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On the independence of tonogenesis in Patkaian branches

Kellen Parker van Dam

Universität Passau | La Trobe University

Tonogenesis for Tangsa-Nocte has previously been described as likely derived from phonation distinctions in the proto-language, where aspiration and voicing played no part (van Dam 2018). With newly published Wancho data (Losu & Morey 2023), a direct tone correspondence can be shown between Tangsa-Nocte and Wancho. Phom (Burling & Phom 1998) shows a similar correspondence. The situation differs when considering Southeast Patkaian varieties such as Lainong and Khamniungan; a correspondence pattern can still be found, but only when taking into account features like voicing and aspiration which had no role in Tangsa-Nocte tonogenesis.

Khamniungan also lacks the checked-tone category found elsewhere in Patkaian and other Mainland Southeast Asian languages. This paper will show how tonogenesis can be explained for the entirety of Patkaian (Northern Naga) as distinct tonogenetic events based on common pre-tonal features such as voicing, aspiration, and phonation in the proto language.

Keywords: Tonogenesis, Patkaian, Northern Naga, Khamniungan, Tangsa-Nocte, Wancho

1. Introduction

This paper presents an analysis of tone categories across Patkaian branches (formerly “Northern Naga”, Glottocode kony1246), with a focus on language varieties which represent each of the three branches as described in van Dam (forthcoming). These branches are the northern branch consisting of the Tangsa-Nocte, Tutsa, and Ollo varieties, the southwestern branch which includes Wancho and Konyak among others, and the southeastern branch of Khamniungan, Lainong, Gongvangpounyiu and Makyam. An analysis is presented showing that tonogenesis must have occurred separately in each of these three branches based on pre-tonal features of phonation and segmental phonology. Through tonal

reflexes of these features, a high degree of tone category correspondence is maintained, despite having independently formed tone systems.

Previously, Weidert (1979) made attempts to trace tone categories across Tibeto-Burman to a single origin within the realm of phonation distinctions, with an early focus on the Sal and Kuki-Chin-Naga (South Central) languages. He argued for an analysis of tone coming about not only from differences of syllable structure or voicing contrasts – as has been shown for much of mainland Southeast Asia (e.g. Dockum & Gehrmann 2021) – but also differences in phonation types, namely breathy, modal or creaky. A similar explanation for tonogenesis was repeated for Tangsa-Nocte languages in van Dam (2018: 105ff), and phonation contrasts as a driver of tonogenesis are often cited in the literature for other Sino-Tibetan languages (Michaud & Sands 2020; Zhu 2024).

In spite of this, Weidert was unsuccessful in presenting a satisfactory case of tone correspondences between Northern Naga varieties as a whole, in particular with much hand-waving around Khamniungan for which difficulties in correspondences were explained away as the result of a presumed now-lost agglutination in the proto language (Matisoff 1994). This leaves unanswered the question of whether or not tone correspondences can be shown across the Patkaian branches.

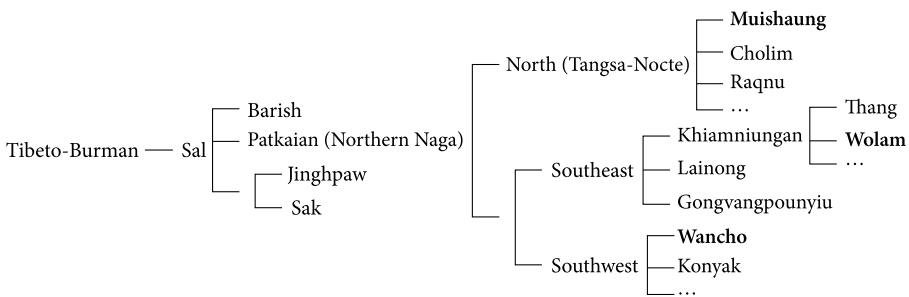


Figure 1. Position of Muishaung, Wolam & Wancho within Tibeto-Burman

A separate but related question is, should cross-linguistic tone category correspondences be able to be established, whether tonogenesis can be determined to have occurred a single time for the entire Patkaian subgroup, or if instead it occurred independently at some later stage in different branches. A single event would be reasonable to speculate, should correspondences between categories be established.

In answering these two questions, this paper establishes separate tonogenetic events in Patkaian. Tone category correspondences can be readily found across the group, but do not occur as one-to-one correspondences restricted to single tone categories. Neither can features be established as consistent in the tono-

genetic events as the same for all three branches of which modern-day tonemes are reflexes.

Descriptions of tone systems with their corresponding triggers of tonogenesis are presented for each of the major sub-branches, exemplified by prototypical languages from each for which reliable tone descriptions and marked wordlists exist. Proto-forms may be reconstructed with features which account for the tone categories of each of the three branches, but with greater complexity in correspondence features than only phonation as proposed in Weidert (1979). Instead, specifically for Khamniungan, additional consideration to features such as contrastive onset voicing and aspiration must be given.

1.1 Methodology

In the following sections, this paper will discuss a range of cognate terms to investigate potential tone category correspondences between language varieties. The varieties presented here were chosen for their high level of reliability on tones, with speakers who are able to consistently produce the underlying tonal contours in a way in which toneme identity was apparent, and for the resources available in the literature. In certain cases, there may be literature on the languages in question, including that which focuses on tone. However, due to the unavailability of a sufficiently large set of underlying data in such cases, additional data were elicited anew with fresh analysis by the author.

The primary concept list¹ used for this analysis is from Wancho (Losu & Morey 2023), which includes the original data from Burling and Wangsu (1998).² This forms the foundation of the current study since it is at present the most meticulously tone-marked word list for Wancho which has yet been published. The concepts are given primacy over other potential concept lists due to the guaranteed overlap of the majority of these concepts with Phom (Burling & Phom 1998), another closely related language variety, as well as the ease of collecting these concepts from speakers of other language varieties addressed in this paper for which tonal identity can be ascertained. This identification of tone category here is based on unpublished acoustic analysis by the author conducted while investigating the tone system of related Tangsa-Nocte language varieties, intuition of and identification by native speakers with a high degree of metalinguistic

1. “Concept list” as used in List et al. (2025), generally equivalent to “word list”.

2. Wancho data sources are hereafter referred to as “Wangsu” for Burling and Wangsu (1998), and “Losu” for Losu and Morey (2023), being the names of the co-authors who served as the primary consultants.

awareness, and cross-varietal comparisons used for the purpose of reconstructing tone categories of cognate etyma for varieties of Patkaian.

1.1.1 *Data sources*

Based on this initial concept list of Burling, Muishaung data were then collected for corresponding terms from an unpublished preview version of the *Bovmc Thuiyz Jungx* Muishaung dictionary (Keluim et al. 2018) and supplemented through additional inquiries (Keluim p.c.). Muishaung is presented as the prototypical variety for Tangsa-Nocte due to high reliability of phonemic transcription and the ability of the speakers consulted for this task to correctly and consistently identify tone categories. Such identification is generally difficult due to the low functional load and low metalinguistic awareness about underlying tonemes as described in van Dam (2018). Some tone changes have occurred in Tangsa-Nocte varieties which differ from the expected reflexes, such as Phong's shift of some second-tone stems to third tone (ibid: 235f), or levelling of tone category in certain semantic subdomains in some Rangpang/Pangwa subgroup varieties (ibid: 100f). For this reason, Tangsa-Nocte data are at times supplemented by additional word forms from Cholim and Raqnu, varieties for which tonal identification is also reliable, but which in general have less data availability.

For the Southeastern branch, the primary exemplar is Wolam Khamniungan (Thaam, 2024; van Dam & Thaam, forthcoming) for which recordings have been collected between January 2023 and February 2025 as part of the development of a dictionary in collaboration with community members,³ with supplemental data from Lainong (Wayesha 2010) and Gongvangpounyiu (Thangjiu, 2024, p.c.) in cases where cognates may not be attested due to considerable internal variation within Southeastern. All newly collected data were gathered from community linguists having given informed consent. Generally speaking, Southeastern is a very small branch in terms of the number of varieties, but for which phonology and tonal realisations are considerably diverse.

This is the opposite situation to the Northern branch (Tangsa-Nocte-Tutsa) where the number of varieties is considerably larger than the other branches, but for which the tone system is incredibly consistent and stable across varieties. Khamniungan data were collected from the tone-marked *Wolam Ngiopit* dictionary of Wolam currently in preparation, and supplemented by further collection in cases where terms were not present in the dictionary (Thaam, 2024).

3. Recordings from this period are currently being prepared for archiving as part of a larger project on Wolam Ngio documentation in collaboration with members of the Wolam community.

1.1.2 *Concept matching & cognacy*

Due to some branch-specific idiosyncrasies of the languages studied, a few additional steps were required in selecting stems for comparison. Most notably, Muishaung shows a system of verbal stem suppletion common throughout Tangsa-Nocte (Morey 2018) where a given concept may have two distinct but related stems for verbal and nominal readings. In many cases, one of these stems will have a CVC syllable structure, typically but not always the nominal stem, while the other will have CV or CVN syllable structure. In Muishaung, ‘bamboo’ is one such example, where it occurs as /βaʔ₄/⁴ in many compounds – e.g. /βaʔ₄kʰiu₁/ ‘bamboo strips’, /βaʔ₄mi₁/ ‘bamboo shoots’, etc. – but as /βɔ₂/ < *βaŋ for the bare stem, and also a part of other compounds relating to bamboo – e.g. /βɔ₂lɛuk₄/ ‘bamboo joint’, or /βɔ₂tsa₂/ ‘hard outer skin of bamboo’. Where two forms of related stems exist, such as with ‘bamboo’, the CV/CVN form is taken over the CVC form, as all CVC stems in Muishaung will necessarily be 4th tone similar to Tai or Sinitic.

Cognacy was determined through the comparative method (Rankin 2017). Regular correspondences were found based on data from 100 doculects across Patkaian for roughly 750 concepts as part of a large-scale phylogenetic analysis of the family (van Dam 2023).

Within the data analysed here, a number of stems may not appear to be cognate at first glance. In many cases, however, apparent differences between the variety first described in Burling and Wangsu (1998) and that of Kamhua Noknu still reflect regular sound changes of a single etymon, such as ‘mucus’ /βwi⁴⁴/ and /goi₃/. A regular /β~g/ correspondence is well attested throughout Wancho dialects, as is the case with ‘stomach’, /βok⁵²/ and /gom₂/ where rather than involving only a single etymon, the segmental difference likely reflects a lost stem as part of a larger lexical compound.⁵ Less frequently, examples are found where

4. Subscript numbers indicate language-specific tone categories. Superscript numerals indicate pitch contours, where 5 indicates a high pitch and 1 low, following Chao (1930). When inline in the text, contour values of this type are followed by a colon, again following conventions established in Chao (1930).

5. Many language varieties on this sub branch of Northern Naga have final nasal for ‘stomach’, including Chen, Kahyu (Karyaw), Chuyo, and some Wancho varieties, while final /k/ is more common everywhere else in the branch. In some cases, such as Khiamniungan where the form is often /tʰan/, this can be shown to be the result of elision of a now-lost augmentative marker, *niu* in this case, which is phonologically identical to that for ‘mother’. In Khiamniungan this is typically with a palatal onset but labialised due to spreading of a labial release of the onset in the proto form of ‘stomach’. Such lenition can be clearly demonstrated through comparison to older Khiamniungan dialects where *niu* is retained. Thus /tʰan/ in Wolam corresponds to /tʰai.niu/ in Kingphu Khiamniungan, and /tʰai/ in other dialects where the augmentative is not present.

the Kamhua Noknu dialect has an entirely different stem from that of Burling and Wangsu (1998). Such differences are still informative and may be linked to other varieties, as in many cases Wangsu's stem has parallels in Tangsa or Khi-amniungan, while the Kamhua Noknu stem may not. Examples include 'sore, wound' /mak⁴⁴/ in Wangsu's Wancho, corresponding with Muishaung /ma₃/,⁶ and /a⁴⁴ho⁵²/ for 'shade' in Wancho corresponding to /hu₂/ in Wolam Ngio. Kamhua Noknu has /təm₁/ and /pəŋ₃/ for these two terms, respectively.

1.2 Tone category matching

As each source cited here has a different approach to numbering, tone category labels have been normalised to avoid confusion with language-specific tonemes. First, all tones in Wancho and Muishaung have been re-assigned labels using letters A B C and D, matching the categories which correspond with regularity between language varieties. To do this, first cognates were identified based on comparisons across Tangsa-Nocte, Wancho, and other Northern Naga varieties, setting aside tone categories at the start. Once a sufficient number of cognates were identified between Tangsa-Nocte and Wancho, tone categories were compared, which showed a large number of stems where categories corresponded reliably, and a much smaller number where they did not. Letters were used instead of numbers in order to distinguish the category labels here from those in the literature.

For nearly all Tangsa-Nocte literature — a result of the influence of Stephen Morey's work on the language — descriptions follow a common pattern where tone 1 refers to the reflexes of creaky syllables, tone 2 for reflexes of modal voice in the proto language, and tone 3 for those which were breathy or had some form of final /h/ in the proto language (van Dam 2018:105f). Morey typically does not mark checked syllables with tone numbers for Tangsa-Nocte varieties since checked syllables are predictably 4th tone, as is also the case in Losu and Morey (2023). In Wancho, CVC syllables are analysed as forming their own tone category, with tone contrasts on CVC syllables not being attested.

This consistency in labelling is useful especially since it keeps descriptions of Tangsa varieties mostly in line with each other in terms of cognacy of tone categories, since nearly all subsequent work on Tangsa-Nocte follows the numbering system used in Morey (2015) and in subsequent publications. In Wancho, tone

6. The missing tonal correspondence here is explained in more detail below, however the coda in both languages may be a reflex of a formerly productive glottal suffix, /-h/ in CV syllables in Muishaung and /-k/ in this Wancho variety, likely attached to a stem *ma, an allofam with "to be bad" *maⁿ.

Table 1. Tone category correspondences between numbering in Tangsa-Nocte (Morey 2015) and Wancho (Losu & Morey 2023)

Category	Wancho	Tangsa-Nocte
A	1	2
B	3	3
C	2	1
D	4	4

numbers follow a similar pattern, but following Bangwan Losu's numbering system, which Morey has adhered to in his own work on the language. This means that even in cases where tonemes are cognate between Wancho and Tangsa-Nocte, tone 1 in Tangsa-Nocte will not correspond to tone 1 in Wancho, since they were assigned independently of each other.⁷

To resolve the discrepancy in tone notation systems without contradicting the established literature on these varieties, here instead letters A, B, C and D will be used. For Wancho, A will refer to Losu's tone 1, B to tone 3, C to tone 2 and D to tone 4. For Muishaung, A corresponds to Morey's tone 2 and C to tone 1. Morey's notation is what is followed in nearly all of the current Tangsa-Nocte literature.

Khiamniungan introduces some complications to this approach of using A-D, as there are 5 tones in the variety described here, and unlike Wancho or Tangsa-Nocte, Khiamniungan checked syllables cannot reasonably be analysed as a separate toneme. Instead they are found to occur with any of the 5 tones found on open syllables. This mismatch will be addressed later on in the section on Khiamniungan.

2. Overview of tone in Patkaian sub-branches

This section presents a brief overview of the tone systems of each of the three branches.

7. The same situation occurs within Muishaung Tangsa, where the ordering of tones in the Tangsa script developed by the late Lakhum Mossang and adopted by the Tangsa Script Development committee again follows a different order.

2.1 Tangsa-Nocte-Tutsa-Ollo (Northern branch)

The tone system found in the northern branch of Patkaian, also known as Tangsa-Nocte⁸ is fundamentally a 4-toneme system with surface similarities to that of Middle Chinese, or to the 4-way split of Tai tones⁹ into A B C and D, where one category is “checked” or “dead”. Across dozens of varieties, the tonemes are cognate, therefore allowing proto-tone categories to be easily reconstructed with phonation and coda segments determining the categories. Tone 1 is a reflex of creaky phonation (van Dam 2018: 105f). Creak is still easily detectable in a number of varieties, including the Muishaung variety discussed here. In varieties in which creakiness is still apparent, this tone tends to be low, while in other varieties, most notably Cholim and Rëra, creak is not apparent, but slight final glottalisation is still present with the pitch being high and flat (*ibid.*).

Tone 2 in Tangsa-Nocte derives from words with modal phonation in the proto language, and is by far the most frequently occurring toneme. Tone three often has a slightly longer duration and in some varieties, such as Phong (Pon-thai), will have a final /h/ on what are otherwise CV syllables (*ibid.*: 106f). Tone three is the least common, and when it does occur, is most frequently found on nominalised verb stems, the result of an earlier method of nominalisation through the use of a glottal coda, either /h/ or /ʔ/. Fourth tone is found only on CVC syllables, and functions as its own toneme, including differentiation of sandhi patterns in some varieties. CVC syllables also pattern in terms of historical sound changes with their CV(N/L) counterparts based on the place of articulation of the coda. Thus *CVk will undergo sound changes in parallel with *CVŋ of the same vowel, *CVt with *CVn, *CVp with *CVm and *CVʔ with *CV (van Dam 2025).

In some varieties, tone mergers have occurred previously or are occurring now. For example, Haqchum has only three tones today, having seen a merger between tones 1 and 3 (van Dam 2018: 207–214). Any variety of Tangsa-Nocte which has fewer than 4 tones will have undergone such a merger, and any variety with more than 4 tones will be due to a split, as is possibly the case with Lochhang as spoken in Myanmar (Vong Tsu Shih, p.c.). In the case of mergers or splits, correspondences will still be discernible, as is likewise the case with Sinitic tone systems derived from the 4×2-tone system described for Middle Chinese.

Table 2 shows tone contrasts for Muishaung. Due to sound changes across various Tangsa-Nocte varieties and the low functional load of tone in Tangsa-

8. Occasionally also Tangsa-Nocte-Tutsa or Tangsa-Nocte-Tutsa-Ollo.

9. Categories A-D here also correspond to Tai categories in cases where Tai loans into Patkaian have retained phonation features, as described in van Dam (2018: 270f) and Morey and van Dam (2019).

Table 2. Tones in Muishaung Tangsa

Form	Gloss	Form	Gloss	Category
na ₁ ³¹	ailment	mɛuŋ ₁ ³¹	dream	C
na ₂ ²³¹	paddyfield	mɛuŋ ₂ ²³¹	corpse	A
na ₃ ³³	ear	mɛuŋ ₃ ³³	unconscious	B
naʔ ₄ ⁵	sharp	mɛuk ₄ ⁵	erase	D

Nocte, full four-way contrast sets are difficult to find. This is made more difficult by the fact that tone in such languages is under-described. Table 1 shows two full sets for Muishaung, although for other syllable shapes it is common for only two or three contrasts to occur.

2.2 Wancho, Southwestern

Wancho is a representative variety for the Southwestern branch. Other Southwestern varieties include Phom, Konyak and Chen. A variety of Lower Wancho was described in Burling and Wangsu (1998) with reliable tonal transcription, and Losu and Morey (2023) documented Upper Wancho as spoken in Kamhua Noknu village, again with reliable tonal transcriptions. Table 3 shows the most typical regular correspondence of tone categories between the two Wancho varieties.

Table 3. Basic correspondences within Wancho

Gloss	Burling & Wangsu		Losu & Morey	
mat	dom ⁵²	A	dəm ₁	A
mortar	tʰom ¹¹	B	tʰəm ₂	C
meat	mɔy ⁴⁴	C	məi ₃	B
to eat	saʔ ⁴⁴	D	saʔ ₄	D

Wangsu's 52: contour most often corresponds to Losu's tone 1, Wangsu's 11: to tone 2, and 44: on monosyllables often corresponds to Losu's tone 3. As mentioned above, these have been re-assigned letters A-C to distinguish from the language-specific tone numbers. Checked syllables form their own tone category as in Tangsa-Nocte.

In many cases, the same correspondences are not found between cognate terms in the two Wancho varieties. While this is initially unexpected, a few patterns are apparent. First, Burling's transcription favours a 44: contour on many stems, possibly the result of list intonation or speakers simply not presenting a

tonal contour in isolation. Second, when occurring as the first syllable of a disyllabic lexeme, contours are often given as 44: likely due to phonetic interference in the form of regressive assimilation of the pitch contour.

Table 4. Mismatches between Burling & Wangsu (1998) and Losu & Morey (2023)

Gloss	Burling & Wangsu	Losu & Morey
bird	o ⁴⁴	C
bone	za ⁴⁴	C
carry	hʌn ⁴⁴	C
sink	siŋ ⁴⁴	C

Burling’s elicitation methodology is not entirely clear, as with his account of Phom. Due to a clearer methodology and the ability to confirm with both Morey and Losu, for the purposes of analysis here the tone identification in Losu and Morey (2023) will be given greater weight in cases where Burling and Wangsu (1998) give a 44: contour on the same stem presented with a different toneme in Losu and Morey.

The dismissal of such cases of 44: B tones in Burling and Wangsu is further supported by cross-linguistic correspondences on these words, such as the Muishaung form of ‘bone’ /rɔ̃/ or ‘bird’ /βu/ also having tone C, matching the categories of Losu and Morey. These correspondences are discussed further below.

2.3 Khamniungan, Southeastern

Previously, tone in Khamniungan has not been satisfactorily described.¹⁰ Based on analysis by the current author, five tonemes can be clearly established which are largely cognate across Khamniungan varieties. Pitch contours in Northern varieties such as Thang and Wolam are largely the same, despite other considerable phonemic changes. As Weidert (1987) noted, the tone categories of Khamniungan do not correspond well when taken as a whole, shown in Table 5 which compares to Tangsa-Nocte as reported by Weidert.

10. Coupe (2014) offers a brief description of a tone system with 5 tonemes, however in subsequent data collection and analysis, the provided contours are not consistent with those produced by speakers who have provided data for the current study. For example, ‘tooth’ is cited in Coupe (2014) as a 55: contour, where speakers consulted for this study consistently give a 53: contour. In spite of some inconsistencies, in general Coupe’s contours correspond to those of the current author, but with insufficient analysis.

Table 5. Weidert's Khamniungan tones (1987: 11)

	TC-I	TC-II	TC-III	TC-IV
	*modal	*creaky	*breathy	*checked
Tangsa-Nocte	A (tone 2)	C (tone 1)	B (tone 3)	D (tone 4)
Khamniungan	31:	11: 13: 35:	33: 55:	11: 13: 35:

Specifically, Weidert investigated Muishaung (as “Moshang”) for Tangsa and Ha’wa Nocte (as ‘Namsangia’), also described in Rahman (2018). Khamniungan contours have been modified here to follow the conventions of Chao’s tone numbers (Chao 1930) for readability, while the Tangsa-Nocte systems values have been converted to the tone category numbering as used elsewhere in this paper.¹¹

Weidert describes Khamniungan¹² as having a six-tone system. This is problematic for a couple of reasons. First, in recent investigations only 5 tones have been found. Second and of perhaps greater importance, Khamniungan preserves all 5 of these tones in CVC syllables, i.e. Weidert’s TC-IV, for which only 3 contours are given and all matching TC-II contours. Adding to the confusion is the fact that Weidert only documented tone in Khamniungan for three contrastive heights, although aside from tone 1¹³ with a 55: contour and second tone with 54:, this should not be an issue for describing any other tone contrasts in our data. Two rising contours are also given by Weidert, while today only one is attested in Wolam Khamniungan as per native speaker interpretations of the tonemes, and words given with the 13: contour in Weidert typically correspond to a 22: contour (tone 4) in Wolam today, such as in ‘louse’ *hiu*?²² and ‘crab’ *hun*?²², both described by Weidert as low-to-mid rises.¹⁴ Weidert’s split could be due to a later but still very recent merger occurring on rising tones, thus collapsing a distinction made by Weidert. It could also be due to errors in the data presented.

11. Weidert followed a system where 3 is high and 1 is low, equivalent to a H M L analysis, with flat contours marked by only a single digit. Thus his <23> is here instead presented as <35> following the system of Chao (1930).

12. From transcriptions it is clear Weidert investigated Thang Ngio, the standard variety spoken in Noklak, which differs segmentally but generally not tonally from Wolam Khamniungan otherwise discussed here.

13. Numbering is as defined in van Dam (forthcoming).

14. A more detailed investigation into Weidert’s reported tone contours for Khamniungan can and should be conducted, but is outside the scope of the current paper.

Khiamniungan tonemes can be explained as reflexes of a combination of onset voicing and rime structure, with indications suggesting the role of phona-tion. Table 6 gives three minimal sets. Gaps indicate forms which are not attested on those tonemes.

Table 6. Minimal sets in Wolam Khiamniungan

Form	Gloss	Form	Gloss	Form	Gloss
hai ₁ ⁵⁵	to shake	t ^h ai ₁ ⁵⁵	money	—	—
hai ₂ ⁵³	to create	—	—	tai ₂ ⁵³	to divert
hai ₃ ⁵¹	to console	t ^h ai ₃ ⁵¹	front	tai ₃ ⁵¹	to keep
hai ₄ ²²	to carry	t ^h ai ₄ ²²	white	tai ₄ ²²	to challenge
hai ₅ ²⁴	intestines	—	—	—	—

With some exceptions due to irregular sound changes, tones 1 and 5 have voiceless onsets, with tone 1 specifically being almost entirely restricted to aspirated onsets. Tone 5 is the only rising contour and historically had a non-sonorant coda, although on some words this has been lost. A voicing merger has occurred throughout the language for non-sonorant onsets, and voiced fricatives aside from the bilabial <w> have either become zero onsets, or shifted to /s/ which in turn have in some cases shifted to /h/, thus explaining the high occurrence of all 5 tones in Wolam Khiamniungan on words with /h/ initials.

As mentioned, tone 1 is additionally aspirated; all occurrences of onsets with this tone are either aspirated or are instances of /h/, with few exceptions. First, one occurrence of /p/ initial without aspiration is found, *pai*₁⁵⁵ ‘to break’, possibly due to loss of aspiration from an earlier **ph*. Second, one occurrence of /l/ initial with first tone was previously suggested by one speaker as [lau₁⁵⁵] ‘to make a hole’, although this has since been agreed upon by speakers as another sense of *lau*₂⁵³ meaning ‘to carve, mark, tattoo’, and not a first-tone word. Compare PTB #2317 **klaw* (Matisoff 2003) ‘dig out, weed’ and #2400 **la:y* ‘dig’ for which PKC has **laay* ≠ **hlaay*. This is still relevant, however, as Wolam /l/ is often a reflex of proto-Patkaian **d*, compare ‘weave’ /laʔ₅/ < PTB #2686 *(*t/d*)ak, and so a first tone /l/ onset might occur as a reflex of a more appropriate initial consonant. In this case however, along with the correct identification of a second-tone stem, the similarities to **klaw* suggest that this is more likely a lost cluster. Finally, a notable example ENOUGH /ʔum₁/ is confirmed to have tone 1, but significantly this is a case of a lost **z* initial in proto-Patkaian, an exception to the tonal reflexes still without explanation. However, stems are known to change tone category from time to time, so this may simply be such a case.

Tone 2 is a reflex of unaspirated onsets which were likely voiced. The greater tendency toward voicing is shown by the large number of zero onsets, many of which are derived from **r* and **z*, both of which were lost in Wolam.¹⁵ Just over half of all zero onset stems of those analysed here occur with tone 2, as well as over 40% of *m*- initials, and approximately as many *n*- initials.

CV syllables will not take 5th (rising) tone. There are a few exceptions, all with /i/ nuclei. These are ‘lick’ /ʃi₅/, ‘talk’ /ʃi₅/, ‘exist’ /ki₅/ and ‘dog’ /tʃi₅/.

‘Lick’ and ‘talk’ are a case of polysemy / semantic expansion, and is typically reconstructed for PTB (Matisoff 2003) with final **-k*, and for which cognates across Sino-Tibetan retain final /-k/. Matisoff (2003) links this reflex to PTB #629 **m/s/g-lyak* ‘lick/tongue’. The onset shift from **l-* to /ʃ/ is also seen in Chang, and derives from a contraction of **s-l-*, a cluster well preserved in the Barish (Bodo-Garo) languages. ‘lick/talk’ thus lost the coda following tonogenesis, and has tone 5 today likely as a reflex of this now-lost final obstruent.

DOG is less clearly motivated for tone 5 in Wolam. It is not reconstructed with a stop coda, except in proto-Karen (Jones 1961). However, in Tangsa-Nocte, the cognate has tone 1 < **creak*, and a regular correspondence between glottal codas in Khamniungan and tone 1 in Tangsa-Nocte is better attested.¹⁶

CVC syllables are put into TC-IV. However, other than a halved duration, there is nothing about closed syllables which would support an analysis of them as a separate tone category. Weidert also includes three different contours within this tone class, further pointing to the difficulty in such an analysis.

Weidert’s transcriptions for Khamniungan tones differ from what would be expected today, e.g. ‘corpse’ (p.17). These are most likely simple mistakes in many cases. Tonal marking of CVC syllables are often much more divergent than the contours found for speakers today. For example, ‘day’ is given as ²³ni¹⁷ (p.21) with a 35: contour, but is /pi²²/ with 22: contour in modern speech.

3. Cross-language correspondences

Returning to the issue of cross-linguistic correspondences, in many cases cognate terms show tonal correspondences between languages well, as shown in Table 7.

15. Compare Gongvangpounyiu ‘sky’ /zaŋ/ < **raŋ* to Khamniungan /a:/ < **raŋ*

16. Shown in Table 11 below with Wolam Ngio and Muishaung Tangsa as exemplars

17. Burling’s contour transcription precedes the syllable and uses a different scale.

Table 7. Some cross-linguistic tone correspondences

Gloss	Muishaung Tangsa		Wancho Burling & Wangsu		Wancho Losu & Morey	
husked rice	βuŋ ₂	A	βoŋ ⁵²	A	boŋ ₁	A
mat	dəm ₂	A	dom ⁵²	A	dəm ₁	A
ginger	tsiŋ ₂	A	tsya ⁵²	A	tē ₁	A
to name	miŋ ₃	B	maŋ ⁴⁴	B	mən ₃	B
snake	piu ₃	B	pu ⁴⁴	B	pu ₃	B
ear	na ₃	B	na ⁴⁴	B	na ₃	B
to pound	t ^h iu ₁	C	t ^h u ⁴⁴	B	su ₂	C
mortar	t ^h im ₁	C	t ^h om ¹¹	C	t ^h əm ₂	C
long	lu ₁	C	lo ⁴⁴	B	ləu ₂	C

Note the two examples in Table 7 where Burling and Wangsu again give tone B when Losu and Morey have C. Other cases also exist where the terms appear to have originally been cognate, but have since shifted in meaning. One such example is ‘elder brother’ /p^hu₁/ in Muishaung and ‘grandfather’ /pu₂/ in Wancho, both having tone C.

Of some interest is the correspondence between third-tone Muishaung terms such as ‘snake’, ‘ear’ and ‘name’. Third tone is typically rare in Tangsa-Nocte varieties, with only a few nominal stems carrying that tone. More often it occurs on nominalised verbal stems, a reflex of a now-lost [+glottal] coda.¹⁸

This reflex is also seen through dialectal variation of stems for common verbs such as ‘hear’, initially **tal* but occurring as **tat* for some varieties where the suffix has resulted in a shift of the coda on the original stem. The corresponding category – also marked as tone 3 in Losu and Morey – is much more common in Wancho. Of the monosyllabic words included in Losu and Morey which were analysed in this paper, approximately 100 occurrences of this tone occur, compared to just over 150 of tone 1.

3.1 General tendencies

Despite a number of correspondences appearing between Wancho and Muishaung, these begin to break down when also considering Khamniungan. However, a number of general tendencies can be seen. A disproportionately large

18. This was previously described in van Dam (2018) as *-*h* but is more likely some underspecified glottal segment which shifts CV syllables to CV^h and CVN/CVL to their corresponding CVC forms with the same place of articulation on the coda.

number of Khamniungan tone 5 words begin with unaspirated obstruents or /h/, which is the result of mergers. These seem to be corresponding to voiced onsets, e.g. ‘thief’ (/guʔ³³/ in Burling’s Phom and /ɣiuʔ₄/ in Muishaung), ‘cicada’ (/goẽŋ/ in Deori), and ‘uncle’ (/ɣu₁/ in Muishaung).

Additionally, a similarly large percentage of tone 1 words have aspirated obstruent initials or /h/, with nearly all other instances of tone 1 words beginning with aspirated onsets. The /h/ initial is much more common in Wolam than in other Khamniungan varieties due to a shift from *s. Nasal onsets with glottal tone in Muishaung – tone 1 – tend to correspond to tone 3 in Wolam. Table 8 shows a number of correspondences.

Table 8. Correspondence between Tangsa-Nocte tone 1 and Khamniungan tone 3

Gloss	Muishaung Tangsa	Wolam Khamniungan
slippery	nel ₁	nin ₃
mother	niu ₁	niu ₃
sister	na ₁	nu ₃
tail	mi ₁	mi ₃

A very small number of possible counter-examples can be found, such as TIRE, /ɲauʔ₃/ in Wolam but /ne₂/ in Muishaung, although the lack of consistency between the place of articulation on the nasal onset and the inconsistent coda make this possibly not truly cognate.

Table 9. Correspondence between Tangsa-Nocte tone 1 and Khamniungan tone 4

Gloss	Muishaung Tangsa	Wolam Khamniungan
dream	meuŋ ₁	mia ₄
lost	mei ₁	mi ₄
speak	ŋo ₁	ŋiu ₄

Tone 4 in Wolam also occurs on stems which have first-tone cognates in Muishaung, shown in Table 9, however these generally have voiced onsets, and are overall uncommon. Reflexes of stems with voiced onsets and modal phonation will be on tone 2.

Table 10. Correspondence between Tangsa-Nocte tone 2 and Khamniungan tone 2

Gloss	Muishaung Tangsa	Wolam Khamniungan
heart	mun ₂	mon ₂
festival	moel ₂	miu ₂
full	mər ₂	mian ₂

Table 11. Correspondence between Tangsa-Nocte tone 1 and Khamniungan tone 5

Gloss	Muishaung Tangsa	Wolam Khamniungan
urine	ʃo ₁	teʔ ₅
chew	ʃo ₁	ʃiu ₅
cane	ʒi ₁	hai ₅
salt	ʃum ₁	tim ₅
one	ʃi ₁	tak ₅

4. Predictive power of cross-language correspondences

Tone correspondences between Muishaung and Wancho have predictive power in Wolam Khamniungan. A number of lexemes were collected which lacked tone marking. To test this, a number of morphemes were checked for accuracy of tone category predictions with speakers by determining the likely toneme based on cognates in Wancho and Muishaung. Specifically, under the following three conclusions, the tone in Wolam can be accurately determined to be the same as the word “good” /mi/, the primary exemplar of Wolam 2nd tone, assuming cognates exist across the languages in question:

- 1. a given stem in Tangsa-Nocte has tone 2, following the numbering of Morey (2015),
- 2. a cognate exists in Wancho which has tone 1 (following the numbering of Losu & Morey 2023), and
- 3. a cognate exists in Gongvangpounyiu (Thangjiu, p.c.) with has a voiced initial

If all three of these are true, then, should a cognate exist in Wolam Khamniungan, it will have tone 2, the reflex of A tone. This was tested for a number of otherwise unmarked tones in a preview version of the *Wolam Ngiopit* dictionary, as tone marking is still a work in progress (Thaam, p.c.). Examples of this correspondence are shown in Table 12, in which the Wolam Khamniungan forms were previously not marked for tone in the *Wolam Ngiopit* dictionary.

Table 12. Correspondences with Khamniungan (Wolam Ngio)

Gloss	Wancho	Muishaung	Wolam	Category
iron	dʒan ₁	ʒan ₂	sun ₂	A
winnowing basket	on ₁	βən ₂	ʔin ₂	A
cane	gi ₁	rii ₂	ʔai ₂	A
corpse	məŋ ₁	mɛuŋ ₂	mia ₂	A
bamboo	gō ₁	βɔ ₂	ʔu ₂	A

5. Conclusion

Along with Table 12, data in Tables 13–15 show regular tonal correspondence for all three varieties. A much larger set can be shown for which pairs of these three varieties show the tone correspondence. C-category tones are fewer due to being generally uncommon in Tangsa-Nocte, and D-category (checked) tones are not included as they lack a correspondence to Wolam Khamniungan.

Table 13. A-category correspondences across varieties

Gloss	Kamhwa Noknu Wancho	Muishaung Tangsa	Wolam Khamniungan	Category
<i>road</i>	ləm ₁	ləm ₂	jam ₂	A
<i>heart</i>	moŋ ₁	muŋ ₂	mɔŋ ₂	A
<i>younger sibling</i>	[ku]nau ₁	no ₂	niu ₂	A
<i>tree, wood</i>	pən ₁	pul ₂	pai ₂	A

From these data it is clear that a reasonably high degree of correspondence can be shown between Wancho and Muishaung Tangsa in terms of tone categories on stems which are cognate. One could reasonably conclude that this indicates a single tonogenetic event. In such a case, onset voicing played no discernible role in tonogenesis, as has been shown for Tangsa-Nocte which underwent tonogenesis based solely on phonation and segmental features (van Dam 2018).

Unlike Tangsa-Nocte, onset voicing distinctions as well as aspiration played an important role in Khamniungan tonogenesis. With the exception of onsets which are the result of post-tonogenetic mergers, first tone is exclusively voiceless aspirated, second and fifth tone are never on aspirated onsets, and first and second are never with voiced onsets. Segmental factors also play a role as with

Table 14. C-category correspondences across varieties

Gloss	Kamhua Noknu Wancho	Muishaung Tangsa	Wolam Khamniungan	Category
blood	[a]ɖɿ ₂	[tə ₀]yii ₁	he ₃	C
stone	loŋ ₂	luŋ ₁	juŋ ₃	C
long	ləu ₂	lu ₁	lai ₃	C
grandfather	pu ₂	p ^h u ₁ ‘elder brother’	pau ₃	C
father	pa ₂	βa ₁	pu ₃	C
fire	bən ₂	βər ₁	ʔin ₃	C
bird	o ₂	βu ₁	βai ₃	C
tail	məi ₂	mi ₁	mi ₃	C
rope	gu ₂	riu ₁	ʔau ₃	C

Tangsa-Nocte and Wancho, but in a much less restrictive manner. Fifth tone is largely on stems which have or previously had oral stop codas; they are found on each of the other four tones as well. Thus unlike Wancho and Tangsa-Nocte, oral stop codas are not a sufficient condition for determining tone category.¹⁹

There is the additional issue that Khamniungan third-tone words correspond either to our A category or C category presented above for the purposes of cross-language comparison, but with the distinction again based on aspiration. Third-tone aspirated onsets correspond to tone A (first tone in Wancho, second in Tangsa-Nocte < **modal*), while unaspirated onsets correspond to C (second tone in Wancho, first tone in Tangsa-Nocte < **creaky*). This points back to Weidert’s efforts to draw connection between modern tone systems and pre-tonal features, although clearly without common tonogenetic events.

Likewise, one would reasonably conclude from the features of the Khamniungan tone system that it was not the same system as that of Tangsa-Nocte, given the importance of aspiration and lost voicing contrasts that contribute to the modern categories while absent in Wancho and Tangsa-Nocte tonogenesis. The correspondences between categories point only to the fact that they are closely related languages and therefore should have some degree of correspondence regardless. Table 16 shows stems which have tone 3 rather than tone 2 in Khamniungan, but which have voiceless aspirated onsets and correspond instead to category A, rather than C as would occur for non-aspirated onsets.

19. Although in the opposite direction there is some value as fifth tone CV syllables often do indicate a lost glottal coda or glottalisation, such as ‘uncle’ /kai₅/, cognate with Muishaung /yɿ₁/.

Table 15. B-category correspondences across varieties

Gloss	Kamhwa Noknu Wancho	Muishaung Tangsa	Wolam Khamniungan	Category
<i>tooth</i>	ba ₃	βa ₃	hu ₄	B
<i>name</i>	mən ₃	miŋ ₃	ɲian ₄	B
<i>snake</i>	pu ₃	piu ₃	pau ₄	B
<i>year</i>	pō ₃	βɔ ₃	pun ₄	B
<i>buffalo</i>	ŋa ₃	ŋa ₃	ŋu ₄	B

Table 16. A-category correspondences across varieties from Khamniungan tone 3

Gloss	Kamhwa Noknu Wancho	Muishaung Tangsa	Wolam Khamniungan	Category
<i>head</i>	k ^h əu ₁	k ^h u ₂	k ^h ai ₃	A
<i>potato</i>	k ^h ən ₁	k ^h ɤn ₂	k ^h e ₃	A
<i>skin</i>	k ^h on ₁	k ^h i ₂	k ^h un ₃	A
<i>vomit</i>	p ^h an ₂	p ^h ai ₁	p ^h u ₃	A

Taken altogether, this establishes that at the very least Khamniungan underwent tonogenesis separately. Could it then be said at least that Wancho and Tangsa-Nocte share a single event? Here the problems are with genealogical closeness more generally. Based on large-scale lexical phylogenetic analysis, Wancho and Khamniungan are more closely related than either are to Tangsa-Nocte (van Dam 2023). While the results are probabilistic in nature, the large dataset ensures at least some degree of reliability of the results. In these results, three branches are clearly shown, with a closer affinity between Southeast (Khamniungan, Lainong, Gongvangpounyiu...) and Southwest (Wancho, Konyak, Chen...) compared to the Tangsa-Nocte-Tutsa varieties (ibid).

Thus, Wancho must necessarily have undergone tonogenesis independent of Tangsa-Nocte, since it would have occurred more recently than their latest common ancestor which was also shared with Khamniungan. Wancho and Tangsa-Nocte do not form a monophyletic clade that does not also include Khamniungan. Similarities between the tone systems of Wancho and Tangsa-Nocte are therefore a result of tonogenesis occurring based on similar features of phonation and the presence of oral stop codas, resulting in a high degree of cognacy between tone systems. The degree to which phonation was significant in Khamniungan tonogenesis is yet undetermined, since no reflexes of a past distinction remain today aside from a handful of CV syllables having fifth tone, suggesting some degree of lost glottalisation.

Table 17. Sample of correspondences with Phom & Lainong

Gloss	Wancho	Phom	Muishaung	Khiam.	Lainong	Category
path	ləm ₁	lam ⁵⁵	ləm ₂	jam ₂	lim ⁵³	A
head	kʰəu ₁	—	kʰu ₂	kʰai ₃	kʰo ²¹	A*
snake	pu ₃	bu ³¹	piu ₃	pau ₄	pio ³³	B
stone	lon ₂	ɣon ³³	luŋ ₁	juŋ ₃	luan ²¹	C
chew	sau ₂	ʃay ⁵⁵	ʃo ₁	ʃiu ₅	—	C*
pot	tʃik ₄	ɗak ³³	tik ₄	lak ₅	diak ⁴⁴	D

While tonogenesis must have occurred separately in all three branches when taking phylogenetic analyses into account, correspondences which consider aspiration, voicing and final glottalisation can still be shown, as illustrated in Table 17. Starred categories are those for which Khiamniungan shows a different correspondence pattern based on segmental features. These ultimately show not tonal category alignments in the way Gedney’s tables (Gedney 1972) may apply to Tai languages, but rather pre-tonal features which reflexes have retained in one way or another.

5.1 Paths of tonogenesis

Tonogenesis in Patkaian can be explained for all major branches and sub-branches as being derived from a four-way split in the proto language which corresponds to what has been described as phonation in van Dam (2018). The phonetic realisation of these four categories is not well known for proto-Patkaian. Thus, for the sake of keeping the description straightforward, they are referred to as phonation categories here. Figure 2 provides an overview of the paths of tonogenesis in Patkaian.

Circled values represent tonal categories. Squares represent segmental features. Each of the Roman numerals in Figure 2 marks a stage of tonogenesis based on the four underlying categories, A-D. These largely correspond to language groups, although not based on genealogical grounds. That is, one cannot assign a given stage to a given branch within Patkaian. Stage I represents both Tangsa-Nocte and Wancho, being the Northern branch and part of the Southwestern branch respectively. This can be further broken down based on differences in particular varieties. Figure 3 shows the paths for stage I.

Stage Ia represents Wancho as well as most of the varieties of Tangsa-Nocte. Lenition has occurred on some stems resulting in a shift from tone D to tone C, a shift which has happened fully in Phom. Stage Ib represents a handful of Tangsa-

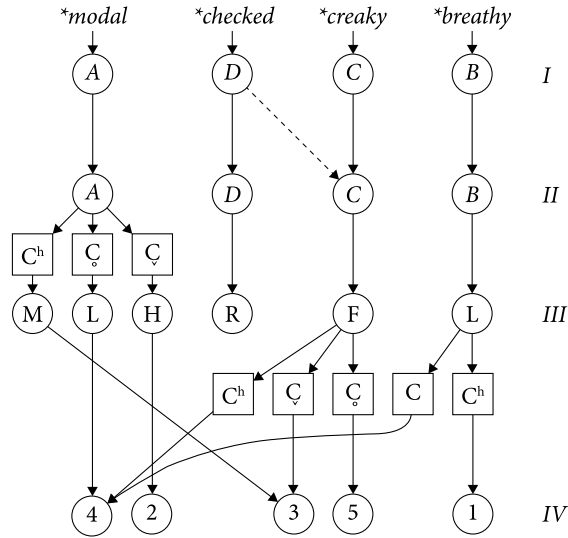


Figure 2. Paths of tonogenesis

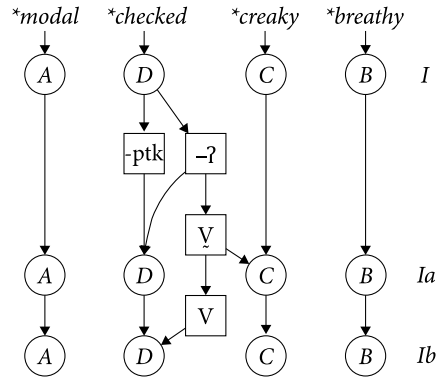


Figure 3. Stages Ia and Ib

Nocte varieties which have undergone lenition of the glottal coda but retain the category D tonal reflex pitch contour. An additional system with similar levels of simplicity and connection to the original 4 categories is found in Chen, a language variety spoken in Myanmar and India, and often grouped under the larger Konyak umbrella.

Konyak and Mulder (2022) analyse a four-tone system for Chen which is still demonstrably derived from the original four categories discussed here. Figure 4 shows the four categories presented therein with the numbers they were assigned in the text. Values in diamonds represent tone contours following the system described in Chao (1930).

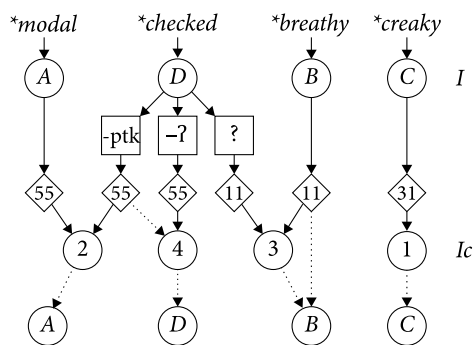


Figure 4. Stage Ic, Chen based on Konyak & Mulder (2022)

In spite of tone A and D reflexes both having 55: pitch contours, the authors separate CV? syllables with 55: contours from other 55: contour syllables due to the presence of glottalisation. This analysis results in a split in category D. A more parsimonious analysis is shown in Figure 5 wherein D and A have simply merged and syllable structure is no longer relevant in the tone system. This also brings the system in line with that of the other stage I and II varieties, the latter discussed below. Note that a handful of D reflexes in Chen have shifted to a 11: contour. It is not yet clear what may have conditioned this change, although the vast majority retain a 55: contour.

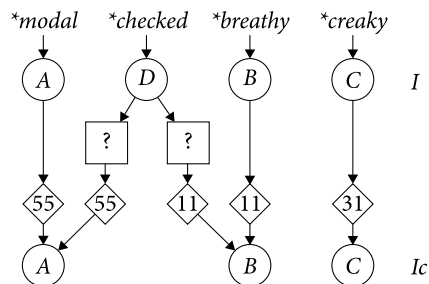


Figure 5. Parsimonious analysis for Chen

Importantly and as previously mentioned, these three paths within stage I cover two different branches within Patkaian. Chen and Wancho are south-western varieties, while Tangsa-Nocte makes up the northern branch. Lainong, however, is a Southeastern variety which also falls within Stage I. Lainong also underwent loss of codas on CV? syllables, but this did not result in a tone change. Instead, there are group A reflexes with a 53: contour, B with 33: contour, and C with 21:. All reflexes of group D stems have a 44: contour, regardless of whether they are CVC or CV syllables.

Stage II is best represented by Phom, where category D has fully merged with B and there is no influence on the tone system of the syllable structure beyond that. Category C is posited as a reflex of **creaky*, which is likely the motivating factor in the merger, possibly due to creak being realised as a low pitch as it is in Tangsa-Nocte varieties for which it is present, and CVC syllables otherwise having a low tone. Both are 33: contours today in Phom, whereas reflexes of group A are 55: and those of B are 31: based on Burling and Phom (1998).

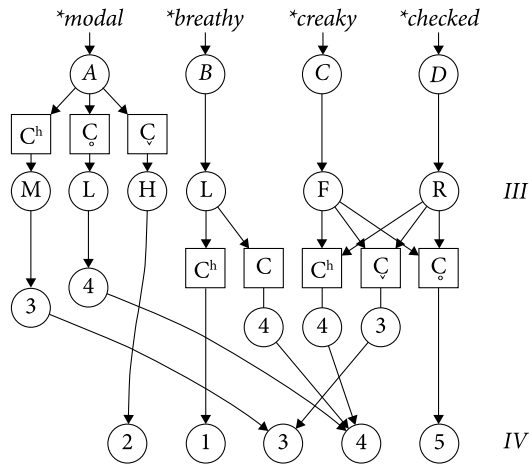


Figure 6. Stages III (Gongvangpounyiu), and IV (Khamniungan)

Figure 6 shows stages III and IV, representing Gongvangpounyiu and Khamniungan. In Khamniungan, D category is no longer recoverable, as CVC syllables can be found for any of the 5 tone categories, with the same pitch contour as their CV counterparts in that category except for the truncated duration.

In Gongvangpounyiu, B and C remain intact, but A splits based on voicing and aspiration. Checked syllable reflexes of D category are always rising tone in Gongvangpounyiu. In terms of phonology, Gongvangpounyiu is much more conservative than either Khamniungan or Lainong, the two other major Southeastern groups. The tone system however is not nearly so conservative.

Stage IV represents Khamniungan, which shows some interesting splits which, like Gongvangpounyiu, rely on features such as aspiration and voicing. Tone 5 comes entirely from the C and merged D categories. As with Gongvangpounyiu and to some extent Phom, syllable structure is not a significant feature of the tone system. CVC syllables are found across tone categories, but are for the most part found with Khamniungan tones 3, 4, and 5.

5.2 Makyam

Finally, the Makyam language must be mentioned. Linguistically, Makyam is also classified as a southeastern variety. By some reports, it is considered to fall under Lainong in terms of tribal identity. However, it is by far the most linguistically divergent variety not only of Southeastern but perhaps all of Patkaian. It can be difficult to find a sufficient number of correspondences in large part due to lexical changes which have occurred in Makyam that differ so considerably from those of other Southeastern varieties. More Burmese loans and other anomalies occur, such as on ‘sun’ *ny*⁴⁴, a stem which is otherwise always **sal* in Patkaian. Very little has been written about Makyam, most of it by Nawsawu (2016a, 2016b). Despite the focus of the literature being on phonology and tone along with the inclusion of a substantial wordlist, the value as a source of reliable tonal data may not be so great. Toneme targets are often presented in disyllabic words despite potential assimilatory effects, and often pairs which are presented as minimal are in fact not. In spite of this, some correspondences on monosyllables were able to be found, from which a few broad comments can be made.

First, high-to-low falling tones often correspond to the same contour in Khamniungan when on CVC syllables. Table 18 shows examples of this.²⁰ Notably, a number of terms which are common throughout Patkaian such as Makyam’s *mi*⁵² ‘person’ are absent from Khamniungan. In some cases there are near matches, such as ‘breast’ which is *nau*₃⁴¹ in Wolam but *ɲɔk*³¹ in Makyam with a 31: contour instead of the expected 52:. Makyam frequently has either a 52: or 44: contour on CVC syllables.

Table 18. Falling tones on closed syllables

Gloss	Makyam	Wolam
pig	vei ⁵²	ja ₃ ⁴¹ ·
village	nok ⁵²	ɲuk ₃ ⁴¹ ·
ladle	tʃap ⁵²	tap ₃ ⁴¹ ·
others	mi ⁵²	me ₃ ⁴¹ ·
breast	ɲɔk ³¹	nau ₃ ⁴¹ ·

20. Toneme duration is marked for Wolam Ngio in this and the following tables with : for longer tonemes and · for shorter, should it later be relevant to future research on possible correspondences between Makyam and Khamniungan tone categories. Tones 1, 4 and 5 are phonemically longer as a secondary feature.

Second, tone 3 contours in Wolam on open syllables will generally correspond to 33: contours in Makyam, as in Table 19. A notable exception is ‘aquatic leech’ lat_3^{41} in Wolam and a CVC syllable, so expected to have a 52: contour in Makyam, but which instead has 33:

Table 19. Falling tones on open syllables

Gloss	Makyam	Wolam
1SG	ηe^{33}	$\eta o_3^{41'}$
2SG	ηy^{33}	$\eta a_3^{41'}$
gong	ηam^{33}	$\eta am_3^{41'}$
head	ke^{33}	$k^h ai_3^{41'}$
twenty	$k^h y^{33}$	$k^h i_3^{41'}$
leech	lap^{33}	$lat_3^{41'}$

Tone 2 in Wolam, which is a high, short toneme with a slight fall, usually corresponds to either 33: or 44: in Nawsawu’s description. This may be due to confusion between the two tonemes in the elicited data, given its rarity, but this can not be known from the available literature. Table 20 presents examples of both of these correspondences.

Table 20. 53:-33: Correspondences

Gloss	Makyam	Wolam	Gloss	Makyam	Wolam
goat	nun^{33}	$^?un_2^{53'}$	cane	zi^{44}	$^?ai_2^{53'}$
hot	lam^{33}	$lam_2^{53'}$	journey	ju^{44}	$^?iu_2^{53'}$
iron	zy^{33}	$sun_2^{53'}$	path	$luom^{44}$	$jam_2^{53'}$
nose	ηan^{33}	$\eta an_2^{53'}$			
younger sibling	ηu^{33}	$niu_2^{53'}$			

More commonly, 44: in Makyam corresponds to tone 4 in Wolam which has a 22: contour, as in Table 21. Duration is an important feature of tone in northern Khamniungan, and it is possible this may also have some effect on the correspondence patterns. Unfortunately it cannot be known from the currently available Makyam data if there are notable durational features.

In spite of these potential correspondence, given the significant lexical differences between Makyam and its closest relatives, including borrowings as well as semantic change, on top of the lack of available data on the language, for now this

Table 21. Falling tones on open syllables

Gloss	Makyam	Wolam
crab	hu ⁴⁴	hun ₄ ^{22ː}
log drum	pon ⁴⁴	p ^h ian ₄ ^{22ː}
language	ɲy ⁴⁴	ɲiu ₄ ^{22ː}
tiger	k ^h ɔ̌ ⁴⁴	k ^h au ₄ ^{22ː}

is only a first attempt at drawing patterns. With luck, additional work may be done in the future to resolve some of these questions.

5.3 Summary

The significantly increase in data on Patkaian varieties in recent years provides a much better picture both in terms of tone correspondences between the languages as well as how these tone systems have come about. With improved data on previously described systems, such as Wancho (Losu & Morey 2023), as well as newly collected data on under-described varieties such as Khamniungan (Thaam, p.c.) and Gongvangpounyiu (Thangjiu, p.c.), a more complex picture emerges in how the tone systems of these languages are related to each other.

From these data, it can be concluded that each of the tone systems found in Patkaian varieties today are from the most part derived from common features of syllable structure and what was most likely a phonation distinction as described in van Dam (2018), but not onset voicing. The major exception to this are Gongvangpounyiu and Khamniungan varieties, which also rely on the reconstructed phonation distinctions as the original features of what has become tone, but importantly also involved aspiration and onset voicing in a way that is not seen elsewhere in Patkaian varieties. Thus, we can be certain that although tone category correspondences are fairly easy to find in most cases, these reflect not a common tonogenetic event, but rather pre-tonogenetic features which happened to develop into tone in often similar ways.

Table 22. Tone correspondences between Southeast Patkaian varieties

Tone	Syllable	Example	Khamniungan		Gongvangpounyiu		Lainong	
A <i>*modal</i>	C ^h V	‘twenty’ # <i>khi</i>	3	41:	M	33:	53:	
	C̣V	‘descend’ # <i>hau</i>	4	22:	L	21:		
	C̣V	‘buffalo’ # <i>luan</i>	2	553:	H	453:		
B <i>*breathy</i>	C ^h Ṿ	‘hang’ # <i>phan</i>	1	55:	L	21:	33:	
	C̣Ṿ	‘snake’ # <i>pau</i>	4	22:				
	C̣Ṿ	‘axe’ # <i>wau</i>						
C <i>*creaky</i>	C ^h Ṿ	‘pound’ # <i>thiu</i>	5	24:	F	41:	21:	
	C̣Ṿ	‘chew’ # <i>sio</i>						
	C̣Ṿ	‘fire’ # <i>wan</i>						
D <i>*checked</i>	C ^h VC	‘bracelet’ # <i>khip</i>	4	22:	R	25:	44:	
	C̣VC	‘pot’ # <i>dak</i>	5	24:				
	C̣VC	‘village’ # <i>nuak</i>	3	41:				

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Address for correspondence

Kellen Parker van Dam
 Lehrstuhl für Multilinguale Computerlinguistik
 Universität Passau
 Dr.-Hans-Kapfinger-Straße 16, Rm 315
 94032 Passau
 Germany
 kellenparker@gmail.com
 <https://orcid.org/0000-0002-7304-1685>

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