

A write-up on
PANGWALI PHONOLOGY



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1 INTRODUCTION	1
1.1 THE PANGI PEOPLE	1
1.2 THE PANGWALI LANGUAGE	1
1.3 PURPOSE OF THE STUDY	1
1.4 THE LANGUAGE ASSISTANTS	2
1.5 SYMBOLS AND ABBREVIATIONS	2
2 INTERPRETATION	5
2.1 UNIT OR SEQUENCE	5
2.1.1 <i>Affricates</i>	5
2.1.2 <i>Nasal, tap, flap, and lateral consonants plus glottal fricative</i>	5
2.1.3 <i>Palatalized and labialized consonants</i>	6
2.1.4 <i>Nasals and Homorganic Consonants</i>	8
2.1.5 <i>Long Vowels and Diphthongs</i>	9
2.1.6 <i>Consonant length</i>	11
2.2 CONSONANT OR VOWEL	12
2.3 A ONCE-UPON-A-TIME SYSTEM OF VOWEL HARMONICS – A TENTATIVE HYPOTHESIS	14
2.3.1 <i>The Absence of a conditioning vowel</i>	16
2.3.1.1 The Absence of a conditioning vowel with feminine nouns	16
2.3.1.2 The Absence of a conditioning vowel with masculine neuter nouns	20
3 THE PHONETIC CHART	23
3.1 CONSONANT CHART	23
3.2 VOWEL CHART	23
4 THE PHONEMIC INVENTORY	24
4.1 CONSONANT CHART	24
4.2 VOWEL CHART	24
5 DESCRIPTION AND DISTRIBUTION OF THE PHONEMES	25
5.1 CONSONANTS	25
5.1.1 <i>Plosives and Affricates</i>	26
5.1.2 <i>Nasals</i>	31
5.1.3 <i>Tap and Flap</i>	32
5.1.4 <i>Fricatives</i>	33
5.1.5 <i>Approximants</i>	34
5.1.6 <i>Lateral Approximants</i>	35
5.2 VOWELS	37
5.2.1 <i>Oral Vowels</i>	37
5.2.1.1 Voiced Oral Vowels	37

5.2.1.2	Devoiced Oral Non-Syllabic Vowels /ɰ/ and /ɤ/-- a tentative hypothesis.....	42
5.2.1.3	Nasalized Vowels.....	43
6	EVIDENCE OF CONTRAST.....	45
6.1	CONSONANTS.....	45
6.1.1	<i>Plosives and Affricates</i>	45
6.1.2	<i>Nasals</i>	49
6.1.3	<i>Tap and Flaps</i>	49
6.1.4	<i>Fricatives</i>	49
6.1.5	<i>Approximants</i>	50
6.1.6	<i>Lateral Approximant</i>	50
6.2	VOWELS.....	51
6.2.1	<i>Contrast of Quality between voiced oral vowels</i>	51
6.2.2	<i>Contrast of Quantity between Oral Vowels</i>	53
6.2.3	<i>Contrast between Voiced oral vowels and Voiceless oral vowels</i>	55
6.2.4	<i>Contrast between Voiced oral vowels and Nasal vowels</i>	56
7	THE SYLLABLE.....	57
7.1	SYLLABLE STRUCTURE AND SYLLABLE TYPES.....	57
7.1.1	<i>Syllable Structure</i>	57
7.1.2	<i>Syllable Types</i>	57
7.2	DISTRIBUTION OF SYLLABLES IN WORDS.....	58
7.2.1	<i>Monosyllabic Words</i>	58
7.2.2	<i>Disyllabic Words</i>	59
7.2.3	<i>Trisyllabic Words</i>	60
7.2.4	<i>Quadrisyllabic Words</i>	61
8	DISTRIBUTION OF PHONEMES IN WORDS.....	62
8.1	DISTRIBUTION OF CONSONANTS IN WORDS.....	62
8.1.1	<i>Distribution of unit consonants</i>	62
8.1.1.1	Word initial consonants.....	62
8.1.1.2	Word medial consonants (intervocalic).....	63
8.1.1.3	Word final Consonants.....	65
8.1.2	<i>Consonant Clusters</i>	66
8.1.2.1	Word initial consonant clusters.....	66
8.1.2.2	Word medial consonant clusters.....	66
8.1.2.3	Word final consonant clusters.....	69
8.1.3	<i>Three consonant word medial clusters</i>	70
8.2	DISTRIBUTION OF VOWELS AND DIPHTHONGS IN WORDS.....	71
8.2.1	<i>Vowels in open syllables</i>	71
8.2.2	<i>Vowels in closed syllables</i>	72

8.3	VOWEL CLUSTERS	73
8.3.1	<i>Word initial vowel clusters</i>	73
8.3.2	<i>Word medial vowel clusters</i>	73
8.3.3	<i>Word final vowel clusters</i>	74
9	STRESS	75
10	PRACTICAL ALPHABET.....	78
10.1	VOWELS	78
10.2	CONSONANT CHART	78
11	BIBLIOGRAPHY	79

1 Introduction

1.1 The Pangi people

The language spoken in the Pangi Valley of Chamba district, Himachal Pradesh is known as Pangwali. The valley is situated towards the North West side of the state bordering to Jammu and Kashmir in the mid Himalayas. According to 2001 census the population recorded is 21,570. Its elevation above mean sea level is 9500 feet. It is closed to outside world for at least four months each year due to heavy snowfall. The people are mainly agriculturists. They live in small hamlets scattered throughout the hills. They are self-sufficient and love to celebrate festivals. Their society is managed by a local body made up of people of various clans.

1.2 The Pangwali language

G.A. Grierson (Second edition, 1967:373) classifies Pangwali language under Indo-European, Indo-Aryan, Pahadi, and Western Pahadi, respectively. Since inaccessibility is predominant in this part of the state, the language varies from place to place. There are four dialects of this language found with some differences in the valley. They are Pangwali Killar, Pangwali Purthi, Pangwali Sach and Pangwali dharwasi. However, people at large are of the opinion that the language spoken in Sach belt has preserved a lot of Sanskrit features. But, as Killar is the headquarters of the valley, most of the people accept and understand the language spoken here.

1.3 Purpose of the study

The main purpose of this study is to standardize the Language for Literacy Development activities.

Language vitality is very high among the Pangi people and the language is spoken in all sociolinguistic domains.

A prerequisite for achieving this main goal is a thorough understanding of the Pangwali sound system in order to develop mother tongue literacy materials using the Devanagari script. This need led to the present study.

1.4 The Language Assistants

The data for this study is mostly gathered from the Killari dialect. Since we do not have regular language help, there are many people from whom data has been collected personally. Among them, Dr. Hari Sharma and friends from Parmas village are noteworthy. However, the data has been checked with Mr. Rakesh Sharma.

1.5 Symbols and Abbreviations

[]	Phonetic data.
/ /	Phonemic data.
C	Consonant, occurring at syllable onset and syllable coda
V	Vowel, occurring at syllable nucleus.
ᶤ	Breathy consonant.
ᶦ	Breathy vowel.
ᶑ	Nasalized vowel.
ᶛ	Devoiced consonant.
ᶜ or ᶝ	Devoiced vowel.
ᶞ	Non-syllabic vowel.
/*CVC../	Potentially occurring or reconstructed phonological interpretations.
[-CəC -]	Open transition between consonants in this Write-up is arbitrarily represented by the non-syllabic, diffuse, centralized ‘shewa’ vowel symbolized by [ə]. (It is not, therefore, used precisely as in the International Phonetic Alphabet (IPA) as always and only representing a half-open mid central vowel.) This symbol, [ə], is not to be confused with the symbol [ɘ] or with its syllabic counterparts [ɘ̩] and [ɘː], symbols here used in accord with the conventions of the IPA. So, for example, [ɘ] is a weakly voiced non-syllabic central or central-back close-mid unrounded non-phonemic vowel, whereas [ɘ] and [ɘː] are fully voiced, fully syllabic central-back close-mid unrounded phonologically and historically significant vowels. An illustration of the occurrence of a non-syllabic ‘shewa’ [ə] in Pangwari is the word [burəɦeːl], written phonemically as /burhe:l/, meaning ‘not feeling well’.
[-CC-]	Represents close (as opposed to ‘open’) transition in which two (or even three) consonants occur in sequence

- with no audible transition between them, as the sequence [-l.t^h-] in the word [be:l.t^hi] /be:l.t^hi/, ‘*bucket*’, or the sequence [-n̄t^h] in the word [d̄ən̄t^h] ‘two-year old goat.’ Close transition spans a syllable boundary, as in [be:l.t^hi], or occurs within a single syllable, as in [d̄ən̄t^h].
- [CC] Coarticulated consonants, such as [tʃ^h], a voiceless lamino-alveolar affricated stop with sibilant release, as in the word [batʃ^hur̄i] (alternatively transcribed as [bat.tʃ^hur̄i], /batʃ^hur̄i/, ‘*calf*’
- [t̄t̄] Coarticulated consonants showing syllable boundary; this sequence is also transcribed in this Write-up as [tʃ̄]. The transcription [t̄t̄] explicitly shows that this consonant /t̄/ functions at both coda of preceding syllable and onset of succeeding syllable, whereas the transcription [tʃ̄] shows only that the stop component of this co-articulation is prolonged, not immediately released into its fricative component, [ʃ̄].
- [C̄] Half-long consonant, occurring both intervocally and syllable-finally before another syllable-onset consonant.
- [C.C] Consonants separated by syllable boundary
- [V̄V] Glided/blended vowels occurring at a single syllable nucleus; also called a diphthong.
- [(C₁)V(:)(C₂)(C₃)] Pangwari syllable constituents, with [C₁] at syllable onset, [V] or [V:] at syllable nucleus, [C₂] or [C₂C₃] at syllable coda, with parentheses, as in (C₁), marking optional occurrence and lack of parentheses, as in V, marking obligatory occurrence. Numerals indicate the linear sequence of consonants in a syllable. Syllable constituent structure is maximized as [C₁VC₂C₃] For example, the Pangwari word [m₁e_{n̄2}·θ₃]~[m₁e_{n̄2}·t̄^h₃], phonemically transcribed here as /ment^h/, ‘*Stick for making buttermilk.*’ [-C̄ə] Related to the foregoing, the audibly perceptible release of a word-final consonant into a weakly voiced non-syllabic diffuse, centralized vowel is marked by the ‘shewa’ symbol [ə̄], as in [d̄u^hd̄ə̄], /d̄ud̄^h/, ‘*milk*’ This symbol [ə̄] is not to be confused with the symbol [ə] or with its

Introduction

syllabic counterparts [ə] and [ə:]. In this Write-up, [ə] is a weakly voiced non-syllabic central close-mid unrounded vowel and [ə] and [ə:] are fully voiced, fully syllabic central close-mid unrounded vowels.

'	Primary stress
ˈ	Secondary stress
+	Morpheme boundary between stem and suffix
M	Masculine
F	Feminine
N	Neuter
Sg	Singular
Pl	Plural

All the phonetic symbols used are from the International Phonetic Alphabet (IPA), revised to 2005.

2 Interpretation

The univalent syllable patterns found to occur in Pangwali language are six in number: V, VC, VCC, CV, CVC, CVCC. There is very limited occurrence also of CCV and CCVC patterns, but neither of these is found in native Pangwali words. When phonologically nativized, these patterns are reinterpreted as bisyllabic patterns CV.CV and CVC.CV, respectively. See section **8.1.2.1. Word initial consonant clusters**.

2.1 Unit or Sequence

2.1.1 Affricates

Affricates [tʃ], [dʒ], [tʃʰ] and [dʒʰ] are interpreted as units and not sequences based upon the principle of economy of syllable patterns. Since affricates occur word initially and since no univalent CC clusters occur word initially in native Pangwali words, affricates are best interpreted as unit phonemes.

2.1.2 Nasal, tap, flap, and lateral consonants plus glottal fricative

Bilabial nasal [m], alveolar nasal [n], alveolar tap [ɾ], retroflex flap [ɽ], and alveolar lateral [l] followed by voiced glottal fricative [ɦ], are interpreted as sequences of /-m.ɦ-/ , /-n.ɦ-/ , /-ɾ.ɦ-/ , /-ɽ.ɦ-/ , and /-l.ɦ-/ rather than as unit phonemes /-m^h-/ , /-n^h-/ , /-ɾ^h-/ , /-ɽ^h-/ , and /-l^h-/ . Unlike other unit aspirated or breathy consonants (for example, /k^h/ , /t^h/ , /ṭ^h/ , /p^h/ , /g^h/ , /d^h/ /ḍ^h/ , /b^h/ , nasal, tap, flap, and lateral consonants plus glottal fricative /-ɦ-/ typically span syllable boundaries (the latter marked by [.] and /./ in phonetic and phonemic transcriptions adopted here), with nasals, tap, flap, and lateral consonants occurring at the codas of the preceding syllable, and with the glottal fricative occurring at onset of the following syllable, that is, as m.ɦ/ , /-n. ɦ -/ , /-ɾ. ɦ -/ , /-ɽ. ɦ -/ , and /-l.ɦ-/. But unit aspirated consonants /k^h/ , /ṭ^h/ , /t^h/ , /ṭ^h/ , /p^h/ , and unit breathy consonants /g^h/ , /ḍʒ/ , d^h/ /ḍ^h/ , /b^h/ occur at syllable onsets and do not span syllable boundaries. Note the following pairs of words:

[pən.ɦə]	/pənɦə/	<i>'Office area'</i>
[ṭɛ:ṭ ^h ɛ]	/ṭɛ:ṭ ^h ɛ/	<i>'Rice scoop'</i>
[buṛə.ɦɛ:l]	/burɦɛ:l/	<i>'Not feeling well'</i>
[bɛ.ḍɛl]	/bɛḍɛl/	<i>'Ox'</i>

Interpretation

[ḍalə:ŋə]	/ḍalhə:ŋə/	'A wood traditionally used for making torches'
[ḍzəm.mə:]	/ḍzəmɦɛ/	'yawning'

2.1.3 Palatalized and labialized consonants

Palatalized and labialized consonants that vary freely with consonant plus non-syllabic glide /j/ or /w/ or with consonant plus syllabic vowel /i/ or /u/, are not interpreted as unit consonants, /C/, but as sequences of consonant plus vowel, /CV/.

Palatalized consonants [p^j], [b^j], etc. and labialized consonants [p^w], [b^w], etc., may be interpreted as either

- (a) Sequences of consonant plus vowel, that is, as /pi/, /bi/, /pu/, /bu/, etc., or as
- (b) Unit palatalized */p^j/, */b^j/, etc., and labialized consonants */p^w/, */b^w/, etc., as in Kashmiri (Masica, 1991, p. 105).

Interpretation (b) is attractive because it might allow (1) word final devoiced and non-syllabic weakly voiced vowels to be interpreted as palatal and labio-velar offglides that attach as features to preceding consonants. If this were the case, then the combination of word-final voiceless consonant plus non-syllabic devoiced [i̥], for example [-p^hi̥], might best be interpreted as an allophone of a voiceless bilabial palatalized plosive */-p^hi̥/, and the combination of word-final voiceless consonant plus non-syllabic devoiced [ʊ̥] or [ə̥], for example [-p^hʊ̥] or [p^hə̥], might best be interpreted as an allophone of a voiceless bilabial labialized consonant */-p^{hw}/

Moreover, the unit interpretation might also allow (2) the unrounded, fully syllabic central-back vowels [ə] and [ə:] to be interpreted as allophonic hybrids that represent underlying palatalization of preceding consonants in the environment immediately preceding back rounded vowels /o/ and /o:/ that have derounded due to the influence of that palatalization. That is, sequences such as [-p^hə-] and [-p^hə:-], etc., might possibly be interpreted as sequences of unit palatalized consonants plus back rounded vowels, for example, as */-p^ho/ and */-p^ho:/, the derounding of [o] and [o:] to [ə] and [ə:] conditioned by a forward spreading feature [-round] that characterizes a palatal configuration of the tongue.

But problems arise when the data is interpreted in agreement with hypothesis (b) instead of hypothesis (a).

First of all, (1) consonants that have been recorded as palatalized or labialized have also been recorded as non-palatalized and non-labialized. So, for example, with respect to word-initial consonants, words such as

[k ^j e:.ra]	<i>'Small calf'</i>
[k ^w ẽ.re]	<i>'Bachelor'</i>

have also been recorded as

[kje:.ra]	<i>'Small calf'</i>
[k ^w ẽ.re]	<i>'Bachelor'</i>

and even as trisyllabic

[ki.je:.re]	<i>'Small calf'</i>
[kũ.ẽẽ.re]	<i>'Bachelor'</i>

Palatalization and labialization of word-initial and of word-medial consonants may therefore best be described as conditioned variants of non-palatalized and non-labialized consonants. The conditioning came about as the influence of palatal and labial features of underlying high front spread palatal and high back rounded labial vowels /i/ and /u/ spread backward, that is, 'backed up' (regressed) into preceding consonants as a means of compensating for their disyllabification and devoicing.

Desyllabification of /i/ and /u/ may be accounted for in terms of relative sonority potential. The lower sonority potential of high front and high back unstressed vowels [i] and [u], due to their approximation to palatal and velic points of articulation, encouraged contiguous vowels with higher sonority potential, such as stressed or unstressed [e], [e:], [ɛ], [ɛ:], [o], [o:] as well as stressed high front and high back vowels [i], [i:] and [u], [u:], to 'bully' unstressed /i/ and /u/, reducing their status to non-syllabic offglides or even to palatalized or labialized release of preceding stem consonants.

Phonologically, at the current stage, such sonority-reduction as does occur in Pangwari is not considered sufficient ground for interpreting non-

Interpretation

syllabic vowels, offglides, or preceding consonant palatalization or labialization as phonemically consonantal. Non-syllabic or devocalized stem vowels are therefore interpreted as if they were fully vocalic and syllabic vowels /i/ and /u/. Note the following examples:

[kʰe:re] ~ [kje:re] ~ /kije:re/ [ki.e:re]		'Small calf'
[kʷẽ:re] ~ [kũẽ:re] ~ /kũwẽ:re/ [kũ.ũẽ:re]		'Bachelor'
[gʷe:re] ~ [gwe:re] ~ /guwe:re/ [gu.we:re]		'Grazing cattle'
[bʰja:ye] ~ [bʰja:ye] ~ /bʰije:ge/ [bʰi.a:ye]		'Morning'
[be.ŋæ:ŋ]	/banije:n/	'Sweater'
[pʰɜkʰeɾə]	/pijekʰaɾ/	'Drunkard'
[mʰokʰuɾə]	/mijukʰuɾ/	'Head and leg parts of goat'
[bʰu:re] ~ [bjũ:re]	/bijũ:re/	'Decision'
[mʰɛl:kʰ]	/mijɛ:kʰ/	'Iron nail'
[bʰæ̃:ɖi] ~ [bijæ̃:ɖi]	/bijɛdi/	'Evening'
[bʰe:ɾ]	/bije:r/	'Wind'
[tʰe:ɾe] ~ [tije:ɾe]	/tije:re/	'Love'
[pe:tʰijeɾe]	/pe:tʰijeɾe/	'Glutton'
[ɖʰe:nuwe:ɾə]	/ɖʰe:nuwe:ɾ/	'Storeroom'
[peɾʰwe]	/peɾuwe/	'Buttocks'
[peɾʰa:ri]	/paɾʰuwa:ri/	'Early morning'
[ʃɜtʰæ̃:ni] ~ [ʃɜtʰæ̃:ni]	/ʃetʰəwe:ni/	'Name of a local forest'
[nijo:tʰije]	/nijo:tʰije/	'(He) took'

2.1.4 Nasals and Homorganic Consonants

Sequences of Nasal plus Homorganic Consonants [mpʰ], [mb], [ŋtʰ], [ŋɖ], [ntʰ], [nɖ], [nɖʰ], [ɲtʰ], [ɲɖ], [ɲɖʰ], [ɲkʰ], [ɲg], [ɲgʰ] occur word medially and finally and are interpreted as sequences of nasal consonant plus plosive or affricated consonant following the principle of economy of phonemes. Since both nasal consonants and plosive and affricated consonants occur independently as unit phonemes word initially, word medially, and word finally, and since unambiguous CC clusters occur word medially and word

finally, nasal plus stop and nasal plus affricate are best interpreted as CC consonant sequences rather than as unit consonants.

2.1.5 Long Vowels and Diphthongs

1) Cutting across the system of 14 oral vowels /i/, /ε/, /a/, /e/, /ə/, /o/, /u/ and /i:/, /ε:/, /a:/, /e:/, /ə:/, /o:/, /u:/ in Pangwali, long vowels [V:] contrast with short vowels [V]. Long vowels and short vowels in Pangwali may be interpreted as unit vowel phonemes /V:/ and /V/. Alternatively, the long vowels might be interpreted as sequences of short vowel plus homorganic short vowel within monosyllables, / $\widehat{V}V$ /. That is, they might be interpreted as sequences of geminated vowels. This interpretation would seem to work well if we were to interpret monosyllabic vowel glides such as [ɛ̃], [ɜ̃], [ɔ̃], [ə̃] and their nasalized counterparts [ɛ̃̃], [ɜ̃̃], [ɔ̃̃] as sequences of / $\widehat{V}V$ /, that is, as /ɛ̃/ /ɛ̃/, /ɜ̃/ /ɜ̃/ and /ɔ̃/ /ɔ̃/. And, in fact, we have decided to interpret these monosyllabic glides as monosyllabic diphthongs.

However, we have chosen to interpret long vowels, [V:], as units, /V:/, rather than as sequences, / $\widehat{V}V$ / because if we interpreted long vowels as sequences instead of units, we would see uninterrupted sequences of four vowels, that is, /*VVVV/ occurring in disyllabic words such as [gɛ:i:s], phonologically, /*gɛ̃.ɪ̃s/. This word we have chosen to interpret as /gɛ:i:s/. That is, we have chosen to interpret the vowels as a sequence of two unit vowel phonemes, /e:/ and /i:/.

2) Any sequence of glide plus vowel, [$\widehat{V}V$] is interpreted as /VjV/ or as /VwV/ because if we were to interpret them as sequences of /* $\widehat{V}V$ / we would see uninterrupted sequences of three vowels. A word such as [hɜ̃ɛ̃] ‘sweets,’ for example, would therefore need to be interpreted as /*hɛ̃.ɛ̃/. We have chosen to interpret this word as /hɛ.je/, that is, as a /V.CV/ sequence. ([See sections 2.2 Consonant or Vowel and 8.3 Vowel Clusters.](#))

3) Monosyllabic glided oral vowels [ɛ̃], [ɜ̃], [ɔ̃], [ə̃], and glided nasalized vowels [ɛ̃̃], [ɜ̃̃], [ɔ̃̃] we have chosen to interpret as complex syllable nuclei / $\widehat{V}V$ /, that is, as diphthongs /ɛ̃/ /ɛ̃/, /ɜ̃/ /ɜ̃/ and /ɔ̃/ /ɔ̃/. However, disyllabic blends of vowels we have chosen to interpret as sequences of vowel plus vowel, that is, as vowel clusters, /V.V/. ([See sections 2.2 Consonant or Vowel and 8.3 Vowel Clusters.](#))

Interpretation

Following are examples of each of the monosyllabic vowel glides, here interpreted as diphthongs, both oral and nasal, and the disyllabic vowel clusters that they contrast with:

/ɛ̃i/		
[ɛ̃ḍbɛ̃i]	/ɛ̃ḍbɛ̃i/	'Half-sleeved (shirt)'
/ɛ:i/		
[g ^h ʒrɛ:i]	/g ^h ɛrɛ:i/	'A dance on the roof top after Zukaru festival'
/ɛ̃i/		
[kɛ̃i]	/kɛ̃i/	'Do'
[pud̃ʒɛ̃i]	/pud̃ʒɛ̃i/	'To reach'
[tʃ̃nək ^h ɛ̃i]	/tʃ̃nək ^h ɛ̃i/	'To gather or pick one by one'
/ɛ:i/		
[p ^h ɛ:iḍə]	/p ^h ɛ:iḍə/	'Profit/ benefit'
/ɛ̃u/		
[ʃ̃u]	/ʃ̃u/	'Paste of mud used in plastering/repairing'
[nɛ̃u]	/nɛ̃u/	'Name'
[t ^h ɛ̃u]	/t ^h ɛ̃u/	'Male goat used for mating'
/ɛ̃ə/		
[tʃ̃ək ^h]	/tʃ̃ək ^h /	'Calf's chamber in underground room'
[d̃ʒ ^h ɛ̃ə ^h t ^h]	/d̃ʒ ^h ɛ̃ə ^h t ^h /	'Axe'
[lɛ̃əḍ]	/lɛ̃əḍ/	'Stick'
[kɛ:lɛ̃ə]	/kɛ:lɛ̃ə/	'Lunch'
[b ^h ɛ̃ə]	/b ^h ɛ̃ə/	'Brother'
[bɛ̃ə ^h i]	/bɛ̃ə ^h i/	'Daughter-in-law'
/ɛ̃i/		
[b ^h ɛ̃i]	/b ^h ɛ̃i/	'Up'
/ɛ:i/		
[nɛ:i]	/nɛ:i/	'No'
/ɛ̃u/		
[ʒ̃u]	/ʒ̃u/	'I'
/ɛ:ũ/		
[rɛ:ũ]	/rɛ:ũ/	'Paste of mud used to

/ẽə/		<i>seal cracks'</i>
[ẽə]	/ẽəf/	<i>'This year'</i>

2.1.6 Consonant length

There are two grades of consonant length in Pangwali:

(1) unlengthened grade, represented as [C] which may occur in all positions in Pangwari words.

(2) Half-lengthened grade, represented as [C̣], which cannot occur word initially. (Restrictions apply to certain consonants: the alveolar tap /ɾ/, the retroflexed flap /ɽ/, the retroflexed, flap-like nasal /ɺ/, the glottal fricative /h/, and the labio-velar approximant /w/ only occur as short, that is, as [C], never as half-long, [C̣]. All other Pangwari consonants may occur as short [C] or half-long, [C̣].

At the current stage of the analysis, we are interpreting both unlengthened consonants [C] and half-lengthened consonants [C̣] as phonemically non-contrastive. Typically, [C] occurs following long vowels [V:] and following short vowels [V] only if these short vowels occur in unstressed syllables. In fact, following unstressed syllable nuclear short vowels [V], only [C] occurs. [C̣] occurs only following short stressed syllable nuclear vowels, or following long vowels. Note the following examples:

[e'p ^h u:]	/ep ^h u:/	<i>'Your (Sg)'</i>
[kɛp ^h ɛl]	/kɛp ^h ɛl/	<i>'When?'</i>
[pi'p ^h i:]	/pip ^h i/	<i>'Spicy'</i>
[pɔp ^h ɪ]	/pɔp ^h ɪ/	<i>'Paternal aunt'</i>
[be'ḍɛ:]	/beḍ ^h ɛ:/	<i>'Cloud'</i>
[sɔḍ'i]	/sɔḍi/	<i>'Side dish for wine'</i>
[mɛ:sũ]	/mɛ:sũ/	<i>'Meat'</i>
[g ^h ɛṣ'ɛ]	/g ^h ɛ:ṣɛ/	<i>'Punch'</i>
[mɛ:l]	/mɛ:l/	<i>'Charka thread'</i>
[mɛḷ]	/mɛḷ/	<i>'Cow dung'</i>
[ḍɛ:nṭ ^h]	/ḍɛ:nṭ ^h /	<i>'Running fast'</i>
[kɛnṭ ^h]	/kɛnṭ ^h /	<i>'A kind of fruit'</i>

2.2 Consonant or Vowel

1) Intervocalic glides, [ɥ] and [ɹ], here transcribed as [w] and [j] respectively, are interpreted as consonants because there are no univalent /V₁V₂V₃/ clusters found in Pangwali. Interpreting vowel-glide-vowel sequences such as [eɪe] (or [ej̥e]) and [eɥe] (or [ew̥e]) as (a) sequences /**eie*/ and /**eue*/, that is, as /**V₁V₂V₃*/, or as (b) sequences /**ẽie*/ and /**ẽue*/, that is, as glides plus vowel, /**ṼV₁V₂*/, would be anomalous because no unambiguous sequences of three consecutive vowels occurs in the Pangwali data. The interpretation of [ej̥e] and [ew̥e] as /*eje*/ and /*ewe*/, that is, as /-V₁CV₂-/, conforms to a commonly occurring pattern of unambiguous /V₁CV₂/ sequences in Pangwali.

[h̥ej̥e]	/h̥eje/	'Sweets'
[k̥ej̥e:r]	/k̥eje:r/	'Black color made with ash used to paint the stove'
[sip ^h ̥ərije]	/sip ^h rije/	'Butter'
[p̥əɹ̥e:t ^h]	/p̥əwe:t ^h /	'A flat wooden piece to tighten threads'
[ə̃l̥d̥e:wa] ~	/ə̃ld̥e:wa/	'Wheat fodder'
[ə̃r̥d̥e:wa]		

2) Given low sonority values for high front and high back vocalisms /i/ and /u/, sequences of post-consonantal glide plus vowel, [CjV] and [CwV], respectively (alternatively, [Cɹ̥V] and [Cɥ̥V]), and/or palatalized or labialized consonants plus vowel [C^jV], [C^wV], or [C^{ɹ̥}V], are here interpreted as /*CijV...*/ and /*CuwV...*/ in accord with this common Pangwari /C₁V₁C₂V₂/ pattern. The second vowel in this pattern, V₂, can be represented not only by [e], but by any other Pangwari vowel, with the restriction that, as [V₂] vowels, [i] and [u] must be stressed syllable nuclear vowels. (As /V₁/ vowels in this pattern, /i/ in the word-initial sequence /ij-/ and /u/ in the word-initial sequence /uw-/ are unstressed and occur, with /j/ and /w/, as part of the syllable onset, not as part of the syllable nucleus. That is, /ij/ and /uw/ may be realized phonetically as [j] or [w] (alternatively, [ɹ̥] and [ɥ̥]).

Note the following examples and see the examples given in [section 2.1.3](#).

[j̥e:d]	/ije:d/	'Remembrance'
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[jũ:ŋt̪ʰ]	/ijuŋt̪ʰ/	'Winter'
[tʲe:ɾə] ~ [tʲe:ɾə]	/tʲe:r/	'Love'
[t̪.o.ɾe]	/tʲoɾe/	'Parasite/insect on cattle'
[t̪i.o.wɛ]	/t̪ijowɛ/	'Butter'
[olɿə]	/olijə/	'Friend/ a friendly expression when meeting'

3) Lower sonority values for unstressed /i/ and /u/ mean that, in certain phonological contexts in which the feature of low sonority translates into the feature [-syllabic], consonants /j/ and /w/ result. In Pangwari, when the first vowel in /VjV/ sequence is /i/ instead of /e/, and the second vowel is a mid or low vowel, the non-syllabic intervocalic consonantal /j/ may leave only a trace of its presence: it may be present only as (1) fronting of a preceding alveolar nasal consonant, and fronting of the vowel following /j/, or even as (2) metathesis of /j/, with the latter being phonetically realized as fronting of the alveolar nasal consonant preceding the sequence [V₂] and [V₃] instead of a non-syllabic consonantal segment interrupting the sequence [V₂] and [V₃]:

[bɛ.ŋæ:ŋ]	/bɛnijɛ:n/	'Sweater'
[əŋa.əŋj]	/əŋajəŋj/	'Village festival (FSg & Pl)'

4) However, sequences of long vowel plus long high front vowel, [V:i:] are interpreted as /V:i:/ vowel clusters that span syllable boundaries without intervening glides /j/ or /w/. This interpretation is supported by the data because such sequences contrast with number-words in which a glide, [j], is inserted between the two long vowels. That is, such sequences contrast with number-words such as [bɛ:ji:] 'twenty-two' and [t̪ɹe:ji:] 'twenty-three.' For example, [bɛ:ji:] 'twenty-two' contrasts with [gɛ:i:s] 'oath taken on cows.' These are interpreted phonologically as /bɛ:ji:/ and /gɛ:i:s/ respectively.

5) This being the case, sequences of long vowels plus high front or high back unlengthened vowels such as [ɛ:i], [ɛ:u], [ə:i], etc. – minus glide insertion -- are also interpreted as /-V:V-/ vowel clusters that span syllable boundaries without intervening glides /j/ or /w/. That is, they are interpreted as /ɛ:i/, /ɛ:u/ and /ə:i/ respectively. [See section 8.3 Vowel Clusters.](#)

2.3 A Once-upon-a-time System of Vowel Harmonics – a tentative hypothesis

Vowel harmony occurs or existed at one time in several languages in the area that includes Pangi Valley. These languages include Kashmiri, Bhadrawahi, Padari and Pangwali.

Regarding Kashmiri, Sadaf Munshi in a 2004 paper presented at University of Delhi entitled “Underlying Representations of Kashmiri Phonology,” following the work of Mohanlal Sar (“Vowel Harmony in Kashmiri,” unpublished) and Karl E. Zimmer (“A note on Vowel Harmony,” *IJOAL*.33.166-177), wrote,

In Kashmiri the process of vowel harmony is essentially regressive in nature, i.e., a vowel applies harmony on its preceding vowel(s) which get(s) assimilated. Vowels show a high degree of harmony with respect to features [+ or – round] and [+ or – high], the requirements holding to both underived stems as well as derived words.

G.A. Grierson, *Linguistic Survey of India*, reprinted 1973, Volume VIII, Part II, pp. 257-268, described vowel harmony under the confusing label of vowel ‘epenthesis.’ (See Colin Masica (1991.130) who cited a definition of ‘epenthesis’ as ‘insertion of an etymologically unjustified vowel or semivowel to ease a difficult transition,’ which defines a phonological process quite distinct from vowel harmony.) Masica (1991.128) defined vowel harmony in Bengali and Kashmiri as a type of “co-occurrence constraint” on vowels: the vowel of the stem adapts to the vowel of the suffix with the consequence that “morphophonemic variants of stems” result. He allowed that “declensional” differences complicate the description of vowel harmony for Kashmiri, and gave, as an example of the problem, Grierson’s account of the adjective ‘big,’ marked for case endings:

	Sg		Pl	
	Masc	Fem	Masc	Fem
Nom.	<i>baɖ^h</i>	<i>buɖ^h[^]</i>	<i>baɖⁱ</i>	<i>baje ∅</i>
Dat	<i>baɖis</i>	<i>baje ∅</i>	<i>baɖe ∅n</i>	<i>baje ∅n</i>
Ag.	<i>baɖⁱ</i>	<i>baji</i>	<i>baɖyau</i>	<i>bajyau</i>
Abl.	<i>baɖi</i>	<i>baji</i>	<i>baɖyau</i>	<i>bajyau</i>

Masica continues: “According to [Grierson’s] analysis the changes in the stem vowel in the masc. and fem. sg. nom. ($a > o$, $a > u$) are triggered by the final *mātra*-vowels -^u and -^u respectively. Grierson admits that these vowels are ‘often quite inaudible. . . yet there are few words in Kashmiri the sound of which is not affected by them’ . . . Since they do not actually exist as *segments*, they are dispensed with in the transcriptions of Bailey and others. [T. Grahame] Bailey (1937) gives the following version of the same paradigm:

	Sg		Pl	
	Masc	Fem	Masc	Fem
Nom.	<i>boḍ</i>	<i>bɜḍ</i>	<i>bɜḍⁱ</i>	<i>baji</i>
Dat	<i>bɜḍis</i>	<i>baji</i>	<i>bɜḍen</i>	<i>bajen</i>
Ag.	<i>bɜḍi</i>	<i>baji</i>	<i>baḍyau</i>	<i>bajyau</i>
Abl.	<i>baḍi</i>	<i>baji</i>	<i>baḍyau</i>	<i>bajyau</i>

Masica continues, “Without the fictional *mātra*-vowels (except for the ⁻ⁱ *mātra* which is transcribed as palatalization of the preceding consonant.) The stem-vowel alternations [baḍ] [boḍ] [bɜḍ] are inexplicable phonologically, and are reduced to morphologically or even lexically conditioned variants. (There are certain other differences in the transcriptions as well: Bailey hears a different stem vowel in the Dative and Agentive Masculine Singular and in the Masculine Dative Plural, which might be difficult to explain in terms of vowel harmony in any case, and does not hear the difference between the Feminine Dative Singular + Nominative Plural on the one hand and Feminine Agentive + Ablative Singular on the other which is transcribed by Grierson.) . . . Further cases of stem-vowel change of this sort are noted by Grierson (*LSI* 9.4) for Kumauni and West Pahari dialects, increasing in number toward the west as one approaches Kashmiri.”

“When the conditioning vowel is still present, e.g., in Churahi *khāṇā* ‘to eat’ > fem. *khaiṇī*, it may be proper to speak of vowel harmony, *but it is difficult to do so when the conditioning vowel is no longer present*, e.g., in Kiunthali *bauḥṇē* ‘sister’ (agentive singular) > nominative singular *buhṇ*

(from **buhṇī* < **baiḥṇī*)." (End of quotation from Masica, 1991.129-130, *italics* added.)

2.3.1 The Absence of a conditioning vowel

For Pangwali, at the current stage, it would be true to say that, as in Kiunthali, ‘the conditioning vowel is no longer present.’

2.3.1.1 The Absence of a conditioning vowel with feminine nouns.

In Pangwali, Regressive Vowel Harmony (RVH) rules do not apply when forming the plural of a subset of feminine singular nouns. That is, the phonologically conditioning environments (perhaps word-final case-marking vowels) seem to have disappeared. *Both* the singular and plural number of subsets of disyllabic and trisyllabic feminine nouns are currently marked word-finally by a devoiced or weakly voiced non-syllabic close-mid front gender-marking vowel, [ɨ̥] or [ɨ̄]. That is to say, there is no distinction in number indicated by the presence of this final non-syllabic vowel. Instead, distinction in number is marked within the stem of these nouns by a change of the stem vowel from (a) back rounded /u/ or /u:/, or /o/ or /o:/ to central unrounded /ə/ or /ə:/, or from (b) low open-mid central unrounded /ɐ/ or /ɐ:/ to open front unrounded /a/ or /a:/, as in the following sets:

[lo:tʃ ^h ɨ̥]	/lo:tʃ ^h ɨ̄/	‘A puri dish (FSg)’
[lɐ:tʃ ^h ɨ̥]	/lɐ:tʃ ^h ɨ̄/	‘A puri dishes (FPl)’
[ko:t ^h ɨ̥]	/ko:t ^h ɨ̄/	‘Underground room (FSg)’
[kɐ:t ^h ɨ̥]	/kɐ:t ^h ɨ̄/	‘Underground rooms (FPl)’
[kʊɳɨ̥]	/kʊɳɨ̄/	‘Triangle-shaped food (FSg)’
[cɐɳɨ̥] ~ [cɐɳɨ̄]	/kɐɳɨ̄/	‘Triangle-shaped food pieces (FPl)’
[t̪u:ɔ̄ɨ̥]	/t̪u:wo:i/	‘Frying vessel to make chapattis etc.(FSg)’
[t̪ɐ:ɛ̄]	/t̪ɐ:ɛ:/	‘Frying vessels to make chapattis etc.(FPl)’

[e:t ^h ɪ]	/e:t ^h ɪ/	'Kitchen (FSg)'
[a:t ^h ɪ]	/a:t ^h ɪ/	'Kitchens' (FPl)'
[d̥æ:d̥ɪ]	/d̥æ:d̥ɪ/	'Paternal grandmother (FSg)'
[d̥a:d̥ɪ]	/d̥a:d̥ɪ/	'Paternal grandmothers (FPl)'
[n̥æ:n̥ɪ]	/n̥æ:n̥ɪ/	'Maternal grandmother (FSg)'
[n̥e:n̥ɪ]	/n̥e:n̥ɪ/	'Maternal grandmothers (FPl)'
[g̥e:g̥ɪ]	/g̥e:g̥ɪ/	'Burner' (FSg)
[g̥a:g̥ɪ]	/g̥a:g̥ɪ/	'Burners' (FPl)
[pinot ^h ɪ]	/pinot ^h ɪ/	'Grinding stone plate' (FSg)
[pinət ^h ɪ]	/pinət ^h ɪ/	'Grinding stone plates' (FPl)
[t̥ɛd̥z̥o:t̥ɪ]	/t̥ɛd̥z̥o:t̥ɪ/	'Village meeting (FSg)'
[t̥ɛd̥z̥ə:t̥ɪ]	/t̥ɛd̥z̥ə:t̥ɪ/	'Village meetings (FPl)'
[pinj̥e:t̥ɪ]	/pinj̥e:t̥ɪ/	'Kind of fruit (FSg)'
[pinj̥a:t̥ɪ]	/pinj̥a:t̥ɪ/	'Kind of fruit (FPl)'

We conclude that

- (1) The Regressive Vowel Harmony (RVH) conditioning environment for the stem vowel changes that would have allowed the central unrounded stem vowels /ə/ and /ɘ:/ and the low front unrounded stem vowels /a/ and /a:/ to be interpreted as allophones of back rounded vowels /u/ and /u:/ or /o/ and /o:/ and of central unrounded vowels /e/ and /e:/, respectively, has disappeared. The effect of this disappearance has been to add four vowel phonemes to the inventory: the close-mid central unrounded vowels /ɘ:/ and /ə:/ and the low front unrounded vowels /a/ and /a:/.

Interpretation

- (1)
- (2) The RVH conditioning environment for what is now realized as a devoiced or weakly voiced non-syllabic close-mid front word-final old gender-marking vowel, [ɨ] or [ɨ̥], that would have allowed this vowel to be interpreted as an allophone of /i/ has disappeared thereby introducing two new vowel phonemes to the inventory of phonemes. (Gender-marking is currently indicated in the main by suffixes in adjectives and in one of the verbs for ‘be’ (/e:s-/) with (1) /e:sɐ/ indicating that the nominative case noun is masculine, (2) /e:si/ indicating that the nominative case noun is feminine, and (3) /e:su/ indicating that the nominative case noun is neuter. (The /-u/ form, /e:su/, is also used to indicate diminished size. See below under subpoint (7). See also [5.2.1.2 Devoiced Oral Non-Syllabic Vowels /ɨ/ and /ɨ̥/ - a tentative hypothesis.](#))
- (3) The word [t̪u:ɔ:i], /t̪u:wo:i/, ‘Frying vessel used to make chappatis (FSg)’ becomes [t̪ə:ɛ:] /t̪ə:ɛ/ when forming the feminine plural. The fully syllabic, fully voiced word-final /i/ that marks feminine singular for this noun may be related to the same morpheme that marks feminine singular and plural on nouns such as [ko:t̪ʰɨ] /ko:t̪ʰɨ/ ‘Underground room (FSg),’ [kə:t̪ʰɨ] /kə:t̪ʰɨ/ ‘Underground rooms (FPI).’ In the instance of [t̪u:ɔ:i] /t̪u:wo:i/ ‘Frying vessel used to make chappatis (FSg),’ a verb stem ending in a vowel instead of a consonant, the final /i/ marks only feminine singular. When made nominative plural, the final /i/ is changed to /ɛ/, marking this noun as plural. Since /ɛ/ also marks the nominative plural of a subset of masculine nouns, it appears that an older plural number marking system may have collapsed.
- (4) The same form [t̪u:ɔ:i], /t̪u:wo:i/, also functions as the subject of a sentence, nominative case. But when used in an oblique case, the same form as is used for feminine plural, [t̪ə:ɛ:] /t̪ə:ɛ/, occurs. It appears, therefore, that with the collapse of an earlier gender-number-case marking system, the harmony-induced morphophonemic change in the stem vowel now performs more than one semantic function. Morphosyntactic study of these stem alternations is continuing.

- (5) Phonologically, the conditioning environment that has disappeared may have been a close mid unrounded vowel /*e/ that induced preceding vowels to harmonize by either (a) derounding them or (b) fronting them, or both.
- (6) Due to the loss of the conditioning environment, nouns such as those displayed above might possibly now be described as double-stem nouns.
- (7) The stem alternation between feminine singular /-o-/ and feminine plural /-ə-/ is found to mark an alternation between nouns in which a difference in size is indicated, as in the following:

[hɛt̪ ^h oɾə]	/hɛt̪ ^h oɾ/	'Big hammer (MSg & Pl)'
[hɛt̪ ^h əɾə]	/hɛt̪ ^h əɾ/	'Small hammer (NSg & Pl)'

Here it appears that the change from /-o-/ and /-ə-/ serves to mark a change from masculine to neuter gender with the shift in gender doubling as a marker of size as well.

- (8) The morphophonemic alternation between feminine singular-marking back rounded vowels and feminine plural-marking unrounded central vowels apparently does not exhaust the environments in which these vowels occur. These vowels occur and contrast phonologically in completely unrelated morphosemantic environments. Note the following pairs of words:

[tʃəɫ ^h]	/tʃəɫ ^h /	'Toilet' (euphemism)
[ko:t̪ ^h i]	/ko:t̪ ^h i/	'Underground room (FSg)'
[tə:l]	/tə:l/	'Matches'
[to:l]	/to:l/	'Shares'
[dən̪t̪ ^h]	/dən̪t̪ ^h /	'Two year-old goat'
[jū:n̪t̪ ^h]	/jū:n̪t̪ ^h /	'Winter'

Interpretation

[tʃəŋːg]	/tʃəng/	'Pain'
[tʰuŋːg]	/tʰung/	'Beak'

Nor does the morphophonemic alternation between feminine singular-marking open central vowels and feminine plural-marking open front vowels exhaust the environments in which these vowels occur. These vowels occur and contrast phonologically in completely unrelated morphosemantic environments. Note the following set of words:

[alːəŋə]	/aləŋ/	'A small bird'
[tʰɛfːəŋə]	/tʰɛfəŋ/	'Massage'
[a:lə:ŋə]	/a:ləŋə/	'Potato (NSg & Pl)'

Hence, it does not seem possible synchronically to posit morphophonemic alternation rules that exhaustively describe the conditions under which the back unrounded vowels /ə/ and /ə:/ and open front vowels /a/ and /a:/ are permitted to occur.

2.3.1.2 The Absence of a conditioning vowel with masculine and neuter nouns

RVH induced conditioning environments have also disappeared for subsets of masculine and neuter, as well as for some (other) feminine nouns. Both the singular and plural number of subsets of disyllabic and trisyllabic masculine and neuter nouns, and some feminine nouns, are currently marked word-finally by a devoiced or weakly-voiced non-syllabic close-mid front word-final gender-marking vowel, [ɨ] or [ɨ̥], or by a close-mid central unrounded word-final gender-marking vowel, [ə] or [ə̥]. That is, there is no distinction in number indicated by the presence of these final non-syllabic vowels. Indeed, any and all distinctions in number are left unmarked. Nevertheless, the trace of an earlier RVH system has been left behind within the stems of these nouns through a change of the stem vowel from (a) back rounded /*o/ or /*o:/, to central unrounded /ə/ or /ə:/ and/or from (b) low open-mid central unrounded /*e/ or /*e:/ to open front unrounded /a/ or /a:/, as in the following sets:

[barɔ:tʰɨ]	/barə:tʰɨ̥/	'Pile, heap (NSg & Pl)'
[d̥alɛ:ŋə]	/d̥alɛ:ŋə̥/	'Wood traditionally used to make torches (NSg & Pl)'
[bə:rɨ]	/bə:rɨ̥/	'Gunny sack (FSg & Pl)'

[əŋa.əni]	/əŋajəni/	'Village festival (FSg & Pl)'
[bæ̃tʰi]	/bæ̃tʰi/	'Daughter-in-law (FSg & Pl)'
[batʃʰuri]	/batʃʰuri/	'Calf (NSg & Pl)'
[a:ŋtʰuri]	/a:ŋtʰuri/	'Goat's intestine (FSg & Pl)'
[ba:tʰə]	/ba:tʰə/	'Stone vessel (NSg & Pl)'
[paɾə]	/paɾə/	'Last year (NSg or Pl)'
[baɾə]	/baɾə/	'Nose ring (NSg & Pl)'
[gʰa:ɾə]	/gʰa:ɾə/	'Cylindrical vessel (NSg & Pl)'
[dʒʰaʃuɾə]	/dʒʰaʃuɾə/	'Lady's hair (MSg & Pl)'
[d̥daduɾə]	/d̥daduɾ/	'Sheep (NSg & Pl)'
[d̥ɛ:d̥ə]	/d̥ɛ:d̥ə/	'Paternal grandfather (MSg & Pl)'
[n̥ɛ:n̥ə]	/n̥ɛ:n̥ə/	'Maternal grandfather (MSg & Pl)'
[gʷəg̥lʷtʰi]	/gʷəg̥lʷtʰi/	'Incense cup (NSg & Pl)'

Just as for the feminine nouns mentioned above (section 2.3.1.1), we conclude that

- (1) The Regressive Vowel Harmony (RVH) conditioning environment for the stem vowel changes that would have allowed the central unrounded stem vowels /ə/ and /ɛ:/ and the low front unrounded stem vowels /a/ and /a:/ to be interpreted as allophones of back rounded vowels /*u/ and /*u:/ or of /*o/ and /*o:/ and of central unrounded vowels /*e:/ and /*e:/, respectively, has disappeared.
- (2) The RVH conditioning environment for what is now realized as a devoiced or weakly voiced non-syllabic close-mid front word-final gender-marking vowel, [i̥] or [ī], and as a devoiced or weakly voiced non-syllabic close-mid central word-final gender-marking vowel, [ə̥] or [ə̄], that would have allowed these vowels to be interpreted as allophones of /*i/ or /*o/ (or /*u/) has disappeared. The effect of this disappearance has been to add two more vowel phonemes to the inventory (in addition to /ə/ and /ɛ:/, and /a/ and /a:/): the close-mid front centralized unrounded but devoiced /i̥/ and the close-mid back centralized derounded but devoiced /ə̥/. The addition of these vowels, six in all, yields an inventory of 16 oral vowels, 7 short, 7 long and 2 devoiced. (See section [5.2.1.2 Devoiced Oral Non-syllabic Vowels.](#))

Interpretation

- (3) This RVH conditioning environment may have been a number-marking and/or case-marking system which have/has, to a greater or lesser extent, disappeared. As indicated above (**section 2.3.1.1**), phonologically, one of the conditioning environments that has disappeared may have been a close-mid front unrounded vowel */*ɛ/* that induced preceding vowels to harmonize by either derounding and/or fronting them. The harmony constraint was fairly strident since in trisyllabic and in one instance, a quadrisyllabic word, words whose third, second, and first syllable nuclei were marked by back rounded vowels */*o/* and */*o:/* and/or by low central vowels */*ɐ/* and */*ɐ:/*, respectively, all three nuclei were induced to harmonize, first by derounding (as in [əṇṇa.əṇi] /əṇajəṇi/ ‘Village festival (FSg & Pl)’) in the 3rd syllable, second by either derounding (as in [gʊgəlʊtʰi] /gəglətʰi/ ‘Incense cup (NSg & Pl)’ or by fronting (as in [barɔ:tʰi] /barə:tʰi/ ‘Pile, heap (NSg & Pl)’) in the 2nd syllable, and third by derounding (as in [əṇṇa.əṇi] /əṇajəṇi/ ‘Village festival (FSg & Pl)’ in the 1st syllable.
- (4) However, high back rounded vowels such as */u/* of the second syllable of trisyllabic words were apparently unaffected by the harmony rule for reasons unknown at time of writing.

3 The Phonetic Chart

3.1 Consonant chart

	Labial		Dental		Alveolar	Post-alveolar		Weakly Retroflex		Retroflex	Palatal	velar		Glottal	
Plosives	p	p ^h	t̪	t̪ ^h		t̠	t̠ ^h	t	t ^h		c	k	k ^h		
	b	b ^h	d̪	d̪ ^h		ɖ	ɖ ^h	ɖ	ɖ ^h			g	g ^h		
Nasal	m		n̪		n					ɳ	ɲ	ŋ			
Tap or flap					r					ɽ					
Fricatives	ɸ	β			s	ʃ						ç	x	h	ɦ
Approximant	w				ɹ						j				
Laterals					l					ɭ					

3.2 Vowel chart

	Front	Central	Back
Close	i iː j i˞ i˞ː		u uː ʊ u˞ u˞ː ũ ũː
Near-Close	ɪ ɪ̞ ɪ̞ː		ʊ ʊː
Mid			
Close-mid	e	ə əː ə̞ ə̞ː	ɤ ɤː ɤ̞ ɤ̞ː
Mid		ɘ	
Open-mid	ɛ ɛː ɛ̞ ɛ̞ː		ɰ
Near-open	æ æː æ̞ æ̞ː	ɐ ɐː ɐ̞ ɐ̞ː	
Open	a aː		ɑ ɑː

4 The Phonemic Inventory

	Labial		Dental		Alveolar	Post-alveolar		Weakly Retroflex		Retroflex	Palatal	Velar		Glottal	
	p	p ^h	t̪	t̪ ^h		ʈ	ʈ ^h	ɖ	ɖ ^h			k	k ^h	g	g ^h
Plosives	b	b ^h	d̪	d̪ ^h		ɖ̪	ɖ̪ ^h	ɖ̪	ɖ̪ ^h			g	g ^h		
Nasal	m				n										
Tap or flap					r					ɽ					
Fricatives					s	ʃ									h
Approximant	w										j				
Laterals					l										

4.1 Consonant chart

4.2 Vowel chart

	Front	Central	Back
Close	i i: ɨ ɨ̃		u u: ʊ ʊ:
Near-Close	ɪ		
Mid			
Close-mid		ə ə: ɘ ɘ̃	o o:
Mid			
Open-mid	ɛ ɛ:		
Near-open		ɐ ɐ: ɛ̃:	
Open	a a:		

5 Description and Distribution of the phonemes

All the consonants are laid out in the following order of positions in the examples whenever they occur:

Word initial	<u>C</u> V. . .
Word medial	CVC. <u>C</u> V. . . or CVC <u>C</u> .CV. . .
Word final	. . VC <u>C</u>
Inter-vocally	. . VC <u>C</u> V. . .

All the vowels are laid out in the following order of syllable types in the examples, whenever such types occur:

V, VC, CV, and CVC

Voiced aspirated (or breathy) consonants /b^h/ /d^h/ /d̪^h/ /g^h/ /d̪z^h/ do not occur in word-final position. Voiceless plosives are typically aspirated word-medially and word-finally including word-finally before voiceless vowels. To state the same rules another way, within the primary, or native, Pangwari phonological system, (1) voiced unaspirated and voiced aspirated (or breathy) do not contrast word-finally, and (2) voiceless unaspirated and voiceless aspirated plosives do not contrast word-medially and word-finally. ([See section 5.1.1 Plosives and Affricates.](#))

For fuller statements regarding distribution of phonemes, [see section 8. Distribution of Phonemes.](#)

5.1 Consonants

With the exception of /r/, /r̪/, /n/, /h/, and /w/ consonants occur with both lengthened and unlengthened variants. Lengthened variants typically occur following short vowels in stressed syllables. These lengthened variants – not functioning as geminates -- typically close off the preceding syllable as coda, while serving also to open the following syllable as onset, as in

[bat.t̪^hur̪], /bat̪^hur̪/ ‘Calf’

In the phonetic transcription utilized here, such lengthened variants are usually transcribed as [C̪], as in

[bat̪^hur̪], /bat̪^hur̪/ ‘Calf’

Unlengthened variants are marked [C] and occur elsewhere.

Syllable-final consonants and word-final consonants typically release into non-syllabic vowels of roughly the same quality as the preceding vowel. Except for syllable-final and word-final occurrences of /r̪/, and /n/, such vocalic release is usually left unmarked in the phonetic

transcription. Whenever marked, the vocalic release is transcribed as a non-syllabic ‘shewa,’ [ə], in the phonetic transcription, the specific vocalic quality of the release *not* being noted.

However, when the quality of the vocalic release of word final consonants *differs* from the quality of the preceding or surrounding vowels, the release and its specific vocalic quality is marked in the phonetic transcription. See section [5.2.1.2. Devoiced Oral Non-syllabic Vowels.](#)

5.1.1 Plosives and Affricates:

In Pangwali, plosives occur in both voiced and voiceless series. And these two series occur in (a) aspirated (or breathy, in the case of voiced plosives, and even, at times, with voiceless plosives, as in [p^hɛ:t], ‘*Grinding stone*’) and in (b) unaspirated series. Voiceless plosives are always pronounced with some degree of aspirate release. But word-initially, the voiceless aspirated series of plosives and affricate is characterized by a significantly stronger aspirate release, and contrasts with the voiceless unaspirated series in this position. Even though there is no contrast between unaspirated and aspirated voiceless plosives and affricate word-medially and word-finally, since voiceless plosives and affricate in these positions are typically aspirated, they have been written phonemically as aspirates.

The voiced aspirated series is sometimes characterized by a breathy release of voiced plosive consonants into the following vowel which is often transcribed as [b^hV], [d^hV], etc. However, the breathiness is normally detected, not so much at point of the release of the plosive itself as on the following vowel. However in the transcription followed here, where breathiness is the only additionally marked feature of a consonant, it may be marked on the plosive itself, [C̤], but more typically on the following vowel, [V], with the result that voiced aspirates are sometimes marked as [C̤V] and sometimes as [CV] in the phonetic transcription. Sometimes the breathy voiced consonant is devoiced, and this has been marked in a limited way in the transcription. Breathiness is typically co-articulated with a lowering of pitch and upon cessation of breathy phonation the pitch rises to levels characteristic of non-breathy phonation. More work could profitably be done tracking the articulation of the breathy stops with a wider variety of speakers from the various dialect areas.

Final plosive consonants do not contrast with respect to aspiration or breathiness within the native Pangwali phonological system. Final voiced plosives are typically non-breathy; word-medial and word-final voiceless

Description and Distribution of the phonemes

plosives are typically aspirated. (In the case of the words for ‘milk,’ and ‘a fool,’ a final voiced breathy stop is sometimes pronounced [d̪^h] as in [d̪uḍ^hə] and [buḍ^hə], but non-breathy [d̪] as in [d̪uḍə] and [buḍə] are also heard for ‘milk’ and ‘a fool,’ respectively. The non-breathy pronunciation is here accepted as native to Pangwali. Hence, [d̪uḍ^hə]~[d̪uḍə] and [buḍ^hə]~[buḍə] are written phonemically as /ḍuḍ/ and /buḍ/.)

Voiced plosives, both aspirated (breathy) and unaspirated are sometimes devoiced or only weakly voiced. Such devoicing sometimes carries through the following vowel and is marked as [ç̥] or as [ç̥V] in the phonetic transcription. In words ending in homorganic nasal plus voiced stop clusters, the final voiced stop segment is sometimes left unpronounced (‘unstopped’), except in words ending in /nd̪z/

/p/ [p] Voiceless unaspirated bilabial plosive. It occurs word initially.
 [paṭ^huwe] /paṭ^huwe/ ‘Buttocks’
 [pip^hi:] /pip^hi:/ ‘Spicy’

/b/ [b] Voiced bilabial plosive. Intervocally /b/ is sometimes pronounced as [β]. /b/ occurs word initially, medially, and finally, as in
 [ben̪æ:n] /benijɛ:n/ ‘Sweater’
 [sabəḍzi] /sabḍzi/ ‘Vegetables’
 [kamˈbal] /kəmbəl/ ‘Blanket’
 [tʃəbˈ] /tʃəb/ ‘Stairway door’
 [pɜbɛːn] ~ [pɜβɛːn] /pɛbɛːn/ ‘A cereal’

/p^h/ [p^h] Voiceless aspirated bilabial plosive. It occurs word initially, medially, and finally, as in
 [p^hiri] /p^hiri/ ‘Next year’
 [kətʃ^hp^hɛɾə] /kətʃ^hp^hɛɾ/ ‘Armpit’
 [tʃəp^h] /tʃəp^h/ ‘Be quiet’
 [sip^hɛrijə] /sip^hrijə/ ‘Butter’
 [p^hɛ:t] /p^hɛ:t/ ‘Grinding stone’

[ɸ] Voiceless bilabial fricative. It occurs in some (borrowed) words in free variation with [p^h].

[hɛɸtɛ] /hɛp^htɛ/ ‘Week’

Description and Distribution of the phonemes

/b^h/ [b^h] Voiced breathy bilabial plosive. It occurs word initially and medially as in

[b ^h i ^h t ^h i]	/b ^h i ^h t ^h i/	'Wall'
[gəb ^h uːr]	/gəb ^h uːr/	'Children'

/t̥/ [t̥] Voiceless unaspirated dental plosive. It occurs word initially.

[t̥ik ^h ɛːi]	/t̥ik ^h ɛːi/	'Then'
[t̥ɛːt̥ ^h ɛ̃]	/t̥ɛːt̥ ^h ɛ̃/	'Rice scoop'

/d̥/ [d̥] Voiced dental plosive. It occurs word initially, medially, and finally, as in

[d̥aləːnə]	/d̥aləːnə/	'A wood traditionally used for making torches'
[ʃubˌɛgənd̥i]	/ʃubɛgənd̥i/	'Zukaru festival greetings'
[d̥uɔ̃ˌh̃ə] ~ [d̥uɔ̃ˌə]	/d̥uɔ̃/	'Milk'
[suɔ̃ˌi]	/suɔ̃i/	'Side dish for wine'

/t̥^h/ [t̥^h] Voiceless aspirated dental plosive. It occurs word initially, medially, and finally as in

[t̥ ^h ɛːfə̃nə]	/t̥ ^h ɛːfə̃n/	'Massage'
[hɛp̥ ^h t̥ ^h ɛ]	/hɛp̥ ^h t̥ ^h ɛ/	'Week'
[t̥ ^h ɛːt̥ ^h ɛ̃]	/t̥ ^h ɛːt̥ ^h ɛ̃/	'Rice scoop'
[mən̥ˌθ] ~ [mən̥ˌt̥ ^h]	/mən̥t̥ ^h /	'Stick for making buttermilk'

/d̥^h/ [d̥^h] Voiced breathy dental plosive. It occurs word initially and medially as in

[d̥ ^h i ^h c ^h ub̥i]	/d̥ ^h i ^h c ^h ub̥i/	'Little'
[bɛd̥ ^h ɛː]	/bɛd̥ ^h ɛː/	'Cloud'
[bɛd̥ ^h ɛːl]	/bɛd̥ ^h ɛːl/	'Ox'

/t/ [t] Voiceless unaspirated weakly retroflexed plosive. It occurs word initially as in

[tiː]	/tiː/	'Eye'
[toːnɛ]	/toːnɛ/	'Deaf'
[toːl]	/toːl/	'Shares'

Description and Distribution of the phonemes

/d/ [d] Voiced weakly retroflexed plosive. It occurs word initially, medially, and finally. When occurring at the coda of syllables following homorganic nasal [ŋ] as in /k^hɛŋd/, ‘sugar,’ [d] is sometimes left unpronounced, as in [k^hɛŋ].

[dɛŋ(g)]	/dɛŋg/	‘Snow’
[dɛŋdɛ]	/dɛŋdɛ/	‘Rod’
[k ^h ɛŋ(d)]	/k ^h ɛŋd/	‘Sugar’
[dɑdʊrə]	/dɑdʊr/	‘Sheep (NSg & Pl)’

/t^h/ [t^h] Voiceless aspirated weakly retroflexed plosive. It occurs word initially, medially and finally as in

[t ^h uŋg]	/t ^h uŋg/	‘Beak’
[kɛ:ŋt ^h ɛ]	/kɛ:ŋt ^h ɛ/	‘Younger’
[g ^h ɛŋt ^h i]	/g ^h ɛŋt ^h i/	‘Glottis, throat’
[nɛlɔ:t ^h]	/nɛlɔ:t ^h /	‘Ice’
[ɦɛ:t ^h uɾə]	/ɦɛ:t ^h uɾ/	‘Plough’

/d^h/ [d^h] Voiced breathy weakly retroflexed plosive. It occurs word initially as in

[d ^h uɾk ^h]	/d ^h uɾk ^h /	‘Hunger’
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/tʃ/ [tʃ] Voiceless unaspirated lamino-alveolar plosive with post-alveolar sibilant release. It occurs word initially as in

[tʃɛnɛ:l]	/tʃɛnɛ:l/	‘Low caste name’
[tʃiri]	/tʃiri/	‘To tear (intransitive)’
[tʃət ^h]	/tʃət ^h /	‘Toilet (euphemism)’

/d̂z/ [d̂z] Voiced lamino-alveolar plosive with post-alveolar sibilant release. It occurs word initially, medially, finally, and intervocalically as in

[d̂zɪfɛm]	/d̂zɪfɛm/	‘Health’
[pɛrə̂d̂zi]	/pɛrə̂d̂zi/	‘Attendance’
[lɛm ^h ɛrɛ:̂d̂z]	/lɛm ^h ɛrɛ:̂d̂z/	‘A weed used to make local shoes’
[rɛ̂d̂zɔ:ɾ]	/rɛ̂d̂zɔ:ɾ/	‘Rope’

/tʃ^h/ [tʃ^h] Voiceless aspirated lamino-alveolar plosive with post-alveolar sibilant release. It occurs word initially and intervocalically as in

[tʃ ^h ɛt ^h ɛ]	/tʃ ^h ɛt ^h ɛ/	‘Man’s hair’
[bɛl ^h tʃ ^h ɛ]	/bɛl ^h tʃ ^h ɛ/	‘Shovel’
[kɛ̂uŋtʃ ^h ɪ]	/kɛ̂uŋtʃ ^h ɪ/	‘Homesickness’
[lɔ:tʃ ^h ɪ]	/lɔ:tʃ ^h ɪ/	‘Puri dish (FSg)’

Description and Distribution of the phonemes

/ḍʒ^h/ [ḍʒ^h] Voiced breathy lamino-alveolar plosive with post-alveolar sibilant release. It occurs word initially and intervocalically as in

[ḍʒ ^h ɛŋɛ]	/ḍʒ ^h ɛŋɛ/	'Clothing'
[mɛ:ḍʒ ^h ʒrə]	/mɛ:ḍʒ ^h ɛr/	'Gossip'

/k/ [k] Voiceless unaspirated velar plosive. It occurs word initially.

[kiss [•]]	/kis/	'Why?'
[kɛ:ŋt ^h ɐ]	/kɛ:ŋt ^h ɐ/	'Younger'
[kɛɾəŋgɛ:]	/kɛɾŋgɛ:/	'Funeral place'

[c] Voiceless palatal (or pre-velar) stop occurring initially or medially in or next to stressed syllables of words whose vowels range from close front to open-mid front. It also occurs initially to words to which vowel harmony rules once applied and which end in voiceless near-close front vowel /i̥/.

[cɛŋ]	/kɛŋ/	'Who?'
[cəŋ [•] i̥] ~ [cəŋ [•]]	/kəŋi̥/	'Triangle-shaped food (FPI)'
[k ^h əŋ [•] i̥]		'Little'
[ḍ ^h ik ^h ubɛi̥]	/ḍ ^h ik ^h ubɛi̥/	

/g/ [g] Voiced velar plosive. It occurs word initially, medially, finally, and intervocalically. When occurring at the coda of syllables following homorganic nasal [ŋ] as in [b^hɛŋg], 'An intoxicating leaf,' /g/ is often left unpronounced as in [b^hɛŋ]. When occurring intervocalically following a long vowel, /g/ is often pronounced as lenis, that is, as a voiced fricative [ɣ], as in [b^hjɛ:ɣɛ], 'morning.' Some devoicing may occur preceding word-final voiceless vowels.

[gɛbərə:li̥]	/gɛb ^h rɛfɛ:li̥/	'Pregnant woman'
[kɛɾəŋgɛ:]	/kɛɾŋgɛ:/	'Funeral place'
[murəŋgi̥]	/murŋgi̥/	'A nose ornament'
[b ^h ɛŋg]	/b ^h ɛŋg/	'An intoxicating leaf'
[b ^h jɛ:ɣɛ]	/b ^h jɛ:ɣɛ/	'Morning'

/k^h/ [k^h] Voiceless aspirated velar plosive. It occurs word initially, medially, and finally. When occurring intervocalically at the onset of an unstressed syllable, /k^h/ is often pronounced as lenis, that is, as a fricative, [x] as in [pɛt^hixɛnɐ[•]], 'behind.'

[k ^h ɛt ^h ɐɾ]	/k ^h ɛt ^h ɐɾ/	'Mule'
[ɛŋk ^h ɐɾ]	/ɛŋk ^h ɐɾ/	'A kind of cheese'
[tɪk ^h ɛ:i̥]	/tɪk ^h ɛ:i̥/	'Then'
[pɛt ^h ik ^h ɛnɐ [•]]	/pɛt ^h ik ^h ɛnɐ/	'Behind'

6.2 Vowels

6.2.1 Contrast of Quality between voiced oral vowels.

/i/	/ε/		
[ki]	/ki/		'What?'
[sε]	[sε]		'They'
[tʃiri]	/tʃiri/		'Tore'
[tʃεrε]	/tʃεrε/		'Late'
/ε/	/a/		
[tʃεrε]	/tʃεrε/		'Late'
[parə]	[parə]		'Last year'
[bεʃulə]	/bεʃulə/		'Milking (e.g., cow)'
[batʃ ^h urɿ]	/batʃ ^h urɿ/		'Calf'
[tʃɛl·e]	/tʃɛle/		'Priest'
[ɖalɤ:nɤ]	/ɖalɤ:nɤ/		'Wood traditionally used to make torches (NSg & Pl)'
/a/	/e/		
[ɖalɤ:nɤ]	/ɖalɤ:nɤ/		'Wood traditionally used to make torches (NSg & Pl)'
[ʃɛlu:n]	/ʃɛlu:n/		'Filter for food grains'
[ɖadurɤ]	/ɖadur/		'Sheep (NSg & Pl)'
[ɖɛburɤ]	/ɖɛbur/		'Plastic bottle or vessel'
[batʃ ^h urɿ]	/batʃ ^h urɿ/		'Calf'
[ɖɛburɤ]	/ɖɛbur/		'Plastic bottle or vessel'
/e/	/ə/		
[tʃɛt ^h]	/tʃɛt ^h /		'Terrace on roof of house'
[tʃət ^h]	/tʃət ^h /		'Toilet' (euphemism)
[mɛlɜt ^h i]	/mɛlɛt ^h i/		'Medicinal root'
[pinɛt ^h ɿ]	/pinɛt ^h ɿ/		'Grinding stone plate' (FPl)
[potʃ ^h e]	/potʃe/		'Scrubber'
[paʃə]	/paʃə/		'Day after tomorrow'
/u/	/o/		
[osʻ]	/os/		'Over there'

Evidence Of Contrast

[uʃk ^h]	/uʃk ^h /	'Angry'
[puʃ ^h]	/puʃ ^h /	'Upon'
[bok ^h]	/bok ^h /	'A language'
[kɛʃ ^h oɾə]	/kɛʃ ^h oɾə/	'Firewood'
[dɛbuɾə]	/dɛbuɾə/	'Plastic bottle or vessel'
/u/ /ə/		
[ugi:ɾɪ]	/ugi:ɾɪ/	'Day before Shivaratri'
[ək ^h ɛn]	/ək ^h ɛn/	'Wild hare'
[d̪ʒuk ^h]	/d̪ʒuk ^h /	'Beat'
[t̪ʃəp ^h]	/t̪ʃəp ^h /	'Be quiet'
[kɛʃ ^h u]	/kɛʃ ^h u/	'Raw'
[paʃə]	/paʃə/	'Day after tomorrow'
/ə/ /o/		
[t̪əs]	/t̪əs/	'You' (pl)
[os]	/os/	'That one'
[t̪ʃəb <i>i</i>]	/t̪ʃəb <i>i</i> /	'Twenty-four'
[ʃop ^h e]	/ʃop ^h e/	'Blade of the plough'
/i:/ /e:/		
[bi:ɳə]	/bi:ɳə/	'Dry coriander'
[bæ:ɳə]	/bæ:ɳə/	'Thread'
[gəgi:]	/gəgi:/	'Name of a mountain'
[bɛd̪ ^h ɛ:]	/bɛd̪ ^h ɛ:/	'Cloud'
/e:/ /a:/		
[b ^h æ:ɳə]	/b ^h æ:ɳə/	'Sister'
	/b ^h a:ɳi/	'Brothers' wives as called by brothers' sisters (FPI)'
[b ^h a:ɳi]		
[bæ:d̪]	/bæ:d̪/	'Kind of tree'
[d̪a:d̪i]	/d̪a:d̪i/	'Paternal grandmothers (FPI)'
/a:/ /e:/		
[a:t̪ ^h i]	/a:t̪ ^h i/	'Kitchens' (FPI)'
[e:t̪ ^h i]	/e:t̪ ^h i/	'Kitchen (FSg)'

[pinja:t ^h ɿ]	/pingija:t ^h ɿ/	'Kind of fruit (FPl)'
[pinje:t ^h ɿ]	/pingije:t ^h ɿ/	'Kind of fruit (FSg)'
/u:/ /o:/		
[d̂ʒu:t ^h]	/d̂ʒ ^h u:t ^h /	'Untruth'
[go:t ^h]	/go:t ^h /	'High pasture'
[d̂ʒɛt̂ ^h u:rə]	/d̂ʒɛt̂ ^h u:r/	'Yak'
[t̂ʒd̂ʒo:t ^h]	/t̂ʒd̂ʒo:t ^h /	'Village meeting'
/u:/ /ə:/		
[pu:rə]	/pu:r/	'Bridge'
[mə:r̂ɿ]	/mə:r̂ɿ/	'Burning coal'
[d̂ʒɛt̂ ^h u:rə]	/d̂ʒɛt̂ ^h u:r/	'Yak'
[d̂alə:ŋə]	/d̂alhə:ŋə/	'A wood used in making traditional torches'
/ə:/ /o:/		
[t̂ə:l]	/t̂ə:l/	'Matches'
[t̂o:l]	/t̂o:l/	'Shares'
[d̂ɜ:rə:l]	/d̂ɜ:rə:l/	'Underground room entrance'
[put̂ ^h o:rə]	/put̂ ^h o:r/	'To Pinch'

6.2.2 Contrast of Quantity between Oral Vowels

/i/ /i:/		
[t̂i]	/t̂i/	'Thirty'
[t̂i:]	/t̂i:/	'Too much'
[t̂ ^h iɾə]	/t̂ ^h iɾ/	'Small branches'
[k ^h i:r̂ɿ]	/k ^h i:r̂ɿ/	'Sweet rice'
[pit ^h]	/pit ^h /	'Back'
[pi:k ^h]	/pi:k ^h /	'Funnel'
/ɛ/ /ɛ:/		
[d̂ɛŋt̂ ^h]	/d̂ɛŋt̂ ^h /	'Running fast'
[kɛ:ŋt̂ ^h]	/kɛ:ŋt̂ ^h /	'A kind of fruit'
[t̂ɛt̂ ^h i]	/t̂ɛt̂ ^h i/	'Thirty-three'
[t̂ɛ:t̂ ^h e]	/t̂ɛ:t̂ ^h e/	'Rice scoop'

Evidence Of Contrast

/a/ /a:/ [al̥əŋə] [a:lə:ŋə]	/aləŋ/ /a:lə:ŋə/	'A small bird' 'Potato (NSg & Pl)'
[paʃə] [b̥ ^h a:ŋi̯]	/paʃə/ /b ^h a:ŋi̯/	'Brothers' wives as called by brothers' sisters'
/e/ /e:/ [mɛl̥] [mɛ:l̥]	/mɛl/ /mɛ:l/	'Cow dung' 'Charka thread'
[k ^h ɛ̃] [k ^h ɛ:]	/k ^h ɛ/ /k ^h ɛ:/	'Eat!' 'Mud, dirt'
/ə/ /ə:/ [cəŋ̥i̯] [d̥ ^h ə:n]	/kəŋ̥i̯/ /d̥ ^h ə:n/	'Triangle shaped food item (FPl)' 'Object of worship'
[ʃəni:] [kə:rə]	/ʃəni:/ /kə:rə/	'Swollen' 'Intermediate stage of curd-making'
/u/ /u:/ [tun̥] [ku:n]	/tun/ /ku:n/	'Very drunk, senseless' 'Remove (base form)'
[bat̥ ^h uŋ̥i̯] [d̥zət̥ ^h u:rə]	/bat̥ ^h uŋ̥i̯/ /d̥zət̥ ^h u:r/	'Calf' 'Yak'
/o/ /o:/ [ot̥ ^h i̯] [o:t̥ ^h]	/ot̥ ^h i̯/ /o:t̥ ^h /	'Over there' 'Lips'
[bok ^h] [to:p ^h]	/bok ^h / /to:p ^h /	'A language' 'Men's cap'
[pinot̥ ^h i̯] [t̥ɛd̥zot̥ ^h]	/pinot̥ ^h i̯/ /t̥ɛd̥zot̥ ^h /	'Stone grinding plate' 'Village meeting'

6.2.3 Contrast between Voiced oral vowels and Voiceless oral vowels

Word final voiced oral vowels /i/ and /u/ contrast with word-final voiceless vowels /i̥/ and /u̥/. Note the following contrasting examples:

/i/	/i̥/		
[t̪ɛt̪ ^h i]	/t̪ɛt̪ ^h i/		<i>'Thirty-three'</i>
[t̪i̯ɔ̯:t̪ ^h i̥]	/t̪i̯ɔ̯:t̪ ^h i̥/		<i>'A wash after eating'</i>
[t̪ ^h uri]	/t̪ ^h uri/		<i>'Heel'</i>
[mə:r̪i̯]	/mə:r̪i̯/		<i>'Burning coal'</i>
[id̪ ^h ə:ri]	/id̪ ^h ə:ri/		<i>'Of this place'</i>
[bat̪ ^h u̯r̪i̯]	/bat̪ ^h u̯r̪i̯/		<i>'Calf'</i>
/u/	/u̥/		
[mut̪ ^h u]	/mut̪ ^h u/		<i>'Sweet'</i>
[ba:t̪ ^h u̯]	/ba:t̪ ^h u̯/		<i>'Stone vessel (NSg & Pl)'</i>
[t̪ ^h ə̯n̪·ũ]	/t̪ ^h ə̯nu/		<i>'Cold'</i>
[d̪ə:d̪ə̯]	/d̪ə:d̪ə̯/		<i>'Paternal grandfather (MSg & Pl)'</i>

The following examples show contrast between citation forms of words ending in consonants and words ending in word-final voiceless vowels /i̥/ and /u̥/:

[bæ:d̪]	/bæ:d̪/		<i>'Kind of tree'</i>
[d̪ə:d̪i̯]	/d̪ə:d̪i̯/		<i>'Paternal grandmother (FSg)'</i>
[kər]	/kər/		<i>'Do (base form)'</i>
[pə:r̪ə̯]	/pə:r̪ə̯/		<i>'Last year (NSg or Pl)'</i>