	eat
Vb061b	Vbc088	wuuraa	wúurāa	wúūràa	wúurammã̀	bruter	forage
Vb062a	missing	ɟa	ɟíɛ̄	ɟíaà	ɟálli̧	authoriser	allow
Vb063a		ɲã	ɲíɛ̃̄	ɲíã̰à̰	ɲálli̧	rire	laugh
Vb064a		ɟə	ɟíə̄	ɟíaà	ɟəlli̧	brûler	burn
Vb065a		fuɔ	fúɔlā	fúɔlà	fúɔmà	tenir	hold
Vb066a		ɟuu	ɟúulā	ɟúulà	ɟúumà	voler	fly
Vb067a		mũɔ̃	múɔ̃̄lā	múɔ̃̄là	múɔ̃̄mà	sucer	suck
Vb068a		hũɔ̃	húɔ̃̄lā	húɔ̃̄là	húɔ̃̄mà	prendre	take

File Code	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb069a		ɲə̃ə̄	ɲə́ə̄lā	ɲə́ə̄là	ɲə́ə̄mà	être acide	be acidic
Vb070a		ŋmã	ŋmáā̃	ŋmáà̃	ŋmállì	voler	steal
Vb071a		diɛ	díɛlā	díɛlà	díɛmmà	flotter	float
Vb072a		kɔ̃ / kʷɔ̃	kúɔ̄̃	kúā̃à̃	kɔ́llì	labourer	work fields
Vb073a		piɛ	píɛlā	píɛlà	píɛmà	augmenter	increase
Vb074a		ɲũɔ̃	ɲű̃ɔ̄̃lā	ɲű̃ɔ̄̃là	ɲű̃ɔ̃mà	boire	drink
Vb075a		tɔ / tʷɔ	túɔ̄	túāà	tɔ́llì	cracher	spit
Vb076a		tu	túū	túə̄ə̀	túllì	annoncer	announce
Vb077a		ɟuu	ɟúūlā	ɟúūlà	ɟúumà	pousser	push
Vb078a		hʲã	híᷓ̃	híᷓ̃à̃	hʲállì	griller	grill
Vb079a		nìɛ				être là	be there
Vb081a		ɟaala	ɟáalá	ɟáalà	ɟáalammà	laisser	let
Vb082a		ta	tíɛ̄	tíāà	tállì	quitter, passer	leave
Vb083a		gbə	gbə́ə̄	gbə́āà	gbə́llì	rencontrer	meet
Vb084a		be	bíē	bíāà	béllì	appeler	call
Vb085a		blə	blə́rā	blə́rà	blə́mmà	attraper	catch
Vb086a		huu	húulā	húulà	húumà	naître	be born
Vb087a		fã	flᷓ̂	flᷓ́à̃	fállì	piquer	sting
Vb089a		cu	cúū	cúə̄ə̀	cúllì	porter au dos (enfant)	carry on back a child
Vb091a		ha	ɬᷓ̂	ɬáà	hállì	oindre	anoint
Vb092a		tã	tíᷓ̃	tíᷓ̃à̃	tállì	donner coupe de pied	kick
Vb093a		cã	cíᷓ̃	cíᷓ̃à̃	cállì	rechauffer tôh	reheat tôh
Vb094a		ɟã	ɟíᷓ̃	ɟíᷓ̃à̃	ɟállì	couper	chop
Vb095a		sã	síᷓ̃	síᷓ̃à̃	sállì	péter	pass gas
Vb096a		vã	vlᷓ̂	vlᷓ́à̃	vállì	reculer	back up
Vb097a		gbə̃ə̄̃	gbə́ə̄̃lā	gbə́ə̄̃là	gbə́ə̃mà	être fort	be strong
Vb098a		pĩĩ	píĩ̄lā	píĩ̄là	píĩmà	réveiller qqn	awaken s.o.
Vb099a		kxɨ	kxɨ́rə̄	kxɨ́rə̀	kxɨ́mmà	relier	tie again
Vb100a		fii	fíīlā	fíīlà	fíīmà	presser l'eau	squeeze
Vb101a		ɬɨ	ɬɨ́rə̄	ɬɨ́rə̀	ɬɨ́mmà	dépouiller	skin
Vb102a		pii	píīlā	píīlà	píīmà	tailler arbre	trim
Vb103a		pe	píē	píāà	péllì	être fou	be crazy
Vb104a		to	túō	tóāà	tóllì	enfiler	thread
Vb105a		co	cúō	cóāà	cóllì	reprendre form	take shape
Vb106a		fo	fúō	fóāà	fóllì	déterrer	unearth
Vb107a		pu	púū	púə̄ə̀	púllì	faire la pipinière	garden
Vb109a		du	dúū	dúə̄ə̀	dúllì	faire bruit	make noice
Vb110a		fuu	fúūlā	fúūlà	fúumà	abriter	shelter
Vb111a		vuu	vúūlā	vúūlà	vúumà	flatter	flatter
Vb112a		ca	cíɛ̄	cíāà	cállì	se doucher	bathe
Vb113a		naa	náalā	náalà	náamà	balayer	sweep

File Code	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb114a		dɪ̃ɪ̃	dɪ́ɪ̃lā	dɪ́ɪ̄là	dɪ́ɪ̃mà	éteindre	extinguish
Vb115a		fiɛ	fíɛlā	fíɛlà	fíɛmà	poser enfant sur les genoux	place child on one's lap
Vb116a		paa	páalā	páalà	páamà	rester	stay put
Vb117a		sɪ́ɛ̃	sɪ́ɛ̃lā	sɪ́ɛ̄là	sɪ́ɛ̃mà	chauffer	heat
Vb118a		ŋmə̃ə̃	ŋmə́ə̃lā	ŋmə́ə̃là	ŋmə́ə̃mà	produire fruit	bear fruit
Vb119a		tɪ̃ɪ̃	tɪ́ɪ̃lā	tɪ́ɪ̃là	tɪ́ɪ̃mà	crépir	plaster
Vb120a		cɪ̃ɪ̃	cɪ́ɪ̃lā	cɪ́ɪ̄là	cɪ́ɪ̃mà	réfugier	find refuge
Vb121a		ɬə	ɬə́rā	ɬə́rà	ɬə́mmà	sortir	exit
Vb122a		ɬa	ɬárā	ɬárà	ɬámmà	refuser	refuse
Vb123a		ba	blâ	bláà	bállì	rester	stay put
Vb124a		fʲã	fíɛ̃̄	fíãà	fʲállì	uriner	urinate
Vb125a		fɪ̃ɪ̃	fíɪ̃lā	fíɪ̃là	fíɪ̃mà	envelopper	envelope
Vb125b	Vbc048	fɪ́nə̃ə̃̀	fɪ́nə̃ə̃	fɪ́nə̃ə̃̀	fɪ́nə̃mmà	faire le tour	run around
Vb126a		hɔ̃	hṹɔ̃̄	hṹã̀	hɔ́llì	sentir	smell
Vb127a		huɔ	húɔlā	húɔlà	húɔmà	soulever	lift up
Vb128a		ɟii	ɟíilā	ɟíílà	ɟíimà	écarter	move apart
Vb129a		krâ	kárrā	kárrà	krámmà	poser	place
Vb130a		máà	máalā	máalà	máamà	dépasser	surpass
Vb131a		mɪ̃ɛ̃	mɪ́ɛ̃lā	mɪ́ɛ̃là	mɪ́ɛ̃mà	s'habituer	get used to
Vb132a		sii	síilā	síílà	síimà	faire la divination	divine
Vb133a		suu	súulā	súúlà	súumà	fermer	close
Vb135a		tuu	túulā	túúlà	túumà	tirer à l'arc	pull a bow
Vb135b	Vbc062	tuuraa	túurāa	túúràa	túurammà	insulter	insult
Vb136a		və̃ə̃	və́ə̃lā	və́ə̃là	və́ə̃mà	grandir	to age
Vb136b		vānāã	vánãã	vánnāã	vānãmmà	être agé (pl)	be aged (pl)
Vb137a		vɪ̃ɛ̃	vɪ́ɛ̃lā	vɪ́ɛ̃là	vɪ́ɛ̃mà	jetter monnaie	toss coins
Vb138a		ɟuɔ	ɟúɔlā	ɟúɔ̄là	ɟúɔmà	partager	share
Vb139a		ɟu	ɟúū	ɟúə̄ə̀	ɟúllì	remplir	fill
Vb140a		ɟii	ɟíilā	ɟíílà	ɟíimà	tisser	weave
Vb141a		sɪ́ì	síilā	síìlà	síìmà	circoncire	circumcise
Vb143a		cɔ	cúɔ̄	cúāà	cɔ́llì	passer nuit	spend the night
Vb144a		pɛ̃	píɛ̃̄	píãà	pɛ́llì	enrouler autour	wrap around
Vb145a		sɪ̃ɪ̃	sɪ́ɪ̃lā	sɪ́ɪ̃là	sɪ́ɪ̃mà	mouiller	to dampen
Vb146a		nu	núū	núə̄ə̀	núllì	être profond	be deep
Vb147a		ɢuu	ɢúulā	ɢúulà	ɢúumà	se fouler	sprain
Vb148a		bla	blárā	blárrà	blámmà	être sale	be dirty
Vb149a		blɪ̃ɪ̃̀	blɪ́ɪ̃rə̄	blɪ́ɪ̃rə̀	blɪ́ɪ̃mà	noircir	blacken
Vb150a		daa	dáalā	dáálà	dáamà	être long	be long
Vb150b		danāã	dánãã	dánnāã	dánãmmà	être long (pl.)	be long (pl)
Vb151a		kuu	kúulā	kúúlà	kúumà	poser contre	place against

	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb151a	Vbb001	bər	bə́rrā	bə́rrà	bə́rɨmmà	couper	cut

	OLD	Base Form	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb152b	Vbc098	bəraa	bə́rāa	bə́rrāà	bə́rammā̀	hacher	cut up
Vb153a	Vbb002	mʲãl	mʲã́llā̄	mʲã́llà̄	mʲã́lɨmmā̀	prendre feu	take fire
Vb154a	Vbb003	ciil	cíilā	cíīlà	cíilɨmmā̀	vanner	winnow
Vb155a	Vbb004	dʷal	dʷállā	dʷállà	dʷálɨmmā̀	plaire	please
Vb156a	Vbb005	fɨr	fɨ́rrē̄	fɨ́rrè	fɨ́rɨmmā̀	détacher	detach
Vb157a	Vbb006	fiir	fíirē̄	fíīrè	fíirɨmmā̀	évanter	fan
Vb158a	Vbb007	fúur	fúurē̄	fúurè	fúurə̄mmā̀	dépouiller	skin
Vb159a	Vbb008	fʲãl	fʲã́llā̄	fʲã́llà̄	fʲã́lɨmmā̀	serrer	tighten
Vb160a	Vbb009	haal	háalā	háālà	háalɨmmā̀	vider	empty
Vb161a	Vbb010	hiil	híilā	híīlà	híilɨmmā̀	enlever	take out
Vb162a	Vbb011	hul	húllə̄	húllə̀	húlɨmmā̀	raser	shave
Vb163a	Vbb012	hũn	hṹnnā̀	hṹnnā̀	hṹnɨmmā̀	détacher	detach
Vb164a	Vbb013	hʲar	hʲárrā	hʲárrà	hʲárɨmmā̀	chanter	sing
Vb165a	Vbb014	kʷor	kʷórrā	kʷórrà	kʷórɨmmā̀	égrainer	remove grain
Vb166a	Vbb015	kũɔ̃l	kṹɔ̃lā̄	kṹɔ̃là̄	kṹɔ̃lɨmmā̀	ramasser	gather
Vb167a	Vbb016	kuul	kúulā	kúūlà	kúulɨmmā̀	sécher	dry
Vb168a	Vbb017	kʷar	kʷárrā	kʷárrà	kʷárɨmmā̀	se sauver	escape
Vb169a	Vbb018	maar	máarā	máārà	máarɨmmā̀	partir	leave
Vb170a	Vbb019	mə̃ə̃l	mə̃́ə̃lā̄	mə̃́ə̃là̄	mə̃́ə̃lɨmmā̀	jouer musique	play music
Vb171a	Vbb020	ɟar	ɟárrā	ɟárrà	ɟárɨmmā̀	cueillir	pick / pluck
Vb172a	Vbb021	per/pʲer	pʲérrā	pʲérrà	pʲerɨmmā̀	balayer	sweep
Vb173a	Vbb022	saar	sáarā	sáārà	sáarɨmmā̀	laver	wash
Vb174a	Vbb023	jɨr	jɨ́rrē̄	jɨ́rrè	jɨ́rɨmmā̀	être aveugle	be blind
Vb175a	Vbb024	ver/vʲer	vʲérrā	vʲérrà	vʲérɨmmā̀	retourner	return
Vb176a	Vbb025	wuɔr	wúɔrā	wúɔrà	wúɔrɨmmā̀	gratter	scratch
Vb177a	Vbb026	ɟal	ɟállā	ɟállà	ɟálɨmmā̀	écrire	write
Vb178a	Vbb027	nar	nárrā	nárrà	nárɨmmā̀	lutter	wrestle
Vb179a	Vbb028	táàl	táalā̄	táālà	táalə̄mmā̀	fendre	split
Vb180a	Vbb029	pʲãl	pʲã́llā̄	pʲã́llà̄	pʲã́lɨmmā̀	tresser	braid
Vb181a	Vbb031	kaal	káalā	káālà	káalɨmmā̀	pleurer	cry
Vb182a	Vbb032	ɟʷar	ɟʷárrā	ɟʷárrà	ɟʷárɨmmā̀	fatiguer	tire
Vb183a	Vbb033	kãn	kã́nnā̄	kã́nnà̄	kã́nɨmmā̀	penser	think
Vb183b	Vbc020	kãnãã	kã́nā̃ā	kã́nā̃à	kã́nãmmā̀	se rappeller	remember
Vb185a	Vbb035	kxə̃ə̃l	kxə̃́ə̃lā̄	kxə̃́ə̃là̄	kxə̃́ə̃lɨmmā̀	percer	pierce
Vb186a	Vbb036	fʲãn	fʲã́nnā̄	fʲã́nnà̄	fʲã́nɨmmā̀	saluer	greet
Vb187a	Vbb037	tũɔ̃l	tṹɔ̃lā̄	tṹɔ̃là̄	tṹɔ̃lɨmmā̀	désherber riz	weed rice
Vb188a	Vbb038	car	cárrā	cárrà	cárɨmmā̀	nier	deny
Vb189a	Vbb039	ciɛl	cíɛlā	cíɛlà	cíɛlɨmmā̀	griller	grill
Vb190a	Vbb040	gbãl	gbã́llā̄	gbã́llà̄	gbã́lɨmmā̀	tordre	twist
Vb191a	Vbb041	hur	húrrə̄	húrrə̀	húrɨmmā̀	dégager la fummé	clear smoke
Vb192a	Vbb042	hɨr	hɨ́rrə̄	hɨ́rrə̀	hɨ́rɨmmā̀	démolir	demolish
Vb193a	Vbb043	hãn	hã́nnā̄	hã́nnà̄	hã́nɨmmā̀	brûler	burn
Vb194a	Vbb044	ɲĩɛr	ɲĩ́ɛrā̄	ɲĩ́ɛrà̄	ɲĩ́ɛrɨmmā̀	attiser le feu	fan into flame
Vb195a	Vbc100	pigɨ	pígɨrə̄	pígɨrə̀	pígɨmmā̀	plier	fold

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Vb196a	Vbb046	ɟ̃án	ɟ́ánnā	ɟ́ánnà	ɟ́ánɨ̃mmà	entrer	enter
Vb197a	Vbb047	ɟur	ɟúrrā	ɟúrrà	ɟúrɨmmà	vider	empty
Vb198a	Vbb048	kul	kúllə̄	kúllə̀	kúlɨmmà	forger	smelt
Vb199a	Vbb049	nãn	nánnā	nánnà	nánɨ̃mmà	lécher	lecher
Vb200a	Vbb050	nuɔl	núɔlā	núɔ̄là	núɔlɨmmà	houer	hoe
Vb201a	Vbb051	paal	páalā	páālà	páalɨmmà	raboter	plane
Vb202a	Vbb052	pʲál	pʲállā	pʲállà	pʲálɨmmà	filer	thread
Vb203a	Vbb053	puul	púulā	púūlà	púulɨmmà	bouillir	boil
Vb204a	Vbb054	sãl	sállā	sállà	sálɨmmà	sauter	jump
Vb205a	Vbb055	suur	súurā	súūrà	súurɨmmà	vendre	sell
Vb206a	Vbb056	tar	tárrā	tárrà	tárɨmmà	glisser	slip
Vb207a	Vbb057	tũn	túnnā	túñnà	túnɨ̃mmà	arroser	water
Vb208a	Vbb058	ɟiil	ɟíilə̄	ɟíīlə̀	ɟíilɨmmà	tourner	turn
Vb208b	Vbc096	ɟiiləə	ɟíiləə̄	ɟíīləə̀	ɟíilə̄mmà	pivoter	spin around
Vb209a	Vbb059	ɟon	ɟónnā	ɟónnà	ɟónɨmmà	manquer	miss
Vb210a	Vbb060	fáal	fáalā	fáālà	fáaləmmà	terminer	complete
Vb211a	Vbb061	gbar	gbárrā	gbárrà	gbárɨmmà	détacher	detach
Vb212a	Vbb062	káal	káalā	káālà	káalɨmmà	faire jour	be daylight
Vb213a	Vbb063	bĩn	bínnā	bíñnà	bínɨ̃mmà	mélanger céréales	mix cereal
Vb214a	Vbb064	ciir	cíirā	cíīrà	cíirɨmmà	redresser	stand up
Vb215a	Vbb065	haar	háarā	háārà	háarɨmmà	être haut	be high
Vb216b	Vbc080	halaa	hálaa	hállāà	hálammà	quitter	leave
Vb216a	Vbb066	hal	hállā	hállà	hálɨmmà	être loin	be far away
Vb217a	Vbb067	huul	húulā	húūlà	húulɨmmà	embêter qqn	bother
Vb218a	Vbb068	ɟal	ɟállā	ɟállà	ɟálɨmmà	se rencontrer	meet
Vb219a	Vbb069	kol	kóllā	kóllà	kólɨmmà	être petit	be small
Vb220a	Vbb070	kor	kórrā	kórrà	kórɨmmà	sauver qqn	rescue
Vb221a	Vbb071	kuɔl	kúɔlā	kúɔ̄là	kúɔlɨmmà	maigrir	become thin
Vb222a	Vbb072	nol	nóllā	nóllà	nólɨmmà	courber	bend down
Vb223a	Vbb073	sũɔl	súɔ̃lā	súɔ̃là	súɔ̃lɨ̃mmà	être juste	be correct
Vb224a	Vbb074	fol	fóllā	fóllà	fólɨmmà	arracher	pull out
Vb225a	Vbb075	ɲũɔl	ɲúɔ̃lā	ɲúɔ̃là	ɲúɔ̃lɨ̃mmà	cesser de pleurer	stop crying
Vb226a	Vbb076	hʲãl	hʲállā	hʲállà	hʲálɨ̃mmà	être bête	be stupid
Vb227a	Vbb077	kal	kállā	kállà	kálɨmmà	lire	read

	File Code	VbBase Forma	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb228a	Vbc097	ɟuurəə	ɟúurəə̄	ɟúūrə̀ə̀	ɟúurəmmà	surprendre	surprize
Vb229a	Vbc013	nẽnə̃ə̃	néñə̃ə̄	néñnə̃ə̀	nẽnə̃mmà	perdre	loose
Vb230a	Vbc001	ɟiirə	ɟíirə̄	ɟíīrə̀	ɟíirəmmà	appuyer	lean
Vb231a	Vbc002	cígiɛ	cígiɛ̄	cígɛ̄rà	cigɛmmà	vanner	winnow
Vb232a	Vbc003	kuɔsə	kúɔsə̄	kúɔ̄sə̀	kúɔsəmmà	creuser	dig
Vb233a	Vbc004	duɔsə	dúɔsə̄	dúɔ̄sə̀	dúɔsəmmà	dormir	sleep
Vb234a	Vbc005	hẽə̃sə	héə̃sə̄	héə̃sə̀	héə̃səmmà	durer	linger

	File Code	VbBase Forma	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb235a	Vbc006	ɟásə	ɟásə̄	ɟásə̀	ɟásəmmà	écraser	crush
Vb236a	Vbc007	ɟə̃ə̃lə̃ə̃	ɟə̃ə̃lə̃ə̃	ɟə̃ə̃lə̃ə̀	ɟə̃ə̃lə̃mmà	étaller au soleil	dry in sun
Vb237a	Vbc008	ɟíràa	ɟárrā	ɟárrà	ɟírammà	s'asseoir	sit
Vb238a	Vbc009	ɟugar	ɟúgarā	ɟúgarà	ɟúgarəmmà	déterrer	unearth
Vb239a	Vbc010	kaasə	káasə̄	káasə̀	káasəmmà	crier	cry out
Vb240a	Vbc011	kʷósùɔ̀	kʷósuɔ̄	kʷósùɔ̀	kʷósɔmmà	blesser	hurt
Vb241a	Vbc012	mə́gāà	mə́gāa	mə́gārà	mə́gāmmà	réparer	repair
Vb242a	Vbc094	naliɛ	náliɛ̄	nállīɛ̀	nálɛmmà	avaler	swallow
Vb244a	Vbc015	pesə	pésə̄	pésə̀	pésəmmà	récolter	harvest
Vb245a	Vbc016	súrò	sórrà	sórrà	súrōmmà	se lever	rise
Vb246a	Vbc017	tígìi	tígìrə̄	tígɨ̄rə̀	tígimmà	entasser	pile up
Vb247a	Vbc018	vaalaa	váalāa	váalàa	váalammà	perdre	loose
Vb248a	Vbc090	cesə	césə̄	césə̀	césəmmà	tailler	carve
Vb249b	Vbc095	kaalaa	káalāa	káalàa	káalammà	clarifier	clear
Vb250a	Vbc021	duruu	dúrūu	dúrūù	dúrummà	tomber	fall
Vb251a	Vbc022	pisɨ	písɨ̄	písɨ̀	písimmà	presser	squeeze
Vb252a	Vbc023	húūsà	húusā	húusà	húusāmmà	vomir	vomit
Vb253a	Vbc024	mũɔ̃sə	mũɔ̃sə̄	mũɔ̃sə̀	mũɔ̃səmmà	sucer	suck
Vb254a	Vbc025	ɲũrũɔ̃	ɲúrũɔ̃	ɲúrũɔ̃̀	ɲúrɔ̃mmà	enfler	swell
Vb255a	Vbc026	mə́rə̃ə̃̀	mə́rrā	mə́rrà	mə́rãmmà	se coucher	lie down
Vb256a	Vbc027	páaraa	páarāa	páaràa	páarammà	jouer	play
Vb257a	Vbc028	tə̃ə̃lə̃ə̃	tə́ə̃lə̃ə̃	tə́ə̃lə̃ə̀	tə́ə̃lə̃mmà	lier	bind
Vb259a	Vbc030	huulaa	húulāa	húūlàa	húulammà	chauffer	heat
Vb260a	Vbc031	pígāà	pígāra	pígārà	pígammà	montrer	show
Vb261a	Vbd013	tɨgɨnə̃ə̃	tígɨnə̃ə̃	tígɨ̄nə̀ə̃	tígɨnə̃mmà	s'apprêter	ready
Vb262a	Vbc033	cígèr	cígərā	cígərà	cígərəmmà	vanner	thresh
Vb263a	Vbc034	ə́ə̃lã̄ã̀	ə́ə̃lā̃ã	ə́ə̃lã̄ã̀	ə́ə̃lãmmà	apprendre	learn
Vb264a	Vbc035	húgũɔ̃̀	húgũɔ̃	húgũɔ̃̀	húgɔ̃mmà	roter	belch
Vb265a	Vbc036	bə̃ə̃lə̃ə̃	bə́ə̃lə̃ə̃	bə́ə̃lə̃ə̀	bə́ə̃lə̃mmà	gâter	spoil
Vb266a	Vbc037	biɛriɛ	bíɛriɛ̄	bíɛriɛ̀	bíɛrɛmmà	ramasser	gather
Vb267a	Vbc038	bīnə̃ə̃	bínə̀ə̃	bínnə̃ə̀	bínə̃mmà	rouler	roll
Vb268a	Vbc039	buruɔ	búrūɔ	búrrūɔ̀	búrɔmmà	se séparer	separate
Vb269a	Vbc040	cirə̃ə̃	círə̃ə̃	círrə̃ə̀	círə̃mmà	demander	ask
Vb270a	Vbc041	cĩīnə̃ə̃	cíĩnə̃ə̃	cíĩnə̃ə̀	cíĩnə̃mmà	abandonner	abandon
Vb271a	Vbc042	cúgùr	cúgūrə̀	cúgūrà	cúgūrəmmà	ouvrir	open
Vb272a	Vbc043	də́ə̃nā	də́ə̃nā	də́ə̃nà	də́ə̃nā̃mmà	emprunter	borrow
Vb273a	Vbc044	haasə	háasə̄	háasə̀	háasəmmà	pêcher	fish
Vb274a	Vbc045	fíīsà	fíisā	fíīsà	fíisammà	se reposer	rest
Vb275a	Vbc046	fuuraa	fúurāa	fúuràa	fúurammà	accroupir	crouch
Vb276a	Vbc047	híràa	hʲárrā	hʲárrà	hírammà	être debout	be upright
Vb277a	Vbd002	nugola	núgolā	núgōlà	núgolammà	être gêner	be embarassed
Vb278a	Vbc049	húlìi	húlīi	húllīì	húlimmà	souffler	blow
Vb279a	Vbc050	ɟuraa	ɟúrāa	ɟúrràa	ɟúrammà	se hâter	hurry

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Vb280a	Vbc051	káālà	káalā	káālà	káalāmmà	débrousser	clear fields
Vb281a	Vbc052	ɟiɛriɛ	ɟíɛriɛ̄	ɟíɛrìɛ̀	ɟíɛrɛmmà̄	supplier	implore
Vb282a	Vbc053	kuuləə	kúuləə̄	kúulə̀ə	kúuləmmà̄	agenouiller	knee down
Vb283a	Vbc054	ŋmāsā	ŋmásā	ŋmásà̄	ŋmásāmmà	têter	nurse
Vb284a	Vbc055	ŋmə̄ə̄rə̄ə̄	ŋmə́ə̄rə̄ə̄	ŋmə́ə̄rə̀ə	ŋmə́ə̄rə̃mmà̄	se cacher	hide
Vb285a	Vbc056	núgùr	núgurə̄	núgūrà	núgurəmmà̄	malaxer	mix
Vb286a	Vbc057	ɲə́gār	ɲə́gārā	ɲə́gãrà̄	ɲə́gārə̃mmà̄	coudre	sew
Vb287a f	Vbc058	ɲə̄rīɛ̃	ɲə́rīɛ̄	ɲə́rrīɛ̃	ɲə́rɛmmà̄	diminuer	diminish
Vb288a	Vbc059	pírīì	píriī	pírrīì	pírimmà̄	frotter	rub
Vb289a	Vbc060	saaraa	sáarāa	sáāràa	sáarammà̄	secouer	shake
Vb290a	Vbc061	tɨsīì	tɨsīi	tɨsīì	tɨsīmmà̄	éternuer	sneeze
Vb292a	Vbc063	tūnūū	túnūū	túnnūù	túnūmmà̄	renverser	pour out
Vb294a	Vbc065	gasə	gásə̄	gásə̀	gásəmmà̄	gratter	scratch
Vb295a	Vbc066	jugu	júgurə̄	júgùrə̀	júgummà̄	demander (question)	question
Vb295b	Vbd011	jugurəə	júgurə̄ə̄	júgūrə̀ə	jugurəmmà̄	se renseigner	become informed
Vb296a	Vbc067	sīīnə̄ə̄	síīnə̄ə̄	síīnə̀ə	síīnə̃mmà̄	oublier	forget
Vb297a	Vbc068	fiɛriɛ	fíɛriɛ̄	fíɛrīɛ̀	fíɛrɛmmà̄	étaller	spread out
Vb298a	Vbc069	ɲānāā	ɲánāā	ɲánnãã̀	ɲánāmmà̄	trembler	tremble
Vb299a	Vbc070	hlārāā	hlárāā	hlárãã̀	hlárāmmà̄	rougir	redden
Vb300a	Vbc071	hanāā	hánāā	hánnãã̀	hánāmmà̄	être large	be large
Vb301a	Vbc072	nālīɛ̃	nálīɛ̄	nállīɛ̃	nálɛmmà̄	grogner	scold
Vb302a	Vbc073	jugo	júgorā	júgōrà	júgommà̄	monter	climb
Vb302b	Vbd008	juguraa	júgurāa	júgūràa	jugurammà̄	escalader	climb
Vb303a	Vbc074	tuuləə	túuləə̄	túulə̀ə	túuləmmà̄	émousser	foam
Vb304a	Vbc075	blanāā	blánāā	blánnãã̀	blánāmmà̄	être mou	be soft
Vb305a	Vbc076	birīɛ̃	bírīɛ̄	bírrīɛ̃	bírɛmmà̄	pas à l'aise	be ill at ease
Vb306a	Vbc077	dɨsɨ	dísɨ̄	dísɨ̄rə̀	dísɨmmà̄	être lourd	be heavy
Vb307a	Vbc078	káāsà	káasā	káásà	káasāmmà̄	tousser	cough
Vb308a	Vbc079	kálīɛ̃	kálīɛ̄	kállīɛ̃	kálɛmmà̄	être mal eduquer	be badly raised
Vb310a	Vbc081	ɨ́rīì	ɨ́rīi	ɨ́rrīì	ɨ́rimmà̄	roter	blurp
Vb311a	Vbc082	kuusə	kúusə̄	kúusə̀	kúusəmmà̄	être cher	be expensive
Vb313a	missing	gaala	gáalā	gáālà	gáalammà̄	mélanger	mix
Vb314a	Vbc085	gbaala	gbáalā	gbáālà	gbáalammà̄	être riche	be rich
Vb315a	Vbc086	ɲíɛ̃sə̀	ɲíɛ̃sə̄	ɲíɛ̃sə̀	ɲíɛ̃səmmà̄	cligner les yeux	blink
Vb316a	Vbc087	sɨrīɛ̄	sárrā	sárrà	sɨrāmmà̄	se calmer	calm down
Vb318a	Vbd009	miganāā	míganāā	mígānàã	miganãmmà̄	être bas	be low
Vb319a	Vbd010	gasəraa	gásərāa	gásə̄ràa	gasərammà̄	éparpiller	scatter
Vb320a		gəə	gəərā	gəərà	gəərāa	faire vite	do quickly
Vb320b	Vbc091	gəəraa	gəərāa	gəərāà	gəərammà̄	se hater	hurry
Vb321a	Vbc092	gbáālà	gbáalā	gbáālà	gbáalāmmà̄	mastiquer	chew
Vb322a	Vbc093	hānāā	hánāā	hánnãã̀	hánāmmà̄	fondre	melt
Vb323a	Vbd001	suguraa	súgurāa	súgūràa	súgurammà̄	superposer	stack
Vb324a	Vbd003	fuflɔ̄rūɔ̄	fúflɔ̄rūɔ̄	fúflɔ̄rùɔ̄	fúflɔ̄rɔ̃mmà̄	suer	sweat

	File Code	VbBase Forma	Form 2	Form 3	Nominal	Gloss - French	Gloss - English
Vb325a	Vbd004	núgɔ̄là	núgɔlā	núgɔ̄là	núgɔ̄lammà̄	pétrir	
Vb326a	Vbd005	tísɨnə̄̃ə̀	tísɨnə̄̃ə̄	tísɨnə̄̃ə̀	tísɨnə̃mmà̄	baisser	lower
Vb327a	Vbd006	dɨganã̄ã	dɨ́ganã̄ã	dɨ́gānã̀ã	dɨ́ganã̄mmà̄	être léger	be light
Vb328a	Vbd007	pɨpɨrɨ̄ɛ	pɨ́pɨrɨ̄ɛ	pɨ́pɨ̄rɨ̀ɛ	pɨ́pɨrɛ̃mmà̄	embrasser	embrace
Vb330a	Vbd012	ɲíɡã̄là	ɲíɡã̄lā	ɲíɡã̄là	ɲíɡã̄lã̄mmà̄	chatouiller	tickle
Vb331a	missing	kúganã̄ã̀				être proche	be close
Vb332a	missing	pɨgaçã̄				écraser	stomp upon