The Limbu s-final and t-final verb roots, after Michailovsky 1979 and Weidert 1982[1]

R.K. Sprigg

0. Taplejung and Panthar dialects

I had originally chosen Taplejung as the most suitable place in Limbuan for a research programme into the phonetics and phonology of Limbu planned for the early part of 1956 in order to concentrate on a northern dialect; but I chanced to meet a young Limbu author and poet, Kajiman Kandangwa, who persuaded me to go to Panthar instead, where I could count on help from his friends in studying the language as spoken in the eastern part of the Limbu area, towards Ilam. Through Kandangwa I came to make the acquaintance of the Chief Magistrate of Ilam, Kharga Bahadur Nembang (or Nembahang), better known at that time as Ilam Double Subbah, who offered me his hospitality at the village of Sartap, in the Panthar area of the District then known as Dhankuta, and arranged for one of his relations, the late Randhoj Nembang, to come over each day from the neighbouring village of Imbung (or Yongbong), and patiently instruct me in the pronunciation of Limbu, which he knew how to write in the script of the Limbus, the Kiranti script (cf. Sprigg 1959).

Double Subbah's prestige and support were a big advantage to me, and gave my phonological analysis of the verb in the Panthar dialect of Limbu a flying start; but I have since learnt, from the work of Michailovsky (1979) and Weidert (1982), that, if I had gone to Taplejung as originally planned, I should have found the dialects of that northern and north-eastern area of Limbuan, the Tamur Khola dialects, more regular in the phonetic exponency of their phonological categories, and therefore probably more conservative, than the Panthar dialect, on which I had spent four or five weeks in January and February, 1956 (for an account of part of the data collected at that time, short-quantity verbs, see Sprigg 1966).

1. s-final roots, velar

The comparative irregularity in the Panthar dialect that I have referred to in section (0) above can be readily seen in certain phonetic features of the root and suffix in two sub-categories, the velar sub-categories, of a type of verb root that can conveniently be termed s-final. Indeed the irregularity is such that, at first sight, 's-final' must seem to be a misnomer for these Panthar sub-categories because the final part of the root syllable and the initial part of the suffix in the following examples, [-kh- -(k)kh- -ŋkh-], do not contain any sound resembling [s] or [ɕ], an alveolar or an alveolo-palatal fricative; on the contrary, those sequences of sounds are velar throughout, ending in a voiceless aspirated plosive, which is preceded by either (i) a long vowel, as in

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:dark, Text:mid :: mid-W:0.38, B-Peak:72 :: gamma:1.4, B:145, W:220

[-V:kh-], (ii) a voiceless velar plosive, as in [-V(k)kh-], with the first [k] bracketed to show that [-kkh-] occurs only in slow-tempo utterances, (iii) a short vowel and voiced velar nasal, as in [-Vŋkh-], and (iii) a long vowel and voiced velar nasal, as in [-V:ŋkh-]; e.g. (column 1: imperative ([-ɛ]); column 2: 3rd-person object ([-u-/-ɷ-]); column 3: 1st-person past ([-aŋ]))

i.	[tɕi:khɛ	ʔa:khuʔ	la:khaŋ]
ii.	[ɦɪ(k)khɛ	kɛlɛ(k)khuʔ	lɐ(k)khaŋ]
iii.	[ɦɪŋkhɛ	ɦɪŋkhɷŋ:	tsɷŋkhaŋ]
iv.	[mɛd̥ɦa:ŋkhɛnnɛ	kɛge:ŋkhu:	lo:ŋkhaŋ]

i.	cool it	he pulls it out	I danced
ii.	rock it	you turn it over	(he) turned me over
iii.	rear him	I brought him up	I wrestled
iv.	do not weigh it	you prevented it	I told my name.

In the above examples the suffix is vowel-initial, [-ɛ], [-u-]/[-ɷ-], and [-aŋ], whence the term vowel-initial junction; the roots at (ii) and (iii) belong, respectively, to the root classes 11 and 12 of Sprigg 1966 (437), which is an analysis of short-quantity verb lexical items only, and does not, therefore, include long-quantity verbs such as those at (i) and (iv).

Prompted by the velarity that is such a prominent feature of the junction of root final and suffix initial in velar-final roots such as these I put them into a prosodic class that I termed k (Sprigg 1966, 448-9, but exemplified there only from short-quantity roots, as in (ii) and (iii) above), and thereby separated them from the s category of final that I was setting up to deal with the syntagmatic relations of sibilants in roots containing bilabial and 'tongue-front' consonants.[2] To some extent my reason for keeping the velar type phonologically separate, even though I had realized that these velar-final roots were complementarily distributed in relation to the bilabial-final and 'tongue-front'-final roots, was that the difference between the velars and the two latter was phonetically so great that I felt it would be rather extreme to put them into the same phonological class. It was not until recently that I learnt, from Michailovsky 1979, of the grammatical role of the S suffix (Michailovsky prefers to treat -S as a suffix 'attached to Limbu verbal roots' (1)) embracing tongue-back (or velar) root finals equally with 'tongue-front' and bilabial, as transitive versus the intransitive function of his postfinal Ø (1979, 3, 15-19; cf. the prosodic class z of Sprigg 1966, 448-9), and versus his T-suffix verbs too (1979, 22-4). In a prosodic analysis such as this, congruence of the phonological with the grammatical level should be allowed to over-ride a difference at the phonetic level, however great that phonetic difference may appear to be.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

A more important influence on my analysis at that time, though, was the undue significance that I attached to a speciously orthodox example in my data of a [-ks/ɕ] root, in such forms as [thɒkɕɛ] 'make (him) fight', [thɒksaŋ] '(he) made me fight' (Sprigg 1966, root class 14 (437)). I now believe this lexical item to be an inter-dialectal loan; but at that time, in my ignorance of the northern Limbu dialects, I felt justified in accepting it as an example, the only velar example, of the s prosodic type of final, and therefore classified it prosodically as -Ks (449-50). That decision forced me to classify the quite numerous examples of [-(k)kh-], etc. (Sprigg 1966, root class 11 (437); e.g. (ii) above) otherwise than as s-final; but in this article I propose to treat the [thɒkɕ/s-] lexical item as lying outside what one might call 'original' Panthar Limbu; in which case it should not be allowed to dictate the prosodic and phonematic analysis of the main stratum of that dialect.

2. s-final roots, (a) bilabial cluster, (b) single alveolar and alveolo-palatal, (c) 'tongue-front', both single and cluster

If, then, I treat the [thɒks/ɕ-] verb lexical item as an unassimilated loan from another dialect, it is in the other three phonetic sub-categories of s-final verbs, the bilabial-cluster, the alveolar and alveolo-palatal, and what I have termed the 'tongue-front', especially the two former, that the phonetic justification for the syntagmatic term s is to be found, because the root classes belonging to the two former categories all have either an alveolar or an alveolo-palatal fricative ([s, ɕ]), according to environment, in vowel-initial junction, the junction of the root with a vowel-initial suffix, (a) [-ps/ɕ-] and [-ms/ɕ-], (b) [-V:s/ɕ-, -Vs:/ɕ:-], and (c) friction ([-s/ɕ-]) as a component of a voiceless alveolar or alveolo-palatal (aspirated) affricate, [-t̲sh-]/[-ʧɕh-], [-(t̲)tsh-]/[-(ʧ)tɕh-], and [-n̲tsh-]/[-ɲtɕh̲-]; e.g. (col. 1: imperative ([-ɛ]); col. 2: 3rd-person object ([-u-, -ɷ-]); col. 3: 1st-person past ([-aŋ]))

a.	i.	[mɛʔʰi:pɕɛnnɛ	kɛʰa:psu:	kha:psaŋ]
	ii.	[ʔipɕɛ	thapsɷŋʔ	khɛpsaŋ]
	iii.	[ti:mɕɛ	ti:msuʔ]	-
	iv.	[tɷmɕɛ	kɛʔamsuʔ	tɛmsaŋ]
	i.	do not be mean	you made him cry	I yawned
	ii.	sleep	I throw him (wrestling)	he heard me
	iii.	smoke (meat)	he smokes (meat)	-
	iv.	join --- together	you warm it	he caught me.

The roots at (ii) and (iv) belong, respectively, to the classes 18 and 17 of Sprigg 1966, 437, in which long-quantity verb

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

lexical items, such as those at (i) and (iii), are distinguished but not analysed (433-6).

b.	i.	[jo:ɸɛ	kɛjo:su?	jo:saŋ]
	ii.	[lɛɸ:ɛ	lɛs:u?]	
	i.	satisfy (him)	you satisfy him	he satisfied me
	ii.	know it	he knows it.	

The root at (ii) is an example of root class 19 of Sprigg 1966 (437), classified as s-final on pp. 448-9.

c.	i.	[mɛβ̥ʁe:tɕhɛnnɛ	phɛ:tshɔŋ?	(nɪŋwa) phe:tshaŋ]
	ii.	[phɔ(t̪)tɕhɛ	kɛ:phɒ(t̲)tshu?	phɔ(t̲)tshaŋ]
	iii.	[pɛɲtɕhɛ	nɒn̲tshu?]	-
	i.	do not forget it	I squash it flat	I forgot
	ii.	employ him	you employ him	he employed me
	iii.	put a finish on [it	he keeps it by [it	-

There are no long-quantity examples of [-ɲtɕh/-n̲tsh] in my data; the roots at (ii) and (iii) are examples, respectively, of root classes 9 and 10 of Sprigg 1966 (437), but with a change of translation from 'bevel' to 'put a smooth finish on', the sense of the Nepali verb मठार्नु.

3. Tamur Khola root-final -S and S-cluster verbs

Michailovsky 1979 does not go into phonetic detail; but the seven types of 'final consonants or clusters' -S, -PS, -TS, -KS, -MS, -NS, and -ŊS, in a complete list of twenty-two (2), seems closely to resemble the seven Panthar s finals exemplified in (1)-(2) above; e.g. CI:KS, A:MS, LA:KS, LEKS, HIŊS, HA:PS, TUMS, PHOTS, NɔNS (15, 17-19, 22-4, 26; 'cool, uproot, dance, turn over, rear, cause to weep, assemble (a fire), hire, keep leftovers'). In view of the suspect status of [thɒks/ɕ-] in the Panthar dialect, discussed at (1) above, it is interesting to note 'THɔKS "incite to fight"' among his examples.

Michailovsky's examples are drawn from the Tamur Khola dialects only; Weidert's, on the other hand, include both Tamur Khola and Panthar; e.g.

P.	cakkhɛ?, thɛ:khɛ?, sɔŋgɦɛ?	?ipsɛ?, ?aapsɛ?, tɛmsɛ?, seesɛ?
T.K.	caksɛ?, thɛ:ksɛ?, sɔŋsɛ?	

glossed, respectively, as (Sg. Impv.) wear, tear, sell, sleep,

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

winnow, catch, urinate.

4. Phonetic development of the Panthar root-final velars

Weidert's Tamur Khola examples, when compared with my Panthar examples, show a noteworthy alternation between a sequence of either a velar plosive (voiceless) or a velar nasal (voiced) and [s] in the former dialect with a sequence of either a velar stop (voiceless), though only in slow tempo, or a velar nasal (voiced) and an aspirated velar plosive (voiceless in my material, [-ŋkh], but voiced in Weidert's [-ŋgɦ]):

	i	ii	iii	iv
T. K.:	-Vks-	-V:ks-	-Vŋs-	
P.:	[-V(k)kh-]	[-V:kh-]	[-Vŋkh-]	[-V:ŋkh-]

(Tamur Khola phonetic formulae abstracted from Weidert 1982 (5)).

I have observed a very similar alternation to that shown in columns (i) and (ii) above not between two different dialects of one language but within a single dialect, the Balti dialect of Tibetan. In Balti conditional forms (in [-na]) a velar or a uvular s-cluster verb has alternative final sequences [-ks] and [-kh], or [-χs] or [-χ], e.g.

[ʒɪksna]/[ʒɪkhna] 'jigs-na if he is afraid

[ʃaχsna]/[ʃaχna] gshegs-na if he goes (hon.), (Sprigg 1967, 196-7); the alternatives were equally acceptable to my informant.

The type of alternation in the Balti is different from the Limbu because it is consonant-initial ([n-]) where the Limbu is vowel-initial ([ɛ], [u-]/[ɷ-], [a-]) in the examples at (1) above; but, even so, I believe the process of phonetic development to have been the same. One possibility, supported by a comparison of sex and septem in Latin with ἕξ (héx) and ἑπτά (heptá) in Greek (and षष् (sáṣ) and सप्त (saptá) in Sanskrit) is that the change could have been direct, from local friction at the alveolus ([s]) to cavity friction, the voiceless resonance of the oral and pharyngal cavities as a whole ([h], or, in detail, [ɛ̰], [ụ-]/[ọ-], and [ạ-]), through the process of lowering the highest point of the tongue raised, the blade, from the proximity of the alveolus to the position of the appropriate vowel.[3]

On the other hand the velar contact present in [-kh] suggests that the aspiration (cavity friction) might well have developed via velar local friction ([x]), replacing the alveolus as the point of fricative approximation:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

[-ks] > [-kx] > [-kh]

(for examples of [-(k)kh] and [-kh] see section (1), i-ii, above).

In slow-tempo utterances in the Panthar dialect there is, in short-quantity lexical items, the possibility of what appears, at first sight, to be a sequence of velar stop and velar plosive ([-kkh-], cf. (1) above); but [-kkh-] is better regarded as an aspirated long plosive ([-k:h-]), balancing the short vowel of short-quantity lexical items such as these (but the plosive is short in fast-tempo utterances: [-kh-]).

To support this interpretation of [-kkh-] as [-k:h-] when preceded by a short vowel I would cite the root-final [-s:]/[-ɕ:] of (2.b) above, corresponding to the [-ss]/[-ɕɕ] of Sprigg 1966, root class 19 (436-7), e.g. (vowel-initial junction)

[lɛɕ:ɛ lɛs:ɷŋ: kɛlɛs:u?]

know it I knew it you know it;

the length of consonant is invariably associated with shortness of vowel, and is better symbolized as [-s:]. In corresponding long-quantity lexical items the consonant is short ([s/ɕ]) in association with length of vowel; e.g.

[mɔ:ɕɛ mɔ:sɷŋ? kɛmɔ:su?]

get him drunk I get him drunk you get him drunk.

Root-final [-V:ŋkh] and [-Vŋkh] cannot be accounted for by exactly the same process: while a development of [s] to [h] is as possible for these nasal finals as for the plosive type, it leaves the velar voiceless plosive as an intruder. A phonetically similar voiceless velar plosive can be observed from some English speakers intruding in the pronunciation of Kingston, for example, as [kɪŋkstən] rather than [kɪŋstən]. In both the Limbu and the English the intruding velar plosive shares voicelessness with the following sound, [s] in English, and [h] < *[s] in Limbu, and its velarity with the preceding sound, together with its oral occlusion feature. I therefore see the process as something like the following:

*[-ŋs] > *[-ŋks] > [-ŋkh].

(for examples see (1), iii-iv above).

I would account for the development of the root-final tongue-front nasal and (aspirated) affricate cluster, [-n̪tsh]/[-ɲtɕh], from a presumed earlier *[-n̪s]/[-ɲɕ], in much the same way as I have done for the corresponding velar nasal and (aspirated) plosive clusters through an intrusive alveolar

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

or alveolo-palatal plosive ([t̲]/[t̻]). Here again English supplies something of a parallel in the pronunciation of words such as lunch and branch with a final nasal-and-affricate cluster ([-n̲tʃ]) rather than a nasal-and-fricative cluster ([-n̲ʃ]), in which what I take to be an intrusive plosive ([t̲]) shares its voicing feature, voicelessness, with the following sound, but its place of articulation, alveolar, and its oral occlusion with the preceding sound; from the sequence of plosive and fricative an affricate has developed:

*[-n̲s] > *[-n̲t̲s] > [-n̲tsh]

*[-ɲɕ] > *[-ɲtʃɕ] > [-ɲtɕh]

(for examples see (2), b, iii, above).

In this type of root final the aspiration feature ([h]) cannot be treated as a development from local friction at the alveolus, because alveolar local friction remains, in the junction, as the fricative element of the affricate. This aspiration feature is quite striking, because aspirated affricates ([tsh, tɕh]) do not otherwise occur in Limbu. I would explain it as an automatic accompaniment of the voicelessness feature, as opposed to the non-aspiration that accompanies voice and affrication in intraverbal junction ([-dz-], alternating with voicelessness, [-ts-], in word-initial position); e.g.

[mɛdza:tɛnnɛ] [tsa:ma?][4]

please do not eat to eat

(cf. also, for plosives, the alternation of [p] with [b], [t] with [d], and [k] with [g]; e.g.

[p-] [pi̍(:)ɹɛ] [t-] [tɔ̍(:)jɛ]

[-b-] [mɛ:bi̍(:)ɹɛnnɛ] [-d-] [mɛ:dɔ̍:jɛnnɛ]

[k-] [kɛŋɛ]

[-g-] [mɛ:gɛŋɛnnɛ]

give it, do not give it; dig it, do not dig it; fall, do not fall).

The same explanation can also stand for the remaining tongue-front finals, whether short ([-tsh]/[-tɕh]) or long ([-ts:h]/[-tɕ:h]) affricates: the aspiration automatically accompanies the voicelessness. The length of the closure feature, which I had formerly treated as a difference between an affricate in long-quantity syllables ([-V:tsh]/[-V:tɕh]) and a sequence of occlusive and affricate in short-quantity syllables, the occlusive being present only in slow-tempo utterances, [-V(t̲)tsh]/[-V(t̻)tɕh], I now treat as a difference

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

in the length of the affricate, balancing a difference in vowel length, long vowel and short affricate versus short vowel and long affricate (but short in fast tempo):

long quantity: [-V:tsh] or [-V:tɕh]

short quantity: [-Vts(:)h] or [-Vtɕ(:)h]

(for examples see (2), b, i-ii above).

5. The s term of the final prosodic system: phonetic exponents

The purpose of the s term of the three-term final prosodic system, s, t, and z, is to associate, syntagmatically, the two different types of friction, (voiceless) alveolar or alveolo-palatal local friction, on the one hand, and (voiceless) cavity friction (or aspiration), on the other, with the appropriate preceding place of articulation, (i) bilabial, (ii) tongue-front, and (iii) velar, and with the appropriate one of four different manners of articulation, plosive, nasal, vocalic, taking into account differences in tempo. In order to admit the complementarily distributed Panthar velar root finals, in [-kh], [-(k)kh], and [-ŋkh], at (1), together with the tongue-front root finals in [-tsh/-tɕh], [-(t̲)tsh/-(t̲)tɕh], and [-n̲tsh/-ɲtɕh], at (2.c), which share the aspiration feature with them, into the same prosodic class, s-final, as the bilabial-and-fricative cluster root finals, in [-ps/ɕ] and [-ms/ɕ], at (2.a), and the single alveolar- or alveolo-palatal-fricative root finals, in [-s/ɕ] and [-s:/ɕ:], at (2.b),[5] separate statements of phonetic exponency are needed, one for each of the four phonetically different sets of syntagmatic relationships. These four complementarily distributed groups of associated phonetic features can be symbolized, from imperative and other such vowel-junction forms, as:

i. [s/ɕ] with [p] as in [-ps/ɕ]

[m] [-ms/ɕ]

ii. [s:/ɕ:] [V] [-Vs:/ɕ:]

[s/ɕ] [V:] [-V:s/ɕ]

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

iii. [sh/ʂh] with
- [(t̲)t̲/(ʈ)ʈ] as in [-(t̲)tsh/(ʈ)tʂh]
- [nt̲/ɲʈ] [-nt̲sh/ɲtʂh]

iv. [h]
- [(k)k] [-(k)kh]
- [ŋk] [-ŋkh],

in which [(k)] and [(t̲)/(ʈ)] are confined both to short-quantity lexical items and to slow tempo; for examples see, for (i), (2.a) above, for (ii), (2.b) above, for (iii), (2.c) above, and, for (iv), (1) above (cf. also root classes 18, 17, 19, 9, 10, 11, and 12 of Sprigg 1966, 437, and, for the s term of the final system, 448-9).

6. The t term of the final prosodic system: phonetic exponents

The prosodic function of the t term, the second of the three terms comprised in the final system, is to associate root-final non-aspirated dentality, whether voiceless or voiced, with such preceding place-of-articulation features within the root final as labiality, velarity, and (in short-quantity lexical items, and only in slow tempo) dentality, and with such manners of articulation as occlusion and nasality, and also to associate a root-final voiced alveolar tap ([ɾ]) with a preceding vocalic articulation. The three complementarily distributed sets of features concerned in these syntagmatic relationships can be symbolized phonetically as follows, from imperative and other such vowel-junction forms:

i. [t̲ₙ] with
- [p] as in [-pt̲ₙ]
- [(t̲ₙ)] [-(t̲ₙ)t̲ₙ]
- [V]/[V:] [-Vt̲ₙ]/[-V:t̲ₙ]
- [k] [-kt̲ₙ]

ii. [d̲ₙ]
- [m] [-md̲ₙ]
- [n̲ₙ] [-n̲nd̲ₙ]

iii. [ɾ] [V̊(:)]/[V:] [-V̊(:)ɾ]/[-V:ɾ]; e.g.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

(s = short quantity; l = long quantity).

i.	s:	[tɕɛpt̪ɛ	mɛ(t̪)t̪ɛ	thɒkt̪ɛ]
	l:	[li:pt̪ɛ	pa:t̪ɛ	tho:kt̪ɛ]
ii.	s:	[jɛmd̪ɛ	phɛnd̪ɛ]	-
	l:	-	[thɒ:nd̪ɛ]	-
iii.	s:		[pi̤ɾɛ]	
	l:		[po:ɾɛ]	

(i) cut it, say it, fight; be heavy, speak to (him), cook it; (ii) tattoo him, untie it; mend (clothes); (iii) give it (to him); grow;
(cf. also root classes 2, 4, 6, 16, 8, and 22 of Sprigg 1966, 437, and, for the t term of the final system, 448-9, with this difference: I have re-classified root class 22 as t rather than as z). There are no examples of a root-final [ŋd] in my material; but Michailovsky 1979 gives a single example (obscene): CAŊT, as against seventeen examples of -NT, but none of -MT. My example [jɛmdɛ] contains the only root in [-md] in my material.

7. The z term of the final prosodic system: phonetic exponents

To the third, and last, term of the final system I have, for want of a better, assigned the letter z, the initial letter of zero. The purpose of this type of prosodic piece is to associate single consonant sounds with a preceding vowel (the majority of the phonetic exponents of both s and t, on the other hand, are consonant clusters; cf. (5) and (6) above). These consonant sounds are, in imperative forms, and therefore in vowel-initial junction, two of them plosive, bilabial and velar, one of them an alveolar flap, and two of them nasal; there is also a syllabic vowel as a root-final possibility accompanied, in slow tempo, by a non-syllabic voiced front spread vowel, but coalescing with the vowel of the suffix syllable in the types of vowel junction stated below. The nasals are necessarily voiced, for voiceless nasals do not occur in Limbu; the plosives, on the other hand, and the flap type too in the formal scatter of certain lexical items (those of root class 5 of Sprigg 1966, 437; those of root class 7 have voice in all junction contexts), alternate in voicing between voice in vowel-initial junction and voiceless-ness in consonant-initial junction and in interverbal junction; i.e. they share the voice feature with a following vowel but are otherwise voiceless; e.g. (i) vowel-initial junction, (ii)-(iv) consonant-initial junction, (v) interverbal junction,

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

	i	ii	iii	iv	v	
[b]	[jɛbɛ	jɛpma	ʔajɛpɸiʔ	jɛppaʔ	kɛjɛp]	[p/pp]
	[ɦa:bɛ	ɦa:pma	ʔaɦa:pɸiʔ	ɦa:paʔ	kɛɦa:p]	[p]
[g]	[lagɛ	lakma	ʔalakɸiʔ	lakkaʔ	kɛlak]	[k/kk]
	[pe:gɛ	pe:kma	ʔabe:kɸiʔ	pe:kaʔ	kɛbe:k]	[k]
[ɾ]	[ɸɛɾɛ	ɸɛpma	ʔaɸɛ(t̪)tɕhiʔ	ɸɛtta?	kɛ:ɸɛt]	[p/(t̪)t̪/tt̪/t̪]
	[je:ɾɛ	je:pma	ʔaje:tɕhiʔ	je:taʔ	kɛe:t]	[p/t̪/t̪]

stand	to stand	we two stand	I stand	you stand
cry	to cry	we two cry	I cry	you cry
lick it	to lick	it licks us two	it licks me	it licks you
go away	to go	we two go	I go	you go
kill it	to kill	it kills us two	it kills me'	it kills you
laugh	to laugh	we two laugh	I laugh	you laugh

(the short-quantity examples represent root classes 1, 3, and 5 in Sprigg 1966, 437).

The 1st-person subject or object examples in column (iv), in which voicelessness ([p, k, t]) precedes a vowel, appear to run counter to the examples in column (i), in which it is voice ([b, g, ɾ]) that precedes a vowel; but it seems from comparison with the behaviour of open-syllable roots in this type of junction that it is to be regarded as consonant-initial junction: the initial consonant of the suffix (1st-person subject or 1st-person object) is [ʔ] in such examples as [wa:ʔaʔ, ɸi:ʔaʔ], 'I sit', 'I die'. Occasionally I have observed a glottal plosive in this type of junction even when the root is a closed syllable; e.g. [thɷmməʔah], usually [thɷmmaʔ], 'I am strong', [lammaʔah], usually [lammaʔ], 'I ---' [obscene]. It seems clear, therefore, from internal evidence, that forms such as [jɛppaʔ] and [ɦa:paʔ] above have developed from *[jɛpʔah] and *[ɦa:pʔah], in which the root-final stop was not only in junction with a suffix-initial consonant but shared voicelessness with it (cf. also Weidert 1982 for comparative evidence from other dialects: 'the vowel /-a/ is followed by a glottal stop in the Pantharay dialect, whereas it is preceded by glottal stop in most of the Tamor Khola dialects - - -

Pantharay [kɛŋaʔ] = kɛŋ-aʔ, vs.
Tamor Khola [kɛŋʔa] = kɛŋ-a.

In the Hangpang dialect of Tamor Khola the glottal stop gets further weakened and assimilates loosely to the velar nasal, = [kɛŋ-ᵑa] = [kɛŋŋa].' (8).

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

For the predominantly plosive types of final shown above, voice and voicelessness are a function of type of junction, and, therefore, in complementary distribution; but the remaining types of z-final root have a constant voicing feature, voice, in consonant-initial and interverbal junction as well as in vowel-initial junction; e.g.

	i	ii	iii	iv	v	
[m]	[lɛmɛ	lɛmma	ʔəlɛmɕiʔ	lɛmmaʔ	kɛlɛm]	
[ŋ]	[kjɛŋɛ	kɛŋma	ʔagɛŋɕiʔ	kjɛŋŋaʔ	kɛgɛŋ]	
[ɾ]	[taɾɛ	tɔmma	ʔadɔɲtɕhiʔ	tɔnnaʔ	kjɛ:dɔn]	[m/ɲ/n̪]
[V(j)]	[tɒ̇(j)ɛ	tɒ̇:maʔ	ʔadɔʔə suʔ]			[V̇:]
[Vj]	[tɒjɛ	tɒ:maʔ	ʔadɒ:suʔ]			[V:]
	[wʌjɛ	wɑ:maʔ	ʔawɑ:ɕiʔ	wɑ:ʔaʔ	kɛwɑ:ʔ]	
[j]	[tjɛh	ta:ma(ʔ)	ʔada:ɕ iʔ	ta:ʔaʔ	kɛda:]	
–	[jɛh	ju:ma	ʔaju:ɕiʔ	ju:ʔaʔ	kɛju:]	
–	[tɕɛh	tsa:maʔ	ʔadza:suʔ]			
–	[ɕɛ	ɕi:ma	ʔaɕi:çiʔ	ɕi:ʔaʔ	kɛɕi:ʔ]	
	be lazy	to be lazy	we two are lazy	I am lazy	you are lazy	
	fall down	to fall	we two fall	I fall	you fall	
	scold him	to scold	he scolds us two	he scolds me	he scolds you	
	dig	to dig	we two dig it			
	sew it	to sew	we two sew it			
	stay	to stay	we two stay	I stay	you stay	
	come here	to come	we two come	I come	you come	
	come down	to come down	we two come down	I come down	you come down	
	eat it	to eat	we two eat it			
	die	to die	we two die	I die	you die	

(the verb lexical items of lines 1-4 are examples of the root classes 15, 13, 7, and 21 of Sprigg 1966, 437). The verb in line 6, [wʌ-/wɑ:-], had also been included there as an example of root class 20; but I now realize that it should have been treated as a long-quantity root, and as not comparable, therefore, with the other roots of p. 437, which were intended to be short-quantity only. The same correction applies to the various examples of [tɔ-/tɔ:-] on p. 436, where it is incorrectly given as an example of the s (short) term of the quantity system; it ought to have been classified as l (long).

I have thought it advisable to give seven sets of examples of the open-syllable type of lexical item, on lines 4-10, in order to account for a wide degree of phonetic variation in their vowel-junction forms (col. (i)). All the other types

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

of junction (cols. (ii)-(v)) show length of vowel ([-ɒ:], [-ɑ:], etc.), as one would expect in a long-quantity root; but the examples in col (i) show shortness of vowel, at one extreme, and, at the other extreme, co-alescence with the vowel of the suffix, resulting in a monosyllable.

Instead of a detailed fourfold prosodic statement I will briefly state the phonetic facts on which such a statement would be based:

i. where the lexical item has lip-rounding (and therefore backness) as a vowel feature in junction of types (ii)-(v), consonant-initial and interverbal, the vowel is syllabic in vowel-initial junction (col. (i)), though short, as in lines 4-5 ([tɒ́:-/tɒ́-], [tɒ:-/tɒ-]), unless

ii. the lexical item has syllable-initial lip-spreading ([j-]), in which case it coalesces, as in line 8 ([ju:-/j-], not *[jujɛ]); but

iii. if the lexical item has lip-spreading (and therefore frontness) as a vowel feature in junction of types (ii)-(v), it is either non-syllabic front spread, as in the dental-initial lexical item of line 7 ([tj-]) in type-(i) junction, or it coalesces with the vowel of the suffix, in a monosyllable, as in lines 9-10, containing [tɕɛ] and [ɕɛ], presumably from *[tsaɛ] and *[ɕiɛ]. unless

iv. that lexical item has lip-rounding ([w-]) as a syllable-initial feature (and therefore backness, [ɑ:/ʌ], as a vowel feature), in which case its vowel is syllabic, as in line 6; for *[wjɛ] is an impossibility.

8. Revision of Sprigg 1966 as regards the s and t terms of the final system (448-9)

In Sprigg 1966 (which deals only with short-quantity lexical items in detail) I stated a prosodic system of four terms, s, t, z, and k, the final system, in order to deal with syntagmatic relations among consonants in root-final clusters and between single consonants and vowels (448-9). The presumed phonetic development of *[-ks] and *[-ŋs] to [-(k)kh] and [-ŋkh] in the Panthar dialect, discussed in (3)-(4) above in comparison with the Tamur Khola dialects, has decided me in favour of reducing the membership of that system from four to three by absorbing the former k term, appropriate to root classes 11 and 12 (p. 437), e.g. [-(k)kh] and [-ŋkh], in the s term. This re-classification has meant changing the phonetic exponency of the s term, in (5) above, in order to accommodate the complementarily distributed velars, at (iv), as fellow members with the bilabial clusters [-ps] and [-ms] (root classes 18 and 17), at (i), and, at (iii), the tongue-front finals, e.g. [-(t)tsh/-(ʈ)tɕh] and [-n̪tsh/-ɲtɕh] (root classes 9 and 10).

This revision will mean that the phonematic units K and Ŋ of my former statement, Kk and Ŋk, will now be re-classified as Ks and Ŋs; but the phonetic exponents of each of these two

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

phonematic units will remain the same:

K: voicelessness + occlusion ([k']; slow-tempo only)

N: voice + nasality ([ŋ]); e.g.

K: [ʁɪ(k)khɛ], N: [ʁɪŋkhɛ] ('rock it', 'rear him'; root classes 11 and 12 respectively).

The phonematic units -Ts and -Ns of Sprigg 1966 (449), and their phonetic exponents, remain as stated there, except that the phonetic exponent ascribed to -T, voicelessness + occlusion ([t']), must be stated as limited to slow-tempo utterances. The phonematic units -Ps and -Ms, and their phonetic exponents, remain as stated (450).

A second, and consequent, change in Sprigg 1966 (448-9) will be the removal of root class 14, stated there as -Ks, e.g. [mɛ:ʁʰʊkɕɛnnɛ] 'do not make --- fight', from the s term of the final system to a subsidiary system, on the grounds that it is a loan from a Tamur Khola dialect (cf. (1) above).

A further revision concerns the root class which is given in Sprigg 1966 as 23 (437). This root class was grouped there, prosodically, with 21 and 22 (as g, from glottal), on the grounds that all three were united by the glottal feature ligamental phonation, alternating with glottal plosion; e.g. (i) vowel-initial junction, (ii) consonant-initial junction

i		ii	
[-V̀ʁ]	[mɛ:bɛ́ʁɛnnɛ]	[pɛʔəma]	[-Vʔəˊ]
[-V̀:ʁ]	[mɛʔʔɒ̀:ʁɛnnɛ]	[ʔɒ̀:ma]	[-V̀:]
	do not get sick	to vomit	

This root class is suspect: (i) it is supported by only two members, the two exemplified above, and (ii) the former may have been confused with another, and phonetically similar, verb for 'vomit':

[peʔma] to get sick, [pɛ́rah] he got sick.

Chemjong 2018 V.S. symbolizes both verbs as long-quantity:

पे-मा pe:ma 'to vomit'; अ-मा a:ma 'to eject from the mouth',

with past-tense forms:

पेसु pesu and अ-सु a:su (cf. also Michailovsky 1979: PES itr. 'vomit' (23). These two lexical items, therefore, should probably be treated as errors, or perhaps assigned to an

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

onomatopoea sub-category, in which case the number of root classes given in Sprigg 1966 (437) will be reduced from twenty-three to twenty-two.

A third revision concerns the root class 22 of Sprigg 1966 (437): [piɾɛ] 'give it'; there I classified it as z (448-9) on the grounds that it was of the 'single-final-consonant' type. These phonetic grounds, however, are not decisive: a single root-final consonant ([s/ʂ], [s:/ʂ:]) has been admitted as an exposent of the s term of the final system (at (2.b) and (5.ii) above), e.g. [jo:ʂɛ] 'satisfy him', [lɛʂ:ɛ] 'know it'; a single root-final [t] has also been admitted as an exponent of the t term of that system (at (6.i) above), e.g. (fast-tempo) [mɛtɛ] 'say (it)', [pa:tɛ] 'speak to (him)'; and, in anticipation of this revision, I have included there, in sub-section (iii), the example referred to above, [piɾɛ] 'give it' (root class 22), with [po:ɾɛ] added as a corresponding long-quantity example. In vowel-initial junction an alveolar tap ([ɾ]) occurs in the exponency of both terms, z and t; so it becomes necessary to take into account consonant-initial junction and interverbal junction as well; e.g. (i. z term, ii. t term)

i.	[ɾ]	[ʂɛɾɛ ɾɛpma ʔaʂɛ(ʈ)ʈʂhiʔ ʂɛttaʔ kɛ:ʂɛt]	[p/(ʈ)ʈ/ʈʈ/ʈ]
		[je:ɾɛ je:pma ʔaje:tʂhiʔ je:taʔ kɛe:t]	[p/ʈ/ʈ]
		[tɑɾɛ tɒmma ʔadɔɲtʂhiʔ tɔnnaʔ kjɛ:dɔn]	[m/ɲ/nn/n]
ii.		[piɾɛ pi:mah ʔabi(ʔ)ʂiʔ piʔʔaʔ kɛ:biʔ]	[V̇(:)/(ʔ)/ʔʔ/ʔ]
		[po:ɾɛ po:ma ʔabo:ʂiʔ po:ʔaʔ kɛbo(:)ʔ]	[V:/ʔ]

i. kill it, to kill, it kills us two, it kills me, it kills you; laugh, to laugh, we two laugh, I laugh, you laugh; scold (him), to scold, he scolds us two, he scolds me, he scolds you; ii. give him it, to give, he gives it to us two, he gives it to you; grow, to grow, we two grow, I grow, you grow.

The range of phonetic forms at (ii) shows that this type of root, number 22 of Sprigg 1966 (437), can usefully be associated, as the contrasting t-final type of root, with the [s/ʂ] and [s:/ʂ:] types of s root (root no. 19), and with the vowel-final type of z root [V(:)] (root no. 21), together with no. 20, [V(:)], its corresponding long-quantity root, incorrectly classified there as short-quantity (436-7); e.g. (l = long quantity; s = short quantity)

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

l	s	[s/ɸ]	[jo:ɸɛ	jo:ma	ʔajo:ɸiʔ	jo:ʔaʔ kɛjo(:)ʔ]	[V:/V]
	z	[Vj]	[tɒjɛ	tɒ:maʔ	ʔadɒ:suʔ]	[wa:ʔaʔ kɛwa(:)ʔ]	
	t	[ɾ]	[pɛ:ɾɛ	pɛ:ma	ʔabɛ:ɸiʔ	pɛ:ʔaʔ kɛbɛ:]	
s	s	[s:/ɸ:]	[lɛɸ:ɛ	lɛ:maʔ	ʔalɛ:ɸiʔ]		[V:]
	z	[V̓(j)]	[tɒ̓(j)ɛ	tɒ̓:maʔ	ʔadɔʔəsuʔ]		[V̓(:)]
	t	[ɾ]	[pi̓ɾɛ	pi̓:mah	ʔabiʔɸiʔ	piʔʔaʔ kɛ:biʔ]	[V̓:/Vʔ]

l s satisfy him, to satisfy, he satisfies us two, he satisfies me, he satisfies you;
  z sew it, to sew, we two sew it; I sit, you sit;
  t fly, to fly, we two fly, I fly, you fly;
s s know it, to know, we two know it;
  z dig it, to dig, we two dig it;
  t give it, to give, he gives us two, he gives me, he gives you.

The odd man out in the short-quantity set of examples is the s-final set, which is distinguished by (i) clear phonation for the vowel (versus ligamental phonation), and by (ii) length of consonant ([ɸ:/s:]) in vowel-initial junction (it would, in any case, be impossible for the z-final and t-final examples to follow it in this length feature; for, in the nature of things, a non-syllabic vowel or a tap cannot be long). It is possible that the [ɸ:/s:] might have developed simply to balance the shortness of the preceding vowel, or it might have developed from a sequence of fricative and glottal plosive (*[sʔ]), corresponding to the suggested development of the long nasals [n: ŋ: m:] (fellow continuants of [ɸ:/s:]) in what I have ascribed to glottal-plosive junction forms (1st-person subject or object grammatical forms) from *[nʔ ŋʔ mʔ]; e.g.

-Ts	-Ns	-Ks	-Ŋs	-Ps	-Ms
[phɔnnaʔ	-	hɪŋŋaʔ	hɪŋŋaʔ	ʔimmaʔ	tɛmmaʔ]

he employs me, he rocks me, he rears me, I sleep, he seizes me (Sprigg 1966, 442).

9. The s-final type of root, and its phonematic system

The upshot of the revision of the s term of the final system is that it now comprises a set of seven phonematic units, three of which are symbolized by P, T, and K, three with the nasal symbols M, N, and Ŋ, and one, following Michailovsky 1979 (2), with the symbol Ø; they occur in both short-quantity and long-quantity lexical items, except for N, which is confined to short-quantity lexical items:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

short: Ps Ms Ts Ns Ks Ŋs Øs

long: Ps Ms Ts - Ks Ŋs Øs; e.g.

(as in vowel-initial junction, 1st-person subject or object)

[ʔips- nams- phʊ(t̲)tsh- nʊn̲tsh- ʁɪ(k)kh- sʊŋkh- les:-]

[ʁa:ps- ti:ms- phɛ:tsh- - li:kh- tha:ŋkh- jo:s-]

sleep, smell, employ, store up, rock, sell, know
make cry, smoke (meat, etc.), squash flat, train, weigh, satisfy.

10. -Ms, -Ns, and -Ŋs, and nasality

The examples of -Ms, -Ns, and -Ŋs roots that were given at (8) above each have a cluster for their phonetic exponents in the Panthar dialect. This type of exponent is appropriate to junction in which there is an initial vowel in the suffix, which is the case for grammatical forms such as the imperative, the 3rd-person object (present or past), and the 1st-person intransitive past ([-ɛ, -uʔ/-ɷŋʔ, -aŋ]); e.g. (imperative)

short: [mɛ:nam̥ɛnnɛ, nʊntɸhɛ, sʊŋkhɛ]; long: [ti:mɸɛ, tha:ŋkhɛ]

do not stink, save them up, sell it; smoke it, weigh it.

This type of junction was chosen to illustrate the cluster possibility; but there are other types of junction in which the phonetic exponents of -Ms, -Ns, and -Ŋs are not a cluster but a single sound, as in the following examples, which are taken from (i) interverbal junction (word-final), (ii) suffix-initial nasal-consonant junction ([m-]), (iii) suffix-initial plosive-consonant junction ([b-]; interrogative), and suffix-initial fricative-consonant junction ([ɸ-/s-]; dual): (cols. one, three, and four contain s(hort-quantity) roots, and cols. two and five l(ong-quantity)

	-Mss	-Msl	-Nss	-Ŋss	-Ŋsl
i.	[kjɛ:dɛm			kjɛʁɪŋ	kɛlo:ŋ]
ii.	[tɛmma?	ti:mma	pɛmma	ʁɪŋma(?)	lo:ŋma]
iii.	[kjɛ:dɛmbi			kjɛʁɪŋ bi	kɛlo:ŋbi]
iv.	[ʔadɛmɸiʔ	ʔadi:msuʔ	ʔabɛntshuʔ	ʔaʁɪŋɸiʔ	ʔalo:ŋɸiʔ]

i. he seizes you, he rears you, you give your name
ii. to seize, to smoke, to put a good finish on, to rear, to give one's name
iii. does he seize you, does he rear you, do you give your name
iv. he seizes us two, we two smoke it, we two put a good finish on it, he rears us two, we two gave our names.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:mid, Text:mid :: mid-W:0.24, B-Peak:73 :: gamma:1, B:145, W:220

Regardless of whether the phonetic exponency of each of these three finals, Ms, Ns, and Ŋs, is a cluster or a single sound, that exponency invariably contains nasality as one of its features; so the choice of the symbols M, N, and Ŋ is appropriate.

11. -Ps, -Ts, and -Ks, and their plosion/nasality alternation

One might expect a comparable state of affairs to be also true of -Ps, -Ts, and -Ks, that all three would have plosion, or, where appropriate, affrication, as part of their phonetic exponency in all their forms, even if they too had sometimes a cluster as phonetic exponent (as in (1), (2), and (5) above) and sometimes a single sound. This is what the examples so far given suggest; e.g. (s = short quantity; l = long quantity)

-Pss	-Psl	-Tss	-Tsl	-Kss	-Ksl
i. [ʔipɸɛ	ɦa:pɸɛ	phɒ(ʈ)tβhɛ	phɛ:tʃhɛ	ɦɪ(k)khɛ	li:khɛ]

go to sleep, make --- cry, employ him, squash it flat, rock it, train him; but these examples do not give a complete picture: -Ps, -Ts, and -Ks are not as consistent, in this respect, as -Ms, -Ns, and -Ŋs; for they alternate in phonetic exponency between the plosion and affrication exemplified above and the nasality to be observed in the following examples: ((ii) nasal-initial consonant junction ([m-]), iii) plosive-initial consonant junction ([b-]), (iv) fricative-initial consonant junction ([ɸ-]), (v) interverbal junction; cols. 1, 3, 5: short-quantity roots; cols. 2, 4, 6: long-quantity roots)

-Pss	-Psl	-Tss	-Tsl	-Kss	-Ksl
[ʔimma?	ɦa:mma	phɒmma	phɛ:mma	ɦɪŋma?	li:ŋma]
[ʔimbi	kɛɦa:mbi	kɛb̥hɒmbi	kɛb̥hɛ:mbi	kɛhɪŋbi	kjɛli:ŋbi]
[ʔaʔimɸi?	ʔaɦa:mɸi?	ʔab̥hɒɲtɸhi?	ʔab̥hɛ:ɲtɸhi?	ʔaɦɪŋɸi?	ʔali:ŋɸi?]
[ɦɛn ʔim	kɛɦa:m	kɛb̥hɒn	kɛb̥hɛ:n	kjɛ:ɦɪŋ̀	kjɛli:ŋ]
[m]	[m]	[m/ɲ/n̪]	[m/ɲ/n̪]	[ŋ]	[ŋ]

to sleep, to make --- cry, to employ, to squash flat, to rock, to train;
does he sleep, does he make you cry, does he employ you, does he squash you flat, does he rock you, does he train you;
we two sleep, he makes us both cry, he employs us two, he squashes us two flat, he rocks us two, he trains you;
he sleeps, he makes you cry, he employs you, he flattens you, he rocks you, he trains you.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Weidert 1982 classifies these -Ps, -Ts, and -Ks roots of mine as '*nasal verb*' ('/-m/, /-n/, /-ŋ/'; 5, 9), and accounts for the plosion or affrication in vowel-initial junction as a development from an earlier nasal: 'The stem-final nasal consonant that shows up in the A quotation form changes to its homorganic voiceless stop counterpart when fused with -s-. What can be suspected at this moment is that an original fusion of two suffixes lies at the bottom of the seemingly unorthodox change from nasal to stop. The assumption of an ordered sequence of the same two suffixes where -t/d- is followed by -s- is most natural' (11).

The main obstacle to a 'fusion of suffixes' solution is that, if a t suffix is in systemic contrast with a s suffix, each suffix having a conflicting role in the morphology, it is difficult to conceive of the two as combining within a single root. Weidert is aware of this difficulty: he commends one of a number of tentative solutions as 'advantageous in the sense that a clashing together of two infixes as surmised above is avoided' (13) and as having the advantage of not having to postulate two juxtaposed proto-suffixes in verb classes (1) and (4) e.g. for '(1)', '-a(a)ŋ-t-s', and for '(4)', '-a(a)m-t-s' (12); but, after considerable discussion, he decides in favour of treating these roots in which plosion and affrication alternate with nasality as having substituted plosion/affrication for nasality in certain of their forms as a result of introducing a -t- suffix: 'the a priori assumption of allowing a proto-suffix system containing the minimal elements Ø (zero), *-t-, *-s-, and *-t-s-' (15).

My own view is the reverse of this: instead of postulating that such roots as these have been moving from nasality towards a mixture of nasality and plosion I take the -Ps, -Ts, and -Ks roots to have moved from complete, or near-complete, plosion/affrication to the current mixture: plosion/affrication maintained in vowel-initial junction, but superseded by nasality in consonant-initial junction and in interverbal (or word-final) junction.

12. The s-final phonematic system and Tibeto-Burman comparison

Support for identifying the sort of s-final root considered in (10) above as being classifiable as -Ps, -Ts, and -Ks rather than, following Weidert 1982, as '-m-t-s', '-n-t-s', and '-ŋ-t-s' (12, 16-18) comes from comparison with Burmese and Tibetan:

-Ps	and Burmese -p,	Tibetan -b(s)
-Ms	-m,	-m
-Ts		-d (?from *-ds)
-Ns		-n
-Ks	-k,	-g(s)
-Ñs	-ñ,	-ñ(s)
-Øs	-V,	-V(s); e.g.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Limbu		Burmese	Tibetan
'ips	sleep	'ip	?yib hide one's self (Benedict 1972, 36)
hèps	wear		?'kheb/khebs spread over
yups	tighten	rup take in (but, contrariwise:	
cups	assemble	chum	'dzom(s))
nams	smell	nam: smell of	mnam smell of
tèms	catch		'tham seize
pòts	start, keep on	?pru do, perform	spyod perform, use
nòns	keep by	nho add	snon add
'èks	break	'ak crack open	
phòòks	break (tr.)	phok burst	'big(s)/'bug(s) break into
sòṅs	sell	choṅ conduct business	'tshoṅ/btsoṅs sell
thuṅs	make --- drink		'thuṅ/'thuṅs drink
sees	make water	sē: urine	
yoos	satisfy	rai be satisfied	
nees	lie down		(b)sñe(s).

The cognates are not numerous; but I believe them to be enough to justify such finals as -Ps, -Ts, and -Ks as distinct from -Ms, -Ns, and -Ṅs.

13. Presumed development of nasality in -Ps, -Ts, and -Ks roots

In the examples at line (ii) of (11) above it would be possible to account for the single nasal, [m], which is the phonetic exponent of -Ps and -Ts, and [ŋ], as the phonetic exponent of -Ks, as an aspect of the nasal type of junction: since nasality also occurs as an initial feature of the suffix lexical item ([m-, n-]), presumed root-final *[-ps], *[-ts], and *[-ks] might be thought to have developed nasality in place of plosion-and-friction cluster, perhaps through some such process as that shown below, whereby [-s-] develops into a voiceless nasal ([m̥, ŋ̊]) before being voiced to [m] and [ŋ]:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

i. [*[-ps m-] *[-ts m-]] > [-p̥m̥m-] > [-m̥m-] > [-mm-]

ii. *[-ks ŋ-] [-k̥ŋ̊n-] > [-ŋ̊n-] > [-ŋn-]; for examples of (i) see line (ii) of (11) above; and for (ii) cf. the following:

-Ps	-Ts	-Kss	-Ksl
[tho:mnɛ	phɔnnɛ	pɒŋnɛ	khe:ŋnɛ]
I watch for you,	I employ you,	I lift you up,	I tie you up.

This explanation cannot, however, serve for types of junction such as those shown at lines (iii) and (iv) of (11) above, in which there is a suffix-initial consonant other than a nasal, either, at (iii), a plosive ([b-]) or, at (iv), a fricative ([s-]); so I can only suggest, here, that the features of the nasality type of junction (line (ii)) might have been extended by analogy to all consonant-initial types of junction, e.g. lines (iii) and (iv). Once the cluster type of exponency had ceased to be a possibility in consonant-initial junction, the choice must have lain between a single stop or plosive, [p t k], and a single nasal, [m n ŋ]; and the choice of the nasal might, perhaps, have been reinforced by the nasality that would be familiar in that type of junction as part of the phonetic exponency of -Ms, -Ns, and -Ŋs (cf. (10) above). In fact, roots of the three types -Ps, -Ts, and -Ks (root classes 18, 9, and 11 of Sprigg 1966, 437) seem well on the way to being absorbed, respectively, into the -Ms, -Ns, and -Ŋs classes (root classes 17, 10, and 12); for it is only in the type of junction in which the suffix is vowel-initial that plosion survives as one of their exponents, with the result that there are phonetic criteria for distinguishing -Ps, -Ts, and -Ks roots from -Ms, -Ns, and -Ŋs, respectively, only in vowel-initial junction.

Even in word-final position (and, therefore, in interverbal junction) it is nasality, not plosion, that has been chosen for the phonetic exponents of -Ps, -Ts, and -Ks, [m n ŋ], as at line (v) of (11) above, just as it is for -Ms, -Ns, and -Ŋs, as in line (i) of (10) above.

It is significant that a cluster cannot occur in word-final position in present-day Panthar Limbu, but only a single consonant, either (i) stop ([p k t ʔ]), as for -Pz and -Pt, for -Kz and -Kt, for -tz and -tt, and for -Øt and -Øz (symbolized as -Rzg and -Yzg in Sprigg 1966, 450), or (ii) nasal ([m ŋ n]), as for -Ps, -Ms, -Mz, and -mt, for -Ks, -Ŋs, and -Ŋz, and for -Ts, -Ns, -nz, and -nt.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:dark, Text:mid :: mid-W:0.28, B-Peak:75 :: gamma:1.4, B:145, W:220

It is not unreasonable to suppose that Limbu formerly had consonant clusters in verb roots in word-final position, because consonant clusters are attested in the same circumstances in the Balti dialect of Tibetan, e.g.

[mɪ ʔɪps] will not hide, [mɪ ʒɪks] will not fear (yib, 'jigs)

In current Limbu, however, the choice, for the phonetic exponency of -Ps, -Ts, and -Ks in interverbal junction, lies between a single plosive and a single nasal; and, if I am correct in assuming that nasality had previously developed as the appropriate phonetic exponent for junction with a consonant-initial suffix in all circumstances ([-mb- -ms- -mɕ-], etc.; (11) above, lines (ii)-(iv)), then that nasality would clearly have been a more appropriate feature than plosion for replacing an earlier cluster in interverbal junction too.

14. The t-final type of root, and its phonematic system

It would be reasonable to expect that the seven-term phonematic system attributed to the s member of the three-term final system (s, t, z), namely P, K, T, M, N, Ɲ, and Ø (as in (8)-(11) above), should be matched by a seven-term phonematic system for the t member of the final system too. There is no difficulty in identifying six members, P, K, t, n, m, and Ø; e.g. ((i) short-quantity, (ii) long-quantity; vowel-initial junction ([-ɛ]))

	Pt	Kt	tt	mt	nt	Øt
i.	[tɕɛptɛ	thɒktɛ	mɛttɛ	jɛmdɛ	phɛndɛ	pi̤ɾɛ]
ii.	[kho:ptɛ	la:ktɛ	ʔuətɛ	-	wa:ndɛ	pɛ:ɾɛ]

i. cut it, fight him, speak to him, tattoo him, untie it, give it;
ii. grasp it, tread on it, call him, rock him, fly;
but there is no good candidate for the role of example of a seventh class, *Ɲt, corresponding to the Ɲs of the s-final phonematic system, with junction features *[-ŋd], corresponding to the [-md] and [-nd] of the mt and nt examples above. There is, however, a poor candidate for a seventh such root class, a solitary example, in the verb lexical item in the following two words:

[ɦɛn ɕɛ:ŋk] he pants [mɛɕɛ:ŋktɛnnɛ] do not pant.

The forms of this verb do not, however, make it a strong candidate for a further category, -Ɲt, because the root-final [-ŋk] and [-ŋkt-] of these two words do not conform strictly to the pattern set by the -nt and the -mt classes, [-nd-] and [-md-] (root classes 8 and 16 of Sprigg 1966, 437: e.g.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

[kɛ:phɛn] he unties you [mɛ:ɟɛmdɛnnɛ] do not tattoo him;

which would require *[ɦɛn ɸɛ:ŋ] and *[mɛɸɛ:ŋdɛnnɛ]. Even if these words were treated as deriving their voiceless velar stops [-k] and [-k-] in something like the intrusive manner of [-k-] in the pronunciation of the English example Kingston as [kɪŋkstən] referred to in (4) above, they would still be at odds with the -nt and -mt classes.

Alternatively, and probably better, the exceptional forms [ɸɛ:ŋk] and [-ɸɛ:ŋkt-] could be treated as onomatopoeic, and assigned to a sub-system isolated from the majority pattern of the language. In that case there will not be a correspondence in number between the seven root classes belonging to the s-final type and the six root classes of the t-final type in the Panthar dialect. It is worth noting, at this point, in support of this onomatopoeia treatment, that there is no seventh, or -ŋd-, member of the t/d cluster type in Weidert 1982 (5, 9) either, and that, although Michailovsky 1979 distinguishes a NT root class (2, 16), he gives only one example of this class, an obscenity.

In the Panthar dialect the nasal terms -N, -M, and -Ŋ are less well represented in terms of lexical items than -T, -P, and -K in both t and s types of final: in the s type there are no examples of -N in long-quantity lexical items, and in the t type there are no -Ŋ lexical items, not even an obscenity, and only one example of -M, as against thirteen -Ms lexical items (and five -Mz lexical items; cf. (16) below). Further, in the z type of final (at (16) below), -N, -M, and -Ŋ are confined to short-quantity lexical items; and, even so, there are only three lexical items serving as examples of -Nz. It seems reasonable, therefore, to treat the discrepancy in in numbers between the six-term t-final phonematic system and the seven-term s-final phonematic system (and the seven-term z-final phonematic system, at (16) below) as fortuitous.

15. The t-final phonematic system and Tibeto-Burman comparison

The number of examples of t-final cognates that I have been able to find for comparison with Burmese and Tibetan includes:

Limbu		Burmese	Tibetan
liipt-	heavy	leṡ	ljid- heavyness
'èpt-	fan	yap fan (n.)	(g.)yab- fanning
cèpt-	cut		bcad (perf.) cut
khakt-	get hard	khak difficult	khag- difficult
makt-	dream	mak	rmaṅ-

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

	Limbu	Burmese	Tibetan
lookt-	run	?rok arrive, reach	rgyug run
mutt-	blow	mhut	'bud
putt-	clench fist	put slap	
caatt-	play		rtsed
khuunt-	steal	khui	rkun- theft
pir-	give	pe:	sbyin
pèèr-	fly	pyam	'byer disperse in flight (Benedict 1972, 83, 166)
phir-	tread on	phi crush	?'phyi blot out
nèr-	be in dilemma		mnar be tormented
har-	bite	hap	hab mouthful
'èr-	get chapped		'gas chap
kar-	crack		" crack
poor-	grow		?'bo(s) swell up.

16. The z-final type of root, and its phonematic system

The seven-term phonematic system of the s-final and the six-term, or, perhaps, seven-term system of the t-final types of root have been stated in (9) and (14) above; before proceeding to a brief study of Michailovsky's -?R roots it is first necessary to state the phonematic system of the z term of the final prosodic system, and give examples (the phonetic criteria of the z term were stated at (7) above).

The z term's phonematic system also comprises seven units; they are, in relation to the quantity system:

short: Pz Kz tz nz Mz Nz Øz

long: Pz Kz tz - - - Øz; e.g.

(as in a dual form, cf. (7) above)

	-Pz	-Kz	-tz	-nz	-Mz	-Nz	-Øz
s:	[-jɛp-	-lak-	-ʃɛɛ(ʧ)t-	-dɔɲʧ-	-lɛm-	-gɛŋ-	-dɔʔə-]
l:	[-ʃa:p-	-be:k-	-je:ʧ-	-	-	-	-dɒ:-]

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

s: stand, lick, kill, scold, laze, fall, dig
l: cry, go, laugh.

17. The z-final phonematic system and Tibeto-Burman comparison

Limbu		Burmese	Tibetan
yèp	stand	rap	
lip	plait	?lip curl	sle
pak	scoop	pak	
lak	lick	lyak	ldag
thak	weave		'thag
yut	bring down	rhut put down	
sèt	kill	sat	bsad/gsod
yeet	laugh	ray	bgad
waat	wear, put on	wat	'god adorn
lim	entice	?lim delude	
thuṅ	drink		'thuṅ
śii	die	se	shi/'chi
kuu	carry		'khur
tò	dig	tū	?'dul till (Benedict 1972, 62)
caa	eat	cās	za/bza'

18. T clusters and -?R (Michailovsky 1979)

Michailovsky is puzzled by his 'roots in -R and -?R, which in some cases seem to be related to -T and -N' (1979, 3).[6] In fact, in nine instances out of thirteen in his Appendix he has treated -?R as a honorary member, as it were, of what he terms the 'T-allofam' (20, 23).[7] His section 'Families with Ø- and T-allofams (or two T-allofams)', for example, includes:

Ø: Tɔ sew, THA keep (composition only)

T: Tɔ?R have sth. sewn for so., THA?R put aside.

The roots -?R of Michailovsky's analysis are given more than honorary -T status in my analysis: in (14) above they appear as fully-fledged members of the t class of final, their phonematic unit being Ø; e.g. (short-quantity) [pɨ-] give,

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:mid, Text:mid :: mid-W:0.17, B-Peak:76 :: gamma:1, B:145, W:220

(long-quantity) [pɛ:ɾ-] 'fly'. This means that I classify the Panthar-dialect root [thaʔɾ-] 'keep', corresponding to Michailovsky's THAʔR, as -Øt, or, rather, since it is short-quantity, as -Øts. There is no root in my data corresponding to his THA; but, if there were, I should expect to classify it prosodically as z-final, with Ø as its phonematic unit, i.e. as -Øz, in accordance with my classification of [tɒj-/tɒ:-] as -Øz in (16) above. The relationship of THA versus THAʔR would then be one of z versus t, corresponding closely to Michailovsky's intuition. Indeed, superficial changes in his symbolization can make the relationship even clearer: (i) Michailovsky 1979 treats open-syllable roots, such as THA and TƆ, as having 'final consonant Ø' (2); but this Ø is not overtly symbolized in his roots; if it were to be, THA and TƆ would be symbolized as THAØ and TƆØ; (ii) his root-final 'ʔ' in '-ʔR' is in complementary distribution with -Ø, the former being followed only by 'R', and the latter being never followed by any other symbol; so '-ʔR' could be re-symbolized as -ØR; (iii) 'R' in the proposed -ØR is in complementary distribution with 'T', as in -PT, -TT, -KT, -MT, -NT, and -ŊT; it could therefore be re-symbolized as T, whence -ØT, a change that is, in any case, advisable on account of the honorary 'T-allofam' status of -R that I have referred to above, with the advantage that THAØ and TƆØ would appear in opposition to THAØT and TƆØT (and '-ʔR' in Michailovsky's 'complete list of final consonants or clusters' would need to give place to -ØT); (iv) this -ØT derived from '-ʔR' is confined to short-quantity syllables; the complementarily distributed long-quantity final consonant symbolized as 'R' (Michailovsky 1979, 2) in '-:R', would also need to be re-symbolized as -ØT, and could be distinguished from the short-quantity -ØT by using Michailovsky's long-quantity symbol ':', whence -:ØT versus -ØT, e.g. MA:R and TEʔR (Michailovsky 1979, 17, 16) re-symbolized as MA:ØT and TEØT; (v) Michailovsky's 'Ø-allofam' is not overtly symbolized: 'HA:P itr. "weep" is the Ø-allofam (in spite of its final -P) of the family HA:P‖HA:PT‖HA:PS' (2); but if HA:P were to be overtly symbolized as an example of the Ø-allofam, that 'fam' would appear as HA:PØ‖HA:PT‖HA:PS; correspondingly, his open-syllable roots THA and TƆ, for which I have proposed, at (i), that the '-Ø consonant' be overtly symbolized, whence THAØ and TƆØ, would then have to be re-symbolized as THAØØ and TƆØØ (versus THAØT and TƆØT). The former Ø of -ØØ in, for example, TƆØØ would be in phonological contrast with such other final consonants as -P, -T, -M, -N, and -Ŋ, while the latter Ø of -ØØ would be in allo-fam (morphological) contrast with -T and -S. As one would expect in an article directed towards the allo-fam relationships, all the open-syllable roots in Michailovsky 1979 are also examples of Ø-allofam, and could, therefore, be symbolized with -ØØ; but not all -Ø verbs in Limbu are Ø-allofam: 'transitives are in a minority among verbs with Ø-postfinal that have T- or S-allofams, not among all verbs with Ø-postfinal' (5). There might, then, be an advantage, for easy reference, in using a

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

different symbol for the allofam from the postfinal, Ø for one of them, perhaps, and Q, Z, X, or some other unneeded letter of the alphabet, for the other.

Such Panthar z-final roots as [ʂi:-] die, [phɒ:-] knit, [tɒ́(:)-] dig, and [mɒ́(:)-] dig, for example, could be put into Michailovsky's 'Ø-postfinal' class but not into his Ø-allofam class, as SI:Ø, PHƆ:Ø, TƆØ, and MƆØ, but not as SI:ØØ, etc. His grouping of roots by 'family' has no relevance to these four, and other such non-Ø-/T-/S-fam roots; they are non-fam.

19. Long quantity and short quantity in -Øz roots

In Sprigg 1966 I made the mistake of classifying the root [tɒj-/tɒ:-] 'sew' (Michailovsky's TƆ) and [wʌj-/wa:-] 'be' as short-quantity (436, 437), through giving undue importance, as a phonetic criterion, to the marked shortness of vowel that I had observed in certain of their forms; I now realize that this shortness is confined to the type of junction in which the suffix has a (syllabic or non-syllabic) initial vowel ([-ɒ(j)-, -ʌj-]; Sprigg 1966, 436; cf. (7) above). I also now find that, in its re-considered role as a long-quantity root, [tɒj-/tɒ:-] contrasts, in quantity, with the short-quantity root [tɒ́(j)-/tɒ́(:)-] 'dig', mainly through a difference in phonation, 'normal' versus ligamental phonation; and so does [mɒj-/mɒ:-] 'get drunk' with [mɒ́j-/mɒ́(:)-] 'dig':

	vowel-initial junction	consonant-initial junction
l:	[tɒjɛ tɒjɑŋʔ	ʔadɒ:suʔ tɒ:maʔ]
s:	[tɒ́(j)ɛ tɒʔəjɑŋʔ	ʔadɒʔəsuʔ tɒ́:maʔ]
l:	sew it, I sew it, we two sew it, to sew	
s:	dig it, I dig it, we two dig it, to dig	

The above two, [tɒ́(j)-/tɒ́(:)-] and [mɒ́j-/mɒ́(:)-], are, in fact, the only short-quantity examples of this, the -Øz, type (root class 21, Y(z), of Sprigg 1966, 449-50) in my data; but I take them to be enough to make it necessary to distinguish them, as -Øzs roots, from the above long-quantity (-Øzl) roots [tɒ(:)-] 'sew' and [mɒ(:)-] 'get drunk', and from quite a number of long-quantity roots corresponding to Michailovsky's -Ø class. If I were to follow him in using ':' to symbolize long quantity, Panthar lexical items such as [tɒj-/tɒ:-] 'sew' and [tʂ-/tsa:-] 'eat' would be distinguished by this ':' symbol, as TƆ:(Ø) and CA:(Ø), from TƆ(Ø) 'dig' and MƆ(Ø) 'dig'.

Michailovsky's Ø-allofam and T-allofam examples may be compared, as regards quantity, as follows:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

TA come, JU come down, KHE quarrel

TA:T bring, JU:T bring down, KHETT quarrel over sth. (obj.) (15),

KO be burned (17), TƆ sew

\- TƆʔR [TƆØT] have so. sewn for so. (obj.),

THA keep (only in composition), KU carry

THAʔR [THAØT] put aside, KU:TT have so. (obj.) carry sth.,

KHƆ worship (spirits) CA eat,

KHƆ:TT exorcise (spirits) from so. (obj.), CA:TT feed,

SA deliver,

SA:TT deliver sth. to so. (obj.) (20).

Michailovsky's open-syllable (Ø-allofam) examples are all short-quantity; so, too, are three of his T-allofam examples; but the majority are long. The Panthar -Øz cognates, on the contrary, are all long-quantity, -Øzl, and therefore correspond in quantity to the related -Øt roots: (phonetic form appropriate to junction with [-mɑ] for the -Øzl roots, and to junction with [-ɛ] for the -tzl and -ttl roots)

i.	[ta:-	ju:-	khe:-	tɒ:-	ku:-	tsa:-]	-Øzl
ii.	[ta:ɾ-	ju:ɾ-]					-tzl
iii.			[khe:t-			tsa:t- sa:t-]	-ttl

i.	come	come down	quarrel	sew	carry	eat	-
ii.	bring	bring down					
iii.			claim	-		feed	guide.

20. -ʔR and -S as T-allofam and S-allofam

-ʔR appears again in its T-allofam role in Michailovsky's section 'Families with T- and S-allofams' (23), in which his -ʔR is paired, this time, with -S in six striking intransitive-transitive pairs of examples, from which I have chosen:

PƐS vomit PHES fart SES urinate

PƐʔR vomit on PHEʔR fart at SEʔR urinate on so. (obj.)

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

(Michailovsky 1979, 23, 17).

On the same grounds as in (18) above I would substitute -ØT for his -?R, with the result that PHE?R and SE?R would be regularized as PHEØT versus PHES, which could, correspondingly, be regularized as PHEØS; and so, similarly, could SE?R and SES, and the other examples. It would, in that case, be necessary to substitute ØS in Michailovsky's 'complete list of final consonants and clusters' for his final consonant -S, which, like his -?R, combines, in his examples, only with a short vowel, e.g. PHES and SES above. My Panthar -ɸs cognates, however, are, with one exception, long, matched by -ɸt short forms:

-ɸsl: [nɛ:ɕ- - phe:ɕ- ɕe:ɕ- ma:ɕ- mɔ:ɕ-]

-ɸts: [nɛʔɔɾ- peʔɾ- pheʔɾ- ɕeʔɾ- maʔɔɾ-]

-ɸzl: [mɔj-]

lie down, - break wind, urinate,
be in a dilemma, be sick, break wind in the face of, urinate on,

lose, get --- drunk,
hide, get drunk.

Translated into Michailovsky's symbolization my -ɸsl examples would appear as: PE:S, PHE:S, SE:S; they are all long-quantity (for the quantity distinction in -ɸs lexical items cf. (2.b) and (8) above); my -ɸts examples, on the other hand, are short-quantity, and would need to be symbolized as PE?R, PHE?R, and SE?R, for example, in his system (or PEØT, PHEØT, and SEØT in accordance with my proposal at (18) above).

21. -R and -S as T-allofam and S-allofam (intransitive and transitive)

Michailovsky 1979 assigns Ø-allofam and S-allofam roles respectively to -R and -S in his section 'Families with Ø- and S-allofams' (17-19); e.g.

-R(Ø): PƐR itr. fly SOR itr. wake up

-S: PHƐS tr. cause to fly SOS tr. " ";

but he adds the observation: '[perhaps should be placed in §A4a below]' (18), i.e. in the section entitled 'T-allofam intransitive or deponent'.

From my point of view the latter alternative is preferable. Michailovsky's 'final consonant' R would then have honorary T-allofam status; and I should find it tempting to re-symbolize his PƐR and SOR, for example, as PƐT and SOT, or, more consistently, PƐØT and SOØT, in morphological contrast with

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

PƐS and SOS (re-symbolized as PƐØS and SOØS); but any such re-interpretation would lead to conflict with the re-symbolization of -ʔR as -ØT advocated at (18) above; e.g. TɔʔR and PƐʔR as TɔØT and PƐØT. It would confound Michailovsky's short-vowel final -ʔR examples with his short-vowel final -R examples, with the result that his PƐʔR 'vomit on' (23) would be identical with his PƐR 'fly' (18), both being re-symbolized as PƐØT (this identification would not, however, apply if his 'fly' example were spelt PƐ:R, as it is on p. 26).

22. Quantity in -R roots (-ØT v. -:ØT)

In my Panthar material the symbolization problem does not arise, because there are only two categories, short-quantity in -Øt versus long-quantity, where Michailovsky has two short-quantity and one long-quantity (-ʔR, -R, -:R); his -ʔR forms regularly correspond to Panthar short-quantity forms; e.g.

TEʔR take away, THAʔR put aside, NAʔR desist -ʔR

[teʔɾ- thaʔəɾ-] keep, [nɛʔəɾ-] be in a dilemma, -Øts;

his -R and -:R forms, on the other hand, correspond to my long-quantity -Øt (-Øtl) examples as follows:

sh.: POR, PƐR, HER, SƐR, SOR, JOR;

l.: PHI:R, MA:R, I:R, Hɔ:R, Sɔ:R

l.: " , " , " , " ;

e.g. *[poːɾɛ, pɛːɾɛ, ɦeːɾɛ; phiːɾa]; grow! fly! get dry! it shrank.*

In the Panthar dialect, then, provided that long quantity were symbolized, by a colon as in Michailovsky 1979, perhaps, or by doubling the vowel symbol as in Weidert 1982, there would be no difficulty in symbolizing Michailovsky's -R and -:R roots as -:ØT; in which case his POR, PƐR, and PHI:R, for example, would appear as PO:ØT, PƐ:ØT, and PHI:ØT (or pooØt, etc.).[8] In this long-quantity type of root it would be possible to assign an intransitivity function to the -T as opposed to the -S.

23. Quantity in -S roots (-ØS v. -:ØS)

All Michailovsky's examples of -S roots, thirty-six in number, are symbolized as short-quantity; but the ten cognate roots in my Panthar data are all long-quantity except one, [pɛ́ɸ-], which is in any case suspect (for short-quantity -Øs roots cf. (2.b) and (8) above):

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:dark, Text:mid :: mid-W:0.26, B-Peak:75 :: gamma:1.4, B:145, W:220

sh.: MAS, HIS, PHƐS, PHIS, PHES, SES, KIS, LAS, KHAS, PƐS, + 26

l.: " , " , " , " , " , " , " , " , " ;

sh.: " ;

e.g. [mɛbʱɛ:sjɛnnɛ] do not make --- fly, [ɸe:ɸɛ] urinate!

?[pɛ́(:)ɸɛ] get sick!

The Panthar long-quantity root [pɛ:ɾ-] 'fly' is, therefore, in the same quantity category as its matching causative [phɛ:s-] 'make --- fly' (they might be symbolized as PƐ:ØT and PHƐ:ØS); and so are [mɔj-] and [mɔ:ɸ-], 'get drunk' and 'get --- drunk' respectively (-Øzl v. -Øsl).

24. -Ø and the final system (s, t, z), and Weidert 1982

My observations on Michailovsky 1979, and especially the morphological significance of his final consonants and clusters -R, -?R, and -S in relation to his Ø-, T-, and S-allofams ((18)-(23) above) largely depend on associating the three terms of my final system, s, t, and z, through a common phonematic unit -Ø. Stated in (8) above I recall that association here: (i. long quantity, ii. short quantity)

i.	s:	[-s/ɸ]	[ɸe:ɸɛ	ɸe:ma	ʔaɸe:suʔ	jo:ʔaʔ kɛjo(:)ʔ]	[-V:/V]
	t:	[-ɾ]	[pɛ:ɾɛ	pɛ:ma	ʔabɛ:ɸiʔ	pɛ:ʔaʔ kɛbɛ:]	
	z:	[-Vj]	[kujɛ	ku:maʔ	ʔagu:suʔ	ju:ʔaʔ kɛju:]	
		[C-]	[tɸɛ	tsa:ma	ʔadza:suʔ	wa:ʔaʔ kɛwa:ʔ]	
ii.	s:	[-s:/ɸ:]	[lɛɸ:ɛ	lɛ:maʔ	ʔalɛ:suʔ]	- -	[-V:]
	t:	[-ɾ]	[pi̍ɾɛ	pi̍:maʔ	ʔabi̍ʔɸiʔ	pi̍ʔʔaʔ kɛbi̍ʔ]	[-V̍:/V̍ʔ]
	z:	[-V̍(j)]	[tɒ̍(j)ɛ	tɒ̍:maʔ	ʔadɒ̍ʔəsuʔ]	- -	[-V̍:/V̍ʔə]

i. urinate, to urinate, we two urinate, he satisfies me, he satisfies you;
fly, to fly, we two fly, I fly, you fly;
carry it, to carry, we two carry it; I come down, you come down;
eat it, to eat, we two eat it; I stay, you stay;
ii. know it, to know, we two know it;
give it, to give, he gives us two, he gives me, he gives you;
dig, to dig, we two dig it.

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

As far as long-quantity roots are concerned, Weidert 1982 advances a very similar analysis:

'11. -aa-s
12. -aa-t
13. -aa-Ø ('absence ("zero") versus presence (-t/d-, -s-) of suffix elements' (12)) — VOWEL

e.g.

	infinitive	sg. impv.	1st p. sg. fut.	English gloss
'11.	seema?	seesɛ?	seesuŋ?	urinate
12.	pɛɛma?	pɛɛrɛ?	pɛɛ-a	fly
13.	caama?	cɛ?	caŋ?	eat
14.	kuuma?	kuyɛ?	kuyuŋ?	carry' (9).

It is only in vowel-initial junction that Weidert's two classes 13 and 14 differ from each other; and I have shown above (7) that they are complementarily distributed in relation to lip-rounding and lip-spreading; consequently, his two classes are equally members of my -Øz class.

A dearth of material compared with my Panthar data has prevented Weidert from dealing comparably with short-quantity roots, in terms of his categories -s-, -t-, and -Ø-, corresponding closely to my root-final classes -Øs, -Øt, and -Øz above: he has no short-quantity forms suitable for treating as -s- or as -Ø-, but only forms suitable for -t-; e.g.

'(10) -a?-t- GLOTTAL' (12), e.g.

'(10) ha?ma? ha?rɛ? ha?ruŋ? bite' (9).

Because of this absence of contrasting short-quantity -s- and -Ø- forms he goes on, in a section on 'Reconstructed Proto-Limbu Verb Class morphology' (18), to distinguish this class sharply from his 'class 12 -t':

'10 *CV[±p/t/k/]s-t > CV?-d > CV?r-
12 *CVV-t > CVVr-' (18).

His classes 10 and 12 correspond to my short-quantity (s) and long-quantity (1) root-final -Øt class as follows:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:mid, Text:mid :: mid-W:0.18, B-Peak:78 :: gamma:1, B:145, W:220

	Weidert	Sprigg
10	CVʔr-, e.g. haʔ/haʔr-	-Øts, e.g. [pɨ̀:/pɨ̀ɾ/pɨ̀ʔ-]
12	CVVr-, e.g. pɛɛ/pɛɛr-	-Øtl, e.g. [pɛ:/pɛ:ɾ-];

his class 11 merges the short- and long-quantity members of my root-final -Øs class as follows:

	Weidert	Sprigg
11	CVss~CVs~CVVs, e.g. see/sees-	-Øss, e.g. [lɛ:/lɛɸ:-] -Øsl, e.g. [ɸe:/ɸe:s-];

and, finally, his classes 13 and 14 have no examples corresponding to the short-quantity members of my root-final -Øz class, whence the following correspondence:

	Weidert	Sprigg
		-Øzs, e.g. [tɒ̀:/tɒ̀(j)-]
13	C(V)-, e.g. caa/c-	-Øzl, e.g. [ku:/kuj-], [tsa:/tɕ-]
14	CVV, CVy, e.g. kuu/kuy-	

Michailovsky 1979 and Weidert 1982 have helped me to arrive at a fairly large-scale revision of my previous analysis, Sprigg 1966 (limited, for the most part, to short-quantity lexical items), through acquainting me with data from other dialects, and through a close examination of the morphological role of -s and -t.

γηράσκω δ'αεὶ πολλὰ διδασκόμενος.

NOTES

1. The revised version of a paper of the same title presented, in summary form, at the 4th Annual Conference of the Linguistic Society of Nepal, Tribhuvan University, Kathmandu, December, 1983.

2. I have used 'tongue front' as a phonetic term to cover the three parts of the tongue (as active articulator) tip, blade, and front, in association, respectively, with the teeth, the alveolus, and the hard palate, as in: (i) [t̪, n̪], (ii) [t̠, n̠], (iii) [tʂ, ɲ], in opposition to 'tongue back', or velar ([k, g, ŋ]).

3. For 'cavity friction' see Pike 1943: 'voiceless resonance of a chamber as a whole by air going through it as through an open tube' (71); for the vowel quality cf. Sweet 1877:

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:mid, Text:mid :: mid-W:0.2, B-Peak:76 :: gamma:1, B:145, W:220

'By weakening the different point and blade consonants a variety of vowels may be found, which are not included in the regular scheme of vowels. - - - A weakened [z] gives a vowel that has the effect of a very forward [eh] (I.P.A. [ə]), being in fact the "blade" vowel most nearly corresponding to [eh], and bearing the same relation to [eh] as [z] itself has to [j]' (Henderson 1971, 115).

Cf. also the alternation in Nepali between [s-] and [-ɦ-] for the lexical item [s/ɦʌt], e.g. [sʌttʌri] 'seventy' and [ekəɦʌttʌr] 'seventy-one', though, in the case of [ɦ], the cavity friction is accompanied by, and masked by, local friction in the glottis (arytenoidal friction) and by voice (cf. Sprigg 1978, 12-15).

4. The absence of aspirated affrication as a word-initial possibility to match the word-initial non-aspirated affrication that appears in examples such as: [tsəmma?] 'I meet', [tsɔ:] '(he) ate it' (from *[tsa:u:]), and the example [tsa:ma?] above appears to be due to the very reverse of the process by which I have sought to explain the development of aspiration within the word: an earlier word-initial aspirated (voiceless) affricate *[tsh] would appear to have developed into a (non-aspirated) voiceless fricative ([s-]), perhaps through a weakening of the plosive element giving rise to * [ssh] and *[sh] as intermediate stages. Michailovsky 1979 gives six examples in which he associates his root-initial S with TS as members of a transitive-intransitive pair; e.g. 'TSUPS itr. "gather", SUPS tr. "gather"', 'TSONT itr. "fall over", SONT tr. "fell, knock over"' (25). This would make his S- in certain lexical items a reflex of *TSH-.

5. These two fricatives are necessarily voiceless; for voiced fricatives do not occur in Limbu, except for [z] as an *occasional fast-tempo variant of the affricate [dz], e.g. [mɐza:tɛnnɛ] 'do not feed him', 'do not play'.*

6. Limbu books, in the Kiranti script, also show some confusion in spellings with r-; but in their case the confusion is with l-, e.g. sap-ra for sap-la 'book'. Probably the reason for this is that, apart from loan-words such as ra-ja 'king', [l] and [ɾ] are complementarily distributed: [l] is restricted to initial position in lexical items, and can occur in word-initial position; [ɾ] is restricted to the final position in lexical items, but does not occur in word-final position; e.g. [lɛ̀:ɾaŋ] 'he stretched me', [kɛlɛʔɛɾu?] 'you stretch him', but [kɛ:lɛʔ] 'he stretches you'. Chemjong 2018 V.S. gives only one page of entries with word-initial r.

7. 'I have adopted Jim Matisoff's "allofam" for "member of a word family", and his sign "◊" to indicate this relationship. In most of the finals - - - the formal difference between the allofams lies in the postfinal element. Thus when I refer to the Ø-, T- or S-allofam of a family, I am referring to the postfinal not to the final: HA:P itr. "weep" is the Ø-allofam (in spite of its final -P) of the family HA:P◊HA:PT◊HA:PS; HA:PT tr. "mourn" is the T-allofam of HA:P (or of the family),

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)

Back:dark, Text:mid :: mid-W:0.33, B-Peak:75 :: gamma:1.4, B:145, W:220

etc.' (2-3).

While I recognize that his fellow specialists owe a considerable debt to Matisoff for introducing the terminology of procreation into Tibeto-Burman studies, through 'tono-genetic' (Matisoff 1970) and 'the "organic" approach to linguistic comparison' (Matisoff 1974-5), he should not lead us into miscegenation: the etymological bastard 'allofam' should be replaced by some such term of pure lineage as allogene or allophyte.

8. Michailovsky has symbolized his short-quantity root PƐR 'fly' (18) as long-quantity (PƐ:R) on p. 26; the long-quantity symbolization is supported by Weidert 1982: '12 pɛɛma?, pɛɛrɛ?, pɛɛ-a' (9).

REFERENCES

Benedict, P.K., 1972. Sino-Tibetan, CUP

Chemjong, I.S., 2018 V.S. Limbu-Nepali-English dictionary, Kathmandu: Nepal Academy [Nepali]

Henderson, E.J.A., 1971. The indispensable foundation, OUP

International Phonetic Alphabet, revised to 1979 [sheet]

Jones, D., 1917/1977. English pronouncing dictionary, [14th ed., completely revised, A.C. Gimson ed., Everyman's Reference Library, London: Dent]

Matisoff, J.A., 1970. 'Glottal dissimilation and the Lahu rising tone: a tono-genetic case-study', Journal of the American Oriental Society, 90.1, 13-44

Matisoff, J.A., 1978. Variational semantics in Tibeto-Burman, the "organic" approach to linguistic comparison [Occasional Papers of the Wolfenden Society, VI; ed.: F.K. Lehman]; [Cyclo-styled, 1974, 1975]

Michailovsky, B., 1979. 'Tibeto-Burman dental suffixes: evidence from Limbu' [paper presented at the 12th International Conference on Sino-Tibetan languages and linguistics, Paris, 1979]

Sprigg, R.K., 1959. 'Limbu books in the Kiranti script', Akten des XXIV Internationalen Orientalisten Kongresses München 1957, Wiesbaden, 590-2

Sprigg, R.K., 1966. 'Phonological formulae for the verb in Limbu, as a contribution to Tibeto-Burman comparison', in C.E. Bazell et al. ed., In memory of J.R. Firth, London: Longman's Linguistics Library, 431-53

Sprigg, R.K., 1967. 'Balti-Tibetan verb syllable finals, and a prosodic analysis', Asia Major, New Series, XIII, 1, 187-210

Sprigg, R.K., 1978. 'Phonation types: a re-appraisal', Journal of the International Phonetic Association, 8, 1-2, 2-17

Weidert, A.F., 1982. 'Verb class morphology of Limbu' [paper prepared for the 3rd Annual Conference of the Linguistic Society of Nepal, Kathmandu, 1982]

Sprigg, R.K. 1985, "The Limbu *s*-final and *t*-final verb roots after Michailovsky 1979 and Weidert", in *Linguistics of the Tibeto-Burman Area*, vol. 8, no. 2, pp. 1-35. (purl.org/sealang/sprigg1985limbu.pdf)