The Limbu s-final and t-final verb roots
after Michailovsky 1979 and Weidert 1982

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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- -γkh-], do not contain any sound resembling [s] or [ə], 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
[-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 (iv) a long vowel and voiced velar nasal, as in [-Vŋkh-]; e.g. (column 1: imperative ([-ɛ]); column 2: 3rd-person object ([-ʊ-/ʊ-]); column 3: 1st-person past ([-aŋ]))

i. [tʃi:khɛ]  
   ?a:khu?  
   la:khau]

ii. [hi(k)khe]  
   kɛɛ(k)ku?  
   lɛ(k)khaŋ]

iii. [hɪŋkhe]  
   ḫɛŋkhɛŋ:  
   Ṫɛŋkhaŋ]

iv. [meŋkha:ŋkhe]  
   kegeŋkhu:  
   loŋkhaŋ]

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], [-ʊ-/ʊ-], 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. 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.
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/ε] root, in such forms as [thvksε] 'make (him) fight', [thvksaŋ] '(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 [thvksε/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 [thvksε] 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, s]), according to environment, in vowel-initial junction, the junction of the root with a vowel-initial suffix, (a) [-ps/ε-] and [-ms/ε-], (b) [-V:s/ε-, -Vs:/ε:-], and (c) friction ([-s/ε-]) as a component of a voiceless alveolar or alveolo-palatal (aspirated) affricate, [-tsh-]/[-tɕh-], [-tntsh-]/[-tŋh-], and [-ntsh-]/[-ŋtɕh-]; e.g. (col. 1: imperative [−ε]); col. 2: 3rd-person object (−u−, −o−); col. 3: 1st-person past (−aŋ))

a. i. [meghi:psɛmne] kha:psan [kha:psaŋ]
   ii. [ipɛ] thapsaŋ? khe:psan](
   iii. [ti:me] ti:msa
   iv. [təmɛ] ke?amsa

   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) he caught me.
   iv. join --- together you warm it

The roots at (ii) and (iv) belong, respectively, to the classes 18 and 17 of Sprigg 1966, 437, in which long-quantity verb
lexical items, such as those at (i) and (iii), are distinguished but not analysed (433-6).

b. i. [jọrɛ] kɛjo:su? jo:səŋ]
   ii. [lɛzɛ] 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. [mɛbhe:tʰɛnɛ] phɛ:tshəŋ? (nɪŋwə) phe:tshəŋ]
   ii. [phɔ(t)ənɛ] kɛ:phɔ(t)tʃu? phɔ(t)tʃəŋ]
   iii. [pɛntʃɛ] nʊntʃu?]

   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 he keeps it by

There are no long-quantity examples of [-ntʃ/-ntʃ] 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 नढ़ा.

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 -NS, 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:KS, LA:KS, LE:KS, H:NS, HA:PS, TUMS, PHOTS, N:NS, 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 [thɔks/-] in the Panthar dialect, discussed at (1) above, it is interesting to note 'THKS "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. cakkhe?, the:khe?, sənghe?
   ?ipse?, ?apse?, təmsə?, seese?
T.K. cakse?, the:kse?, sənse?

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

\[
\begin{array}{cccc}
  & \text{i} & \text{ii} & \text{iii} & \text{iv} \\
\text{T. K.:} & \text{Vks} & \text{V:ks} & \text{Vŋs} & \\
\text{P.:} & \text{[V(k)kh]} & \text{[V:kh]} & \text{[Vŋkh]} & \text{[V:ŋkh]}
\end{array}
\]

(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.

[ʒiksa]/[ʒikhna] \text{'[jɪgs-na]' if he is afraid}

[ɕax̣a]/[ɕax̣na] \text{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 ([ɛ̃], [u-]/[o-], [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 ɛ̃ɛ̃ (hex) and ἑπτά (hepta) in Greek (and छ्र (sās) and सप्त (saptā) 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 pharyngeal cavities as a whole ([h], or, in detail, [ɛ̃], [y-]/[o-], and [a-]), 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.

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:
[-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 ([-khh-], cf. (1) above); but [-khh-] 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 [-khh-] as [-k:h-] when preceded by a short vowel I would cite the root-final [-s:]/-[s:] of (2.b) above, corresponding to the [-ss]/[-sp] of Sprigg 1966, root class 19 (436-7), e.g. (vowel-initial junction)

[le:se] le:se:η: kēle:se: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/η]) in association with length of vowel; e.g.

[mo:se] mō:se:η? kēmo:se:u?

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

Root-final [-V:ηkh] and [-Vηkh] 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 [kųŋstən] rather than [kůŋstən]. 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:

*[-ης] > *[-ηks] > [-ηkh].

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

I would account for the development of the root-final tongue-front nasal and (aspirated) affricate cluster, [-ntsh]/[-ntʃ], from a presumed earlier *[-ns]/[-ŋs], in much the same way as I have done for the corresponding velar nasal and (aspirated) plosive clusters through an intrusive alveolar
or alveolo-palatal plosive ([t]/[tʰ]). 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 ([−nts]) rather than a nasal-and-fricative cluster ([−ns]), in which what I take to be an intrusive plosive ([t]) 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:

\[*−ns > *−nts > −ntsh\]
\[*−nɛ > *−ntʃ > −ntʃh\]

(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 ([tʃh, tʃh]) 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 intrusive junction ([−dz−], alternating with voicelessness, [−ts−], in word-initial position); e.g.

[mɛdza:teme] [tsa:maʔ]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−] [piː:ɛ] [t−] [tʃː(ː)jɛ]

[−b−] [mɛːbiː(ː)ɛmɛ] [−d−] [mɛːdʒːjɛmɛ]

[k−] [kɛnɛ]

[−g−] [mɛːɡɛmɛ]

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 ([−tʃh]/[−tʃh]) or long ([−tsːh]/[−tsːh]) 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 ([−Vːtʃh]/[−Vːtʃh]) and a sequence of occlusive and affricate in short-quantity syllables, the occlusive being present only in slow-tempo utterances, [−V(ː)tʃh]/[−V(ː)tʃh], I now treat as a difference
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 \([-V:t\dot{\rho}h]\)

short quantity: \([-Vt\dot{s}(\cdot)h]\) or \([-Vt\dot{\varepsilon}(\cdot)h]\)

(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 \([-\eta\cdot h]\), \([-\eta\cdot k\cdot h]\), and \([-\eta\cdot n\cdot k\cdot h]\), at (1), together with the tongue-front root finals in \([-tsh/-t\dot{\rho}h]\), \([-t\cdot tsh/-t\cdot t\dot{\rho}h]\), and \([-n\cdot tsh/-n\cdot t\dot{\rho}h]\), 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 \([-ps/\varphi]\) and \([-ms/\varphi]\), at (2.a), and the single alveolar- or alveolo-palatal-fricative root finals, in \([-s/\varphi]\) and \([-s:\varphi:\cdot]\), at (2.b), separate statements of phonetic exponenty 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:

\[
\begin{align*}
\text{i. } & [s/\varphi] \quad \text{with} \\
& [m] \\
& \text{as in } [-\eta s/\varphi] \\
\text{ii. } & [s:\varphi:] \quad \text{[V]} \\
& [-V s:\varphi:] \\
\end{align*}
\]
iii. $[\text{sh}']$ with

- $[nt]$  
  $[-ntsh/ntsh]$

- $[(k)k]$
  $[-(k)kh]$

iv. $[\text{h}]$

- $[\eta k]$
  $[-\eta kh]$,

in which $[(k)]$ and $[(t)/t]$ 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 manner-of-articulation as occlusion and nasality, and also to associate a root-final voiced alveolar tap ($[\text{ʃ}]$) 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:

- $[\text{p}]$
  as in $[-p_{\text{n}}]$

- $[(t)][t]$
  $[-(t)t]$ 

i. $[\text{t}]$

- $[\text{v}]/[\text{v}]:$
  $[-\text{v}t]/[-\text{v}:t]$

- $[\text{k}]$
  $[-k_{\text{t}}]$

- $[\text{m}]$
  $[-m_{\text{d}}]$

ii. $[\text{d}]$

- $[\text{n}]$
  $[-n_{\text{d}}]$

iii. $[\text{r}]$

- $[\text{v}(:)]/[\text{v}]:$
  $[-\text{v}(::r)]/[\text{v}:r];$ e.g.
(s = short quantity; l = long quantity).

i. s: [tɛɾpɛ]  me(t)ɛ  thœkɛ]
i: [li:ptɛ  pa:te  tho:ktɛ]

ii. s: [jemɛ]  phenɛ]  -
i: [thœ:ndɛ]  -

iii. s: [piɛ]
i: [po:ɛ]

(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):
CAYT, as against seventeen examples of -NT, but none of -MT.
My example [jemɛ] 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,
i   ii   iii   iv   v
[b]  [jebe]  jepma  ?ajepqei?  jeppa?  kejep]  [p/pp]
[g]  [lage]  lakma  ?alakqi?  lakka?  kəlak]  [k/kk]
[x]  [sele]  əpma  ?때(t)tφhi?  əetta?  ke:əet]  [p/(t)t/θ/τ]

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, x]) 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 [waiʔaʔ, ɕiʔaʔ], '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. [θɔmməʔah], usually [θɔmmaʔ], 'I am strong', [lammaʔah], usually [lammaʔ], 'I ---' [obscene]. It seems clear, therefore, from internal evidence, that forms such as [jeppaʔ] and [ha:paʔ] above have developed from *[jeʔpʔah] and *[ha: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 a glottal stop in most of the Tamor Khola dialects ---

Pantharay  [kəŋaʔ] = kəŋ-aʔ, vs.

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

\[
\begin{array}{cccccc}
\text{i} & \text{ii} & \text{iii} & \text{iv} & \text{v} \\
\text{[m]} & \text{[lem} & \text{ləmma} & \text{?aləmi}? & \text{lem} & \text{a} & \text{klelm}] \\
\text{[v]} & \text{[kje} & \text{kəjm}a & \text{?ajəmi}? & \text{kje} & \text{nə} & \text{kegəv}]
\end{array}
\]

\[
\begin{array}{cccc}
\text{[tə} & \text{tom} & \text{a} & \text{?aətəm}hi}? & \text{ton} & \text{na} & \text{kje} & \text{don}]
\end{array}
\]

\[
\begin{array}{cccc}
\text{[V(j)]} & \text{[tə(j)e} & \text{təm} & \text{a} & \text{?aəsəu}]
\end{array}
\]

\[
\begin{array}{cccc}
\text{[Vj]} & \text{[tə} & \text{tə} & \text{m} & \text{a} & \text{?aəsəu}]
\end{array}
\]

\[
\begin{array}{cccc}
\text{[wəje} & \text{wəm} & \text{a} & \text{?awaəmi}? & \text{wə} & \text{əm} & \text{ə} & \text{kewa} & \text{ə}?
\end{array}
\]

\[
\begin{array}{cccc}
\text{[j]} & \text{[təjə} & \text{ta} & \text{m} & \text{a} & \text{?aəmi}? & \text{tə} & \text{ə} & \text{kədə}]
\end{array}
\]

- \[
\begin{array}{cccc}
\text{[jəj} & \text{ju} & \text{m} & \text{a} & \text{?aəmi}? & \text{ju} & \text{ə} & \text{kəju}]
\end{array}
\]

- \[
\begin{array}{cccc}
\text{[təəj} & \text{tsə} & \text{m} & \text{a} & \text{?aəsəu}]
\end{array}
\]

- \[
\begin{array}{cccc}
\text{[sə} & \text{si} & \text{m} & \text{a} & \text{?aəsi}? & \text{si} & \text{ə} & \text{kəps}i:?
\end{array}
\]

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, [wa-/wa-], 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 [tə-/tə-] 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
of junction (cols. (ii)-(v)) show length of vowel ([-pː],
[-aː], 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, coalescence 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:

1. 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 ([tʃː-/tʃ-], [tːvː-/tːv-]), unless

2. the lexical item has syllable-initial lip-spreading
([j-]), in which case it coalesces, as in line 8 ([juː-/j-],
not *[juː])

3. if the lexical item has lip-rounding (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 ([tʃ-]) in type-(i) junction,
or it coalesces with the vowel of the suffix, in a monosyllable,
as in lines 9-10, containing [tʃɛ] and [ʃɛ], presumably from
*[tʃæ] and *[ʃæ]. unless

4. that lexical item has lip-rounding ([w-]) as a
syllable-initial feature (and therefore backness, [aː/ʌ],
as a vowel feature), in which case its vowel is syllabic, as
in line 6; for *[wʃɛ] 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 *[-γs] to [-k(kh)] and
[-γkh] in the Panhar 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 [-γkh], 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. [-tsh/-(t)ʃh] and [-ntʃ/-ntʃh] (root classes
9 and 10).

This revision will mean that the phonetic units K and η
of my former statement, θ and θ̂, will now be re-classified
as KS and ηS; but the phonetic exponents of each of these two
phonematic units will remain the same:

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

N: voice + nasality ([ɲ]); e.g.

K: [ɦɪ(k)kʰɛ], N: [ɦɪŋkʰɛ] ('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. [me:ɻʰpɛmmɛ] '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

<table>
<thead>
<tr>
<th>i</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-Vf]</td>
<td>[peʔma]</td>
</tr>
<tr>
<td>[-V:ʃ]</td>
<td>[-V:ʃ]</td>
</tr>
</tbody>
</table>

\[-Vf\] [me:beʔennɛ] [peʔma] \[-Vʃ\]
\[-V:ʃ\] [meʔʔvɛpɛnnɛ] [ʔv:ma] \[-V:ʃ\]

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, [pɛraham] he got sick.

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

पेमा pe:ma 'to vomit'; अमा a:ma 'to eject from the mouth',

with past-tense forms:

पेसु pesu and असु 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
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): [pìɾɛ] '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 [t] has also been
admitted as an exponent of the s term of the final
system (at (2.b) and (5.ii) above), e.g. [joːɛ] 'satisfy
him', [lɛɛːɛ] '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) [mɛɛ] 'say (it)', [paːtɛ] 'speak to
(him)'; and, in anticipation of this revision, I have included
there, in sub-section (iii), the example referred to above,
[pìɾɛ] 'give it' (root class 22), with [poːɛ] added as a
respective long-quantity example. In vowel-initial junction
an alveolar tap ([ɾ]) occurs in the exponent of both terms,
z and t; so it becomes necessary to take into consonant-initial
junction and interverbal junction as well; e.g. (i. z term,
ii. t term)

i. [ɾ] [ɛɛɛɛ ɛɛpmə ʁaɛ(t)tɛhiʔ ɛɛttaʔ keːɛɛt] [p/(t)ʃ/tt/tʃ]
[jɛɛɛ jeːpmə pajeːtɛhiʔ jeːtəʔ keːt] [p/t/tʃ]
[tɛɛɛ tɔmɔmə ʁaɒŋtɛhiʔ tɔnɔma kɛːdɔn] [m/ŋŋŋ/ŋ]

ii. [pɛɛɛ pʰmah ʁaβiʔ(?)ɾiʔ pioʔaʔ keːbiʔ] [ɬ/ː/ʔ/ʔ/ʔ/ʔ]
[pɔɛɛ pʰma ʁaboːɾiʔ pɔʔaʔ keboː(ː)/ʔ] [ɬ/ː/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/ʃ] and [sː/ʃː] types of s-root (root no. 19), and with the
vowel-final type of z root [Vːː] (root no. 21), together with
no. 20, [Vːː], its corresponding long-quantity root, incorrectly
classified there as short-quantity (436-7); e.g. (1 = long
quantity; s = short quantity)
1 s [s/φ] [jo:pe jo:ma ?ajo:pi? jo:?a? kεjo(:)?] [V:/V]
2 z [Vj] [tvje tv:ma? ?adv:su?] [wa:?a? kεwa(:)?]
3 t [ɛ] [pe:le pɛ:ma ?abe:pi? pɛ:?a? kɛbe:]
4 s [s:/ɛ:] [lɛ:ɛ lɛ:ma? ?ale:pi?] [V:]
5 z [tv(j)] [tɔ(j)e tɔ:ma? ?adv:ɔsu?] [V:]

1 s satisfy him, to satisfy, he satisfies us two, he satisfies me, he satisfies you;
2 z sew it, to sew, we two sew it; I sit, you sit;
3 t fly, to fly, we two fly, I fly, you fly;
4 s s know it, to know, we two know it;
5 z dig it, to dig, we two dig it;
6 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 ([s:/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 [s:/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 (*[s?]?), corresponding to the suggested development of the long nasals [n: ɣ: m:] (fellow continuants of [s:/s:]) in what I have ascribed to glottal-plosive junction forms (1st-person subject or object grammatical forms) from *[n? ɣ? m?]e.g.

-Ts -Ns -Ks -Mʃs -Ps -Ms


he employs me, he rocks me, he reels 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 ʃ, and one, following Michailovsky 1979 (2), with the symbol ɣ; they occur in both short-quantity and long-quantity lexical items, except for N, which is confined to short-quantity lexical items:
short: Ps Ms Ts Ns Ks Ns Æs
long: Ps Ms Ts - Ks Ns Æs; e.g.

(as in vowel-initial junction, 1st-person subject or object)
[?ips- nams- pha(t)sh- nøntsh- k liking- ñøkh- les:-]
sleep, smell, employ, store up, rock, sell, know
make cry, smoke (meat, etc.), squash flat, train, weigh, satisfy.

10. -Ms, -Ns, and -Nøs, and nasality

The examples of -Ms, -Ns, and -Nøs 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 ([³-ø, -u-/øø, -øø]); e.g. (imperative)
short: [mø:nømø, nøntøhø, øøøkøhø]; long: [ti:msø, tha:økøhø]
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 -Nøs 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 ([ø-]), (iii)
suffix-initial plosive-consonant junction ([b-]; interrogative),
and suffix-initial fricative-consonant junction ([z-/s-];
dual): (cols. one, three, and four contain s(hort-quantity)
roots, and cols. two and five l(ong-quantity)

|Mss | Msl | Nss | Æss | Æsl |
--- | --- | --- | --- | --- |
1. [kje:dem | kjøhø | kεlo:ø]
2. [temma? | ti:mma | øømma | kηøma(? | lo:øma]
3. [kje:ømbi | kjøhø bi | kεlo:øbi]
4. [øøømøøi? | øøømøøu? | øøøøøøu? | øøøøøøøi?]

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

-PPs -PPl -TTs -TTl -KKs -Kkl

i. [ʔipɛ̂ haːpɛ̂ phə(t)obble pheːtɔhe hɪ(ŋ)kʰe liːkʰe]
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 -Ñs; for they alternate in phonetic exponenty 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 ([s-]), (v) intervelar junction; cols. 1, 3, 5: short-quantity roots; cols. 2, 4, 6: long-quantity roots)

-PPs -PPl -TTs -TTl -KKs -Kkl

[ʔimma? haːmma pʰɪmma pʰɛːmma hɪŋma? liːŋma]
[ʔimbi keːhaːmbi kɛʰɔmbi kɛʰɛːmbi keːkʰɪbi kjɛliːŋbi]
[ʔɛn ʔim keːhaːm kɛːkʰon kɛːkʰɔn kɛ:kʰiŋ kjɛliːŋ]

[m] [m] [m/ŋ/ŋ] [m/ŋ/ŋ] [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.
Weidert 1982 classifies these -Ps, -Ts, and -Ks roots of mine as 'nasal verb' ('/-m/, /-n/, /-y/'; 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 '(l)', '-a(a)_n-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 '-y-t-s!' (12, 16-18) comes from comparison with Burmese and Tibetan:

-Ps and Burmese -p, Tibetan -b(s)
-Ks
-Ts
-Ns
-Ks
-ŋs
-øs

<table>
<thead>
<tr>
<th>Language</th>
<th>Affrication</th>
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<tbody>
<tr>
<td>Burmese</td>
<td>-p</td>
</tr>
<tr>
<td>Tibetan</td>
<td>-b(s)</td>
</tr>
<tr>
<td>Weidert</td>
<td>-m-t-s</td>
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<tr>
<td></td>
<td>-n-t-s</td>
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<td>-y-t-s</td>
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<td>Limbu</td>
<td>Burmese</td>
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<td>'ips</td>
<td>sleep</td>
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<tr>
<td>héps</td>
<td>wear</td>
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<td>yups</td>
<td>tighten</td>
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<td>cups</td>
<td>assemble</td>
</tr>
<tr>
<td>nams</td>
<td>smell</td>
</tr>
<tr>
<td>tèms</td>
<td>catch</td>
</tr>
<tr>
<td>ṅòts</td>
<td>start, keep on</td>
</tr>
<tr>
<td>nòns</td>
<td>keep by</td>
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<tr>
<td>'èks</td>
<td>break</td>
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<tr>
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<tr>
<td>sòns</td>
<td>sell</td>
</tr>
<tr>
<td>thuṣns</td>
<td>make --- drink</td>
</tr>
<tr>
<td>sees</td>
<td>make water</td>
</tr>
<tr>
<td>yoos</td>
<td>satisfy</td>
</tr>
<tr>
<td>nees</td>
<td>lie down</td>
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</table>

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 -Ns.

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 ([m, ŋ]) before being voiced to [m] and [ŋ]:
i. \[ *[\text{-ps m-}] \] > \[ *[\text{-ts m-}] \] > \[ *[\text{-nm-}] \] > \[ *[\text{-mm-}] \]

ii. \[ *[\text{-ks m-}] \] > \[ *[\text{-yn-}] \] > \[ *[\text{-yn-}] \] > \[ *[\text{-yn-}] \]; for examples of (i) see line (ii) of (ll) above; and for (ii) cf. the following:

-Ps -Ts -Kss -Ksl

[thokmne phonne pande khe:yan]  

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 (ll) above, in which there is a suffix-initial consonant other than a nasal, either, at (iii), a plosive ([b-]) or, at (iv), a fricative ([c-]); 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 exponomy 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 y]; 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 exponomy of -Ms, -Ns, and -Ys (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 -Ys 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 -Ys, 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 y], as at line (v) of (ll) above, just as it is for -Ms, -Ns, and -Ys, 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 ([n k t ?]), as for -Pz and -Pt, for -Kz and -Kt, for -tz and -tt, and for -t and -tz (symbolized as -Rzg and -Yzg in Sprigg 1966, 450), or (ii) nasal ([m n r]), as for -Ps, -Ms, -Mz, and -mt, for -Ks, -Ys, and -Yz, and for -Ts, -Ns, -nz, and -nt.
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.

\[ [\text{mi} \ ʔ\text{ups}] \text{ will not hide, } [\text{mi} \ \ddot{\text{z}}\text{ks}] \text{ will not fear (\text{yib, \ 'jigs})} \]

In current Limbu, however, the choice, for the phonetic exponent of \(-\text{Ps, -Ts, and -Ks in interverb 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- -ms-], 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 interverb 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, N, N, N, and \(\emptyset\) (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 \(\emptyset\); e.g. ((i) short-quantity, (ii) long-quantity; vowel-initial junction ([-\(\emptyset\)]))

\[
\begin{array}{cccccc}
\text{Pt} & \text{Kt} & \text{tt} & \text{mt} & \text{nt} & \emptyset t \\
\hline
\text{i.} & \text{tɛp\text{e}} & \text{thuk\text{e}} & \text{met\text{e}} & \text{jɛm\text{e}} & \text{phend\text{e}} & \text{p\text{e}}\text{e} \\
\text{ii.} & \text{kho:\text{p\text{e}}} & \text{la\text{e}} & \text{ʔ\text{u\text{a}}\text{e}} & \text{wa\text{nd\text{e}}} & \text{pɛ\text{e}}\text{ɛ} \\
\end{array}
\]

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, \*\text{Nt}, corresponding to the Ny of the s-final phonematic system, with junction features \*[-\(\ddot{v}\text{d}\)], 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:

\[ [\text{hen \ ʔɛ\text{e}}\text{ŋk}] \text{ he wants } [\text{mɛɛ}\text{ŋk} \text{tɛn\text{e}}} \text{ do not want.} \]

The forms of this verb do not, however, make it a strong candidate for a further category, -\text{Nt}, because the root-final [-\(\ddot{v}\text{k}\)] and [-\(\ddot{v}\text{kt\text{-}}\)] of these two words do not conform strictly to the pattern set by the -nt and the -mt classes, [-\(\ddot{d}\text{\text{-}}\)] and [-\(\ddot{m}\text{\text{-}}\)] (root classes 8 and 16 of Sprigg 1966, 437: e.g.
He unties you do not tattoo him;

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

Alternatively, and probably better, the exceptional forms *[ζεςκ] and *[ζεςκε] 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 -K's lexical items (and five -Mz lexical items; cf. (16) below). Further, in the z type of final (at (16) below), -N, -K, and -ŋ are confined to short-quantity lexical items; and, even so, there are only three lexical items serving as examples of -Mz. It seems reasonable, therefore, to treat the discrepancy 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:

<table>
<thead>
<tr>
<th>Limbu</th>
<th>Burmese</th>
<th>Tibetan</th>
</tr>
</thead>
<tbody>
<tr>
<td>liint-</td>
<td>heavy</td>
<td>lijid- heavyness</td>
</tr>
<tr>
<td>'ent-</td>
<td>fan</td>
<td>(ŋ.)yab- fanning</td>
</tr>
<tr>
<td>cēnt-</td>
<td>cut</td>
<td>bcad (perf.) cut</td>
</tr>
<tr>
<td>khakt-</td>
<td>get hard</td>
<td>khak difficult</td>
</tr>
<tr>
<td>mak-</td>
<td>dream</td>
<td>kha- difficult</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rma-</td>
</tr>
<tr>
<td>Limbu</td>
<td>Burmese</td>
<td>Tibetan</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>lookt-</td>
<td>run</td>
<td>?rok</td>
</tr>
<tr>
<td>mutt-</td>
<td>blow</td>
<td>mhut</td>
</tr>
<tr>
<td>nutt-</td>
<td>clench fist</td>
<td>put slap</td>
</tr>
<tr>
<td>caatt-</td>
<td>play</td>
<td>rtaed</td>
</tr>
<tr>
<td>khuunt-</td>
<td>steal</td>
<td>khui</td>
</tr>
<tr>
<td>nir-</td>
<td>give</td>
<td>pe?</td>
</tr>
<tr>
<td>nèèr-</td>
<td>fly</td>
<td>pyan</td>
</tr>
<tr>
<td>nhir-</td>
<td>tread on</td>
<td>phi</td>
</tr>
<tr>
<td>nèr-</td>
<td>be in dilemma</td>
<td>mnar</td>
</tr>
<tr>
<td>har-</td>
<td>bite</td>
<td>hap</td>
</tr>
<tr>
<td>'èr-</td>
<td>get chapped</td>
<td>'gas</td>
</tr>
<tr>
<td>kar-</td>
<td>crack</td>
<td>&quot;</td>
</tr>
<tr>
<td>noor-</td>
<td>grow</td>
<td>?'bo(s)</td>
</tr>
</tbody>
</table>

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 phonic 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 Ùz
- long: Pz Kz tz - - Ùz; e.g.

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

- Pz -Kz -tz -nz -Nz -Ùz -Øz
- s: [-jep- -lak- -t(h)t- -dant- -lem- -g?m- -do?o-]
- l: [-kapi- -be:k- -je:t- -dav:-]
s: stand, lick, kill, scold, laze, fall, dig
l: cry, go, laugh.

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

<table>
<thead>
<tr>
<th>Limbu</th>
<th>Burmese</th>
<th>Tibetan</th>
</tr>
</thead>
<tbody>
<tr>
<td>ʒèp</td>
<td>stand</td>
<td>rap</td>
</tr>
<tr>
<td>ʒip</td>
<td>plait</td>
<td>?lip</td>
</tr>
<tr>
<td>pək</td>
<td>scoop</td>
<td>pak</td>
</tr>
<tr>
<td>əlak</td>
<td>lick</td>
<td>lyak</td>
</tr>
<tr>
<td>thak</td>
<td>weave</td>
<td>'thag</td>
</tr>
<tr>
<td>yut</td>
<td>bring down</td>
<td>rhus</td>
</tr>
<tr>
<td>[section missing]</td>
<td>sat</td>
<td>bsad/gsod</td>
</tr>
<tr>
<td>yeet</td>
<td>laugh</td>
<td>ray</td>
</tr>
<tr>
<td>waat</td>
<td>wear, put on</td>
<td>wat</td>
</tr>
<tr>
<td>ʒlim</td>
<td>entice</td>
<td>?lim</td>
</tr>
<tr>
<td>thun</td>
<td>drink</td>
<td>'thun</td>
</tr>
<tr>
<td>ʒii</td>
<td>die</td>
<td>se</td>
</tr>
<tr>
<td>kuu</td>
<td>carry</td>
<td>'khur</td>
</tr>
<tr>
<td>tɔ</td>
<td>dig</td>
<td>tū</td>
</tr>
<tr>
<td>ʃeə</td>
<td>eat</td>
<td>ʃeə</td>
</tr>
</tbody>
</table>

18. T clusters and -ʔR (Michailovsky 1979)

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

Ø: Tɔ  sew,
THA keep (composition only)

T: TɔʔR have sth. sewn for so., THAʔR put aside.

The roots -ʔR 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) [pi'-] give,
(long-quantity) [pe:f-] 'fly'. This means that I classify the
Panthar-dialect root [tha:z-] 'keep', corresponding to Michailov-
sky's THA?R, as −∅t, or, rather, since it is short-quantity,
as −∅ts. 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 ∅ as its phonematic unit, i.e.
as −∅z, in accordance with my classification of [tʊj-/tʊ:-]
as −∅z in (16) above. The relationship of THA versus THA?R
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
TO, as having 'final consonant ∅' (2); but this ∅ is not overtly
symbolized in his roots; if it were to be, THA and TO would be
symbolized as THA∅ and TO∅; (ii) his root-final '?r' in '-?R'
is in complementary distribution with −∅, the former being
followed only by 'R', and the latter being never followed by
any other symbol; so −?R could be re-simplified as −∅R;
(iii) 'R' in the proposed −∅R is in complementary distribution
with 'T', as in −PT, −TT, −KT, −MT, −NT, and −NT; it could
therefore be re-simplified as T, whence −∅T, 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 THA∅ and TO∅ would appear in opposition to THA∅T and
TO∅T (and −?R in Michailovsky's 'complete list of final
consonants or clusters' would need to give place to −∅T);
(iv) this −∅T derived from −?R 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-simplified as −∅T, and could
be distinguished from the short-quantity −∅T by using Michail-
ovsky's long-quantity symbol ':', whence −:∅T versus −∅T, e.g.
MA:R and TE?R (Michailovsky 1979, 17, 16) re-simplified as
MA:∅T and TO∅T; (v) Michailovsky's '∅-allofam' is not overtly
symbolized: 'HA:P itr. 'weep' is the ∅-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
∅-allofam, that 'fam' would appear as HA:P∅|HA:PT|HA:PS;
correspondingly, his open-syllable roots THA and TO, for
which I have proposed, at (i), that the '−∅ consonant' be
overly symbolized, whence THA∅ and TO∅, would then have to
be re-simplified as THA∅∅ and TO∅∅ (versus THA∅T and TO∅T).
The former ∅ of −∅∅ in, for example, TO∅∅ would be in phonological
contrast with such other final consonants as −P, −T, −M, −N,
and −N̄, while the latter ∅ of −∅∅ would be in allo-fam (morpho-
logical) 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
∅-allofam, and could, therefore, be symbolized with −∅∅; but
not all −∅ verbs in Limbu are ∅-allofam: 'transitives are in
a minority among verbs with ∅-postfinal that have T- or
S-allocfams, not among all verbs with ∅-postfinal' (5). There
might, then, be an advantage, for easy reference, in using a
different symbol for the allofam from the postfinal, $\emptyset$ 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 [\textipa{[ʂi:-]} die, [\textipa{[phɔ:-]}] knit, [\textipa{[tɔ(:)-]}] dig, and [\textipa{[mɔ(:)-]}] dig, for example, could be put into Michailovsky’s '∅-postfinal' class but not into his $\emptyset$-allofam class, as SI:$\emptyset$, PHC:$\emptyset$, T$\emptyset$, and M$\emptyset$, but not as SI:$\emptyset\emptyset$, etc. His grouping of roots by 'family' has no relevance to these four, and other such non-$\emptyset$-/T-/S-fam roots; they are non-fam.

19. Long quantity and short quantity in -∅z roots

In Sprigg 1966 I made the mistake of classifying the root [\textipa{[tɔj-/tv:-]}] 'sew' (Michailovsky’s TCo) and [\textipa{[waj-/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 ([-$v(j)-$, -$\lambda j-$]; Sprigg 1966, 436; cf. (7) above). I also now find that, in its re-considered role as a long-quantity root, [\textipa{[tɔj-/tv:-]}] contrasts, in quantity, with the short-quantity root [\textipa{[tɔ(j)/tɔ(:)-]}] 'dig', mainly through a difference in phonation, 'normal' versus ligamental phonation; and so does [\textipa{[mɔj-/mɔ(:)-]}] 'get drunk' with [\textipa{[mɔj-/mɔ(:)-]}] 'dig':

\begin{itemize}
  \item \textit{vowel-initial junction} \textit{consonant-initial junction}
  \item l: [\textipa{[tvje\ tvoj\h?}]} \ ?add:su\ tvo:ma\?]
  \item s: [\textipa{[tɔ(j)/e\ tvoaj\h?}]} \ ?add:esu\ tvo:ma\?]
\end{itemize}

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, [\textipa{[tɔ(j)/tɔ(:)-]}] and [\textipa{[mɔj-/mɔ(:)-]}], are, in fact, the only short-quantity examples of this, the -∅z, type (root class 21, Y(0), of Sprigg 1966, 449-50) in my data; but I take them to be enough to make it necessary to distinguish them, as -∅zs roots, from the above long-quantity (-∅zl) roots [\textipa{[tv(:)-]}] 'sew' and [\textipa{[mp(:)-]}] 'get drunk', and from quite a number of long-quantity roots corresponding to Michailovsky’s -∅ class. If I were to follow him in using ':' to symbolize long quantity, Panthar lexical items such as [\textipa{[tvj-/tv:-]}] 'sew' and [\textipa{[ts/-tsa:-]}] 'eat' would be distinguished by this ':' symbol, as TCo:(∅) and CA:(∅), from TCo(∅) 'dig' and MCo(∅) 'dig'.

Michailovsky’s ∅-allofam and T-allofam examples may be compared, as regards quantity, as follows:
TA come, JU come down, KHE quarrel
TA: T bring, JU: T bring down, KHE TT quarrel over sth. (obj.) (15),
KO be burned (17), TO sew
 - TΩΩR [TΩΩT] have so. sewn for so. (obj.),
THA keep (only in composition), KU carry
THAΩΩR [THAΩΩT] put aside, KU: TT have so. (obj.) carry sth.,
KHC worship (spirits) CA eat,
KHC: 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 -ØØ cognates, on the contrary, are all long-quantity, -ØØŁ, and therefore correspond in quantity to the related -Øt roots: (phonetic form appropriate to junction with [−mA] for the -ØØŁ roots, and to junction with [−e] for the -tzl and -ttl roots)

  ii. [ta: Ω − ju: Ω] −tzl
  iii. [ke: t− tsa: t− sa: t−] −ttl

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

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

-ΩΩR appears again in its T-allofam role in Michailovsky's section 'Families with T- and S-allofams' (23), in which his -ΩΩR is paired, this time, with -S in six striking intransitive-transitive pairs of examples, from which I have chosen:
PES vomit PHES fart SES urinate
PEΩΩR vomit on PHΕΣΩΩR fart at SEΩΩR urinate on so. (obj.)
(Michailovsky 1979, 23, 17).

On the same grounds as in (18) above I would substitute 
$\emptyset T$ for his $\emptyset R$, with the result that PHER and SE$\emptyset R$ would be 
regularized as PHE$\emptyset T$ versus PHES, which could, correspondingly,
be regularized as PHE$\emptyset S$; and so, similarly, could SE$\emptyset R$ and SES,
and the other examples. It would, in that case, be necessary 
to substitute $\emptyset S$ 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 $-$$s$ cognates,
however, are, with one exception, long, matched by $-$t short 
forms:

$\emptyset sl$: [ne:z- phe:z- se:z- ma:z- mo:z-]

$\emptyset ts$: [ne:er- pe:z- phe:z- se:z- ma:er-]

$\emptyset sl$: [mo]-

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 symbolism my $-$sl 
examples would appear as: PE:S, PHE:S, SE:S; they are all 
long-quantity (for the quantity distinction in $-$s lexical items 
cf. (2.b) and (8) above); my $-$ts examples, on the other hand,
are short-quantity, and would need to be symbolized as PE$\emptyset R$
PE$\emptyset R$, and SE$\emptyset R$, for example, in his system (or PE$\emptyset T$, PHE$\emptyset T$
and SE$\emptyset T$ in accordance with my proposal at (18) above).

21. $-$R and $-$S as T-allofam and S-allofam (intransitive and tr nsitive)

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

$-$R($\emptyset$): PER itr. fly SOR itr. wake up

$-$S: PHES tr. cause to fly SOS tr. 

but he adds the observation: '[perhaps should be placed in
$\S 14$a 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 PER and SOR, for example, as PET and SOT, or, more 
consistently, PE$\emptyset T$ and SOT, in morphological contrast with
PE'S and SOS (re-symbolized as PEØS and SOØS); but any such re-interpretation would lead to conflict with the re-symbolization of -?R as -ØT advocated at (18) above; e.g. TÇPR and PE?R as TCØT and PEØT. It would confound Michailovsky's short-vowel final -?R examples with his short-vowel final -R examples, with the result that his PE?R 'vomit on' (23) would be identical with his P&R 'fly' (18), both being re-symbolized as PEØT (this identification would not, however, apply if his 'fly' example were spelt PE: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 (-?R, -R, -:R); his -?R forms regularly correspond to Panthar short-quantity forms; e.g.


[te?e- tha?ar-] keep, [ne?ar-] 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, P&:R, HER, SER, SOR, JOR;


l.: " , " , " , " ;

e.g. [po:le, pe:le, he:le; phi:la]; 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, P&R, and PHI:R, for example, would appear as PO:ØT, PE:ØT, and PHI:ØT (or poøt, etc.). In this long-quantity type of root it would be possible to assign an intranisitivity 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, [pèe-], which is in any case suspect (for short-quantity -ØS roots cf. (2.b) and (8) above):
sh.: MAS, HIS, PHES, PHIS, PHES, SES, KIS, LAS, KHAS, PES, + 26
1.: "", "", "", "", "", "", "", "";
sh.:
"

e.g. [meθhe:sjenne] do not make --- fly, [pe:se] urinate!
? [pē(:)se] get sick!

The Panthar long-quantity root [pēːl-] 'fly' is, therefore, in the same quantity category as its matching causative [phēːs-]
'make --- fly' (they might be symbolized as PEː∅T and PHAEː∅S);
and so are [məj-] and [məːs-], 'get drunk' and 'get --- drunk'
respectively (−∅zl v. −∅sl).

24. −∅ 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 −∅−, −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 −∅. Stated in (8) above I recall that association here:
(i. long quantity, ii. short quantity)

i. s: [−s/∅] [pēːs əeːsə miːma aːpəːsu? jəːʔə kəjo(ː)?] [−Vː/∅]
t: [−l] [pēːs pəːma aːbəːəi? pəːʔə kəbeː]
[−Vj] [kuiː kuiːma? aːguːsu? jəːʔə kəjuː]
z: [−C−] [təeː təːma? aːdzaːsu? wəːʔə kəwaː?

ii. s: [−s/∅] [leːs əeːma? aːluːsuʔ] − − [−Vː]
t: [−l] [pīː pīːma? aːbiːəi? pīːʔə kəbīʔ] [−Vː/∅ʔ]
z: [−V(j)] [təː(j)ə təːma? aːdəʔəsuʔ] − − [−Vː/∅ʔ]

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;
est 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
you;
dig, to dig, we two dig it.
As far as long-quantity roots are concerned, Weidert 1982 advances a very similar analysis:

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

\[
\text{e.g.} \quad \begin{array}{cccc}
\text{infinitive} & \text{sg. impv.} & \text{1st p. sg. fut.} & \text{English gloss} \\
'11. \text{seema?} & \text{seese∅?} & \text{seesun∅?} & \text{urinate} \\
12. \text{peema?} & \text{peere∅?} & \text{peese∅-a} & \text{fly} \\
13. \text{caama?} & \text{cē∅?} & \text{cay∅?} & \text{eat} \\
14. \text{kụuma?} & \text{kuye∅?} & \text{kuyuy∅?} & \text{carry' (9).}
\end{array}
\]

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-spreadings; consequently, his two classes are equally members of my -∅z 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 -∅-, corresponding closely to my root-final classes -∅s-, -∅t, and -∅z above: he has no short-quantity forms suitable for treating as -s- or as -∅-, but only forms suitable for -t-; e.g.

''(10) -a∅-t - GLOTTAL' (12), e.g.

''(10) ha?ma? ha?re∅ ha?ruy∅ bite' (9).

Because of this absence of contrasting short-quantity -s- and -∅- 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 > CVV∅r-' (18).

His classes 10 and 12 correspond to my short-quantity (s) and long-quantity (l) root-final -∅t class as follows:
Weidert

10 CVPr-, e.g. haʔ/haʔr- -ός, e.g. [pʰː/pʰrː/pʰʔ-]
12 CVVr-, e.g. peʔ/peʔr- -ότl, e.g. [pʰː/pʰʔrː-];

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

Weidert

11 CVss-CVs-CVVs, e.g. see/sees-

Sprigg

-όςς, e.g. [leː/leːς-]

[-όςl, e.g. [peː/peːς-];

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

Weidert

13 C(V)-, e.g. caa/c-

Sprigg

-όςς, e.g. [tʰː/tʰ(j)-]

[-όςl, e.g. [kuː/kuj-], [tzaː/tzaː-]

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 -ς and -τ.

γράφω δ' αεί πολλα διδασκόμενος.

NOTES


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) [t, ɾ], (ii) [t, ɾ], (iii) [t, n], in opposition to 'tongue back', or velar ([k, ɡ, 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:
'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 [-h-] for the lexical item [s/hät], e.g. [sättär] 'seventy' and [ekəhättär] 'seventy-one', though, in the case of [h], 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', *[tsa:mm] 'he ate it' (from *(tsa:mm)), and the example [tsaːma?] 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 *[tʃʃ] would appear to have developed into a (non-aspirated) voiceless fricative ([s-]), perhaps through a weakening of the plosive element giving rise to *[ʃʃ] and *[ʃ] 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. [mezaitëm] '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. san-la for san-la 'book'. Probably the reason for this is that, apart from loan-words such as re-ja 'king', [l] and [r] are complementarily distributed: [l] is restricted to initial position in lexical items, and can occur in word-initial position; [r] is restricted to the final position in lexical items, but does not occur in word-final position; e.g. [lɛ:laŋ] 'he stretched me', [kɛ:laŋ] 'you stretch him', but [kɛ:lɛ?] 'he stretches you'. Chemjong 2018 V.S. gives only one page of entries with word-initial r. 

7. 'I have adopted Jim Mattisoff'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 |--, T- or S-allofam of a family, I am referring to the postfinal not to the final: HA:P itr. "weep" is the |---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),
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 allo-
genue or allophyte.

Michailovsky has symbolized his short-quantity root PER 'fly' (18) as long-quantity (PÆ:R) on p. 26; the long-
quantity symbolization is supported by Weidert 1982:

'l2 pezma\', pe\唐朝{\', pe\唐朝{-a}' (9).

REFERENCES

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