

Morphophonology of the Kullui language and the rule of accentuation

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Abstract: In this article, based on field data, I investigate the rules of accentuation in Kullui through the lens of morphophonological features. Like Russian, Kullui is characterized by the reduction of unaccented vowels. However, unlike Russian, Kullui lacks a written standard, and its inflectionality, like that of other New Indo-Aryan languages, is far less developed. Furthermore, there are no accentual paradigms in word inflection. Vowel alternations in word formation provide the basis for formulating rules for the reduction of unaccented vowels. Kullui affixes are divided into three types: those that do not affect accent placement, those that cause an accent shift, and accentually independent affixes, which generate words with two accents — one on the root and one on the suffix. The first two groups exhibit characteristic syllabic structures, while the third consists mainly of borrowed or recently grammaticalized units. An analysis of affix structures, verified against a larger lexical corpus, led to the formulation of a general rule of accentuation applicable to both derived and non-derived words. According to this rule, prefixes in Kullui are unaccented. The accented syllable, when counted from the end of the word to the beginning, is the first syllable containing the vowels *e*, *a*, *o* or ending in a combination of a nasal with a homorganic plosive or affricate. If no such syllable exists, the accent falls on the syllable furthest from the end (i.e., the first, excluding prefixes). In words ending in a consonant, the search starts from the last syllable, and in words ending in a vowel, from the penultimate syllable.

Keywords: accent, Indo-Aryan, Kullui, morphophonology

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Морфонология куллуи и правило постановки ударения

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Аннотация: В статье, основанной на полевых данных, автор исследует правила постановки ударения в языке куллуи через призму морфонологических особенностей. Для куллуи, как и для русского языка, характерна редукция безударных гласных. Однако язык куллуи не имеет письменной нормы, а его флективность, как и у других новоиндийских языков, выражена значительно слабее, чем в русском. Кроме того, в словоизменении отсутствуют акцентные парадигмы. Чередования гласных в процессе словообразования дают возможность сформулировать правила редукции безударных гласных. Аффиксы языка куллуи делятся на три типа: не влияющие на место ударения, вызывающие перенос ударения и акцентно независимые, то есть порождающие слова с двойным ударением — на основе и на суффиксе. Первые две группы имеют характерные слоговые структуры, в то время как третья состоит преимущественно из заимствованных или недавно грамматикализованных единиц. Анализ структуры аффиксов и проверка выводов на более обширном лексическом материале позволили сформулировать универсальное правило постановки ударения, применимое как к производным, так и к непроизводным словам. Согласно этому правилу, префиксы в куллуи являются безударными. Ударным становится первый слог (при подсчете от конца к началу слова), который содержит гласные *e*,

а, о или заканчивается на сочетание носового с гоморганным взрывным или аффрикатой. Если такого слога нет, ударение падает на наиболее удаленный от конца слог (то есть первый, исключая префиксы). В словах, оканчивающихся на согласный, поиск начинается с последнего слога, а в словах, оканчивающихся на гласный, — с предпоследнего.

Ключевые слова: индоарийские языки, куллуи, морфонология, ударение

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1. Methods of research

Kullui is an Indo-Aryan language of the Himachali group, lacking official status and a written standard. It has approximately 200,000 speakers (196 thousand speakers, as per Census of India 2011), primarily in the Kullu district of the state of Himachal Pradesh, India. This study is based on field materials collected by me and my colleagues during expeditions to Himachal Pradesh between 2014 and 2023.¹

Below in this section I expound the terms and considerations that are crucial for my analysis of Kullui data. Since this article forms part of a larger study encompassing the phonetics, morphophonology, and historical phonology of the Kullui language, morphophonology is approached here in a way that is most conducive to addressing questions of phonetic reconstruction. Such reconstruction consists of two key components: internal reconstruction, which relies on the synchronic description of the language and is essentially equivalent to morphophonological analysis, and external comparison, which incorporates data from related languages.

Given the variety of morphophonological theories, I deemed it necessary to select the approach to morphological description that best suits the analysis of accentology and aligns more closely with the internal reconstruction of the language in diachronic terms. As such, this paper follows the terminology proposed by Churganova [1973] and Dybo [2002]. Since even seemingly well-established terms, such as “phoneme”, are interpreted differently, for example, in the Moscow and Leningrad phonological schools, below I present the non-universal terminology of the aforementioned authors (they can be referred to as the “Mytishchi school”), which I will use throughout the study.

In the study of New Indo-Aryan languages, morphophonology has traditionally received insufficient attention. However, as noted by Elizarenkova [1988: 69], the structure of Hindi allows for its morphophonology to be considered as a distinct level of linguistic description, given that Hindi exhibits both inflectional and analytical features. The Kullui language, in turn, retains a significant number of archaisms, such as verb classes and declension types, which imply a stronger presence of inflectional traits. The archaic nature of Kullui provides additional grounds for examining its morphophonology.

Unlike Elizarenkova’s work on Hindi, which relied on the orthography of that language (despite its imperfect reflection of phonology), the study of Kullui must depend on phonological transcriptions derived from the field materials. This is because Kullui lacks a standardized orthography, and existing grammatical descriptions [Thakur 1975; Ranganatha 1980] do not provide an adequate representation of its phonology.

As Dybo [2002: 456] notes, “the process of internal reconstruction, at least at its initial stage, almost entirely coincides with the process of (synchronic) description of a language.”²

¹ More information on the project can be found at: https://pahari-languages.ru/?page_id=20&lang=en.

² In other words, the same idea is expressed by Burlak and Starostin [2005: 189]: “Internal reconstruction largely coincides with synchronic morphophonological description of the respective language.”

In this section, I summarize some key aspects of morphophonological theory based on the Russian language, as presented in [Churganova 1973] and [Dybo 2002], in order to later apply their conceptual framework to Kullui data.

The task of synchronic phonological description involves compiling an inventory of phonemes, which includes: first, the identification of minimal sound units in a spoken language; second, the identification of these units with others that can occupy the same position in the phonological chain without altering the content; third, the contrast of these units with others that occupy the same position but affect the content; and fourth, the identification of these units with sound segments that, though occurring in different environments, occupy the same position within the broader system of oppositions. A phoneme is defined as a bundle of essential features of a sound segment that is associated with specific semantic content in a given language. Consequently, the process of compiling a phoneme inventory (i.e., a set of contrastive units) inherently requires the identification and classification of meaning-bearing units, such as morphemes, words, syntagms, and others.

A well-known example of this is the positional phonology of the Russian language. The ability to distinguish phonemes varies depending on their position within the word. Positions that allow for the distinction of the maximum number of phonemes are referred to as strong positions, while positions where oppositions are neutralized are considered weak positions. In Russian, the strong position for vowels is the accented syllable, where five vowels are distinguished: *a, o, i, e, u*. In the first pre-accented and first null onset unaccented syllables, four vowels are distinguished: *i, u, i^ɛ, ʌ*, while in other positions, only three vowels are distinguished: *i, u, ə*. Phonemes occurring in strong positions are termed strong phonemes, whereas those in weak positions are classified as weak phonemes. These three systems of phonemes cannot be reduced to one another without incorporating morphological data, such as the identification of roots in words like *stól* ‘table.NOM.SG’ and *stalá* ‘table.GEN.SG’. The consistent representation of a morpheme across different phonological environments is referred to as a **morphophoneme**.

Typically, a morphophoneme consists of a set that includes one strong phoneme and one or more weak phonemes. However, as noted by Churganova [1973: 35], there are cases where such a set lacks a strong position. For instance, the first syllable of the word *karónā* ‘cow’ does not receive accentuation in any possible environment for this morpheme. Morphophonemes that lack a strong position are termed weak, whereas those that include a strong position are referred to as strong morphophonemes.

The system of strong morphophonemes corresponds to the reconstructed phoneme system of the language at an earlier stage of its development. Resolving the ambiguity of weak morphophonemes, however, is not feasible through synchronic description alone and necessitates external comparison. For the Russian literary language, the most immediate object of external comparison is written Russian, which, despite the relative arbitrariness of its orthographic norms, often reflects an earlier stage of the language and incorporates features from Russian dialects. A broader external comparison can also be made with other East Slavic languages.

In the case of the Kullui language, I found myself in a somewhat different situation. Kullui lacks a written standard or well-described dialects, which means that external comparison requires turning to more distantly related idioms rather than a written variety of the same language. At the same time, the historical phonology of Indo-Aryan languages has been broadly studied. There are written records of languages that correspond phonologically to the period of Old Indo-Aryan linguistic unity (such as Sanskrit and Vedic). Furthermore, a comparative dictionary of Indo-Aryan languages [Turner 1962–1966] and an etymological dictionary of Nepali [Turner 1931] provide invaluable resources that simplify the task of external comparison. However, when it comes to internal reconstruction, my efforts were significantly constrained for several reasons.

1. The inflectional system of Kullui, like that of most Indo-Aryan languages, is underdeveloped, with a significant reliance on analyticism. Even forms that are synchronically syn-

thetic are often contracted analytical forms, and as such, they do not significantly impact morphophonological processes. The older inflectional morphemes are predominantly monosyllabic, which means their influence on morphophonology is relatively weak. These characteristics of Indo-Aryan languages lead to the necessity of studying morphophonology primarily through the material of word formation, as exemplified by [Elizarenkova 1988], which has largely served as a model for the study of Kullui's morphophonology.

2. There are no comprehensive or representative dictionaries of Kullui, and the corpus compiled by our team is relatively small. Consequently, the study of the morphophonological structure of roots through the analysis of word formation is limited by the size of the available lexical data.
3. In Indo-Aryan descriptive linguistics, unlike in Slavic languages, the concept of accentuation traditionally receives limited attention, and vocalism is rarely examined through the framework of positional phonology. Instead, much greater emphasis is placed on vowel length. Often, the phonological relevance of vowel length is not properly substantiated, and its inclusion in phonological descriptions can be seen more as a tribute to Sanskrit grammatical tradition, rather than as a feature intrinsic to the phonological system of the language in question. Many grammatical descriptions distinguish three or even four degrees of vowel length, yet the notion of strong and weak positions is entirely absent. Furthermore, the concept of morphophonological description is largely overlooked in the study of New Indo-Aryan languages.

In contrast, in the case of Russian, this concept arises almost intuitively due to the existence of a written form largely based on morphological principles. This difference can likely be attributed to the fact that Hindi, the most thoroughly studied New Indo-Aryan language, only acquired its modern orthography in the 19th century, and its orthography is still essentially phonetically, rather than morpho(phono)logically oriented. Moreover, Hindi orthography is predominantly phonetic (although the phonetic principle is not always consistently applied), and a closer analogy among Slavic languages would be found in Belarusian orthography. Although the morphophonological systems of Russian and Belarusian are undoubtedly similar, their orthographic principles radically differ.

If we accept the idea that comparing spoken and written forms of Russian is a specific case of external comparison, Russian speakers, when learning the language at school, gain their first exposure to this kind of comparison through the study of orthography. By learning “test words” for unaccented vowels, Russian speakers develop an initial intuitive understanding of its morphophonology, which later aids in constructing a more systematic model of its morphophonological level. In contrast, the study of Belarusian does not involve “test words” for unaccented vowels (unlike consonants). Orthography, based primarily on phonetic principles, as is the case of Belarusian and Hindi, does not require the memorization of “test words” at school age. As a result, the relevance of morphophonology is not immediately apparent to a linguist studying their native language.

4. Unlike Russian and many other languages, lexical accent in Kullui — defined as the phonetic prominence of one syllable in a word — cannot be identified through the analysis of such acoustic parameters as vowel duration, pitch, or intensity. Instead, the primary marker of accented syllables in Kullui is the absence of reduction and the full articulation of the vowel. In contrast, the parameters that are easily measurable in the Praat software³ — vowel duration, pitch, and intensity — are influenced by entirely different factors.

In the Russian linguistic tradition, likely due to the extensive study of Russian accent, some researchers identify not three but four possible acoustic correlates of accent: intensity, duration, pitch, and quality [Maslov 1987: 72–73]. The last of these — vowel quality — has received disproportionately little attention in English-language linguistic litera-

³ Available at: <https://www.fon.hum.uva.nl/praat>.

ture. Historically, Russian accent has been classified as dynamic, consisting of two components: intensity and duration. However, instrumental analyses of the acoustic properties of Russian accent have demonstrated that intensity plays only a minor role [Kodzasov, Krivnova 2001: 474; Knyazev, Pozharitskaya 2011: 159]. Instead, duration has been shown to be the most reliable acoustic correlate of Russian accent.

In addition to duration, vowel quality — or timbre — is a critical feature of Russian accent. An accented syllable is characterized by both longer duration and greater clarity of articulation [Avanesov 1974: 80]. These findings from instrumental analysis have been interpreted differently across various studies. Kodzasov and Krivnova [2001: 471–475] distinguish between acoustic intensity (loudness) and articulatory intensity (the tension of vocal cords and the force of exhalation). They regard vowel duration and quality as manifestations of articulatory intensity while noting that acoustic intensity is not a contributing factor. This framework supports the classification of Russian accent as dynamic, with articulatory intensity serving as its primary component.

Conversely, Knyazev and Pozharitskaya [2011: 161–162] interpret Russian accent as a qualitative-quantitative phenomenon, positing a dependency of vowel quality on vowel quantity. This relationship is explained through B. Lindblom's concept of **undershoot**, where the reduced duration of an unaccented vowel prevents the speech organs from achieving “ideal” articulation. However, in neither framework is vowel quality treated as an independent parameter, despite its evident significance for Russian accent.

The prominence of quality as a correlate of accent is particularly evident in the positional phonology of Russian. In accented syllables, the maximum number of vowel distinctions, i.e. five, is maintained, whereas in the weakest syllabic positions, this number is reduced to only three.

To date, no studies have explored the possibility of a significant quality correlate of accent in Indo-Aryan languages.⁴ However, for describing the Kullui language, it appears most fitting to treat vowel quality as the primary acoustic correlate of accent. This approach is justified by the fact that other factors — such as vowel duration, pitch, and acoustic intensity — are governed by entirely different mechanisms.⁵ From an articulatory perspective, it is reasonable to hypothesize that heightened articulatory intensity serves as the principal correlate of accent in Kullui. This intensity consistently manifests acoustically as vowel timbre and, to a lesser extent, as the duration of the vowel or the subsequent consonant.

In the broader field of accentology, it is essential to reference the influential framework developed by Paul Garde, who distinguishes between positive and negative accentual markers. Negative markers are characterized by the neutralization of contrasts in unaccented positions, such as the qualitative reduction of vowels in unaccented syllables [Garde 2015: 63]. He further observes that some languages rely exclusively on negative accentual markers [Ibid.: 67].

Applying Garde's framework to the Kullui data reveals that the primary accentual mechanism in Kullui is negative, manifesting as systematic reduction of vowels in unaccented syllables.

5. Unlike Russian, Kullui lacks accentual paradigms, meaning that the phonemes within many morphemes never appear in an accented position.

These factors considerably complicate the synchronic description of Kullui morphophonology and, by extension, its phonology. To address these challenges, I developed an extensive word-formation questionnaire, which formed the foundation for fieldwork conducted during a

⁴ This parameter is partly considered in [Hussain 1997] for Urdu and in [Abbasi, Hussain 2015] for Sindhi, but according to these works it is not the main one.

⁵ The issue of vowel length in Kullui is addressed in greater detail in [Krylova 2024a]. As for pitch and intensity, they are associated with the realization of the phoneme *h* and voiced aspirates.

2023 expedition to the village of Naggar. The questionnaire comprised of two sections: the first aimed to verify and expand upon word-formation data outlined in M. R. Thakur’s work, see [Thakur 1975: 216–226] on nominal word formation and [Ibid.: 286–289] on causative verbs, while the second focused on documenting causative formations for all verbs encountered in the field materials collected by our team. This effort resulted in the identification of over 300 new lexical items, many of which significantly deepened our understanding of Kullui word formation and provided a robust dataset for constructing a synchronic morphophonological — and, by extension, phonological — analysis.

By the time these new data were collected, I already had a general conceptual framework for Kullui morphophonology. However, due to the scarcity of data for internal reconstruction, my earlier models relied heavily on external comparison [Krylova 2024b]. While this approach diverges from classical methodologies for constructing morphophonological systems and may present challenges for readers unfamiliar with other Indo-Aryan languages, the present study, enriched by newly collected lexical material, is based exclusively on Kullui data.

2. Phonemic composition of Kullui vocalism:
Strong and weak phonemes

The phonemic inventory of Kullui vowels includes the following phonemes: *a*, *o*, *e*, *i*, *u*, *ɔ*, *ɛ*, *ə*. Also, any vowel (and consonant *w*) can be nasalized, but for phonetical reasons, I prefer to consider nazalization as a suprasegmental element. However, a simple enumeration does not convey the essence of the phonological system, which is defined by the relationships between meaning-distinguishing units. An analysis of the phonetic chain reveals positional differences in the ability to contrast phonemes.

In Kullui vocalism, four positional systems can be identified from the perspective of positional phonology, each with its own pattern of phonemic oppositions: accented (strong), final, convocalic, and unaccented (weak).

2.1. Accented position

The accented syllable is the strongest position in a word. In this position, the maximum number of phonemes — seven vowels — can be distinguished: *i*, *e*, *ɛ*, *a*, *ɔ*, *o*, *u*. Examples include: *bés* ‘bus’, *bás* ‘smell’, *bótsu* ‘calf’, *bétsu* ‘he saved himself’, *bétsu* ‘he sold’, *bón̄* ‘forest’, *bén̄* ‘become!’, *bún̄* ‘weave!’, *bán̄* ‘weft’, *tóta* ‘parrot’, *tóta* ‘hot’, *ól̄h* ‘lip’, *ól̄h* ‘eight’, *kón̄a* ‘corner’, *kón̄* ‘ear’, *kíla* ‘corn’, *kéla* ‘lonely’.

Table 1

Vowels in accented position			
	Back	Central	Front
High	<i>u</i>		<i>i</i>
Mid-high	<i>o</i>		<i>e</i>
Mid-low	<i>ɔ</i>	<i>ɛ</i>	
Low		<i>a</i>	

2.2. Final position

The final position refers to an open syllable at the end of a polysyllabic word or certain suffixal formations derived from recently contracted analytic forms. In this position, five vowel phonemes are distinguished (notated with a secondary accent, to reflect their relatively high contrast): *i*, *e*, *a*, *u*, *o*. Examples include: *bókri*, ‘goat (female)’, *bókre*, ‘goats’, *bókra*, ‘goat (male)’, *bókru*, ‘kid’, *déwo*, ‘O, gods!’, *débi*, ‘goddess’, *b^húp^hi*, -*á*la, ‘moldy’.

Table 2

Vowels in final position			
	Back	Middle	Front
High	<i>u</i>		<i>i</i>
Mid-high	<i>o</i>		<i>e</i>
Mid-low		<i>a</i>	

2.3. Convocalic position

The convocalic position refers to a non-final unaccented vowel adjacent to an accented or final vowel, or separated from it only by the phoneme *h* (which often elides in casual speech). In this position, two phonemes can be distinguished: *i*, *u*. However, they often acquire glide-like realizations (*j*, *w*), raising questions about whether they should be classified as vowels or consonants.⁶ In practical transcription, the rarity of vowel clusters or triple consonant clusters in Kullui motivates the use of *j* and *w* for adjacent glides, while *i* or *u* is used when separated by *h*. Additionally, *i* in pre-final positions is transcribed as *ij*.

Examples of *i/j* and *u/w* in convocalic positions include: *kjári* ‘bed’, *kṵári*⁷ ‘unmarried girl’, *buhár* ‘broom’, *bihál* ‘foothill’, *nuhár* ‘face’, *nihál* ‘wait!’, *qráwna* ‘scary’, *lájka* ‘worthy’, *négrija* ‘Naggarian, inhabitant of Naggar’, *kulwi* ‘Kullui’.

Table 3

Vowels in convocalic position			
	Back	Middle	Front
High	<i>u</i>		<i>i</i>

2.4. Unaccented position

The unaccented (or weak) position encompasses all other unaccented environments, where phonemic contrasts are neutralized, leaving only *ə* as possible: *bə́/ána* ‘to plant’, *kúkə́* ‘rooster’, *bə́/áh* ‘hope’, *nə́/án* ‘mark’, *məsánt* ‘last day of the month’, *pínsəl* ‘pencil’. Vowels in weak positions often elide. For more information on the rules for the loss of *ə*, see [Krylova 2025]. It

⁶ One may object, noting that the interpretation hinges on whether these phonemes serve as syllable-forming elements in the convocalic position. However, in Kullui, the same speaker may pronounce a word like *dihara* ‘day’ with varying syllable counts, such as /d^hjaɾa/ and /dihara/. Despite this variation, the analysis requires the establishment of a consistent transcription system.

⁷ ~ signifies nasalization.

is important to note that, although *a* is not contrasted with other vowels in this position, it is nevertheless marginally contrasted with absence of sound or consonants. Therefore, I believe it is necessary to include it among the weak phonemes. Compare *aram* ‘rest’, *ram* ‘Rama, a proper name’, and *tramba* ‘copper’.

2.5. Summary

Kullui vocalism encompasses four distinct systems of phonemic opposition, with the unaccented position representing a degenerate system consisting of a single element. These systems are not reducible to one another without addressing the issue of morphemic identification. Such an inquiry extends beyond phonological description, necessitating both internal reconstruction (or morphophonological analysis) and external comparison.

3. The issue of the phonological nature of accent

In the following section, I intend to carry out the internal reconstruction of Kullui based on the morphophonological theory as presented in [Churganova 1973; Dybo 2002], treating accent as a prosodeme or suprasegmental phoneme in line with [Dybo 2002: 457]. The issue of whether accent is phonological in nature in languages where different accent positions form distinct phoneme systems is far from trivial. One standard method to justify the phonological nature of a given distinction is to present minimal pairs of words that differ solely in this aspect (in the case of accent, in its position). For example, the phonological nature of Russian accent can be easily demonstrated for native speakers using the minimal pair *záмок* ‘castle’ — *замóк* ‘lock’ in its orthographic form. Orthography in old-written languages often mirrors morphological transcription, reflecting the historical development of the language. This is also true of Russian orthography despite its reforms. However, a reader unfamiliar with Russian might reasonably question whether the words differ only in accent, given that the transcription *zámək* — *zamók* also includes two additional distinctions: *a* vs. *ɐ* and *ə* vs. *o*. The morphophonological transcription *zám*k* — *zam*k*,⁸ just like the orthographic version, indeed only differs in accent placement.

However, in the case of Kullui, an unwritten analytical language, no such orthographic record exists, and the morphophonological transcription I use typically includes weak morphophonemes, making it impossible to form minimal pairs with strong morphophonemes for comparison. Since this work primarily targets linguists who are not native speakers of Kullui, I rely on a phonological transcription system that is in line with standard linguistic practice for unwritten languages. As the example of Russian shows, while it is possible to use phonological transcription to identify minimal pairs illustrating the phonological nature of accent, word pairs with identical phonological transcription are less common than those with identical orthographic or morphophonological transcription. However, in Russian, pairs like *nyuy* — *nyuy* (*pús’u* — *puš’ú*) clearly differ, only in accent placement, even in phonological transcription. Similar words in Kullui would have properties analogous to those containing *uhi*, *ihu*, *uhu*, or *ihí* in non-final positions. Although such words are absent in the dictionary, theoretically they are plausible. While minimal pairs are absent in the dictionary, they are still theoretically possible, which allows us to regard accent in Kullui as phonologically significant, following the framework of L. V. Shcherba.

However, the fact that accent in Kullui can be considered phonological does not imply that strict rules for accent placement do not exist. Rather, it suggests that there are no purely phonological rules for accent placement and full description of accentuation (partly) belongs to the morpho(phono)logical layer.

⁸ * is used here to signify the morphophoneme “fluent o”, represented by alternation of *o* with a zero sound in different morphological forms, cf. *zamók* ‘lock.NOM.SG’ — *zamká* ‘lock.GEN.SG’.

4. Classification of Kullui affixes from the perspective of accentuation

Kullui affixes can be categorized into the following types based on their interaction with lexical accentuation.

1. **Unaccented affixes** do not influence the position of the accent.
2. **Accented affixes** shift the accent from the base to the affix.
3. **Accentually independent affixes** carry their own accent but leave the accent of the base unaffected.

The first two categories are particularly significant for constructing the morphophonological model and analyzing the accentual system of Kullui. The third category, by contrast, is less central for this study, as it primarily consists of borrowed affixes or affixes that have recently emerged through the fusion of analytical constructions.

This analysis primarily concerns derivational affixes since no inflectional affixes in Kullui belong to the second category. Most inflectional affixes belong to the first category and are characterized by the same syllabic structure as the derivational affixes of this category. Space does not permit a full examination of them in this article. Several inflectional affixes belong to the third category and are discussed in the corresponding section.

Developing the morphophonological model requires grouping phonemes from various positions into series that correspond to morphophonemes. The number of strong morphophonemes equals the number of phonemes found in accented positions, which is seven. In the unaccented position, where phonological contrasts are absent, the system is straightforward: any series includes only one unaccented phoneme, *ə*.

The phonemes in the final position, however, are more difficult to integrate with those in accented positions. This is because word-formation processes rarely allow for transitions between these positions (one notable exception is *búa* ‘father’s sister’ → *bwái* ‘father’s sister’s husband’). Despite this, the final position is noteworthy due to its relatively large inventory of phonemes and its distinctiveness — it appears only in words ending in a vowel and is often filled by derivational or inflectional affixes.

Given these observations, it is plausible to hypothesize that the final position historically did not develop the phonemes *ɛ* or *ɔ*. The remaining phonemes can be straightforwardly aligned with their accented counterparts. Consequently, the most compelling aspect of Kullui morphophonology is the behavior of accented phonemes when they shift to the convocalic position as a result of derivational operations.

5. Unaccented affixes

5.1. Unaccented prefixes

This category encompasses nearly all prefixes of Indo-Aryan origin as well as some borrowed ones.

kə- ‘bad, ominous’

Base word

bət ‘road’

bél ‘time of day’

dífa ‘direction’

Derived word

kəbət ‘bad road’

kəbél ‘evening twilight’

kədífa ‘wrong direction’

mūh ‘mouth’
dziŋa ‘life’

kāmūha ‘a person bringing misfortune’
kədziŋa ‘a person living a bad lifestyle’⁹

pər- ‘great-’ used in kinship terms

Base word

nāni ‘maternal grandmother’
nāna ‘maternal grandfather’
dāda ‘paternal grandfather’
dādi ‘paternal grandmother’
dʰótru ‘grandson from daughter’s side’
dʰótri ‘granddaughter from daughter’s side’
pótru ‘grandson from son’s side’
pótri ‘granddaughter from son’s side’

Derived word

pərnāni ‘maternal great-grandmother’
pərnāna ‘maternal great-grandfather’
pərdāda ‘paternal great-grandfather’
pərdādi ‘paternal great-grandmother’
pərdʰótru ‘great-grandson from daughter’s side’
pərdʰótri ‘great-granddaughter from daughter’s side’
pərpótru ‘great-grandson from son’s side’
pərpótri ‘great-granddaughter from son’s side’

nə- used for negation

Base word

lājik ‘worthy’
bāləg ‘of age’
rādzi ‘content’
róg ‘disease’
bʰág ‘portion’
dʰr ‘fear’
dzānna ‘to know’
pʰrʰna ‘to read, study’
bénna ‘to become, succeed’

Derived word

nəlājik ‘unworthy’
nəbāləg ‘underage’
nrādz ‘angry, displeased’
nəróga ‘healthy’
nəbʰága ‘deprived’
nəqóra ‘fearless’
nədzán ‘ignorant’
nəpʰrʰ ‘illiterate’
nəbéŋ ‘unaccommodating’

nər-, dər- used for negation

Base word

gūŋ ‘quality’
áf ‘hope’
búdʰi ‘intellect’

Derived word

nərgūŋa ‘worthless (person)’
nəráf ‘hopeless, sad’
dərbúdʰi ‘foolish’

5.2. Unaccented suffixes

This category encompasses a significant portion of suffixes. To better analyze the syllabic structure of these suffixal formations, it is helpful to view the extension of the word as a unified whole, consisting of both the suffix and the inflectional affixes (markers of the *a*-declension,¹⁰ declinable adjectives, and infinitives). These extensions typically follow structures such as *-V*, *-CV*, *-əC*, and *-ijV*, with two unique cases *-əCV* and *-jC-*.

⁹ The last two words in the list represent a word formation model distinct from the others, as they are substantivized adjectives of the *bahuvrīhi* type, meaning ‘having a bad mouth’ and ‘having a bad life’.

¹⁰ In Kullui there are seven types of noun declension, in most cases the type of declension is obvious when indicating the gender and the form of the direct case singular: masculine nouns ending in *-a* belong to the masculine *a*-declension, masculine nouns ending in other vowels belong to the masculine *V*-declension, masculine nouns ending in consonants belong to the masculine *C*-declension, feminine nouns ending in *-a* belong to the feminine *a*-declension, feminine nouns ending in other vowels belong to the feminine *V*-declension, feminine nouns ending in consonants may belong either to the feminine

While these suffixes do not affect accent placement (with one notable exception, which will be discussed below), some vowel shifts in the root may still occur under their influence. We will first examine examples of formations where no changes to the root take place.

Among these suffixes, *-i₁-*, *-u-*, and *-ø-* — the so-called zero suffix — are the most productive. The zero suffix is a theoretical construct introduced to denote the shift to the masculine *a*-declension. It is more natural to treat this marker alongside *-i₁-* and *-u-*, since words formed with these suffixes share similar syllabic structure.

Nouns formed with the zero suffix end in *-a* in their base form, the nominative singular inflexion, which is replaced by *-e* in the plural or oblique cases. Semantically, *-ø-* typically refers to a man or male animal, *-i₁-* to a woman or female animal, and *-u-* to a child or young animal. For inanimate objects, *-i₁-* and *-u-* often indicate smaller sizes. However, in some cases, the semantic function of the suffixes may vary. Additionally, the *-ø-* marker can also be used to convert nouns into declinable adjectives:

<i>b^húk^h</i> ‘hunger’	<i>b^húk^ha</i> ‘hungry’
<i>jók^h</i> ‘thirst’	<i>jók^ha</i> ‘thirsty’
<i>lún</i> ‘salt’	<i>lún^a</i> ‘salty’
<i>píp^li</i> ‘chilly pepper’	<i>píp^la</i> ‘spicy’
<i>pjár</i> ‘love’	<i>pjár^a</i> ‘lovely’
<i>t^hénq</i> ‘cold (n)’	<i>t^hénq^a</i> ‘cold’

-i₁- can also form abstract nouns and names of languages:

<i>dóst</i> ‘friend’	<i>dósti</i> ‘friendship’
<i>gél^t</i> ‘wrong’	<i>gél^ti</i> ‘mistake’
<i>kúlu</i> ‘Kullu valley’	<i>kúlwi</i> ‘Kullui’

In addition to the nominal formations, *-ø-* and *-i₁-* can form derivatives from verbs:

<i>g^hérna</i> ‘to roll’	<i>g^héra</i> ‘dizziness’
<i>dz^húrna</i> ‘to love’	<i>dz^húri</i> ‘love’
<i>dzórna</i> ‘to join’	<i>dzórⁱ</i> ‘couple’
<i>tsórna</i> ‘to steal’	<i>tsóri</i> ‘theft’
<i>dz^húl^hna</i> ‘to swing’	<i>dz^húla</i> ‘swing, cradle’

Since the semantic distinctions between homonymous suffixes do not affect the morpho-phonological processes, I do not differentiate between them.

In most cases, these suffixes do not trigger phonetic changes within the derivation base:

<i>kúta</i> ‘dog’	<i>kúti</i> ‘she-dog’	<i>kútu</i> ‘puppy’
<i>lára</i> ‘husband’	<i>lári</i> ‘wife’	
<i>nána</i> ‘maternal grandfather’	<i>náni</i> ‘maternal grandmother’	
<i>dáda</i> ‘paternal grandfather’	<i>dádi</i> ‘paternal grandmother’	
<i>b^hátidza</i> ‘nephew (brother’s son)’	<i>b^hátidzi</i> ‘niece (brother’s daughter)’	
<i>máma</i> ‘uncle (mother’s brother)’	<i>mámi</i> ‘aunt, mother’s brother’s wife’	
<i>béta</i> ‘son’	<i>béti</i> ‘daughter’	
<i>d^hótru</i> ‘daughter’s son’	<i>d^hótri</i> ‘daughter’s daughter’	
<i>pótru</i> ‘son’s son’	<i>pótri</i> ‘son’s daughter’	
<i>fóhru</i> ‘boy, son’	<i>fóhri</i> ‘girl, daughter’	
<i>gwála</i> ‘herdsman’	<i>gwáli</i> ‘herdswoman’	
<i>páwna</i> ‘male guest’	<i>páwni</i> ‘female guest’	

C-declension or to the feminine *i*-declension. *-a* of masculine *a*-declension is never a suffix, but an inflexion. Here, I indicate the declension type in case where it may raise questions.

<i>kṵára</i> ‘unmarried man’	<i>kṵári</i> ‘unmarried woman’	
<i>kálṭu</i> ‘dark-skinned man’	<i>kálṭi</i> ‘dark-skinned woman’	
<i>gítṭu</i> ‘dwarf (male)’	<i>gítṭi</i> ‘dwarf (female)’	
<i>twár</i> ‘Sunday’	<i>twáru</i> ‘Sunday-born man’	<i>twári</i> ‘Sunday-born woman’
<i>swár</i> ‘Monday’	<i>swáru</i> ‘Monday-born man’	<i>swári</i> ‘Monday-born woman’
<i>búd^h</i> ‘Wednesday’	<i>búd^hu</i> ‘Wednesday-born man’	<i>búd^hi</i> ‘Wednesday-born woman’
<i>brést</i> ‘Thursday’	<i>bréstu</i> ‘Thursday-born man’	<i>brésti</i> ‘Thursday-born woman’
<i>múṣa</i> ‘mouse’	<i>múṣi</i> ‘female mouse’	
<i>géd^ha</i> ‘donkey’	<i>géd^hi</i> ‘jenny’	
<i>g^hóṛa</i> ‘horse’	<i>g^hóṛi</i> ‘mare’	
<i>méhiṣa</i> ‘buffalo’	<i>méhiṣi</i> ‘female buffalo’	
<i>bráli</i> ‘cat’	<i>brála</i> ‘male cat’	<i>brálu</i> ‘kitten’
<i>bókri</i> ‘goat’	<i>bókra</i> ‘male goat’	<i>bókru</i> ‘kid’
<i>tsəpár</i> ‘lizard’	<i>tsəpári</i> ‘female lizard’	

The same pattern is demonstrated by adjectival *-i*:

<i>dzərúr</i> ‘certainly’	<i>dzərúri</i> ‘necessary (adj)’
<i>róg</i> ‘disease’	<i>rógi</i> ‘ill’
<i>súk^h</i> ‘happiness’	<i>súk^hi</i> ‘happy’
<i>dúk^h</i> ‘suffering (n)’	<i>dúk^hi</i> ‘suffering (adj)’
<i>déṣ</i> ‘country’	<i>déṣi</i> ‘local’
<i>d^hén</i> ‘wealth’	<i>d^héni</i> ‘rich’

feminine suffix of *i*-declension *-əṇ-*:

<i>úṭ</i> ‘camel’	<i>úṭəṇ</i> ‘female camel’
<i>ráks</i> ‘ghost’	<i>ráksəṇ</i> ‘female ghost’
<i>mór</i> ‘peacock’	<i>mórəṇ</i> ‘peahen’
<i>lók</i> ‘man’	<i>lókəṇ</i> ‘woman’
<i>brág^h</i> ‘tiger’	<i>brág^həṇ</i> ‘tigress’
<i>séngi</i> ‘friend’	<i>séngəṇ</i> ‘female friend’
<i>p^hāṇḍi</i> ‘chatterbox’	<i>p^hāṇḍəṇ</i> ‘female chatterbox’
<i>nāti</i> ‘relative’	<i>nātəṇ</i> ‘female relative’
<i>hát^hi</i> ‘elephant’	<i>hát^həṇ</i> ‘female elephant’
<i>dərgáhi</i> ‘scoundrel’	<i>dərgáhəṇ</i> ‘female scoundrel’
<i>nəwgədzija</i> ‘very tall man’ ¹¹	<i>nəwgədzəṇ</i> ‘very tall woman’

feminine suffix of *V*-declension *-ṇi-*:

<i>ṣér</i> ‘lion’	<i>ṣérṇi</i> ‘lioness’
<i>mór</i> ‘peacock’	<i>mórṇi</i> ‘peahen’

masculine suffix of *V*-declension *-i₂-*:

<i>séng</i> ‘friendship’	<i>séngi</i> ‘friend’
<i>ḍ^hól</i> ‘dhaul, kind of drum’	<i>ḍ^hóli</i> ‘dhaul player’
<i>d^hóns</i> ‘dhaunse, kind of drum’	<i>d^hónsi</i> ‘dhaunse player’
<i>bəngál</i> ‘Bengal’	<i>bəngáli</i> ‘Bengali’
<i>pəndzáb</i> ‘Punjab’	<i>pəndzábí</i> ‘Punjabi’
<i>srádz</i> ‘Siraj valley’	<i>srádzi</i> ‘Siraj inhabitant’
<i>grá</i> ‘village’	<i>grái</i> ‘village neighbour’

¹¹ Cf. *-ij-* suffix below.

masculine diminutive suffixes *-ɽu-*, *-tu-*, *-ɲu-*:

<i>hɔtʰ</i> ‘hand’	<i>hɔtʰɽu</i> ‘little hand’
<i>dzɔŋgʰ</i> ‘leg’	<i>dzɔŋgʰɽu</i> ‘little leg’
<i>kɔn</i> ‘ear’	<i>kɔnɽu</i> ‘little ear’
<i>kʰákʰ</i> ‘mouth’	<i>kʰákʰɽu</i> ‘little mouth’
<i>nák</i> ‘nose’	<i>nákɽu</i> ‘little nose’
<i>dɔnd</i> ‘tooth’	<i>dɔndɽu</i> ‘little tooth’
<i>dzót</i> ‘mountain’	<i>dzótɽu</i> ‘mountain’ ¹²
<i>dzibʰ</i> ‘tongue’	<i>dzibʰtu</i> ‘little tongue’
<i>tópi</i> ‘hat’	<i>tópu</i> ‘little hat’

synonymous masculine suffix of *a*-declension *-k-*:

<i>múnɖ</i> ‘head’	<i>múnɖka</i> ‘id.’
<i>lóta</i> ‘waterjar’	<i>lótka</i> ‘id.’

feminine suffix *-ɽi-*:

<i>litsa</i> ‘speck in the eye’	<i>múnɖka</i> ‘id.’
<i>kʰɔl</i> ‘skin, bark’	<i>kʰɔlɽi</i> ‘leather, sheepskin, grain sack for mill transport’

feminine suffix *-ti-*:

<i>gínna</i> ‘to count’	<i>gínti</i> ‘count (n)’
<i>búnna</i> ‘to weave, to braid’ ¹³	<i>búnti</i> ‘knitted ornament of the dress’

a number of unproductive suffixes:

<i>bətsʰána</i> ‘to spread, to lay’	<i>-ŋ-</i> (masculine, C-declension)	<i>bətsʰán</i> ‘bed’
<i>píŋa</i> ‘to grind’	<i>-jŋ-</i> (masculine, C-declension)	<i>bətsʰájŋ</i> ‘cow bedding’
<i>pʰúkərna</i> ‘to blow’	<i>-əŋ-</i> (masculine, C-declension)	<i>píŋəŋ</i> ‘grain for grinding’
<i>lépŋa</i> ‘to cover, smear’	<i>-ɲu-</i> (masculine, V-declension)	<i>pʰúkɲu</i> ‘balloon’
	<i>-ɽ-</i> (masculine, <i>a</i> -declension)	<i>lépɽa</i> ‘bark’

masculine suffix of *a*-declension *-ij-*:

<i>bləspúr</i> ‘Bilaspur’	<i>bləspúrija</i> ‘Bilaspur inhabitant’
<i>kéŋgra</i> ‘Kangra’	<i>kéŋgrija</i> ‘Kangra inhabitant’
<i>grā</i> ‘village’	<i>grāija</i> ‘fellow villager’
<i>kʰódzŋa</i> ‘to tell’	<i>kʰódzŋija</i> ‘storyteller’

The suffixes *-wŋ-* and *-lu* form adjectives: *ɖráwŋa* ‘scary’, *ɖɽálu* ‘timid’ from *ɖráŋa* ‘to frighten’.

Among Persian loanwords, rare or unique substantive suffixes can also be found: *zinda* ‘alive’ — *zindəgi* ‘life’, *dzə́rur* ‘necessary’ — *dzə́rurət* ‘necessity’.

The suffix *-l-* forms declinable adjectives from adverbs and some nouns:

<i>ɔkʰe</i> ‘here’	<i>ɔkʰla</i> ‘local’
<i>áge</i> ‘ahead’	<i>ágla</i> ‘next’
<i>pítsʰe</i> ‘behind’	<i>pítsʰla</i> ‘previous’
<i>mɔndzʰe</i> ‘in the middle’	<i>mɔndzʰla</i> ‘middle’
<i>údze</i> ‘above’	<i>údzla</i> ‘located above’
<i>dúdʰ</i> ‘milk’	<i>dúdʰla</i> ‘milky white’
<i>ʃóbʰ</i> ‘beauty’	<i>ʃóbʰla</i> ‘beautiful, good’

¹² Diminutive semantics is lost in this word.

¹³ Judging by a number of related words and the Hindi cognate, this word also had an older meaning of ‘to knit from wool’.

Adverbs are generally formed using the suffixes *-e* and *-i*, derived from nouns, adjectives, numerals, and adverbs. The suffix *-e* primarily attaches to *a*-declension words, while *-i* attaches to consonant-final words, predominantly feminine *i*-declension nouns:

<i>két^ha</i> ‘joint, united’	<i>két^he</i> ‘together’
<i>péhla</i> ‘first’	<i>péhle</i> ‘at first’
<i>dúdza</i> ‘second’	<i>dúdze</i> ‘again’
<i>tsówt^ha</i> ‘fourth’	<i>tsówt^he</i> ‘four days later/earlier’
<i>póndzwa</i> ‘fifth’	<i>póndzwe</i> ‘five days later/earlier’
<i>ts^hõwã</i> ‘sixth’	<i>ts^hõwẽ</i> ‘six days later/earlier’
<i>séng</i> ‘friendship’	<i>séngẽ</i> ‘together’
<i>údž</i> ‘above’	<i>údže</i> ‘on top’
<i>dót</i> ‘morning’	<i>dóti</i> ‘in the morning’
<i>rát</i> ‘night’	<i>ráti</i> ‘at night’
<i>diháɾa</i> ‘day’	<i>diháɾi</i> ‘during the day’
<i>b^hét</i> ‘upper edge of the terrace field’	<i>b^héti</i> ‘to the upper edge of the field (command to an ox)’
<i>k^hás</i> ‘special’	<i>k^hási</i> ‘especially’

There are three instances where an unaccented suffix affects the placement of accent:

<i>búa</i> ‘father’s sister’	<i>bwái</i> ‘father’s sister’s husband’
<i>déa</i> ‘compassion’	<i>djá-wɛ-a</i> ‘pitiful, poor’
	<i>djá-lu</i> ‘compassionate’

Apparently, this is due to the relative rarity of stems ending in *-a*. The majority of nouns ending in *-a* belong to the highly productive masculine *a*-declension, where *-a* is the ending of the direct singular case. Similarly, in thematic adjectives, *-a* serves as the ending of the direct singular masculine form. In contrast, words with stems ending in *-a* belong to the less common feminine *a*-declension, of which there are about 50 examples in the Kullui dictionary, including *búa* and *déa*.

Another instance where an unaccented suffix alters the position of a vowel is in the formation of compound adjectives:

<i>dúi</i> ‘two’	<i>dúi-b^húija</i> ‘two-storied’
<i>trái</i> ‘three’	<i>trái-b^húija</i> ‘three-storied’
<i>póndz</i> ‘five’	<i>póndz-b^húija</i> ‘five-storied’
<i>b^húi</i> ‘storey, floor’	

All of these cases represent rare examples of alterations in the final position — either to an accented position in *búa* → *bwái* or to a convocalic position in *b^húi* → *b^húija*.

6. Accented affixes

6.1. Accented prefixes causing accent shifting

Productive prefixes of this type were not identified. However, two words can be regarded as prefixal formations: *énbən* ‘quarrel’ from *bénna* ‘to become, to work out, to get along’ and *ólɛa* ‘unsalted’ from *lún* ‘salt’. These two examples are likely exceptions to the general pattern.

6.2. Accented suffixes causing accent shifting

This category is more extensive, encompassing both nominal and verbal suffixes. All these suffixes induce vowel changes in the root. The structure of the augmentations in forms with

such suffixes includes the following types: *-aCV* (*-ari*, *-aɫʰa*, *-aka*, *aɫu*, *-aɫa*, *-aŋa*), *-jaCV* (*-jari*, *-jaŋa*), *-aC* (*-ar*, *-aɫ*), *-oCV* (*-ota*, *-oŋa*), *-eCV* (*-era*, *-eŋa*), *-aCCV* (*-aɾna*, *-aɫna*), *-awC* (*-awɫ*), *-aCəC* (*-akəɾ*), *-CaCV* (*-laŋa*), *-awCV* (*-awŋa*), *-aV* (*-ai*), *-jaV* (*-jai*), *eCCV* (*-eɾŋa*). These extensions are generally long, either disyllabic or ending in a consonant. The accented vowel in the suffix is always *a*, *e*, or *o*.

Suffix *-ar-* (variants: *-jar-*, *-jari-*) forms masculine nouns meaning professions, mostly of *C*-declension (*-jari-* forms *V*-declension nouns):

<i>lóha</i> ‘iron’	<i>luhár</i> ‘blacksmith’
<i>súna</i> ‘gold’	<i>sənjár</i> ‘goldsmith’
<i>púdza</i> ‘puja’	<i>pədzjári</i> ‘pujari’

Suffix *-aɫ-* (masculine nouns denoting local inhabitant):

<i>lég</i> ‘Lag valley’	<i>ləgál</i> ‘inhabitant of Lag valley’
<i>rúpi</i> ‘Rupi valley’	<i>rəpjál</i> ‘inhabitant of Rupi valley’
<i>sári</i> ‘Sari valley’	<i>səɾjál</i> ‘inhabitant of Sari valley’
<i>méndi</i> ‘Mandi valley’	<i>məŋdjál</i> ‘inhabitant of Mandi valley’
<i>tʃəmba</i> ‘Chamba’	<i>tʃəmbjál</i> ‘inhabitant of Chamba’

Suffix *-aɫʰ-* (masculine nouns of *a*-declension denoting straw of a crop):

<i>tsʰóli</i> ‘maize’	<i>tsʰláɫʰa</i> ‘maize straw’
<i>kódra</i> ‘finger millet’	<i>kədráɫʰa</i> ‘finger millet straw’
<i>tsíni</i> ‘millet’	<i>tsəŋjáɫʰa</i> ‘millet straw’

Suffix *-awɫ-* (feminine nouns of *i*-declension denoting state):

<i>tʰékŋa</i> ‘to tire’	<i>tʰəkáwɫ</i> ‘fatigue’
<i>sédzŋa</i> ‘to adorn oneself’	<i>sədzáwɫ</i> ‘luxury’

Suffix *-ai-* (*-jai-*) (feminine action nouns):

<i>líkʰŋa</i> ‘to write’	<i>ləkʰái</i> ‘handwriting’
<i>tséɫʰna</i> ‘to rise’	<i>tsəɫʰái</i> ‘ascent’
<i>sáf</i> ‘clean’	<i>səfái</i> ‘cleaning’

Suffixes *-ak-* (*a*-declension) and *-akəɾ-* (*C*-declension) derive masculine actor nouns:

<i>léɾna</i> ‘to fight’	<i>ləɾáka</i> ‘fighter’
<i>píŋa</i> ‘to drink’	<i>pjáəkəɾ</i> ‘drunkard’

Suffix *-ot-* forms adjectives:

<i>pítsʰe</i> ‘behind’	<i>pətsʰóta</i> ‘of late sowing/harvest’
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Adjective suffix *-aɫ-*:

<i>súkʰ</i> ‘happiness’	<i>səkʰáɫa</i> ‘easy’
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Suffix *-er-* forms adjectives from kinship terms:

<i>mási</i> ‘maternal aunt’	<i>məséra</i> ‘maternal aunt’s (cousin)’
<i>máma</i> ‘maternal uncle’	<i>məméra</i> ‘maternal uncle’s (cousin)’
<i>tsátsa</i> ‘paternal uncle’	<i>tsətséra</i> ‘paternal uncle’s (cousin)’

Finally, all causative suffixes (such as *-a-*, *-ja-*, *-e-*, *-er-*, *-la-*, *-aɫ-*, *-aɫ-*, *-o-*) cause a shift of the accent.

In closed stems of the type *CVC(C)*, the root vowel, when in an unaccented position, shifts to *ə*:

Primary verb

bádzna ‘to sound (about a musical instrument)’

bódzna ‘to collide’

béjna ‘to sit down’

béjna ‘to increase, multiply’

bétsna ‘to escape’

b^hégna ‘to run’

b^hókna ‘to burn (vi)’

dzómna ‘to freeze (vi)’

dzítna ‘to win’

d^hól^hna ‘to fall, spill’

g^héjna ‘to decrease’

hól^hna ‘to plow (field)’

hárna ‘to suffer defeat’

kót^hna ‘to spin (yarn)’

kát^hna ‘to cut (tree)’

k^hénkna ‘to ring (vi)’

láng^hna ‘to cross’

lik^hna ‘to write’

léjna ‘to fight’

léjna ‘to lie down’

mónqna ‘to thresh (grain)’

nínqna ‘to weed (garden-bed)’

nót^hna ‘to dance’

pódz^hna ‘to sprout (vi)’

púd^hna ‘to reach’

pók^hna ‘to be cooked’

p^hésna ‘to get stuck’

rét^hna ‘to learn by heart’

fád^hna ‘to invite’

sédz^hna ‘to be dressed up’

tík^hna ‘to take root’

táng^hna ‘to hang’

t^hék^hna ‘to get tired’

t^hénkna ‘to ring (vi)’

t^hómna ‘to be set’

t^hápna ‘to plaster (a wall with clay)’

tsák^hna ‘to taste’

tsúnqna ‘to swing (vi)’

fún^hna ‘to listen’

mút^hfna ‘to urinate’

síng^hna ‘to smell’

dúk^hna ‘to hurt (vi)’

qub^hna ‘to drown (vi)’

ts^hút^hna ‘to hide (vi)’

t^hóp^hna ‘to boil over’

t^hók^hna ‘to rot (vi)’

ts^híd^hna ‘to crack (vi)’

níb^hna ‘to end’

b^hérkna ‘to complain’

Causative

bádzána ‘to play (a musical instrument)’

bádzána ‘to strike’

báfána ‘to seat’

bə^hána ‘to increase, breed’

bətsána ‘to save’

b^hagána ‘to chase’

b^hakána ‘to burn (vt)’

dzamána ‘to freeze (vt)’

dzətána ‘to help win’

d^həlána ‘to drop, spill’

g^həjana ‘to reduce’

həjana ‘to get (field) plowed by somebody’

hərána ‘to defeat’

kətána ‘to get (yarn) spun by somebody’

kətána ‘to get cut by somebody’

k^hənkána ‘to ring (vt)’

ləng^hána ‘to assist in crossing’

lək^hána ‘to dictate’

ləjana ‘to provoke into a fight’

ləjana ‘to lay’

məndána ‘to get (grain) threshed by somebody’

nəndána ‘to get (garden-bed) weeded by somebody’

nətsána ‘to make dance’

pədzána ‘to sprout (vt)’

pədzána ‘to deliver’

pəkána ‘to cook’

p^həsána ‘to push in’

rəjana ‘to induce to learn by heart’

fəd^hána ‘to invite through someone’

sədzána ‘to decorate’

təkána ‘to sprout a seed’

təngána ‘to get hanged’

t^həkána ‘to tire out’

t^hənkána ‘to ring (vt)’

t^həmána ‘to set’

t^həpána ‘to get plastered by somebody’

tsək^hána ‘to give to taste’

tsəndána ‘to swing (vt)’

fənjána ‘to tell, perform’

mətfjana ‘to induce to urinate’

səngjana ‘to make smell’

dək^héna ‘to torment’

qəbəna ‘to drown (vt)’

ts^hətérna ‘to leave behind’

t^həpérna ‘to allow to boil over’

t^həkérna ‘to rot (vt)’

ts^hədzer^hna ‘to crack (vt)’

nəb^hárna ‘to finish off’

b^hərkána ‘to turn someone against someone’

dʰémkɛna ‘to get scared’
kʰéɾkɛna ‘to knock (vi)’
tsémkɛna ‘to shine’

dʰəmkána ‘to threaten’
kʰərkána ‘to knock (vt)’
tsəmkána ‘to make shine’

In a few open stems, the root vowels, when in a convocalic position (directly adjacent to the accented vowel), undergo the following changes:

o > w

Primary verb

dʰóna ‘to wash’
ɖʰóna ‘to carry’
róna ‘to cry’
sóna ‘to sleep’

Causative

dʰwána ‘to get (clothes) washed by somebody’
ɖʰwána ‘to get (load) carried by somebody’
rwána ‘to make cry’
swána ‘to put to sleep’

i > j

Primary verb

dzína ‘to live’
pína ‘to drink’

Causative

dzjána ‘to save life’
pjána ‘to make drink’

7. Accentually independent affixes

7.1. Prefixes bearing independent accent

Certain negative prefixes, such as *ger-* and *be-*, carry their own accent and appear in Persian borrowings:

hádʒər ‘present’
imán-dár ‘honest’

gér-hádʒər ‘absent’
bé-imán ‘dishonest’

7.2. Suffixes with independent accent

Several suffixes, primarily of Persian origin, exhibit the same property:

-kʰor- (denoting an inclination toward something): *nékalkʰór* ‘imitator’ (from ***nékəl* ‘copy’, *tsugəlkʰor* ‘slanderer’ from ***tsugəl* ‘slander’); the base lexemes of Persian origin were not attested in field data, but their parallels exist in Hindi;

-dar- (denoting a position or office): *təsíldár* ‘head of a tahsil (an administrative unit)’, *dzmindár* ‘landowner’;

-kʰan-, forming masculine *a*-declension nouns denoting a place: *ɖákʰána* ‘post office’, *gúsəlkʰána* ‘toilet’, *bártsikʰána* ‘kitchen’.

Additionally, a widely used adjectivizing suffix *-a/*-, which derives inflected adjectives from nouns, behaves similarly.¹⁴

bʰúpʰi ‘mold’
kismət ‘fate’
búdʰi ‘intelligence’
bʰág ‘share’

bʰúpʰi-á/la ‘moldy’
kismət-á/la ‘fortunate’
búdʰi-á/la ‘intelligent’
bʰág-á/la ‘having a share’

¹⁴ The etymology of this suffix is well established: like its cognate in Hindi, *-vāl(ā)*, which is often written as a separate word in Hindi texts and easily attaches even to phrases, *-a/*- derives from Old Indo-Aryan *pāla* ‘protector, keeper, refuge’.

The same pattern is observed in certain derivational and inflectional verbal suffixes. These suffixes retain an independent accent of the base and contain unreduced vowels, suggesting they originated from former analytic constructions.

One such suffix is *-i/-u-*¹⁵, which forms denominal and passive (medial) verbs:

<i>dáh</i> ‘pain’	<i>dáhiṇa</i> ‘to be ill’
<i>b^húk^h</i> ‘hunger’	<i>b^húk^hiṇa</i> ‘to starve’
<i>dzər</i> ‘fever’	<i>dzóriṇa</i> ‘to have a fever’
<i>dóng</i> ‘ice’	<i>dóngiṇa</i> ‘to freeze’
<i>mléṛa</i> ‘yeast’	<i>mléṛiṇa</i> ‘to rise (of dough)’
<i>rónq</i> ‘widow’	<i>rónqiṇa</i> ‘to become widowed’
<i>fāṇ</i> ‘ice’	<i>fāṇiṇa</i> ‘to freeze’
<i>fērəm</i> ‘shame’	<i>fērmiṇa</i> ‘to feel ashamed’
<i>tángṇa</i> ‘to hang’	<i>tángiṇa</i> ‘to be hanged’

Interestingly, the causative forms of such verbs shift the accent to the causative suffix, reducing both vowels:

<i>b^hiṛiṇa</i> ‘to fight (of bulls)’	<i>b^həɽjáṇa</i> ‘to make fight’
<i>gódz^hiṇa</i> ‘to hide’	<i>gədz^hjáṇa</i> ‘to conceal’

The *-uda/-ada/-idi/-ede* suffix, which marks the perfective participle, consists of two alternating inflectional endings. This suggests it developed relatively recently from an analytic construction: *tsóluda* ‘gone’ (SG.M), *tsólidi* ‘gone’ (F).¹⁶

The *-ṇua/-nua/-* suffix, which derives agentive nouns, originates from the fusion of the future indefinite marker *-ṇu/-nu* with the adjectivizer *-a/-*: *búdz^hṇu.ála*, ‘caring’.

Similarly, the plural imperative markers *-at*, *-it*, found in the present and future tenses, and plural hortative marker *-am* carry independent accent:¹⁷ *kéra, t* ‘do it now’, *kéri, t* ‘do it in the future’, *kéra, m* ‘let’s do it’.

A brief digression is necessary to clarify the subtle distinction between the two groups of third-type affixes. Historically, the markers *-i/-u*, *-uda/-ada/-idi/-ede*, *-ṇua/-nua/-*, and *-at*, *-it*, *-am* emerged relatively recently from analytical constructions. It is more consistent to treat the vowel positions in these endings as final rather than accented (with the exception of the *a* in *-ṇua/-nua/-*): *b^hiṛi.ṇa*, *tsólu.ḍa*, *búdz^hṇu.ála*, *kéra.ṭ*, *kéri.ṭ*, and *kéra.m*. In most cases, this distinction makes little difference — except in the causative forms *b^həɽjáṇa* and *gədz^hjáṇa*, which are derived from *b^hiṛiṇa* and *gódz^hiṇa*, respectively. In these instances, the root vowel

¹⁵ Historically, *-i/-u-* appears to be related to the passive and denominative Old Indo-Aryan marker *-īya-*. This is rather unusual for an affix of the third group, since accentually independent affixes are generally of more recent origin. Nevertheless, unlike the causative marker *-a-* discussed above, the marker *-i/-u-* does not affect accent placement (cf. *k^héḷṇa*, *k^héḷiṇa* ‘to play’ vs. *béḷṇa* ‘to sit down’, *bāḷṇa* ‘to seat someone’). Apparently, this may be explained by a relatively recent combination of the old verbal marker *-i-* with the auxiliary verb *hoṇa* ‘to be’ in constructions such as *kéri hoṇa* ‘be done’ [Renkovskaya 2020: 115–116]; see also parallels in other Himachali varieties in [Hendriksen 1986: 141–143, 146–149]. Thus, *-i-* may have inherited the properties of the final position of the old passive marker, while *-u* reflects those of the accented position in the periphrasis of the auxiliary verb *hua*.

¹⁶ Participles with *-uda/-ada/-idi/-ede* contain a double inflection and evidently originate from the combination of the old perfective participle in *-u/-a/-i/-e* with the imperfective participle of the auxiliary verb, presumably **hona* ‘to be’: **tsólu hunda*, etc. Thus, they prosodically retain two final vowel positions.

¹⁷ As shown in [Renkovskaya 2021], the imperative inflections *-at* and *-it* originate from combinations of imperative forms in *-a* and *-i* with the particle *tə*, which is why they partially retain the prosodic properties of a phrase. A similar situation is observed with the hortative *keram*, which also occurs in the form *kera me* (from ***kera hame*) and derives from the fusion of the imperative with an archaic first-person singular pronoun.

shifts from accented to weak, while the suffix vowel changes from final to convocalic. If we treat the root *bʰiɫ* ‘crowd’ and the denominative suffix *-i* in *bʰiɫiŋa* as two independent accentual units — as is the case with suffixes like *-dar* or *-aɫ-* — and draw the boundary of the accentual units as *bʰiɫ-iŋa* (rather than *bʰiɫi-ŋa*), we would expect the form ***bʰiɫ-jáŋa*, since the accent shift in the latter part should not cause reduction in the former.

This might seem trivial when describing the situation solely in terms of morphophonological alternations rather than accent, and treating *bʰiɫiŋa* as a unified whole — since vowel reduction occurs only in formations with suffixes containing *e*, *a*, or *o*, but not *i* or *u*. However, when discussing accent, it is essential to distinguish between the accentuation rule and the vowel reduction rule. For instance, the accentuation rule may not apply to relatively old and well-integrated borrowings, even though vowel reduction still takes place in them. Therefore, if *i* or *u* was accented (or long) in the source language, it may remain accented, leading to the regular reduction of unaccented vowels in Kullui: *bəndʰúk* ‘rifle’ (from Arabic via Persian *bundūq* ‘cannon, musket’) and *grib* ‘poor’ (from Arabic via Persian *gharīb* ‘strange, foreign, exotic’).

In contrast, in the verb *bʰiɫiŋa* the deviation is not in the placement of the accent — as is typical in borrowings — but in the lack of reduction in the second syllable, which is fully explainable if the second syllable is regarded as having a final position. This view is corroborated by the formation of *bʰəɾjána*, in which reduction occurs according to the general rules: the vowel that initially occupied the final position shifts to a convocalic position upon the addition of the causative affix, which is then followed by the standard infinitive suffix *-ŋa* (rather than the contracted infinitive of the auxiliary verb *hoŋa*).

All other inflectional markers are unaccented.

8. Alternation of root vowels in morphology and its influence on accent

In addition to suffixal causative formation, Kullui also exhibits a non-suffixal pattern of causative derivation through root-internal alternations. Primarily, this alternation manifests as a shift in the root vowel according to the following pattern (for accented root vowels):

Table 4

The alternation of the accented root vowels in the causatives

Primary verb	<i>u</i>	<i>i</i>	<i>ɔ</i>
Causative	<i>o</i>	<i>e</i>	<i>a</i>

Primary verb

dzúrna ‘to join (vi)’
kʰúlŋa ‘to open (vi)’
múrna ‘to turn (vi)’
rúkŋa ‘to stop (vi)’
pʰírna ‘to roll (vi)’
dzʰóɾna ‘to fall’
mórna ‘to die’
tsórŋa ‘to graze (vi)’
qʰóɫna ‘to fall, spill (liquid)’
póɫna ‘to grow up, be raised’

Causative

dzóɾna ‘to connect, gather’
kʰólŋa ‘to open (vt)’
móɾna ‘to turn (vt)’
rókŋa ‘to stop (vt)’
pʰérna ‘to roll (vt)’
dzʰáɾna ‘to throw down, knock over’
márna ‘to hit, kill’
tsárna ‘to graze (vt)’
qʰáɫna ‘to overturn, pour’
páɫna ‘to keep, raise’

Besides vowels, alternation also affects final consonants of the root, though this is attested in only two cases:

Table 5

The alternation of the final root consonants in the causatives

Primary verb	<i>t</i>	<i>t</i>
Causative	<i>d</i>	<i>r</i>

Primary verb	Causative
<i>ts^hútŋa</i> ‘to hide, to go away’	<i>ts^hódŋa</i> ‘to abandon’
<i>tŋúŋa</i> ‘to break (vi)’	<i>tŋórŋa</i> ‘to break (vt)’

A more complex pattern emerges with disyllabic verb stems that follow this model. Here, an unaccented vowel alternates with an accented one — specifically, *ə* alternates with *a*, which, as seen with suffixes of the second group, attracts accent. All such verbs begin with a vowel. The shift in accent triggers metathesis, when the initial vowel (now unaccented) is placed/moved after the following consonant. Instead of being lost, the unaccented vowel is retained in a con-vocalic position as *w*:

Primary verb	Causative
<i>úkəŋa</i> ‘to rise’	<i>kwáŋa</i> ‘to raise’
<i>ósŋa</i> ‘to descend’ ¹⁸	<i>swáŋa</i> ‘to lower’
<i>úbəŋa</i> ‘to boil (vi)’	<i>bwáŋa</i> ‘to boil (vt)’
<i>útsəŋa</i> ‘to peel (vi)’	<i>tswáŋa</i> ‘to peel (vt)’

A similar case is found in *údzəŋa* ‘to be destroyed’. A hypothetical causative ***dzwáŋa* ‘to damage’ would be expected, yet only a deverbal noun *dzwár* ‘crop damage by livestock’ has been attested.

Thus, not only certain suffixes but also the root can shift the word’s accent when the root vowel undergoes a specific change.

9. Accent in compounding and blending

Kullui features both true compounds (the result of compounding) and portmanteau words (resulting from blending). Blending involves combining the initial part of a stem with the final part of another stem, as in English *breakfast + lunch = brunch*.

In Kullui, such words resemble the descendants of Old or possibly Middle Indo-Aryan compounds and often historically go back to them. However, there are several reasons to consider these lexemes as derived from two primary stems in a synchronic description:

- 1) they are perceived by native speakers as derived words, and their meanings are explained through primary stems.
- 2) transformations at the boundary of stems cannot always be explained in terms of Middle Indo-Aryan historical phonetics;
- 3) in several cases, such words denote highly specific cultural and natural phenomena that are difficult to trace back to the Old or even Middle Indo-Aryan period.

In the following section, I first discuss compounding as a more widespread word-formation process and then move on to the rarer cases of blending.

¹⁸ This verb has perfective form *ós/u*, and *osə/-* as a stem, with irregular loss of the final consonant in the infinitive.

9.1. Compounding

From an accentual perspective, Kullui compounds can be divided into two types. The first type includes compounds in which each stem retains its own accent (e.g., *ts^hiŋi-tsór* ‘one who steals firewood’, from *ts^hiŋi* ‘firewood’ and *tsórna* ‘to steal’). The second type consists of compounds that form a single accentual unit. Morphophonological analysis requires a focus on the latter type. In most cases, the accent falls on the second stem:

<i>kón</i> ‘ear’	<i>bálu</i> ‘ornament, large nose ring’	<i>kənbálu</i> ‘large earring’
<i>bón</i> ‘forest’	<i>mánhu</i> ‘man’	<i>bənmánhu</i> ‘savage’
<i>sót</i> ‘seven’	<i>nádz</i> ‘grain’	<i>sətnádz</i> ‘a ritual mixture of seven types of grain’
<i>tsár</i> ‘four’	<i>ángəl</i> ‘finger (nowadays only as a unit of measurement)’	<i>tsrángla</i> ‘pitchfork’
<i>kúkri</i> ‘chicken’	<i>kóŋi</i> ‘building, house’	<i>kərkóŋa</i> ‘chicken coop’ (from <i>**kəkərkóŋa</i>)
<i>g^hór</i> ‘house’	<i>péŋa</i> ‘to enter’	<i>g^hərpéŋi</i> ‘housewarming’

However, some compounds retain the accent on the first stem:

<i>déw</i> ‘god’	<i>g^hór</i> ‘дом’	<i>déwghra</i> ‘храм’
<i>nóu</i> ‘nine’	<i>gédz</i> ‘gaz (a unit of length, ~90 cm)’	<i>nówgedzija</i> ‘very tall man’, <i>nówgedzəŋ</i> ‘very tall woman’
<i>múg</i> ‘mung bean’	<i>p^hóli</i> ‘pod’	<i>múgphəli</i> ‘peanut’

9.2. Blending

In addition to compounding, Kullui also has several examples of blending, where two stems merge into each other while the derived word still retains a semantic connection to both bases from the speakers’ perspective. At the same time, deriving at least some of these words from Old Indo-Aryan compounds is doubtful, as they refer to highly specific cultural realities of the Kullu Valley. Almost all the existing noun examples retain the accent of the second stem:

<i>lún</i> ‘salt’	<i>kófu</i> ‘small bowl’	<i>nəlófu</i> ‘salt cellar’ < metathesis from <i>**lənófu</i>
<i>súna</i> ‘gold’	<i>kángŋu</i> ‘bracelet’	<i>snángŋu</i> ‘golden bracelet’
<i>búmŋi</i> ‘a brooch for fastening a woman’s plaid (<i>póŋu</i>)’ ¹⁹	<i>d^hága</i> ‘thread’	<i>b^həŋága</i> ‘thread between the pins of a <i>búmŋi</i> ’ ²⁰
<i>ŋákər</i> ‘Thakur, the name of the dominant landowning caste’	<i>béŋ</i> ‘a small cluster of houses’	<i>ŋəkréŋ</i> ‘a cluster of houses belonging to Thakurs’

9.3. Accent patterns in compounds and blended words

An analysis of Kullui compounds and blended words reveals a consistent pattern: words where the accent falls on the second stem (*kənbálu*, *bənmánhu*, *sətnádz*, *tsrángla*, *kərkóŋa*, *g^hərpéŋi*, *nəlófu*, *snángŋu*, *b^həŋága*, *ŋəkréŋ*) exhibit the same behavior as words formed with accented suffixes. Specifically, the accented vowels in the second stem are limited to *a*, *e*, *o*. In contrast, words where the accent remains on the first stem (*déwghra*, *nówgedzija*, *nówgedzəŋ*, *múgphəli*) contain different vowels (*ɔ*, *ɛ*) in the second stem.

¹⁹ It consists of two pins connected by a chain or, in an earlier period, by a thread.

²⁰ Diachronically, the first part of the word, like *búmŋi*, apparently derives from the verb *bunna* ‘to weave’, as the plaid was originally fastened with knitting needles and actual knitting, but at present, the semantic connection between both words and the verb has been lost.

However, three exceptions stand out, where the accent falls on the second stem, despite the presence of a vowel other than *a*, *e*, *o*:

<i>bóŋ</i> ‘forest’	<i>kókŋi</i> ‘a type of cucumber’	<i>bəŋkókŋi</i> ‘wild cucumber’
<i>dúí</i> ‘two’	<i>**póŋhr</i> ‘watch, guard’ ²¹	<i>dəpóŋhr</i> ‘midday, two watches of the day’, <i>dəpóŋhri</i> ‘midday meal’
<i>kʰédʒu</i> ‘left’	<i>hótʰ</i> ‘hand’	<i>kʰədʒʰótʰa</i> ‘left-handed person’

The form *bəŋkókŋi* ‘wild cucumber’ likely arose through analogy with nouns such as *bəŋmánhu* ‘savage’ and others, including the synchronically non-decomposable *bəŋsoka* ‘palm civet’. It appears that *bəŋ-* in the names of local flora and fauna has come to be reanalyzed as a prefix, leading to the loss of its original accent.

In the remaining cases (*dəpóŋhr/dəpóŋhri* and *kʰədʒʰótʰa*), the accent shift is likely influenced by the presence of *h*, which affects the surrounding accented vowels.

Overall, the observed patterns in Kullui word formation provide valuable insights into the system of the vowel morphophonemes.

10. Patterns of morphophonological alternations

This section presents an analysis of morphophonological alternations in Kullui, grouping phonemes from different positions into morphophonemes.

10.1. Alternations between accented and final positions

Due to the specific constraints of word-final position, examples of such alternations are scarce. One clear case is the pair *búa* ‘father’s sister’ — *bwái* ‘father’s sister’s husband,’ where accented *a* trivially corresponds to final *a*. Otherwise, the inventories of accented and final phonemes are nearly identical, except for *ɛ* and *ɔ*, which do not occur at the end of polysyllabic words. A plausible approach is to align all phonemes in a straightforward manner while positing that *ɛ* and *ɔ* correspond to *∅* in final position. The resulting table is as follows:

Table 6

Alternations between accented and final positions							
Accented position	<i>a</i>	<i>e</i>	<i>o</i>	<i>i</i>	<i>u</i>	<i>ɔ</i>	<i>ɛ</i>
Final position	<i>a</i>	<i>e?</i>	<i>o?</i>	<i>i?</i>	<i>u?</i>	<i>∅?</i>	<i>∅?</i>

10.2. Alternations between accented and convocalic positions

Alternations in this category are more numerous:

<i>e</i>	<i>i, j</i> ²²
<i>déa</i> ‘compassion’	<i>djáwŋa</i> ‘poor, miserable’
<i>déa</i> ‘compassion’	<i>djálu</i> ‘compassionate’

²¹ This is an archaic word, referring in medieval India to three-hour time intervals, originally marked by a change of watch; attested in the verb *pəhərna* ‘to keep watch’.

²² *i/j* are transcription variants of one phoneme, as well as *u/w*.

kélu ‘Himalayan cedar’
hérna ‘to look’

rjálu ‘cedar needles’²³
rihána ‘to show’

o
lóha ‘iron’
dʰóna ‘to wash’
qʰóna ‘to carry’
róna ‘to cry’
sóna ‘to sleep’
ósna ‘to descend’

u, w
luhá ‘blacksmith’
dʰwána ‘to get washed by somebody’
qʰwána ‘to get carried by somebody’
rwána ‘to make cry’
swána ‘to put to sleep’
swálna ‘to make descend’

i
pína ‘to drink’
dzína ‘to live’

i, j
pjákaɽ ‘drunkard’
pjána ‘to give to drink’
dzjána ‘to save a life’

u
búa ‘father’s sister’
úkəlna ‘to rise’
úbəlna ‘to boil (vi)’
útsərna ‘to peel off (vi)’
údzərna ‘to collapse’

u, w
bwái ‘father’s sister’s husband’
kwálna ‘to raise’
bwálna ‘to boil (vt)’
tswáɽna ‘to peel (vt)’
dzwáɽ ‘damage to crops by cattle’

For *a* and *ɔ*, only one example of each alternation has been found:

kʰána ‘to eat’
hóna ‘to defecate’

kʰjána ‘to feed’
gihána ‘to cause defecation’²⁴

While these pairs suggest that *a* and *ɔ* correspond to *i/j* in the convocalic position, two examples are insufficient to confirm a systematic pattern. No examples have been found for *ɛ*, meaning that the table can only be partially completed:

Table 7

Alternations between accented and convocalic positions

Accented position	<i>a</i>	<i>e</i>	<i>o</i>	<i>i</i>	<i>u</i>	<i>ɔ</i>	<i>ɛ</i>
Convocalic position	<i>i/j?</i>	<i>i/j</i>	<i>u/w</i>	<i>i/j</i>	<i>u/w</i>	<i>i/j?</i>	?

Filling these gaps will likely require external comparison in a diachronic framework.

10.3. Alternations between accented and unaccented positions

Since vowel contrasts are neutralized in unaccented positions, the alternations follow a relatively simple pattern. It is unnecessary to list all available examples for each morphophoneme, but the following examples illustrate that all strong phonemes participate in the process:

²³ This word is derived via suffix *-aru-* with two metatheses, consonant cluster simplification and dentalization of *l*: **keláru* > **kʰeáru* > **kljáru* > **ljáru* > **rjálu* > *rjálu*.

²⁴ The root vowel change in this case may be attributed to analogy with causatives formed with the suffix *-ja-*, such as the semantically similar *məɽjaŋa* ‘to induce urination’ and the phonetically similar *kʰjaŋa* ‘to feed’ (derived from the open primary root *kʰa-* ‘to eat’). This suggests that ***gəh* may pattern like an open root in this context. In rapid speech, *gihána* is realized as */gʰjaŋa/*, further aligning its phonetic shape with the aforementioned causatives in *-ja-*.

u
súna ‘gold’
púdza ‘puja’
lún ‘salt’
búnna ‘to weave’

ε
lég ‘Lag Valley’
tʰékʰa ‘to become tired’
béŋna ‘to become’
kérna ‘to do’

o
kódra ‘finger millet’
gódzʰína ‘to hide (vi)’
gʰólʰna ‘to mix (vt)’

i
líkʰna ‘to write’
pítsʰe ‘behind’
tsíl ‘Roxburgh pine’
tsírna ‘to saw’

a
sáf ‘clean’
masi ‘maternal aunt’
tsár ‘four’

ɔ
bʰókʰna ‘to burn (vi)’
dzómʰna ‘to freeze’
tsómʰri ‘leather’
tsʰólʰi ‘corn’

e
béʃna ‘to sit’
léʃna ‘to lie down’
kʰélʰna ‘to play’
déŋa ‘to give’

ə/θ²⁵
səŋjár ‘goldsmith’
pədʒjáři ‘pujari’
ólʰa ‘unsalted’
bʰái ‘weaving’

ə/θ
ləgál ‘inhabitant of Lag Valley’
tʰəkáwt ‘fatigue’
bʰána ‘to make’
krána ‘to have (someone) do’

ə/θ
kədrátʰa ‘finger millet straw’
gədʒʰána ‘to hide (vt)’
gʰlʰána ‘to have (someone) mix’

ə/θ
ləkʰái ‘handwriting’
pətsʰóta ‘late-sown (crop)’
tsláru ‘Roxburgh pine needles’
tsráni ‘sawyer’

ə/θ
səfái ‘cleaning’
məsera ‘maternal (cousin)’
tsrágla ‘pitchfork’

ə/θ
bʰəkána ‘to set on fire’
dzəməána ‘to freeze’
tsmár ‘leatherworker’
tsʰlátʰa ‘corn straw’

ə/θ
bəʃána ‘to seat’
ləʃána ‘to lay down’
kʰlána ‘to make (someone) play’
dlána ‘to pass (something) through an intermediary’

The patterns described above can be summarized in the following table:

Table 8

Alternations between accented and weak positions

Accented position	a	e	o	i	u	ɔ	ε
Unaccented position	ə/θ	ə/θ	ə/θ	ə/θ	ə/θ	ə/θ	ə/θ

10.4. Alternations between final and convocalic positions

There are few examples of such alternations, due to the specifics of the final position, which is often filled with such affixes that are not a part of the primary base:

²⁵ The deletion of ə follows phonotactic rather than morphophonological rules and falls outside the scope of this study, cf. [Krylova 2025].

<i>i</i> <i>b^húi</i> ‘storey’	<i>i, j, ij</i> <i>dúi-b^húiija</i> ‘two-storey’, <i>trái-b^húiija</i> ‘three-storey’, <i>póndz-b^húiija</i> ‘five-storey’
<i>tsíni</i> ‘millet’	<i>tsənját^ha</i> ‘millet straw’
<i>rúpi</i> ‘Rupi Valley’	<i>rəpjál</i> ‘inhabitant of the Rupí Valley’
<i>sári</i> ‘Sari Valley’	<i>səjál</i> ‘inhabitant of the Sari Valley’
<i>ménqi</i> ‘Mandi Valley’	<i>məŋdjal</i> ‘inhabitant of the Mandi Valley’
<i>p^hanqi</i> ‘chatterbox’	<i>p^hanqija</i> ‘female chatterbox’
<i>b^hiŋina</i> ‘to fight (of bulls)’	<i>b^həŋjána</i> ‘to make fight’
<i>gódz^hina</i> ‘to hide (vi)’	<i>gədz^hjána</i> ‘to hide (vt)’
<i>u</i> <i>kúlu</i> ‘Kullu Valley’	<i>u/w</i> <i>kúlwi</i> ‘Kullui’

These examples align with the proposed correlation between accented and final positions, reinforcing the hypothesis rather than contradicting it. Specifically, they confirm the expected alternations for accented *i* and *u*.

10.5. The system of strong morphophonemes

When combining all the stages of alternation, we obtain the following table:

Table 9

The system of strong morphophonemes

Accented position	<i>a</i>	<i>e</i>	<i>o</i>	<i>i</i>	<i>u</i>	<i>ɔ</i>	<i>ɛ</i>
Final position	<i>a</i>	<i>e?</i>	<i>o?</i>	<i>i</i>	<i>u</i>	<i>ø?</i>	<i>ø?</i>
Convocalic position	<i>i/j?</i>	<i>i/j</i>	<i>u/w</i>	<i>i/j</i>	<i>u/w</i>	<i>i/j?</i>	
Unaccented position	<i>ə/ø</i>	<i>ə/ø</i>	<i>ə/ø</i>	<i>ə/ø</i>	<i>ə/ø</i>	<i>ə/ø</i>	<i>ə/ø</i>

10.6. Weak morphophonemes

As noted in [Churganova 1973: 35], not every weak phoneme within a morpheme can be correlated with a strong phoneme (for example, the first vowel in the Russian word *кaрoнa* ‘cow’). In the case of Kullui, this statement holds even more true due to both the greater analyticity of Indo-Aryan languages and the lesser degree of description available for Kullui. Therefore, the vowel morphophoneme system must be supplemented with three weak elements: *i/j*, *u/w* in convocalic position, as well as *ə* in unaccented position. The resolution of such ambiguities within a synchronic description is possible through the collection of new field data on Kullui vocabulary, while in a diachronic framework, extensive comparison with other languages will aid in describing its historical phonetics.

11. The rule of accent

Based on the classification of affixes presented above, certain principles can be formulated to determine the placement of accent in Kullui. As previously noted, I consider Kullui accent to

be phonological and assume that minimal pairs are theoretically possible. However, the question of how an accent placement rule should be formulated for a language that employs phonological transcription while also possessing multiple vowel phoneme systems distributed according to accent position is far from trivial. **A rule derived solely from transcription — such as “accent falls on the strong phoneme” — would be formally correct for any word but logically uninformative, as strong phonemes are defined precisely as those occurring in accented positions. A linguistically meaningful rule must explain why certain word-formation processes result in a shift of accent position, while others do not, and at the same time account for the majority of words in which word-formation elements are not synchronically identifiable.** Such an explanation is likely to emerge at the morphophonological, and to some extent, morphological level of analysis. It may also partially incorporate aspects of the language’s lexical history. Thus, the search for accent placement rules involves multiple stages. The first step is to formulate a rule based on word-formation patterns. The next step is to test this rule against the non-derived lexicon of Kullui and identify exceptions. Finally, these exceptions must be classified into distinct groups, each governed by its own set of principles.

First and foremost, all affixes of the third group — those that bear independent accent — should be set aside. These include Persian prefixes *ger-*, *be-*, suffixes *-k^hor-*, *-dar-*, *-k^han-*, *-a/-*, *-i/-u-*, the participial markers *-uda/-ada/-idi/-ede*, the agentive noun marker *-ḡa/-nua/-*, the plural imperative markers *-at*, *-it*, and hortative marker *-am*. Next, it should be stated that all other Kullui prefixes are unaccented. Since it is primarily suffixes that regularly trigger accent shifts, it can be hypothesized that the search for the accented syllable should proceed from the end of the word. The final open syllable is disregarded, as it occupies a word-final position (which may be viewed as bearing secondary accent). Additionally, no affixes of the type *-V* belong to the second group (that is, affixes that attract accent). Consequently, in words ending in a consonant, the accented syllable can be sought beginning with the last syllable, whereas in words ending in a vowel, the search should start from the penultimate syllable.

Furthermore, all accent-attracting affixes contain the vowels *a*, *e*, or *o* in their accented syllable: *-ari*, *-aṭ^h*, *-ak-*, *aṭu*, *-a/-*, *-a-*, *-jari*, *-jaṇ-*, *-ar*, *-aṭ-*, *-aṭ-*, *-awṭ-*, *-akṭ-*, *-la-*, *-ai*, *-jai*, *-ot-*, *-o-*, *-er-*, *-e-*. It can be assumed that morphophonemes corresponding to the strong phonemes *i*, *u*, *ɔ*, *ɛ*, while they may bear accent, do not trigger accent shifts. Thus, the accented syllable will be the first one, counted from the end of the word, that contains the vowels *e*, *a*, or *o* — starting with the final syllable in consonant-ending words and with the penultimate syllable in vowel-ending words. If no such syllable is present, the accented syllable will be the leftmost one (i.e., the first syllable, excluding the prefix). This rule applies to all words discussed in the section on word-formation processes, with the following exceptions: *kābūtār* ‘pigeon’, *kābūtri* ‘female pigeon’, *dzārūr* ‘necessary’, *dzārūri* ‘necessary (adj)’, *dzārūrət* ‘necessity’, *bāṅkókri* ‘wild cucumber’, *dapóhr* ‘midday, two watches’, *dapóhri* ‘midday meal’, and *k^hədž^hót^ha* ‘left-handed’. It appears that the behavior of the pairs *kābūtār*, *kābūtri* and *dzārūr*, *dzārūri*, *dzārūrət* is linked to the Persian origin of these words and the length of the accented vowels in the source language. The accent in *bāṅkókri* may be attributed to the relative productivity of this type of compounding and the perception of *bāṅ-* as a prefix. As for *dapóhr*, *dapóhri*, and *k^hədž^hót^ha*, a hypothesis has already been proposed regarding an accent shift due to the influence of *h* on the vowel. However, in order to clarify the reasons for these deviations, further examples are needed. Such examples were found upon examining the full Kullui lexicon in the Fieldworks project, which currently comprises over 2,800 lexical entries collected by me and my colleagues during field research.

Currently, accent markings are not indicated in the lexicon. To identify deviations from the proposed rule, a search was conducted using regular expressions.

First, let us examine words that exhibit more than one accent. Across all queries, no more than 200 such words have been identified. The majority fall into the following categories: bor-

rowed personal names, Hindi loanwords, Sanskritisms, Persianisms, Anglicisms, suffixal formations containing affixes that bear independent accent, and lexicalized forms with postpositions. Some examples include:

- 1) personal names: *amen* 'Amin', *bombej* 'Bombay', *gopal* 'Gopal', *gorək^hnat^h* 'Gorakhnath', *kotgar^hi* 'Kotgarhi language', *nepal* 'Nepal', *radžəst^han* 'Rajasthan', *radžəst^hani* 'Rajasthani', *saṛisəha* 'Sari Square', *sohel* 'Sohel';
- 2) Sanskrit loanwords: *afirbad* 'blessing', *əkafwaṇi* 'revelation', *kəlakar* 'artist', *məno-kamna* 'cherished desire', *radzd^hani* 'capital';
- 3) causatives borrowed from Hindi: *utarna* 'to lower', *hilaṇa* 'to wave', *ulṭaṇa* 'to overturn', *g^humaṇa* 'to take for a walk', *k^hiskaṇa* 'to push aside';
- 4) formations with affixes that bear independent accent: *ferminda* 'ashamed', *budž^hua[la* 'caring', *b^hup^hia[la* 'moldy', *tsiṇ^hua[la* 'builder'; the perfective forms of the auxiliary verb *lagada*, *lagede*, *lagidi*; prohibitive particles *mətit*, *mətat*, *herit* with imperative endings; *tsə[li*di 'pregnant', likely derived from the perfective participle of an unattested verb, possibly obscene, related to the Old Indo-Aryan *cuḍa*- 'vulva';
- 5) pronominal forms written as single units with genitive and accusative-dative postpositions: *ūira*, *tūira*, *tusabe*, *asabe*;
- 6) contracted forms: the adverb *pits^hləkal* 'yesterday'; the adjective *udzira* 'resident of Manali', formed from a contracted combination of *udže* 'above' and the genitive postposition *ra*;
- 7) numerals: *uṇeti* '29', *iktali* '41', *tfurtali* '44', *tfurasi* '84', *uṇanwe* '89', *uṇahət* '59', *uṇəhtər* '69', *uṇasi* '79', *untali* '39' — borrowed from Mandeali, a neighboring Himachali language.

Beyond these groups, only four words have been identified: *purana* 'old', the noun *mək^hfir* 'name of a month (November-December)', and the causative verbs *mukaṇa* 'to finish' and *g^huṣaṇa* 'to rub'. In *mukaṇa*, vowel reduction in the root is likely avoided to prevent homonymy with *məkaṇa* 'to kill'.

The next group of deviations includes words where the accent falls on the vowels *ɔ*, *ɛ*, *i*, *u* in a non-initial syllable. These queries collectively yield no more than 70 words.

Apart from prefixal formations and previously analyzed compounds, this group also includes personal names, Sanskrit, Persian, and Arabic borrowings, numerals borrowed from Mandeali, as well as the following nine words: *kəpur* 'camphor', *b^hətidza* 'nephew (brother's son)', *b^hətidzi* 'niece (brother's daughter)', *pətikṇa* 'to jump', *g^həṣitṇa* 'to drag', *mək^hir* 'honey', *dz^həṛiṇgiṇa* 'to stumble', *məṭ^hiṅ[la* 'dough or rice ball', *pətsiṇḍu* 'pinch'.

Overall, instances of double accent in the native lexicon conform to the proposed rules.

The third type of deviations includes words without an accented position. This query returned 39 words, most of which are monosyllabic function words. Among nouns, only monosyllabic forms appear. The polysyllabic words include: *nəhi* 'not', *g^həṭi* 'without', *kədi* 'when?', *tədi* 'then', *dzədi* 'when', *məgər* 'however', *mətləb* 'that is'.

Overall, the rule formulated based on derivational affixes also applies to the rest of the lexicon, covering over 90 % of more than 2800 words. The exceptions can be categorized as follows:

- 1) Loanwords, primarily from Persian and Sanskrit (*tatsama*, in traditional terminology), in which vowel reduction may not occur. However, in many cases, when a loanword is sufficiently adapted, reduction does take place, as in *bədam* 'almond' (from Persian *bādām* 'almond'), *bəgar* 'hard labor' (from Persian *begār* 'unpaid labor'), *məndər* 'temple' (from Sanskrit *mandira* 'temple'), and *məsant* 'end of the month' (from Sanskrit *māsānta* 'end of the month'). Personal names, which are also typically of Sanskrit or Persian origin, may likewise retain their vowels. Additionally, there is a significant number of borrowings from Hindi, the local official language, and Mandeali, a neighboring variety from which most numerals have been adopted. Examples of words where reduction does not occur: *gópāl* 'Gopal' (proper name from Sanskrit *gopāla* 'herdsman'), *rádzd^hani*

‘capital’ (from Sanskrit *rājadhānī* ‘capital’), *džétún* ‘olive’ (from Arabic *zaitūn* > Persian *zaitūn* > Hindi *zaitūn*, colloquial Hindi *jaitūn*), *útarna* ‘to lower’ (from Hindi *utarna* ‘to lower’), *úñéhtər* ‘69’ (from Mandeali *uñhattər* ‘69’).

- 2) In the same lexical groups, if a word is somewhat better adapted, vowel reduction in unaccented syllables may occur, but the placement of the accent may be determined differently due to phonetic characteristics of the source language, cf., e.g., *bəndʰúk* ‘rifle’ (from Persian *bunduq* ‘cannon, musket’ (originally Arabic)).
- 3) Function words may be unaccented.
- 4) There is a subset of 10 words that exhibits an accent on *ε*, *u*, *ɔ*, *i* of a non-initial syllable, followed by a nasal + homorganic plosive or affricate: *gʰəméndʰ* ‘pride’, *nərəngi* ‘a type of citrus’, *pətʃúndʒa* ‘55’, *tʃərúndʒa* ‘54’, *tʃʰəpúndʒa* ‘56’, *dʒʰəŋgiŋa* ‘to stumble’, *məʃʰingla* ‘dough or rice ball’, *pətsínqu* ‘pinch’, *brénqda* ‘veranda’, *həŋimba* ‘Hidimba (goddess name)’.

It may be necessary to formulate an additional rule **treating syllables ending in such clusters as equivalent to those with *a*, *e*, *o***. This should be tested against the entire lexicon dataset.

An expected deviation under this rule would be words where *ə* is followed by a nasal + homorganic plosive or affricate, with a preceding accented vowel. The only such exception found is *súrəng* ‘tunnel’.

Final formulation of the rule: **prefixes are unaccented. The accented syllable is determined by counting from the end of the word:**

In words ending in a consonant, the last syllable is counted first.

In words ending in a vowel, the penultimate syllable is counted first.

The first syllable in this sequence that either contains the vowels *e*, *a*, *o* or the vowel followed by a cluster of a nasal with homorganic plosive or affricate receives the accent. If no such syllable is present, the accent falls on the syllable farthest from the end of the word (i.e., the first syllable, excluding any prefix).

Deviations (excluding clear cases of minimally adapted loanwords):

words that do not undergo vowel reduction: *purána* ‘old’, *gʰuʃána* ‘to rub’, *mókʃir* ‘name of a month (November–December)’;

words with accent placement deviating from the predicted pattern: *kəpúr* ‘camphor’, *bʰətídʒa* ‘nephew (brother’s son)’, *bʰətídʒi* ‘niece (brother’s daughter)’, *gʰəʃítʃa* ‘to drag’, *məkʰir* ‘honey’, *pəʃikʃa* ‘to jump’, *dəpóhr* ‘midday, two watches’, *dəpóhri* ‘midday meal’, *kʰəʒʒʰtʰa* ‘left-handed’, *súrəng* ‘tunnel’.

As the data indicate, deviations from the rule account for no more than 10 % of the lexicon (fewer than 280 words, including loanwords, prefixal formations, and derivatives with suffixes of the third group). The number of unexplained deviations does not exceed 15 words.

At this stage, synchronic morphophonology has reached its limits in refining the rule or accounting for further exceptions. Any additional refinements would require analysis within the framework of historical phonetics.

12. Conclusions

The article examined affix types based on their influence on accent. Then, based on the differences in the phonetic structure of affixes that influence and do not influence accent, an accent placement rule was proposed. This rule was tested and refined across the entire dictionary. The study led to the following conclusions:

- 1) Kullui affixes can be categorized into those that influence the root vowel and those that do not;
- 2) suffixes that affect the root vowel follow a specific pattern: they contain the vowels *a*, *e*, *o* and are either polysyllabic or end in a consonant;

- 3) suffixes that do not influence the root vowel either lack this structure or originate from borrowings or recently grammaticalized lexical elements;
- 4) prefixes do not affect the root vowel and remain unaccented;
- 5) there are four positions of the strong morphophonemes, each corresponding to a weak counterpart, as outlined in the table above;
- 6) the accentuation rule, which applies to the vast majority of Kullui words can be formulated as follows:
 - prefixes are unaccented. The accented syllable is determined by counting from the end of the word;
 - in words ending in a consonant, the last syllable is counted first;
 - in words ending in a vowel, the penultimate syllable is counted first;

The first syllable in this sequence that either contains the vowels *e*, *a*, *o* or the vowel followed by a cluster of a nasal with a homorganic plosive or affricate receives the accent. If no such syllable is present, the accent falls on the syllable farthest from the end of the word (i.e., the first syllable, excluding any prefix).

The results of this study demonstrate the importance of morphophonology in the study of accentuation and open up the prospect of applying a similar method to other New Indo-Aryan languages.

ABBREVIATIONS

adj — adjective
F — feminine
GEN — genitive
n — noun

NOM — nominative
SG — singular
vi — intransitive verb
vt — transitive verb

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