

Accent in the Indo-Aryan language Kullui and the relative chronology of phonetic changes¹

The article focuses on the historical phonetics of Kullui, a member of the Indo-Aryan language family, through an analysis of phonological changes that shaped its evolution. The author explores key processes such as the loss of final vowels, the reduction of Middle Indo-Aryan geminates, the emergence of new palatal affricates, and other phonetic shifts that impacted word structure and accent patterns.

The study demonstrates that the fundamental accentual principles inherited from the Middle Indo-Aryan period remained largely consistent despite significant phonological transformations. However, certain phonetic processes triggered shifts in accentuation within specific lexical items. The paper reconstructs the relative and absolute chronology of phonetic developments in Kullui, situating them within the broader context of historical influences, including Arabic and Persian interactions and borrowings from neighboring languages. Furthermore, the article argues for the inapplicability of the so-called “Two-Mora Rule” to the Middle Indo-Aryan ancestor of Kullui in this particular case.

Keywords: Kullui language; word stress; historical phonetics; Two-Mora Rule.

1. General information about Kullui

Kullui is an Indo-Aryan language belonging to the Himachali subgroup, characterized by the absence of official status and a standardized written form. Approximately 200,000 individuals are native speakers of Kullui, primarily located in the Indian state of Himachal Pradesh (Renkovskaya & Krylova, 2021: 72), with a significant concentration in the Kullu district (Renkovskaya 2019: 68). This study is based on field materials collected by myself and my colleagues during research expeditions conducted in Himachal Pradesh from 2014 to 2023. The official language of Himachal Pradesh is Hindi, which is spoken by the majority of Kullui speakers. Among the neighboring Himachali languages, Kullui exhibits the most substantial influence from Mandeali, the language of the Mandi district, which serves as a critical conduit connecting the Kullu Valley to the plains. The contemporary vocalic system of Kullui and the rules governing the reduction of unaccented vowels have been extensively documented in Krylova 2024. In this article, I will analyze the development of the modern accent system in Kullui.

2. Historical and Phonetic Development of the Indo-Aryan Languages: An Overview

The evolution of Indo-Aryan languages is typically divided into three distinct periods: Old (OIA), Middle (MIA), and New (NIA). The OIA period is characterized by the Vedic language

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and (Classical) Sanskrit, which are often considered two dialects of a single language. In contrast, the MIA period is marked by the fragmentation of dialectal unity into a multitude of Prakrits, which are distinct languages. Despite this diversification, many MIA changes exhibit common characteristics, allowing for a general reconstruction of the MIA level (Masica 1991: 165–184).

Notable MIA changes include:

- the phonetic shift of *r* to *a*, *i*, or *u*
- the evolution of *ai* and *aya* to *e*, and *au* and *ava* to *o*
- the Two-Mora Rule, resulting in the loss of phonological length due to shortening of long vowels in closed syllables and lengthening of short vowels in open syllables
- a shift in the accent system (discussed in Section 3)
- the loss of final consonants
- the convergence of three sibilants (*ś*, *ṣ*, *s*) into a single sound (*s*)
- the transition of *y-* to *j-*
- the transformation of most consonant combinations into geminates in word-medial position and single consonants in word-initial position
- the loss of all intervocalic plosives, except for retroflex ones
- the voicing of voiceless intervocalic retroflex plosives
- the shift of intervocalic *n* and *l* to retroflex *ṇ* and *ḷ*

The NIA period is characterized by the following changes (Masica 1991: 187–191) :

- the reduction of geminated consonants
- compensatory lengthening of vowels before geminated consonants
- the loss of final vowels
- coalescence of vowels left in hiatus

However, Kullui, like some other Himachali languages, exhibits deviations from the mainstream development. In the MIA period, the so-called Kullui Prakrit (the MIA reconstructed ancestor of Kullui) retained several OIA clusters, including *p^(h)r*, *b^(h)r*, *k^(h)r*, *g^(h)r*, *tr*, *dr*, *rṣ*, *rś*, *ml* and *kṣ*. Additionally, Kullui preserved the distinction between two sibilants, with *ś* and *ṣ* merging into *f*.

In the NIA period, Kullui underwent labialization of *a* to *ɔ* in accented positions. The common MIA affricates shifted to the dental row in Kullui (*c*, *ch*, *j*, *jh* > *ts*, *ts^h*, *dz*, *dz^h*), while the clusters *tr*, *dr*, and *kṣ* gave rise to a new series of palatal affricates: *tr* > *tʃ*, *dr* > *dʒ*, and *kṣ* > *tʃ^h*. As demonstrated in this paper, neither the Two-Mora Rule nor compensatory lengthening can be reconstructed for the “Kullui Prakrit”. Instead, the language retained traces of OIA vowel length until relatively recently. The significant reduction of non-final unaccented vowels had a profound impact on the phonetic appearance of the Kullui vocabulary.

3. The MIA Accent System

As noted by Jacobi (1898: 563) and Masica (1991: 183), the Vedic accentual system underwent a significant transformation in both Classical Sanskrit and the MIA languages. The new system of accentuation is based on a distinction between light and heavy syllables, where light syllables are defined as open syllables with a short vowel, and heavy syllables encompass all other types. The accented syllable is determined by a rule that singles out the first heavy syllable from the penultimate to the fourth syllable from the end of the word. In the absence of heavy syllables in words with four or fewer syllables, the accented syllable defaults to the first syllable, while in longer words, accent falls on the fourth syllable from the end.

To illustrate the MIA accent system, I will provide some examples. Although Classical Sanskrit is classified as an OIA language due to its phonological, morphological, and lexical features, its functional period and the creation of the texts that have been transmitted to us coincide with the Middle and NIA periods. Notably, Classical Sanskrit, unlike Vedic, exhibits the MIA accent system (Masica 1991: 183). The similarity in phonetic features between Vedic and Classical Sanskrit makes them ideal for demonstrating the differences between the Vedic and MIA accent systems.

The following examples highlight the contrast between the two accent systems:

Vedic	Classical Sanskrit
<i>candramāḥ</i> ‘moon, month’	<i>cāndramaḥ</i>
<i>daṇḍá</i> ‘stick’	<i>dāṇḍa</i>
<i>kumārá</i> ‘child’	<i>kumāra</i>
<i>nārācá</i> ‘kind of arrow’	<i>nārāca</i>

In this study, I will not be referencing the Vedic accent system; consequently, OIA forms will be presented without accent or with an accent mark presumably according to the MIA rule, as is the case in Classical Sanskrit. This convention will also be applied to protoforms taken from Turner’s dictionary (Turner 1966), where the Vedic accent will be omitted in my notation.

4. The Place of Accent in Kullui

It is widely accepted that all Indo-Aryan languages, with the exception of Marathi, which has partially inherited the Vedic accent system, have preserved traces of the MIA accentual system in some form. However, the Kullui accent system presents a more complex picture. While it generally conforms to the MIA system, there are a number of examples that contradict it, suggesting that the modern Kullui accent system was formed at a later stage.

In addition to certain suffixal formations of the NIA period, which are not considered in this study, the exceptions primarily involve words where the MIA system would have predicted an accented vowel in a closed syllable, but which was later reduced to an unaccented vowel. As was noted above, accent in the OIA forms is given according to the MIA rule, rather than the Vedic forms (as in Turner 1966).

The following examples illustrate the discrepancies between the Kullui accent system and the MIA system:

Kullui	OIA (here and below mainly according to Turner 1966, except for a few of the author’s own reconstructions)	Himachali according to Hendriksen 1976
<i>bḥhut</i> ‘many’ (instead of <i>**b^hut</i>)	<i>bahútva</i> ‘abundance’ ²	<i>bɔ:to, bohít</i>
<i>kṛts^hi</i> ‘ladle’ (instead of <i>**kṛts^hi</i>)	<i>*kaṭácchu, kaḍácchaka</i> ‘ladle’	
<i>tsṵwt^ha</i> ‘fourth’ (instead of <i>**tsút^ha</i>)	<i>catúrtha</i> ‘fourth’	<i>tsṵt:hɔ, tsɔ:tho</i>
<i>hṵwdɔ</i> ‘turmeric’ (instead of <i>**hudɔ/hidɔ</i>)	<i>harídṛā</i> ‘turmeric’	
<i>gṵjntf</i> ‘cow urine’ (instead of <i>**gṵñt</i>)	<i>gṵmítṛa-</i> ‘cow urine’	<i>gṵñc, gṵñc, gṵñch</i>
<i>bṵd</i> ‘ox, bull’ (instead of <i>**bṵd</i>)	<i>balivárda</i> ‘ox, bull’	

² Provided we accept the etymology from Turner 1966. A partially adapted loanword from Sanskrit *bahutā* ‘many, abundance’ is also possible.

One possible interpretation is that the ancestral language of Kullui prioritized vowel length over the open/closed syllabic parameter. However, in modern Kullui, the openness/closedness of the syllable is clearly important, as evidenced by examples such as *nārēngi* ‘type of citrus’, *məʃ^hingla* ‘dough or rice ball’, and *pətsínqu* ‘pinch’.

Furthermore, Kullui exhibits examples where an Old and MIA closed syllable with a short vowel becomes accented, and the preceding syllable is reduced and dropped. These examples all follow a similar pattern, where the first reduced syllable is V-initial:

Kullui	OIA
<i>pədzŋa</i> ‘to sprout (about plants)’ (instead of <i>**upədzŋa</i>)	<i>utpádyate</i> ‘arises, originates’
<i>gu^ha</i> ‘thumb’	<i>aṅgúṣṭha</i> ‘thumb’
<i>he^he</i> ‘under’	<i>*adhíṣṭāt</i> ‘below’ ³

In conclusion, while modern Kullui data suggest that the place of accent was established in the MIA period, there is evidence of a shift (or multiple shifts) in accent in the NIA period, following the reduction of numerous MIA geminates and consonant combinations. The accent system that developed in the MIA period did not lead to a significant reduction in unaccented vowels, except for initial ones, which were dropped.

5. The formation of geminates and weakening of intervocalic consonants in MIA languages

A characteristic feature of the MIA period is the transformation of OIA medial clusters into geminates (Masica 1991: 174). This development is also attested in Kullui. Also, in the later MIA period, a series of processes affected intervocalic consonants. Specifically, most intervocalic unaspirated stops, with the exception of retroflex ones, underwent complete elision, while aspirated stops were preserved as *h*. Voiceless retroflex stops, on the other hand, became voiced; subsequently, intervocalic *ḍ* and *ḍh* evolved into *r* and *rh*, respectively.

It is essential to note, however, that there are deviations from this general pattern of development. Notably, combinations of the type “nasal + homorganic stop” did not uniformly undergo the transition to geminates in the MIA period. Furthermore, Himachali has retained many instances of combinations involving velars and labials with *r*, as well as *tr* and *dr* until relatively recently. In Kullui, the less common combinations *kṣ*, *śr*, and *ml* were also preserved until the NIA period. Interestingly, these combinations *tr*, *dr*, and *kṣ* later gave rise to a new series of palatal affricates in Kullui.

6. The Two-Mora Rule and its absence in Kullui

A significant phonological development in late MIA is the Two-Mora Rule (Masica 1991: 182), which dictates that long vowels preceding a consonant cluster (including geminates) undergo shortening, while short vowels preceding a single consonant undergo lengthening. However, an examination of the Kullui vocabulary reveals that this rule is not operative in most cases. Specifically, the regular reflex of OIA *ā* in Kullui is *a*, whereas the regular reflex of OIA *a* is *ɔ*, indicating that there was no redistribution of vowel length in the MIA period.

³ Turner suggests this form, apparently by analogy with the attested *upáriṣṭāt* ‘from above’ in the Rigveda.

This observation is supported by numerous correspondences between OIA *ā* and Kullui *a* in accented positions. The absence of the Two-Mora Rule in Kullui is a notable exception to the general pattern of phonological development in MIA languages:

Kullui	OIA
<i>ād̪z</i> ‘guts’	<i>āntra</i> ‘entrails’
<i>badəɭ</i> ‘cloud’	<i>vārdala</i> ‘rainy day’
<i>gat̪fi</i> ‘women’s belt’	<i>gātrikā</i> ‘belt’
<i>amb</i> ‘mango’	<i>āmra</i> ‘mango’
<i>aʃa</i> ‘flour’	* <i>ārta</i> ‘flour’
<i>badzŋa</i> ‘play a musical instrument’	<i>vādyatē</i> ‘sounds’
<i>badzra</i> ‘millet, pearl millet’	* <i>bājjara</i> ‘millet’
<i>bapu</i> ‘father’	* <i>bāppa</i> ‘father’
<i>dada</i> ‘paternal grandfather’	* <i>dādda</i> ‘father or other older relative’
<i>dat̪fi</i> ‘sickle’	* <i>dātrī</i> ‘knife, sickle’
<i>d^haga</i> ‘thread’	* <i>dhāgga</i> ‘thread’
<i>d^ham</i> ‘ceremonial meal’	<i>dhārma</i> ‘pertaining to religious duty’
<i>d^han</i> ‘paddy’	<i>dhānya</i> ‘grain, corn’
<i>ḍaku</i> ‘robber’	* <i>ḍākka</i> ‘robber, robbery’
<i>kati</i> ‘month of Kārtika (October-November)’	<i>kārttika</i> ‘month of Kārtika (October-November)’
<i>nana</i> ‘maternal grandfather’	* <i>nānna</i> ‘term of respect for an older relative’
<i>nəb^haga</i> ‘dispossessed’	<i>nirbhāgya</i> ‘dispossessed’
<i>paʃəɭ</i> ‘side’	* <i>pārśvapuṭaka</i> ‘fold of the ribs’
<i>p^hagəŋ</i> ‘month of Phagun, February-March’	<i>phālguna</i> ‘month of Phagun, February-March’
<i>p^hagra</i> ‘fig’	* <i>phālgū</i> ‘Ficus oppositifolia’
<i>pjakəɭ</i> ‘drunkard’	<i>pī-</i> ‘to drink’ + * <i>ākkaḍa</i> ‘cramped, stiff’
<i>tamba</i> ‘copper’	<i>tāmra</i> ‘copper’
<i>ʃapu</i> ‘island’	* <i>ʃāppuka</i> ‘island’
<i>t^hat̪f</i> ‘sheep pasture in the mountains’	<i>sthātra-</i> ‘place’
<i>ʃambɾa</i> ‘cauldron’	<i>tāmra</i> ‘copper’
<i>tsatsa</i> ‘paternal uncle, father’s younger brother’	* <i>cācca</i> ‘uncle’
<i>ts^hati</i> ‘chest’	* <i>chātti</i> ‘chest’
<i>vās</i> ‘fast on new moon’	<i>amāvāsya</i> ‘new moon’

However, a limited number of examples suggest that the Two-Mora Rule may have been operative in certain cases. It is plausible to assume that these words were borrowed from a language in which the Two-Mora Rule was applied, although in some instances, the influence of other phonological processes may also be a contributing factor. Notably, these words often exhibit deviations from the expected phonetic patterns of Kullui in other respects as well, suggesting that they may have undergone distinct historical developments.

Kullui	OIA	Two-Mora Rule	Note
<i>bagər</i> ‘wind’	* <i>vātōḍgūrā</i> ‘whirlwind’	<i>ō > o</i>	Unexplained reduction of <i>ū</i>
<i>uɾəkŋa</i> ‘stumble’	* <i>udrōkka</i> ‘stopped’	<i>ō > o</i>	
<i>gont̪f</i> ‘cow urine’	<i>gōmūtra</i> ‘cow urine’	<i>ū > u</i>	Unexplained loss of <i>u</i>
<i>məkfər</i> ‘month of Margshirsh (November-December)’	<i>mārgaśiras</i> ‘month of Margshirsh (November-December)’	<i>ā > a</i>	Irregular assimilation of <i>gf > kf</i>

<i>māk^hir</i> ‘honey’	* <i>māksīkākara</i> ‘bee’	$\bar{a} > a$	OIA <i>kṣ</i> gives <i>tʃ^h</i> in Kullui, possible borrowing from Punjabi
<i>mehnga</i> ‘dear’	<i>mahārg̃ha</i> ‘dear’	$\bar{a} > a$	ϵ instead of expected ɔ , probably borrowed from Hindi
<i>mindz</i> ‘chicken brain’	<i>médya</i> ‘fat’	$\bar{e} > i$	unmotivated epenthetic <i>n</i> (probably a variant of spontaneous nasalization)
<i>pend^he</i> ‘on, above, on top’	<i>upāntē</i> ‘near the end’	$\bar{a} > a$	ϵ instead of expected ɔ , unexplained aspiration
<i>tsəpaɾ</i> ‘lizard’	<i>cārpaṭa</i> ‘lying flat to the head (of ears), palm of hand, thin biscuit of flour’	$a > \bar{a}$	
<i>ṭulṇa</i> ‘to doze’	* <i>ṭóll</i> ‘to wander’	$\bar{o} > u$	

In positing that the ancestral language of Kullui did not apply the Two-Mora rule, I engage with the opposing view expressed by Hendriksen (1986: 68), who posits that the OIA (OIA) long vowels were reduced in closed syllables in the MIA dialect from which Himachali and numerous other Indo-Aryan languages are derived. This assertion constitutes a specific instantiation of the Two-Mora Rule, which Hendriksen illustrates with two examples from Kotgarhi and Kochi. However, a closer examination of these examples (Kochi, Kotgarhi *gɔrko* ‘heavy’ < Pk. *garukkō*- ‘heavy’⁴ < OIA *guru* ‘heavy’, Kochi *bɔḷad* ‘bull’ < Pk. *baladdō* ‘bull’ < OIA *balivarda* ‘bull’) reveals that none of them actually contain an OIA long vowel in a closed syllable, thereby undermining the validity of Hendriksen’s claim.

Furthermore, it is challenging to determine whether the Two-Mora Rule had an impact on other Himachali languages, as the presence or absence of its effect is obscured by the compensatory lengthening of short vowels that occurred concomitantly with the reduction of geminates in the NIA period. In contrast, Kullui is not affected by this compensatory lengthening, thereby providing clear evidence that the Two-Mora Rule does not apply to it.

7. The loss of initial unaccented vowels in the MIA period.

It is worth noting that there are three examples which suggest that loss of unaccented initial vowels occurred in words where the accent fell on the Old and MIA closed syllable with a short vowel. To these examples we can add three more, which appear to have been borrowed from Mandeali (ϵ instead of ɔ), supporting the extension of the assumption of an earlier accent on closed syllables with a short vowel to all of Himachali:

Kullui	OIA	Note
<i>ke^he</i> ‘together’ (cf. Mandeali <i>kəṭṭhe</i>)	<i>ēkástha</i> ‘standing together’	The protoform apparently featured geminated <i>kk</i> . Initial vowel loss is also observed in Sindhi and Himachali.
<i>kela</i> ‘only’	* <i>ēkkálla</i> - ‘only’	Initial vowel loss is irregularly represented in Punjabi and Himachali dialects.
<i>tsekṇa</i> (cf. Mandeali <i>cakṇa</i>) ‘to raise’	<i>ucca</i> ‘high’ + suffix <i>-ákka-</i>	Initial vowel loss is also observed in Punjabi, Himachali, and Dardic Pashai.

However, based on other data, it appears that the loss of initial unaccented vowels was a sporadic phenomenon in this period. In modern Kullui (and other Himachali languages), initial unaccented vowels are generally dropped, but since this also applies to Arabic-Persian

⁴ Descended, with spontaneous gemination (relatively frequent in MIA), from Sanskrit *guruka* ‘a bit heavy’.

borrowings, and cognates outside Himachali and Dardic do not typically exhibit initial vowel drop, it is likely that this is a relatively recent phenomenon.

Nevertheless, there are a few more words that may have undergone initial vowel drop in the early period. These are primarily cases of the loss of *a*, *ā*, but not exclusively:

Kullui	OIA	Note
<i>befṭa</i> ‘to sit down’	<i>upāviśati</i> ‘approaches, sits down’	The loss of the initial vowel is observed in Prakrits, Apabhraṅṣa, and all NIA languages.
<i>hāū</i> ‘I’	<i>ahám</i> ‘I’ (Vedic accent apparently retained)	The initial vowel loss occurs irregularly in MIA and is practically universal in NIA.
<i>v̄ās</i> ‘fast on the new moon’	<i>amāvāsyā</i> ‘new moon’	Loss of the initial vowel is irregularly observed in many NIA languages.
<i>reṭu</i> ‘yarn ball’	<i>araghātṭa</i> ‘water wheel’	The loss is irregularly recorded in Prakrits and later in various Indo-Aryan languages, even where there is no vowel merging or lengthening, so the unaccented initial vowel is not always explainable. The presence of <i>e</i> as a reflection of the combination <i>aCa</i> suggests a borrowing in the MIA period.
<i>ṣaṭ^h</i> ‘the month of Ashadh (June-July)’	<i>āṣāḍha</i> ‘the month of Ashadh (June-July)’	The loss is regular in western languages, including Pashai, Kashmiri, Sindhi, Lahnda, Bashkarik, Punjabi, and Himachali.
<i>ṣaṭ^ha</i> ‘apricot’	<i>āṣāḍhīya</i> ‘relating to the month of Ashadh’	The loss is observed in Punjabi, Himachali, and Kashmiri, but not in other Dardic languages.
<i>nhjara</i> ‘darkness’	<i>*andhīkāra</i> ‘darkness’	The loss is only recorded in Eastern Punjabi and Himachali
<i>k^hjaṛu</i> ‘pen for sheep’	<i>akṣavāṭa</i> ‘competition ground’	The loss is represented in Lahnda and Punjabi. In Kullui, the word is likely a loanword (reflection of <i>kṣ</i> is not standard).
<i>gjahra</i> ‘eleven’	<i>ēkādaśa</i> ‘eleven’	The loss of the initial vowel is observed in some Indo-Aryan languages, with some exhibiting the insertion of <i>j</i> (possibly of a metathetical nature). Like most numerals, the word poorly corresponds to the general requirements of historical phonetics of Kullui.

8. Reduction of geminates: a characteristic feature of the NIA period

One of the primary phonetic markers of the NIA period is the reduction of geminates, which were a distinctive feature of the MIA languages. In Kullui, geminated consonants have lost their phonological significance, and gemination is now merely an allophonic realization of the accent of the preceding syllable.

The reduction of MIA geminates can be exemplified through a comparison of Kullui words with their MIA cognates. Specifically, we can examine cognates that are likely to be close in their phonetic appearance to the MIA ancestor of Kullui, i.e., those that do not exhibit archaisms which distinguish the ancestor language of Kullui from the attested Prakrits, such as the retention of *ś* or certain clusters, and the apparent non-application of the Two-Mora Rule:

Kullui	Pali or Prakrits	OIA
<i>sət</i> ‘seven’	<i>satta</i> ‘seven’	<i>sapta</i> ‘seven’
<i>mūg</i> ‘mung bean’	<i>mugga-</i> ‘bean’	<i>mudga</i> ‘bean’
<i>sotu</i> ‘barley flour’	<i>sattu-</i> ‘barley flour’	<i>saktu</i> ‘coarse flour’
<i>b^hət</i> ‘boiled rice’	<i>bhatta-</i> ‘food’	<i>bhakta</i> ‘food’
<i>b^həti</i> ‘kind of religious ceremony’	<i>bhatti-</i> ‘service, worship’	<i>bhakti</i> ‘worship’
<i>moti</i> ‘pearl’	<i>mottia-, muttia-</i> ‘pearl’	<i>mauktika</i> ‘pearl’
<i>dud^h</i> ‘milk’	<i>duddha-</i> ‘milk’	<i>dugdha</i> ‘milk’

<i>p^hukṇa</i> ‘to burn’	<i>phukkaī</i> ‘blows’	* <i>phūṭka</i> ‘blowing’
<i>makoṛi</i> ‘ant’	<i>makkōḍa-</i> ‘kind of insect’	<i>matkōḍaka</i> ‘ant’
<i>pōdzṇa</i> ‘to sprout’	<i>uppajjati</i> ‘is produced’	<i>utpadyate</i> ‘originates’
<i>tōta</i> ‘hot’	<i>tatta-</i> ‘hot’	<i>tapta</i> ‘hot’
<i>rōdzṇa</i> ‘to be full’	<i>rajjai</i> ‘is fond of’	<i>rajyatē</i> ‘colors, gets excited, enjoys’
<i>a si</i> ‘lazy’	<i>ālassa-</i> ‘laziness’	<i>ālasya</i> ‘laziness’
<i>wās</i> ‘new moon fast’	<i>amāvassā-</i> ‘new moon’	<i>amāvāsyā</i> ‘new moon’
<i>leṇṇa</i> ‘bark’	<i>leppa-</i> ‘wall’	<i>lēpya</i> ‘plaster’
<i>rupa</i> ‘silver’	<i>ruppa-</i> ‘silver’	<i>rūpya</i> ‘beautiful’
<i>nab^haga</i> ‘dispossessed’	<i>ṇibbhagga-</i> ‘dispossessed’	<i>nirbhāgya</i> ‘dispossessed’
<i>naji</i> ‘dance’	<i>ṇaṭṭa-</i> ‘dance’	<i>nāṭya</i> ‘dance’
<i>p^hiṭṭa</i> ‘to disappear, perish’	<i>phiṭṭa-</i> ‘broken’, <i>phiṭṭai</i> ‘breaks’	* <i>sphiṭyati</i> ‘is damaged’
<i>p^huṭṭa</i> ‘burst, explode’	<i>phuṭṭai</i> ‘explodes’	* <i>sphuṭyati</i> ‘explodes’
<i>bək^han</i> ‘story’	<i>vakkhāṇa-</i> ‘story’	<i>vyākhyāna</i> ‘story’
<i>pōka</i> ‘ripe’	<i>pakka-</i> ‘cooked, ripe’	<i>pakva</i> ‘cooked (boiled, baked)’
<i>bōhut</i> ‘many’	<i>bahutta-</i> ‘abundance, many’	<i>bahutva</i> ‘abundance’
<i>tōkḷi</i> ‘spindle’	<i>takku-</i> ‘spindle’	<i>tarku</i> ‘spindle’
<i>g^hōg^hra</i> ‘skirt’	<i>ghagghara-</i> ‘belt with bells’	<i>ghargharī</i> ‘women’s belt with bells’
<i>dzōdzra</i> ‘unripe’	<i>jajjara-</i> ‘feeble with age, withered’	<i>jarjara</i> ‘decayed, torn, broken’
<i>kōṭṇa</i> ‘to spin’	<i>kattai</i> ‘spins’	* <i>kartati</i> ‘spins’
<i>badā </i> ‘cloud’	<i>vaddala-</i> ‘cloud’	<i>vārdala</i> ‘rainy day’
<i>tsōwt^ha</i> ‘fourth’	<i>caūtṭha-</i> ‘fourth’	<i>caturtha</i> ‘fourth’
<i>ōd^ha</i> ‘half’	<i>addha-</i> ‘half’	<i>ardha</i> ‘half’
<i>dubla</i> ‘thin, weak’	<i>dubbala-</i> ‘weak’	<i>durbala</i> ‘weak’
<i>gōb^hu</i> ‘lamb’	<i>gabbha-</i> ‘womb, foetus, interior’	<i>garbha</i> ‘womb, foetus, offspring’
<i>pūnja</i> ‘full moon’	<i>puṇṇimā-</i> ‘full moon festival’	<i>pūrṇimā</i> ‘full moon’
<i>un</i> ‘sheep wool’	<i>uṇṇā-</i> ‘wool’	<i>ūrṇā</i> ‘wool’
<i>tsōmṛi</i> ‘skin’	<i>camma-</i> ‘skin’	<i>carman</i> ‘skin’
<i>kōm</i> ‘work’	<i>kamma</i> ‘business, work’	<i>karman</i> ‘business, work’
<i>tsōḷṇa</i> ‘to go’	<i>callai</i> ‘moves’	* <i>calyati</i> ‘goes’
<i>dz^hulna</i> ‘to swing’	<i>jhullai</i> ‘swings’	* <i>jhulyati</i> ‘swings’
<i>nib^hṇa</i> ‘to end, be finished’	<i>ṇivvahaī</i> ‘passes (time), is finished’	<i>nīrvahati</i> ‘leads out of’
<i>bis^hu</i> ‘scorpion’	<i>vicchia-</i> ‘scorpion’	<i>vṛścika</i> ‘scorpion’
<i>tsakoṇa</i> ‘square’	<i>caūkkōṇa-</i> ‘square’	<i>catuṣkoṇa</i> ‘square’
<i>ōḷ^h</i> ‘eight’	<i>aṭṭha</i> ‘eight’	<i>aṣṭā</i> ‘eight’
<i>īḷ</i> ‘brick’	<i>iṭṭā-</i> ‘brick’	<i>iṣṭakā</i> ‘brick’
<i>piṭ^ha</i> ‘flour’	<i>piṭṭha-</i> ‘flour’	<i>piṣṭa</i> ‘crushed, ground’
<i>muḷ^hi</i> ‘fist’	<i>muṭṭhi-</i> ‘fist’	<i>muṣṭi</i> ‘fist’
<i>miṭ^ha</i> ‘sweet’	<i>miṭṭha-</i> ‘sweet’	<i>mṛṣṭa</i> ‘polished, smeared, delicious’
<i>dzeṭ^h</i> ‘husband’s elder brother’	<i>jeṭṭha-</i> ‘elder’	<i>ḷyēṣṭha</i> ‘elder’
<i>guḷ^ha</i> ‘thumb’	<i>aṅguṭṭha-</i> ‘thumb’	<i>aṅguṣṭha</i> ‘thumb’
<i>ōḷ^h</i> ‘lip’	<i>oṭṭha-</i> ‘lip’	<i>ōṣṭha</i> ‘lip’
<i>hōt^h</i> ‘hand’	<i>hattha-</i> ‘hand’	<i>hasta</i> ‘hand’
<i>mōt^ha</i> ‘forehead’	<i>mattha-</i> ‘skull, head’	<i>masta</i> ‘head’
<i>sut^hra</i> ‘clean’	<i>sutthira-</i> ‘very hard’	<i>susthira</i> ‘very hard’

ɔg 'fire'	aggi- 'fire'	agni 'fire'
mukṇa 'to finish'	mukka- 'released'	*mukna 'released'
mɔts ^h i 'fish'	maccha- 'fish'	matsya 'fish'
hikḷi 'hiccup'	hikkā- 'hiccup'	hikkā- 'hiccup'
kukəɽ 'cock'	kukkuḍa- 'cock'	kukkuṭa 'cock'
kɔɽts ^h i 'ladle'	kaḍacchu- 'ladle'	kaḍacchaka 'ladle'
puts ^h ṇa 'to ask'	pucchāi 'asks'	ṛcchati 'asks'
tsifla 'slippery' (with metathesis)	picchala- 'greasy, slippery'	picchala 'slippery'
b ^h it 'wall'	bhitti- 'wall'	bhitti 'panel, partition, wall'
kuṭṇa 'to grind'	kuṭṭēi 'grinds'	kuṭṭayati 'grinds'
poṭi 'children's writing board'	paṭṭa- 'slab, tablet'	paṭṭa 'slab, tablet'
kadaḷ 'spade'	kuddāla- 'spade, hoe'	kuddāla 'a kind of spade or mattock'
uḍna 'to fly'	uḍḍēi 'flies'	uḍḍayātē 'flies up'
d ^h war 'loan'	uddhāra- 'protection, loan'	uddhāra 'act of raising, deliverance, loan (esp. without interest)'
pipaḷ 'banyan tree'	pippala- 'Ficus religiosa'	pippala 'Ficus religiosa'
pipḷi 'chilli pepper'	pippalī- 'Piper longum'	pippalī 'peppercorn, Piper longum'
sina 'wet'	siṇṇa- 'sweating'	svinna 'sweating'
bel 'vine'	vellī- 'creeper'	vēlli 'creeping plant'
k ^h ḷi 'leather'	khallā- 'leather'	khalla 'leather, leathern garment'
p ^h ul 'flower'	phulla- 'blossoming'	phulla 'expanded, blown (of flowers)'
sid ^h a 'simple, straight'	siddha- 'succeeded, perfected'	siddha 'succeeded, perfected'

Furthermore, Turner's dictionary lists a substantial number of unrecorded Indo-Aryan protoforms featuring geminates. The prevalence of these protoforms is noteworthy, given the relative rarity of geminates in the OIA period as a whole. However, this abundance can be attributed to the challenges of reliably reconstructing consonant combinations to the OIA level. A more accurate interpretation would be to consider these protoforms as representative of the MIA stage, where geminates were more common.

The geminates in these protoforms may have arisen through two possible mechanisms: (1) the simplification of OIA clusters, or (2) irregular doubling of OIA intervocalic consonants, as exemplified by *ekka 'one' (< ēka 'one') and *trikka 'triple, fork, thighs' (< trika 'triple'). However, it is possible that some of these geminates may have originated in the OIA period. All of them were likely reduced in the NIA period:

Kullui	MIA reconstruction level
b ^h ok 'large hole'	*bhōkka 'hollow'
banka 'beautiful'	vāma 'lovely' + MIA suffix -akka-
buka 'puffball mushroom'	*bukka 'powder'
dz ^h əkəɽ 'bush'	*jhakk- 'clump, cluster'
dz ^h ukṇa 'bend'	*jhukkati 'stoops, breaks'
dzikṇa 'mash'	*jhikk 'bend, jerk'
ḍaku 'robber'	*ḍākka 'robber, robbery'
ḍakar 'belch'	*ḍakkāra 'belch'
ḍ ^h əkṇa 'grab'	*ḍhakk- 'take'
ḍ ^h ek 'upper (inner) border of a terraced field'	*ḍhēkka- 'lump, heap'
k ^h ok ^h a 'shed, canopy'	*khōkkha 'hollow'

<i>muka</i> ‘fist, punch’	<i>*mukka</i> ‘punch’
<i>ɸjakəɾ</i> ‘drunkard’	<i>ɸi-</i> ‘to drink’ + <i>*ākkada</i> ‘cramped, stiff’
<i>ɸʰikri</i> ‘potsherd’	<i>*ɸhikkara</i> ‘potsherd’
<i>ɸik</i> ‘tika on the forehead’	<i>*ɸikka</i> ‘mark, point’
<i>ɸokŋa</i> ‘to plane wood’	<i>*ɸōkk</i> ‘strike, bite’
<i>ɸokɾa</i> ‘shoulder basket’	<i>*ɸōkka</i> ‘basket’
<i>ɸjeka</i> ‘waist’	<i>*ɸrikka</i> ‘hips’
<i>ɸuka</i> ‘haystack’	<i>*ɸukka</i> ‘piece’
<i>ukʰəɻ</i> ‘stone mortar for rice’	<i>*udukkhala-</i> ‘wooden mortar’
<i>nəkoɾa</i> ‘nostril’	<i>*nakkapōḍa</i> ‘nostril’
<i>mɔgra</i> ‘waterfall, spring, stream’	<i>*maggara</i> ‘back of the head, nape of the neck’ (cf. Hindi <i>magrī</i> ‘ridge (of a <i>chappar</i> or thatch); ridge-pole; (dialec.) line or row (of plants in a bed); coping (of a wall); elevated line of a watercourse (in garden-beds)’)
<i>dʰaga</i> ‘thread’	<i>*dhāgga</i> ‘thread’
<i>bətsʰaŋ</i> ‘bed’	<i>*vicchādana</i> ‘covering over’
<i>litsa</i> ‘speck in the eye’	<i>*licca</i> ‘defective’
<i>otsʰa</i> ‘small’	<i>*ōccha</i> ‘small, thin’
<i>tsatsa</i> ‘father’s younger brother’	<i>*cācca</i> ‘uncle’
<i>badzra</i> ‘millet, pearl millet’	<i>*bājara</i> ‘millet’
<i>bʰedzŋa</i> ‘to send’	<i>*bhēj</i> ‘to send’
<i>bʰudz</i> ‘wheat straw’	<i>*bhrjita</i> ‘roasted, dried’
<i>dzwaɾ</i> ‘grazing of seedlings by cattle’	<i>*ujjāta-</i> ‘uprooted’
<i>ɸədzjari</i> ‘priest, pujari’	<i>*pūjākāra-</i> ‘performing worship’
<i>udzəɾna</i> ‘to collapse’	<i>*ujjaṭati</i> ‘is uprooted’
<i>bəɸri</i> ‘woman’	<i>*bēṭṭa-</i> ‘defective’
<i>bʰeɻ</i> ‘upper (inner) border of a terraced field’	<i>*bhēṭṭa-</i> ‘mound’
<i>buṭa</i> ‘tree’	<i>*būṭṭa</i> ‘bush, plant’
<i>dʰoti</i> ‘dhoti (men’s clothing)’	<i>*dhōtta</i> ‘cloth’
<i>dzʰuɸʰ</i> ‘lie’	<i>*jhūṭṭha</i> ‘false’
<i>dʒʰəɸiŋa</i> ‘fight, quarrel’	<i>*jhaṭṭ</i> ‘sudden movement’
<i>gʰuɸŋa</i> ‘knee’	<i>ghuṭṭa</i> ‘ankle’
<i>giɸku</i> ‘dwarf’	<i>*giṭṭa-</i> ‘piece’
<i>kuta</i> ‘dog’	<i>*kutta</i> ‘dog’
<i>kuɸu</i> ‘biscuit’	<i>*kuṭṭa</i> ‘broken’
<i>lot</i> ‘leg, kick’	<i>*lattā</i> ‘foot, kick’
<i>loṭa</i> ‘water jug’	<i>*lōṭṭa</i> ‘water jug’
<i>luɸŋa</i> ‘to loot’	<i>*luṭṭati</i> ‘loots’
<i>mətaɻa</i> ‘drunk’	<i>*mattapāla</i> ‘drunkard’
<i>peɸ</i> ‘belly’	<i>*pēṭṭa</i> ‘belly’
<i>roɸi</i> ‘roti’	<i>*rōṭṭa</i> ‘bread’
<i>foɸʰa</i> ‘stick’	<i>*śōṭṭha</i> ‘stick’
<i>ɸʰuɸʰi</i> ‘smoking pipe’	<i>*thuttha-</i> ‘beak, trunk, snout’
<i>tsʰati</i> ‘chest’	<i>*chātti</i> ‘chest’
<i>tsoɸi</i> ‘mountain peak’	<i>*cōṭṭa</i> ‘topknot on head, cockscomb’
<i>tsutəɾ</i> ‘butt’	<i>*cutta</i> ‘anus, vulva’

<i>ut^hra</i> ‘high’	<i>*utthaḍa</i> ‘high’
<i>dada</i> ‘paternal grandfather’	<i>*dādda</i> ‘father or other older relative’
<i>gidəṛ</i> ‘fox’	<i>*gidda</i> ‘jackal, fox’
<i>k^hḍna</i> ‘to pull out’	<i>*kaḍḍhati</i> ‘pulls, draws’
<i>pḍd^hra</i> ‘smooth (of slope)’	<i>*paddhara</i> ‘straight, level’
<i>l^hoḍi</i> ‘chin’	<i>*ṭhōḍḍa</i> ‘beak, trunk, snout’
<i>bapu</i> ‘father’	<i>*bāppa</i> ‘father’
<i>d^hupa</i> ‘sunlight’	<i>*dhuppā</i> ‘sunlight’
<i>q^hipi</i> ‘small bridge’	<i>*ḍhippa-</i> ‘heap’
<i>spari</i> ‘betel palm’	<i>*suppāra</i> ‘betel palm nut’
<i>ṭapu</i> ‘island’	<i>*ṭāppuka</i> ‘island’
<i>t^hipi</i> ‘pat-a-cake game’	<i>*thipp-</i> ‘slap’
<i>ṭipla</i> ‘tear’	<i>*ṭipp-</i> ‘drop, drip’
<i>ṭopi</i> ‘hat’	<i>*ṭōppa</i> ‘hat’
<i>tsopəṛ</i> ‘butter’	<i>*cōppa-</i> ‘oily’
<i>b^hḍṇa</i> ‘to smash, break’	<i>*bhanna</i> ‘broken’
<i>nana</i> ‘maternal grandfather’	<i>*nānna</i> ‘term of respect for an older relative’
<i>d^hamkaṇa</i> ‘to threaten’	<i>*dhammakka</i> ‘threat’
<i>g^humṇa</i> ‘to walk’	<i>*ghummati</i> ‘revolves’
<i>hiṣṇa</i> ‘to wane’	<i>*hiṣṣ-</i> ‘be extinguished, be baffled’
<i>bolṇa</i> ‘to speak’	<i>*bōll</i> ‘to speak’
<i>hiləṇ</i> ‘earthquake’	<i>*hillati</i> ‘moves, shakes’
<i>k^hel</i> ‘game’	<i>*khēll-</i> ‘to play’
<i>k^hilṇa</i> ‘to open, to blossom’	<i>*khill</i> ‘to be open’
<i>k^holṇa</i> ‘to open’	<i>*khōll</i> ‘to open’
<i>k^hulṇa</i> ‘to be open’	<i>*khull-</i> ‘to be open’
<i>kila</i> ‘callus’	<i>*killa</i> ‘clot, swelling’
<i>til</i> ‘sesame’	<i>*tilla</i> ‘sesame’
<i>ts^helu</i> ‘kid’	<i>*chagalla</i> ‘goat’
<i>ts^hilṇa</i> ‘flat cake’	<i>*chilla</i> ‘skin, peel’
<i>tsil</i> ‘Pinus roxburghii’	<i>*cillā</i> ‘cypress, pine’
<i>ulṇa</i> ‘upside down’	<i>*ullatṭatē</i> ‘overturns’

9. The loss of final vowels

The second most significant innovation shared among NIA languages, including Himachali, is the loss of final vowels. Although this phenomenon affected a substantial portion of the vocabulary, its impact is largely obscured by subsequent morphological transformations.

In the MIA period, the suffix *-aka/-ikā*, which originated as a diminutive marker in OIA, became increasingly widespread and acquired a pleonastic function⁵. This suffix was appended to both nominal and verbal nominal forms, serving to unify declension types. The

⁵ C. P. Masica employs the term "pleonastic" to describe morphemes that lack additional semantic content, citing the example of suffixes that became pervasive in the MIA period (Masica 1991: 185). He also utilizes the term "extension" to characterize this phenomenon.

intervocalic consonant *-k-* was subsequently lost, resulting in the forms *-aa/-iā*. In the NIA period, following the loss of final vowels, the remaining elements *-a/-i* emerged as the primary gender markers for nominal parts of speech.

In this capacity, these markers spread to the majority of nouns and adjectives, becoming integral components of new declension paradigms. The list below does not rely on protoforms from Turner's dictionary, since Turner often disregards the presence or absence of gender markers when compiling cognates. While it is not essential to reconstruct such markers for each individual word to the OIA level, I will provide several examples where the protoform with a pleonastic suffix is indeed attested:

Kullui	OIA
<i>aṇḍa</i> 'egg'	<i>āṇḍaka</i> 'egg'
<i>baṅā</i> 'left'	<i>vāmaka-</i> 'left'
<i>bṛts^hi</i> 'she-calf'	<i>vatsikā</i> 'heifer'
<i>braḷi</i> 'cat'	<i>biḍālikā</i> 'kitten'
<i>gatfi</i> 'women's belt'	<i>gātrikā</i> 'belt'

In addition to the aforementioned markers, Kullui also employs the formant *-u*, which is derived from the OIA suffix *-uka*⁶, as a masculine gender marker. Although this phenomenon is less frequent and cannot be directly traced back to the level of recorded OIA protoforms, it exhibits considerable productivity in the modern language, as exemplified by forms such as *bṛts^hu* 'calf' and *braḷu* 'kitten'. In perfective forms such as *keru* 'made', the ending *-u* appears to have evolved from the old ending *-as*, a development that parallels similar changes observed in Sindhi, Konkani, Maithili, and Braj (Masica 1991: 222).

The endings of plural and oblique forms in Kullui are derived from ancient declensional endings but have undergone significant reorganization. This has resulted in a notable characteristic of Kullui morphology: despite the loss of final vowels, most nouns and adjectives, as well as verb forms, terminate in vowels. Specifically, inflected adjectives exhibit a consistent pattern of termination in *-a* in their citation form (masculine singular), *-i* in feminine forms, and *-e* in masculine plural. The most numerous declension type of masculine nouns in Kullui typically exhibits a terminal *-a* in the citation form (direct singular) and terminal *-e* in plural and indirect forms, whereas feminine nouns are characterized by a terminal *-i*. A less numerous but also typical group of masculine nouns consists of indeclinable words with final *-u*. Conversely, a subset of nouns and adjectives that have not undergone extension through the addition of pleonastic suffixes display consonantal termination in their citation form:

Kullui	OIA
<i>ṣup</i> 'sifting scoop'	<i>śūrpa</i> 'basket for winnowing grain'
<i>dṛnd</i> 'tooth'	<i>danta</i> 'tooth'
<i>b^hit</i> 'wall'	<i>bhitti</i> 'partition, wall'
<i>bel</i> 'vine'	<i>vēlli</i> 'creeper'
<i>bāh</i> 'arm'	<i>bāhu</i> 'arm'
<i>un</i> 'sheep wool'	<i>ūrṇā</i> 'wool'
<i>ṣṇh</i> 'evening'	<i>saṃdhā</i> 'junction, twilight'
<i>gṛb^hṇi</i> 'pregnant (of cattle)'	<i>garbhiṇī</i> 'pregnant'
<i>ḍajṇ</i> 'insult to a woman or a cat'	<i>ḍākinī</i> 'female attendant on Kālī'

⁶ In the OIA period, the suffix *-uka* exhibited an agentive function (Wackernagel & Debrunner 1954: 480–483), whereas in its modern manifestation, the suffix *-u* typically conveys a diminutive sense.

Furthermore, a limited subset of nouns exhibits a distinct morphological pattern. Despite lacking pleonastic extension, these nouns terminated in a VTV-type combination (where T represents a non-retroflex plosive) during the OIA period. In contrast, their MIA counterparts featured a vocalic combination. Following the loss of the final vowel, these nouns also came to end in a vocalic sound. Illustrative examples include:

Kullui	OIA
<i>a u</i> ‘potato’	<i>āluka</i> ‘esculent root of <i>Amorphophallus campanulatus</i> ’
<i>dzū</i> ‘louse’	<i>yūkā</i> ‘louse’

10. Coalescence of Adjacent Vowels

A significant phonological process that occurred at a transitional phase between MIA and NIA periods is vocalic merger (Masica 1991: 189). The weakening and subsequent loss of intervocalic stops during MIA led to numerous hiatuses as well as combinations involving glides. These complex vocalic configurations underwent simplification at later stages; however, their outcomes exhibit considerable irregularity, precluding the formulation of any unequivocal rules due to insufficient examples.

Notably, instances abound where vocal merger appears not to have occurred; instead, we observe the usual results of vowel reduction in unaccented positions (this will be discussed below). Nonetheless, select lexemes display aberrant reflexes; in some cases, it is possible to suggest preservation of intervocalic vowels in the form of glides (*y*, *w*) within MIA, followed by further contractions of *-aya-* > *e*, *-awa-* > *o*.

Kullui	OIA
<i>ts^helu</i> ‘kid’	* <i>chagalla</i> ‘goat’
<i>ke a</i> ‘banana’	<i>kadala</i> ‘banana palm’
<i>t^he u</i> ‘palm of hand’	<i>hastatala</i> ‘palm of hand’
<i>per</i> ‘foot’	* <i>padara</i> ‘foot’
<i>refu</i> ‘yarn ball’	<i>araghaṭṭa</i> ‘water wheel’
<i>fer</i> ‘neck sprain’	<i>ṭagara</i> ‘squinty’ (possibly also from <i>ṭēraka</i> ‘squinty’)
<i>obra</i> ‘dark inner room’	<i>apavaraka</i> ‘inner room’

In certain instances, combinations featuring glides did not undergo complete coalescence, instead being preserved with subsequent anticipated reduction of unaccented vowels. This phenomenon is often observed in conjunction with accented long *ā*, although it is not exclusive to this context.

The following examples illustrate this point:

Kullui	OIA
<i>tōwa</i> ‘frying pan’	* <i>tapaka</i> ‘frying pan’
<i>hət^hjar</i> ‘weapon’	* <i>hastakāra</i> ‘tool, weapon’
<i>sənjara</i> ‘jeweler’	<i>suvarṇakāra</i> ‘jeweler’
<i>sjaṇa</i> ‘old, elderly’	* <i>sajāna</i> ‘smart’
<i>pədzjari</i> ‘pujari, priest’	* <i>pūjākāra</i> ‘priest’

Furthermore, merging of the combination *au* into *o* or *ɔ* is also attested:

Kullui	OIA	Note
<i>lɔr</i> 'ram'	<i>lakuṭa</i> 'lakuṭa'	Note the intermediate meaning 'penis' recorded in Sindhi <i>lauṛo</i> , Kumaoni <i>lauṛo</i> , and Hindi <i>lauṛā</i>)
<i>tsɔp^hla</i> 'four-layered'	<i>catuṣpuṭa</i> 'four-layered'	Irregular transition $\zeta > l$
<i>ɔtra</i> 'childless'	<i>aputra</i> 'childless'	Borrowing from Punjabi <i>autara</i> 'childless person' is suggested by the preservation of <i>tr</i>
<i>mlori</i> 'sorrel'	<i>amla</i> 'sour' + <i>kurī</i> 'type of grass' = * <i>amlakurī</i>	Alternative etymology: <i>amlalolikā</i> 'sorrel' with dissimilation $l > r$
<i>gloṭa</i> 'cheek'	* <i>gallapuṭa</i> 'cheek fold'	Preservation of voiceless ζ possibly due to irregular gemination

Additionally, there are instances of vowel merging at the beginning of words:

Kullui	OIA
<i>arfu</i> 'mirror' (instead of expected ** <i>ɔrfu</i> in normal reduction)	<i>ādarśa</i> 'mirror'
<i>uk^hə]</i> 'stone mortar for rice' (instead of expected ** <i>uwk^hə]</i> in normal reduction)	* <i>udukkhala</i> - 'wooden mortar'

11. Early NIA accent shifts

The changes discussed above had a profound impact on the syllabic structure, which inevitably affected the accent. This section will examine cases where the accent position in Kullui diverges from what would be expected based on MIA patterns.

11.1 Accent shift as a result of geminate reduction

The reduction of geminates, which in Kullui was not accompanied by compensatory lengthening, led to a shift in syllable weight, causing many short-vowel syllables to become unaccented (*bóhut* 'many', *kóṛts^{hi}* 'ladle' etc., as noted above). However, it is evident that the accent shift did not date back to the beginning of the NIA period in all instances. The transitions $tr > tf$ and $dr > dʒ$, which occurred after the influx of Arabic-Persian borrowings into the region, suggest that accent shifts in words like *hɔwdʒ* 'turmeric' and *gojntf* 'cow urine' took place no earlier than this time.

11.2 Accent shift as a result of final vowel drop

In addition, the loss of final vowels also had an impact on accent placement. As mentioned earlier, most nouns and adjectives were subjected to extension through suffixes like *-aka*, *-ikā*, *-uka*,⁷ which, after the MIA loss of intervocalic consonants, transformed into *-aa*, *-iā*, *-ua*, and, after the loss of final vowels, into *-a*, *-i*, *-u*. The penultimate syllables of these extended forms were thus light, and such extensions did not significantly affect the accent placement, nor did their later reduction. Therefore, the omission of these extensions in Turner's dictionary when indicating protoforms is an acceptable simplification.

Among words without extensions, which ended up with consonantal codas after the loss of final vowels, the position of the accent remained unchanged. However, the rule for accent placement itself changed: whereas the accent originally fell on the first heavy syllable (starting from the penultimate when scanning from the end of the word to the beginning), in words

⁷ For the OIA period the use of these suffixes is analyzed in details in Edgerton 1911.

with consonantal codas the accent could now shift to the final syllable if it contained a long vowel or ended in a consonantal cluster:

Kullui	OIA
<i>kādál</i> ‘spade’	<i>kuddāla</i> ‘kind of spade or hoe’
<i>ḍākár</i> ‘belch’	* <i>ḍakkāra</i> ‘belch’
<i>ʃlɔŋg</i> ‘scorpion’	* <i>śalánka</i> ‘grasshopper’
<i>kring</i> ‘cry’	** <i>ku-</i> ‘pejorative prefix’ + * <i>riñk</i> ‘cry’
<i>ts^hring</i> ‘spark’	<i>sphulínga</i> ‘spark’ (with early metathesis <i>sph</i> > <i>psh</i>)

However, some words, as a result of the loss of final vowels, did experience a shift in accent placement. This applies to words consisting of three or more syllables, which, in the OIA period, ended in a sequence like -*VTV* (where *T* is a non-retroflex plosive) and later changed to -*VV*. In such words, the accent originally fell on the penultimate syllable according to the MIA rule. However, after loss of the final vowel, the long vowels in these words shifted to a phonologically neutral position (since, from the late MIA period, the length opposition no longer applied to final vowels), and the accent was transferred. This change can be characterized as analogical leveling — the new accentual structure of such words became similar to that of most words ending in a vowel (i.e., those that underwent pleonastic extension).

One should keep in mind that the OIA forms here are given with reconstructed MIA accentuation, not the attested Vedic one, as in Turner’s dictionary:

Kullui	OIA (with reconstructed MIA accent)
<i>góru</i> ‘cattle’	<i>gōrūpa</i> ‘having the appearance of a cow’
<i>páni</i> ‘water’	<i>pānīya</i> ‘water’
<i>úlu</i> ‘owl’	<i>ulūka</i> ‘owl’
<i>pórfu</i> ‘sweat’	<i>praśūta</i> (verbal adjective in - <i>ta</i> from <i>praśūyatē</i> ‘to perspire’)
<i>ǰáṛ^ha</i> ‘apricot’ (with masculine gender marker from ** <i>ǰáṛ^hi</i>)	<i>āṣāḍhīya</i> ‘related to the month of Āṣāḍh’

Some of these cases deviate from the historical phonetics of Kullui, but I will provide all the examples here, as I believe this shift in accent placement was not limited to the Kullui language. Most of these words are numerals, which, in general, deviate significantly from the regular historical phonetic system, and in this case, *ǰfi* ‘80’ was likely borrowed from one of the idioms of Himachal, while the others were borrowed from Mandeali:

Kullui	OIA (with reconstructed MIA accent)	Deviations from Kullui historical phonetics
<i>kúlu</i> ‘Kullu valley’	<i>kulūta-</i> ‘name of a people’	- <i>l</i> ->- <i>l</i> - in intervocalic position (instead of - <i>l</i> ->-[-])
<i>gáb^hru</i> ‘child’	<i>garbharūpa</i> ‘youth’	Compensatory lengthening of <i>a</i> in the first syllable
<i>árje</i> ‘lie’	<i>alika</i> ‘false’	Irregular changes: <i>l</i> > <i>r</i> , lengthening of <i>a</i> (possibly by the Two-Mora Rule), likely extension with plural masculine - <i>e</i>
<i>ǰfi</i> ‘80’	<i>aśśīti</i> ‘80’	Compensatory lengthening of <i>a</i> in the first syllable
<i>uṇási</i> ‘79’	<i>ūnāśīti</i> ‘79’	<i>ś</i> > <i>s</i> (Mandeali: <i>uṇa:ssi</i> , <i>ka:ssi</i> , <i>stassi</i> , <i>ṭhassi</i>) instead of <i>ś</i> > <i>f</i>
<i>kasi</i> ‘81’	<i>ekāśīti</i> ‘81’	
<i>stási</i> ‘87’	<i>saptāśīti</i> ‘87’	
<i>ṭ^hási</i> ‘88’	<i>aṣṭāśīti</i> ‘88’	
<i>bási</i> ‘82’	<i>dvyāśīti</i> ‘82’	<i>ś</i> > <i>s</i> , compensatory lengthening of <i>a</i> in the first syllable, old affricates rendered as palatals (Mandeali: <i>ba:ssi</i> , <i>tryassi</i>)
<i>trási/trjási</i> ‘83’	<i>tryāśīti</i> ‘83’	
<i>ṭfurási</i> ‘84’	<i>caturaśīti</i> ‘84’	<i>ś</i> > <i>s</i> , compensatory lengthening of <i>a</i> in the first syllable,

Kullui	OIA (with reconstructed MIA accent)	Deviations from Kullui historical phonetics
<i>pəɖʒási</i> ‘85’	<i>pañcāśīti</i> ‘85’	old affricates rendered as palatals (Mandali: <i>crwassi</i> , <i>panjyassi</i> , <i>chyassi</i>)
<i>tʃʰási</i> ‘86’	<i>śaḍaśīti</i> ‘86’	
<i>īki</i> ‘21’	<i>ēkaviśāti</i> ‘twenty-one’ (the final syllable drop was already attested in Prakrits as <i>ēgavīsā</i> , so the loss here was a secondary one in the NIA period)	Loss of final syllable in the MIA period, loss of <i>ś</i> (Mandali: <i>ikki</i>). However, loss of the initial vowel is attested in Himachali, meaning the accent did not always shift to it.
<i>ūni</i> ‘19’	<i>ūnaviśāti</i> ‘19’	Reflection of intervocalic <i>-n-</i> as <i>n</i> (instead of <i>ŋ</i>), loss of <i>ś</i> (Mandali: <i>unni</i>). This likely also involved the loss of the final syllable in the MIA period. However, loss of the initial vowel is attested in Dardic and Himachali.

The shift in accent placement in these cases was caused by the movement of the accented vowel into the final position. In other cases, no such shift occurred with long vowels, as illustrated by a number of examples. Not all examples in this list are easily explainable in terms of Kullui historical phonetics, but the distribution is evident. In cases where the etymology is not trivially related to Turner’s dictionary, I have provided the necessary clarifications:

Kullui	OIA (with MIA accent)
<i>kəpúr</i> ‘camphor’	<i>karpūra</i> ‘camphor’
<i>fɪr</i> ‘body’	<i>śarīra</i> ‘body’
<i>dzʰəkʰira</i> ‘thicket’	* <i>jhakkūraka</i> (from * <i>jhāṅkh-</i> / * <i>jhakk-</i> ‘bunch, bush’ with OIA suffixes <i>-īra-</i> and <i>-ka-</i> , cf. <i>kāṇḍīra</i> ‘armed with arrows’ from <i>kāṇḍa</i> ‘arrow’)
<i>gḍīlŋ</i> ‘bearded vulture’	* <i>gaḍḍacillīṇī</i> (from * <i>gaḍḍa</i> ‘sheep’ + * <i>cilla</i> ‘kind of vulture’ + feminine suffix), with compensatory lengthening of <i>i</i> showing borrowing from a different Himachali dialect
<i>dznéu</i> ‘sacred thread’ (probably a metathesis of adjacent vowels from * <i>janoi</i> , attested in languages like Sindhi and Gujarati, with changes <i>i > e</i> , <i>o > u</i>)	<i>yajñōpavīta</i> ‘sacred thread’
<i>bʰəŋói</i> ‘husband of the younger sister’ (the vowel changes are not entirely clear, but variations occur in different languages)	<i>bhaginīpati</i> ‘sister’s husband’
<i>bʰətīdza</i> ‘nephew (son of brother)’ (probably borrowed from a language where the <i>r</i> in <i>bhr</i> and <i>tr</i> was lost, such as Hindi)	<i>bhrātrīya</i> ‘nephew (brother’s son)’ (in Prakrits, <i>bhattijja-</i> is attested with a <i>y > jj</i> change)

In summary, the accent shift in words without extensions, which ended in consonants after the loss of final vowels, reveals a significant change in the accentual system. While the accent originally fell on the first heavy syllable, the phonological changes that took place—such as the loss of final vowels—led to a shift in the rules governing accent placement. The accent could now also fall on the final syllable, provided that it either contained a long vowel or ended in a consonantal cluster. These shifts, which are exemplified by a variety of words in the Kullui and Himachali languages, illustrate the complexity of accentuation changes in the transition from MIA to NIA periods.

11.3 Possible shifts in accent due to vowel mergers

A third potential factor influencing the placement of the accent in NIA languages may be found in certain cases of vowel mergers and glide combinations. However, the examples identified do not allow us to definitively conclude that accent shifts occurred, since in cases of vowel merger, one of the involved vowels was accented according to MIA accent rules. This

becomes evident when applying a refined reconstruction, as compared to Turner’s dictionary, which incorporates pleonastic extensions (for words ending in vowels) and the hypothetical MIA accentuation. For words with extensions (-*aka*, -*ika*, -*uka*) that end in -*a*, -*i*, or -*u*, I reconstruct forms that were not inherited from the protoform according to Turner. In cases where a word consists of four or more light syllables, the addition of an extension should, in accordance with Jacobi’s accent placement rule (“no further than the fourth syllable from the end”), shift the accent one syllable closer to the end of the word.

Kullui	Protoform according to Turner (with MIA Accent)	Refined protoform
<i>ts^hélu</i> ‘kid’	* <i>chagálla</i> ‘goat’	* <i>chagálluka</i>
<i>kéla</i> ‘banana’	<i>kádala</i> ‘banana palm’	* <i>kádalaka</i>
<i>t^hélu</i> ‘palm’	<i>hástatala</i> ‘palm’	* <i>hástataluka</i>
<i>per</i> ‘foot’	* <i>pádara</i> ‘foot’	* <i>pádara</i>
<i>réfu</i> ‘ball’	<i>araghátta</i> ‘water wheel’	* <i>araghátta</i>
<i>ter</i> ‘strain of neck ligaments’	<i>tagara</i> ‘cross-eyed’	* <i>tagara</i>
<i>óbra</i> ‘dark inner room’	<i>apávaraka</i> ‘inner room’	<i>apávaraka</i>
<i>lor</i> ‘ram’	<i>lakuṭa</i> ‘club’	<i>lakuṭa</i>
<i>tsóp^hla</i> ‘four-layered’	<i>catúṣpuṭa</i> ‘four-layered’	* <i>catúṣpuṭaka</i>
<i>ótra</i> ‘childless’	<i>apútra</i> ‘childless’	* <i>apútraka</i>
<i>mlóri</i> ‘sorrel’	<i>amlá</i> ‘sour’ + <i>kurī</i> ‘type of grass’ = <i>ámlakurī</i>	* <i>amlákurika</i> (Possibly <i>amlalólikā</i> ‘sorrel’ due to dissimilation l > r)
<i>glóta</i> ‘cheek’	* <i>gállapuṭa</i> ‘fold of the cheek’	* <i>gállapuṭaka</i>
<i>árfu</i> ‘mirror’	<i>ādárśa</i> ‘mirror’	* <i>ādárśuka</i>
<i>úk^hal</i> ‘stone mortar for rice’	* <i>udúkkhala</i> ‘wooden mortar’	* <i>udúkkhala</i>

As seen from this list, in cases where accent shifts have occurred (e.g., *t^hélu*, *mlóri*, *glóta*), they can be explained not by newly created long vowels, but by pleonastic extensions, since the accent would have followed the MIA rule of being no further than the fourth syllable from the end. However, there is also vocabulary where, despite the addition of an extension, the accent placement does not conform to the “no further than the fourth syllable from the end” rule:

Kullui	Protoform According to Turner (with MIA Accent)	Refined Protoform
<i>ólha</i> ‘unsalted’	<i>álavaṇa</i> ‘unsalted’	<i>álavaṇaka</i>
<i>déwlu</i> ‘temple office’	<i>dévakula</i> ‘temple’ (literally, ‘house of god’; however, in this case, the semantic development seems related to other meanings of <i>kula</i> ‘family, house’)	<i>dévakuluka</i>
<i>páśar</i> ‘side’	<i>pāśvaputa</i> ‘fold of the ribs’	<i>pāśvaputa</i>

Based on this limited material, two hypotheses can be proposed:

- 1) in the ancestor language of Kullui during the MIA period, there was no restriction of placing the accent “no further than the fourth syllable from the end,” or
- 2) the formation of new long vowels *e* and *o* at the beginning of the NIA period could have led to a shift in accent towards these vowels.

12. Compensatory lengthening and its absence in Kullui

An important archaic feature of Kullui phonetics for this period is the absence of compensatory lengthening, which distinguishes Kullui from other Himachali idioms and aligns it more

closely with idioms like Punjabi and Lahnda. This is most evident in the fact that, despite subsequent gemination, in the accented position OIA *a* is reflected as *ɔ*, and *ā* as *a*:

Kullui	Pali or Prakrit	OIA
<i>sət</i> ‘seven’	<i>sátta</i> ‘seven’	<i>sapta</i> ‘seven’
<i>sətu</i> ‘barley flour’	<i>sáttu-</i> ‘barley flour’	<i>saktu</i> ‘coarse flour’
<i>b^hət</i> ‘boiled rice’	<i>bháttā-</i> ‘food’	<i>bhakta</i> ‘food’
<i>b^həti</i> ‘kind of religious ritual’	<i>bhátti-</i> ‘service, worship’	<i>bhakti</i> ‘worship’
<i>təta</i> ‘hot’	<i>tátta-</i> ‘hot’	<i>tapta</i> ‘hot’
<i>rɔdzŋa</i> ‘to be full’	<i>rájjai</i> ‘attached to something, loves something’	<i>rajyatē</i> ‘enjoys’ ⁸
<i>nɔŋa</i> ‘to go, to leave’	<i>ŋássai</i> ‘dies, perishes’	<i>naśyati</i> ‘dies, perishes’
<i>təkli</i> ‘spindle’	<i>tákkū-</i> ‘spindle’	<i>tarku</i> ‘spindle’
<i>g^hɔg^hra</i> ‘skirt’	<i>ghágghara-</i> ‘belt with bells’	<i>ghargharī</i> ‘women’s belt with bells’
<i>dzɔdzra</i> ‘unripe’	<i>jájjara-</i> ‘worn out, faded’	<i>jarjara</i> ‘spoiled, broken’
<i>kətŋa</i> ‘to spin’	<i>káttaī</i> ‘spins’	<i>kartati</i> ‘spins’
<i>bət</i> ‘path’	<i>vátta-</i> ‘path’	<i>vartman</i> ‘wheel track, path’
<i>ɔd^ha</i> ‘half’	<i>áddha-</i> ‘half’	<i>ardha</i> ‘half’
<i>gɔb^hu</i> ‘lamb’	<i>gábbha-</i> ‘womb, embryo’	<i>garbha</i> ‘womb, embryo, offspring’
<i>tsɔmɽi</i> ‘skin’	<i>cámma-</i> ‘skin’	<i>carman</i> ‘skin’
<i>kəm</i> ‘work’	<i>kámma</i> ‘work, deed’	<i>karman</i> ‘work, deed’
<i>lət</i> ‘leg, kick’	<i>látta-</i> ‘heel strike’	<i>lattā</i> ‘foot, kick’
<i>k^hɔdŋa</i> ‘to pull out’	<i>káḍḍhai</i> ‘pulls, draws a line, ploughs’	<i>kaḍḍhati</i> ‘pulls’
<i>hət^h</i> ‘hand’	<i>háttha-</i> ‘hand’	<i>hasta</i> ‘hand’
<i>mət^ha</i> ‘forehead’	<i>máttha-</i> ‘skull, head’	<i>masta</i> ‘head’
<i>ɔg</i> ‘fire’	<i>ággi-</i> ‘fire’	<i>agni</i> ‘fire’
<i>mɔts^hi</i> ‘fish’	<i>máccha-</i> ‘fish’	<i>matsya</i> ‘fish’
<i>pɔʃi</i> ‘children’s writing board’	<i>paṭṭa-</i> ‘small board, tablet’	<i>paṭṭa</i> ‘board, tablet’
<i>k^hɔʃi</i> ‘skin’	<i>khállā-</i> ‘skin’	<i>khalla</i> ‘skin, leather clothing’

In addition, indirect evidence for the absence of compensatory lengthening can be found in the placement of the accent and the reduction of unaccented vowels in certain Kullui words. Had compensatory lengthening occurred in the vowels when the geminates were shortened, those vowels would have remained accented. However, modern data show a shift in the accent:

Kullui	OIA (with MIA Accent)
<i>bóhut</i> ‘much’ (instead of * <i>b^hut</i>)	<i>bahúva</i> ‘abundance’
<i>kóʃts^hi</i> ‘ladle’ (instead of * <i>kʃáts^hi</i>)	<i>kaṭácchu, kaḍácchaka</i> ‘ladle’
<i>tsówt^ha</i> ‘fourth’ (instead of * <i>tsút^ha</i>)	<i>catúrtha</i> ‘fourth’
<i>hówdɔ</i> ‘turmeric’ (instead of * <i>hudɔ/hidɔ</i>)	<i>harídṛā</i> ‘turmeric’
<i>gojntʃ</i> ‘cow urine’ (instead of * <i>gʷōitʃ</i>)	<i>gōmítṛa-</i> ‘cow urine’
<i>bɔʃd</i> ‘ox, bull’ (instead of * <i>bʃad</i>)	<i>balivárda</i> ‘ox, bull’
<i>áʃsi</i> ‘lazy’ (instead of *(ə)ʃsi)	<i>ālasya</i> ‘laziness’
<i>póʃi</i> ‘the day after tomorrow’ (instead of * <i>práʃi</i>)	<i>parásvoas</i> ‘the day after tomorrow’

This archaic feature primarily pertains to the northern and central (main) dialect of Kullui. In the southern and especially the southwestern dialects, which are found in the Mandi region,

⁸ Original meaning is ‘colors; gets excited, enjoys’.

compensatory lengthening is observed. Furthermore, it is important to remember that even in the central dialect of Kullui, many loanwords, especially from Hindi and Mandeali, show compensatory lengthening.

13. Development of OIA *a* > Kullui *ɔ*

A distinguishing feature of the phonetics of most Himachali idioms is the vowel *ɔ*, which corresponds to *a* in other NIA languages. Hendriksen (1986: 192) defines the conditions for this shift as "short accented *a* in an open syllable" (this also applies, among other things, to the Old and Middle IA closed syllables, which became open after the shortening of geminates). However, this formulation is inaccurate for Kullui, where compensatory lengthening did not occur in historically closed syllables. Hendriksen (1986: 195) recognizes this feature of Kullui, which aligns it more closely with Punjabi, as puzzling. Examples where *ɔ* appears before shortened geminates were provided in the previous section, and here are some examples of *ɔ* appearing before preserved consonant clusters, as well as in historically open syllables (in reality, there are about 150 examples of the development *a* > *ɔ* that satisfy the historical phonology of Kullui):

Kullui	OIA
<i>mɔŋd̪na</i> 'to thresh (using an instrument or large cattle)'	<i>mɔndati</i> 'threshes, crushes, grinds' (ɾ usually gives <i>a</i> in MIA)
<i>tʰɔmba</i> 'pillar'	<i>stambha</i> 'pillar'
<i>kɔnh</i> 'shoulder'	<i>skandha</i> 'shoulder'
<i>ʃɔŋg</i> 'centipede'	<i>śalaṅka</i> 'grasshopper'
<i>pʰɔrdz</i> 'the day before yesterday'	<i>parahīyas</i> 'the day before yesterday'
<i>dzɔŋa</i> 'to envy'	<i>jvalati</i> 'burns'
<i>dzɔriŋa</i> 'to be feverish'	<i>jvarati</i> 'suffers, is feverish'

It is difficult to say whether this transition occurred only in accented syllables or also in unaccented ones (similar to what occurred in the eastern Indo-Aryan region, such as in Bengali and Oriya) due to significant reduction of unaccented syllables. However, the nature of the reduction of rounded vowels (*o, u* > *w*) adjacent to other vowels in Kullui suggests that *ɔ* should have undergone similar reduction to *w*, whereas in reality it generally gets fully reduced. A second point that requires clarification in Hendriksen's formulations is the reflection of *a* in loanwords. Hendriksen (1986: 61), describing the Himachali languages Kotgarhi and Kochi, states that *a* in loanwords is reflected either as *ɔ* or as *a*. In the case of Kullui, it can be said that reflection of *a* in Persian and later Sanskrit loanwords is almost universally as *ɛ* (possibly as *e* in individual pronunciation), and the number of loanwords with *ɔ* in place of *a* is extremely small and typically involves a preceding labial consonant. At the same time, the phonemes *ɛ* and *ɔ* occur with similar frequency in Kullui (about 300 lexemes for each).

In the overwhelming majority of cases, *a* in Persian, Arabic, English, and Sanskrit loanwords in the accented position is reflected as *ɛ*, for example:

Kullui	Source of loanword
<i>bɛdɔŋa</i> 'to change'	Arab. <i>badal</i> 'change'
<i>bɛdɔn</i> 'body'	Arab. <i>badan</i> 'body'
<i>dɛrdzi</i> 'tailor'	Pers. <i>darzi</i> 'tailor'
<i>gɛrmi</i> 'summer'	Pers. <i>garmi</i> 'heat, warmth'
<i>bɛʃ</i> 'banyan tree'	Sk. <i>vaṭa</i> 'banyan tree'

<i>d^herm</i> ‘religion’	Sk. <i>dharma</i> ‘religion’
<i>lentf</i> ‘lunch’	Eng. <i>lunch</i> ‘lunch’
<i>bəs</i> ‘bus’	Eng. <i>bus</i> ‘bus’
<i>mendər</i> ‘temple’	Sk. <i>mandira</i> ‘temple’
<i>pteng</i> ‘kite’	Sk. <i>pataṅga</i> ‘flying insect’

There are over a hundred such examples in the dictionary based on our field data. Additionally, *a* is reflected as *ε* in loanwords from Hindi, Mandeali, and Punjabi. It is likely that even in cases where the source is not immediately apparent, words with *ε* may originate from the under-studied Mandeali or other undocumented languages.

At the same time, there are only six clear examples of loanwords reflecting *a* as *ɔ*, and all of them are examples of labialization after labials or before *w*:

Kullui	Source of loanword
<i>bɔkt</i> ‘time’	Pers. <i>vaqt</i> ‘time’
<i>pɔwitr</i> ‘ritually pure’	Sk. <i>pavitra</i> ‘ritually pure’
<i>mɔtʃli</i> ‘fish’ (Kullui <i>mɔts^{hi}</i>)	Hindi <i>macchli</i> ‘fish’
<i>tʃɔwda</i> ‘14’ (with palatalized reflex of common MIA affricate)	Mand. <i>cəwdha</i> ‘14’
<i>tʃɔwbi</i> ‘24’	Mand. <i>cawbi</i> ‘24’
<i>tʃɔwti</i> ‘34’	Mand. <i>cawti</i> ‘34’

In a similar context, a rare development of $\bar{a} > \text{ɔ}$ is also possible (in the last case, even distant assimilation is observed):

Kullui	Source of Loanword
<i>mɔkʃər</i> ‘month of Margashirsha (November-December)’	OIA <i>mārgasīras</i> ‘Margashirsha (November-December)’
<i>mɔŋgɪa</i> ‘to ask’	OIA <i>mārgati</i> ‘searches’
<i>məsɔla</i> ‘torch’	Arab. <i>mash’ala</i> ‘torch’ > Hindi <i>maśāl</i> , <i>masāl</i>

There are few examples of the shift $\bar{a} > \varepsilon$. Such correspondences in Indo-Aryan words can be explained by vowel shortening under the influence of the Two-Mora Rule (and later borrowing from a language where this rule was active), but not all of these examples are of Indo-Aryan origin:

Kullui	Source of loanword
<i>bədze</i> ‘o’clock’	Hindi <i>baje</i> ‘o’clock’ < OIA <i>vādyatē</i> ‘sounds’
<i>bɾeŋɟa</i> ‘veranda’	Hindi <i>barāṅḍā</i> ‘veranda’ < Port. <i>veranda</i> ‘veranda’
<i>dzeŋgəl</i> ‘forest’	Hindi <i>jaŋgal</i> ‘forest’ < OIA <i>jāṅgala</i> ‘deserted, arid’
<i>pənd^he</i> ‘on, above, from above’	OIA <i>upāntē</i> ‘near the end’
<i>p^hɛŋʃɪa</i> ‘to shake, to beat’	OIA <i>phāṅṣ</i> ‘to divide by striking or cutting’
<i>rɛdz</i> ‘enough’	Arab. <i>rāzī</i> ‘content’ (also possible etymology from Punjabi <i>rajjnā</i> ‘to be content’ < OIA <i>rajyatē</i> ‘rejoices’)

Thus, we can conclude that the shift of accented *a* to *ɔ* in Kullui had been completed before the medieval period, when Persian and Arabic loanwords began to spread across the Indo-Aryan area. Moreover, if we assume that the transition affected only the accented syllables, we can infer that it occurred after all the aforementioned accent shifts. This establishes the upper and lower limits of this vowel change in Kullui.

14. Dentalization of affricates

The series of changes described below is notable for the possibility of application of both absolute and relative chronology. Absolute chronology is determined by the presence of these changes in Persian and Arabic loanwords, which entered the Indo-Aryan languages in large numbers between the 11th and 18th centuries during the Islamic conquests and rule. Relative chronology, on the other hand, is tied to the internal organization of the phonological system.

The shift of common MIA palatal affricates (MIA *c*, *ch*, *j*, *jh*) to dental affricates (*ts*, *tsʰ*, *dz*, *dzʰ*) aligns Kullui with most Himachali idioms, with the exception of Mandeali and Jaunsari (Hendriksen 1986: 102), as well as with certain Dardic languages. The analysis of loanwords allows for a relatively precise dating of this transition. Palatal affricates in Arabic and Persian borrowings (transcribed as *ch* and *j* in Steingass 1892) were typically dentalized:

Kullui	Source language
<i>dzagah</i> ‘place’	Pers. <i>jāy-gāh</i> ‘place, location’
<i>dzʰaz</i> ‘ship’	Arab. <i>jahāz</i> ‘camel saddle, ship’
<i>dzisəm</i> ‘body’	Arab. <i>jism</i> ‘body’
<i>tsalak</i> ‘clever’	Pers. <i>chālāk</i> ‘clever’
<i>tserkʰa</i> ‘spinning wheel’	Pers. <i>charkḥa</i> ‘wheel, reel, axis’
<i>tsabək</i> ‘whip’	Pers. <i>chābuk</i> ‘quick, sharp, whip’
<i>beltsa</i> ‘hoe’	Pers. <i>belcha</i> ‘hoe, a small mattock’
<i>tsiz</i> ‘thing’	Pers. <i>chīz</i> ‘thing’
<i>tsadri</i> ‘scarf’	Pers. <i>chādar</i> ‘cover, veil, scarf’
<i>tsar</i> ‘pickles’	Pers. <i>āchār</i> ‘pickles’
<i>tserwi</i> ‘fat’	Pers. <i>charbī</i> ‘fat’
<i>tsakər</i> ‘servant’	Pers. <i>chākar</i> ‘servant’

However, Kullui frequently preserves alternative forms of these loanwords with palatal affricates, such as *tfabuk* ‘whip’ alongside *tsabək*. These forms are likely influenced by Hindi and are usually not phonologically adapted in other respects.

The upper limit of absolute dating for dentalization is established by English borrowings, which entered Indo-Aryan languages during the 19th – 21st centuries. Initially introduced under British colonial rule and later through the role of English as an official language in independent India, these borrowings retained palatal affricates, showing no signs of dentalization:

Kullui	Source
<i>lentf</i> ‘lunch’	<i>lunch</i> ‘lunch’
<i>litfi</i> ‘lychee’	<i>lychee</i> ‘lychee’
<i>martf</i> ‘March’	<i>March</i> ‘March’
<i>tfips</i> ‘tiles’	<i>chips</i> ‘tiles’
<i>tfiz</i> ‘cheese’	<i>cheese</i> ‘cheese’
<i>dʒəpan</i> ‘Japan’	<i>Japan</i> ‘Japan’
<i>dʒəpani</i> ‘persimmon’ (derived from <i>dʒəpan</i> ‘Japan’)	
<i>dʒenwəri</i> ‘January’	<i>January</i> ‘January’
<i>kolədʒ</i> ‘college’	<i>college</i> ‘college’
<i>wilədʒ</i> ‘village’	<i>village</i> ‘village’

The source languages for both groups of loanwords lack aspirated affricates, but it is logical to assume that the dentalization of aspirated affricates occurred concurrently with that of

unaspirated affricates. This process would have resulted in a phonological system entirely devoid of palatal affricates.

15. Formation of a new series of palatal affricates

The shift of old palatal affricates to the dental series marks the lower boundary of the relative chronology of the phonetic changes $tr > tʃ$, $dr > dʒ$, and $kʂ > tʃʰ$.

Kullui	OIA
<i>gatʃi</i> ‘women’s belt’	<i>gātrikā</i> ‘belt’
<i>datʃi</i> ‘sickle’	* <i>dātrī</i> ‘knife, sickle’
<i>tʃuʃŋa</i> ‘to be broken’	<i>truʃyati</i> ‘is broken’
<i>tʰatʃ</i> ‘sheep pasture in the mountains’	<i>sthātra-</i> ‘place’
<i>gontʃ</i> ‘cow urine’	<i>gōmūtra</i> ‘cow urine’
<i>gojntʃ</i> ‘cow urine’	<i>gōmitra-</i> ‘cow urine’
<i>tʃoʃna</i> ‘to break’	<i>trōʃayati</i> ‘breaks’
<i>kʰatʃ</i> ‘pit’	<i>khātra</i> ‘spade, pit, hole’
<i>mutʃŋa</i> ‘to urinate’	<i>mūtrayati</i> ‘urinates’
<i>poʃʃa</i> ‘leaf’	<i>patra</i> ‘leaf’
<i>tʃeka</i> ‘waist’	* <i>trikka</i> ‘hips’
<i>tʃambʃa</i> ‘cauldron’ (instead of * <i>tʃaṃbʃa</i>)	<i>tāmra</i> ‘copper’ (with metathesis of <i>r</i>)
<i>tʃokʃa</i> ‘to sour’ (instead of * <i>tʃokʃa</i>)	<i>takra</i> ‘bitter’ (with metathesis of <i>r</i>)

Kullui	OIA
<i>āḍʒ</i> ‘intestines’	<i>āntra</i> ‘intestines’ (during the MIA period, voicing of voiceless stops occurred after nasals in the northeastern Indo-Aryan region: * <i>āndra</i>)
<i>dʒoʃkaŋa</i> ‘to threaten’	* <i>draʃ</i> ‘to press’
<i>hoʃdʒ</i> ‘turmeric’	<i>haridrā</i> ‘turmeric’
<i>dʒugli</i> ‘cave’	<i>durga</i> ‘fortress, difficult place’ (with metathesis of <i>r</i>)
<i>dʒuba</i> ‘sacred grass durva’	<i>dūrvā</i> ‘sacred grass durva’ (with metathesis of <i>r</i>)

There is also an example of shift in an early (MIA) Sanskritism:

Kullui	OIA
<i>dʒiʃa</i> ‘morning’	<i>dʃśika</i> ‘shining’ (suggesting an early Sanskrit borrowing due to the retention of <i>ʃ</i> as <i>r</i>)

Interestingly, in words where these shifts occurred, a reverse palatalization of preceding dental affricates seems to have taken place:

Kullui	OIA
<i>dʒatʃ</i> ‘festival, fair’ < * <i>dzatr</i>	<i>yātrā</i> ‘journey, pilgrimage’
<i>dʒotʃŋa</i> ‘to yoke’ < * <i>dzotrŋa</i>	<i>yōktrayati</i> ‘binds, ties’
<i>tʃʰoʃ</i> ‘mushroom’ < * <i>tsʰotr</i>	<i>chattra</i> ‘umbrella’

In the central dialect of Kullui, these developments are less consistently observed than in the southeastern dialect, which is closer to Sainji (Sachani village). In the southeastern dialect, *potʃu* ‘son’s grandson’ is recorded instead of *potru* in the central dialect (from OIA *paútra* ‘son’s grandson’). It is possible that forms like *potru* and *dʰotru* ‘daughter’s grandson’ (from *daúhitra*) are due to greater social mobility among speakers of the central dialect and lexical influence

from Mandeali (e.g., through mixed marriages), while the Sachani dialect lies remote from the main trade routes.

Kullui	OIA
<i>tʰɔŋ</i> ‘moment’	<i>kṣaṇa</i> ‘moment’
<i>mɔtʰi</i> ‘fly’	<i>makṣikā</i> ‘fly, bee’
<i>tʰar</i> ‘ash’	<i>kṣāra</i> ‘corrosive’
<i>ɔtʰi</i> ‘eye’	<i>akṣi</i> ‘eye’
<i>tʰɔpṇa</i> ‘to boil away’	<i>kṣapyatē</i> ‘is destroyed’
<i>tʰura</i> ‘knife’	<i>kṣura</i> ‘razor’
<i>tʰa</i> ‘sharp’	<i>tikṣṇa</i> ‘sharp’
<i>antʰa</i> ‘raspberry, blackberry’	<i>ākṣika</i> ‘Morinda tinctoria, Indian mulberry’
<i>kutʰ</i> ‘menstrual blood, pregnant woman’s belly’	<i>kukṣi</i> ‘belly’
<i>tʰet</i> ‘field’	<i>kṣētra</i> ‘field’

Thus, only Kullui, among other Himachali dialects, develops a complete series of palatal affricates, with three elements complemented by a fourth—*dʒʰ*—whose origins remain somewhat obscure, since only a few confirmed examples of this phoneme are found in the lexicon. It generally corresponds to Common MIA *jh* (although its main reflex is *dzʰ*). In some instances, it may be the result of aspiration of a non-aspirated affricate, while in other cases, the etymology remains unclear:

Kullui	Possible etymology	Note
<i>dʒʰaū</i> ‘up’	OIA <i>udyāti</i> ‘rises’ or <i>ujjihitē</i> ‘grows’	
<i>kʰandʒʰɔtʰa</i> ‘left-handed’	Kullui <i>kʰēdʒu</i> ‘left’ + <i>hɔtʰ</i> ‘hand’	The first stem looks like a borrowing from Mandeali (from OIA <i>khañja</i> ‘lame’)
<i>dʒʰintʃi</i> ‘rope swing’	OIA <i>jhīnk-</i> ‘to bend, to pull’	Suffixation is unclear. Possibly an onomatopoeic reduplication
<i>dʒʰipʰ</i> ‘thicket’	OIA <i>jhuppa</i> ‘crowd, bundle’	
<i>dʒʰɔtʃi</i> ‘to fight, quarrel’	OIA <i>jhaṭṭ</i> ‘sudden movement’	
<i>dʒʰil</i> ‘lake’	OIA <i>jhilla</i> ‘swamp, lake’	
<i>dʒʰɔmpʃi</i> ‘hut’	OIA <i>jhamp</i> ‘mat’	No vocalization <i>mp>mb</i>
<i>dʒʰikʃa</i> ‘clothes’	Kullui <i>drigʃa</i> ‘rag, torn’ also OIA <i>thigga</i> ‘rags’, <i>citth</i> ‘to tear’, <i>likka</i> ‘damaged’	It is possible that <i>drigʃa</i> is a variant from Mandeali, but the aspiration and devoicing remain unclear, and the origin of the word is uncertain. Other variants (all of which semantically attest to the meaning ‘rags’) are even less explainable phonetically.
<i>dʒʰɔri</i> ‘wrinkle’	Hindi <i>gharī</i> ‘folded, curled’ from OIA <i>ghaṭ</i> ‘to shape, to mold’, Nepali <i>cāuri</i> ‘wrinkle’	No plausible etymology
<i>dʒʰuṭʃa</i> ‘to drink’	OIA <i>ghuṭṭ</i> ‘to gulp’	

16. Shift of accent following the development of clusters into new palatal affricates

The shifts *tr > tʃ*, *dr > dʒ*, and *kṣ > tʃʰ* inevitably affected the syllabic structure of words, which must have resulted in a new shift of accent. This shift appears to have occurred in the following words:

Kullui	OIA	Note
<i>hówdz</i> ‘turmeric’ (instead of <i>hud₃/hid₃</i>)	<i>harídrā</i> ‘turmeric’	A reflex with <i>lu</i> is also attested in Bengali (<i>halud</i>). The consonants <i>-l-</i> , <i>[-</i> frequently drop in northern Kullui dialects.
<i>gójntf</i> ‘cow urine’ (instead of <i>gōwítf</i>)	<i>gōmíttra-</i> ‘cow urine’	In other Himachali languages, only cognates of <i>gōmūtra</i> ‘cow urine’ appear, e.g., <i>gōũc</i> , <i>gōñc</i> , <i>gōnch</i> , where the Two-Mora Rule likely applied, resulting in an accent shift.
<i>góntf</i> ‘cow urine’ (instead of <i>gwuntf/guntf</i>)	<i>gōmūtra</i> ‘cow urine’	+ Two-Mora Rule.

To avoid a chronological paradox, it must be assumed that labialization of the accented *a* in *hówdz* occurred later than the same labialization of most of the Kullui lexicon. This probably happened under the influence of the subsequent *w*. Compare numerals borrowed from Mandali (*cəwdha* > *tʃəwda* ‘14’, *cawbi* > *tʃəwbi* ‘24’, *cəwti* > *tʃəwti* ‘34’), which evidently entered Kullui after the dentalization of the old affricates and the emergence of new palatals from a language where dentalization had not occurred.

17. Conclusions

The “MIA accentuation rule” underwent no significant modifications throughout the Middle and NIA periods in the development of Kullui, except for a correction related to the loss of final vowels. As a result of phonetic changes, the accent position shifted in certain lexical items. The relative and absolute chronology of these changes can be described as follows.

1. Establishment of the MIA accentuation system → sporadic loss of unaccented initial vowels (e.g., *aṅgúṭṭhaka* ‘thumb’ > Kullui *guṭ^ha* ‘thumb’).
2. Shortening of the MIA geminates → shift of accent from the new light syllables (*kaṭácchu*, *kaḍácchaka* ‘ladle’ > proto-Kullui *kárachia* > Kullui *kórts^{hi}* ‘ladle’, instead of ***kṛóts^{hi}*).
3. Loss of final vowels → shift of accent from new final long vowels (early MIA **gōrūpa* ‘cow-like’ > late MIA **gōrūa* > Kullui *góru* ‘cattle’).
4. Merger of adjacent vowels → possible shift of accent to new long vowels (early MIA **gállaputṭaka* ‘cheek fold’ > Proto-Kullui **gálauṭa* > Kullui *glóṭa* ‘cheek’).
5. Shift of accented *a* to *ɔ* → multiple Arabic-Persian borrowings in the 11th–18th centuries → dentalization of the old palatal affricates → formation of new palatal affricates → shift of accent from new light syllables (*gōmíttra-* ‘cow urine’ > Proto-Kullui *gōwíttr* > Kullui *gójntf* ‘cow urine’) → sporadic labialization of *a* > *ɔ* in proximity to labials (*halúdrā* ‘turmeric’ > early Kullui *háḷud₃* > *hówdz* ‘turmeric’).
6. Reduction of unaccented syllables (including the mass loss of unaccented initial vowels) also occurred after the arrival of Arabic-Persian borrowings.

Thus, the phonetic changes that occurred, with the exception of the loss of final vowels in words ending in *-CV*, did not alter the accentuation rule, but did lead to a shift in accent in certain words.

At the same time, changes in the formulation of the rule were brought about by the formation of certain new suffixes (such as the perfective suffix *-udal-edel-idi*, which arose through the grammaticalization of the imperfective participle from the verb *hoṇa* ‘to be’, and does not affect the accent position), as well as loss of final vowels in words ending in *-CV* (and, thus, the appearance of a class of nouns ending in a consonant).

Moreover, in the MIA ancestor of Kullui (“Kullui-Prakrit”), the Two-Mora Rule was evidently not applied.

Abbreviations for language names

Mand. – Mandeali; MIA – Middle Indo Aryan; NIA – New Indo-Aryan; OIA – Old Indo-Aryan (Proto-Indo-Aryan).

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A. С. Крылова. Ударение в индоарийском языке куллуи и хронология фонетических изменений

Статья посвящена исторической фонетике языка куллуи, одного из индоарийских языков, на основе анализа фонологических изменений, происходивших на протяжении его эволюции. Автор рассматривает ключевые процессы, такие как падение конечных гласных, сокращение среднеиндийских геминат, образование новых палатальных аффрикат и другие изменения, которые повлияли на структуру слов и акцентуацию. Исследование показывает, что базовые акцентные принципы, унаследованные из среднеиндийского периода, оставались относительно стабильными, несмотря на существенные фонетические изменения. Однако некоторые фонологические процессы вызывали смещение ударения в отдельных лексемах.

Работа предлагает реконструкцию относительной и абсолютной хронологии фонетических изменений в куллуи, что позволяет связать их с историческими процессами, включая арабо-персидское влияние и заимствования из соседних языков. Статья также поднимает вопрос о применении "правила двух мор" в среднеиндийском языке-предке куллуи, указывая на его отсутствие в этом конкретном случае.

Ключевые слова: язык куллуи; ударение; историческая фонетика; правило двух мор.