TIBETO-BURMAN DENTAL SUFFIXES: EVIDENCE FROM LIMBU (NEPAL)

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0. Introduction

0.1 General. The flamboyant verbal agreement morphology of Limbu (TB, East Nepal and adjacent India, 200,000 speakers) and of the rest of the East Himalayish (or Bahing-Vayu) group of Tibeto-Burman partly obscures the verbal roots, which themselves preserve traces of an older, no longer productive morphology. The present study presents the evidence, preserved in word-families, for two no longer productive suffixes, **-**S and **-**T, attached to Limbu verbal roots. These suffixes are compared with the "particularly troublesome" dental suffixes reconstructed for Proto-Tibeto-Burman (PTB) (STC:98). In passing, the Limbu evidence for the PTB causative prefix is also presented. The fact that virtually the only suffixes reconstructed for PTB are dentals suggests, in the light of a typological universal proposed by Greenberg, that they were originally added to closed as well as open syllables; thus PTB may have had final consonant clusters of morphological origin.

The data on Limbu used in the present paper was collected in 1977-78 in the Maiwa-Mewa Valleys of Taplejung District, Nepal.[1] This dialect differs slightly from the Panchthar dialect studied by R.K. Sprigg (1966) and on which the late Iman Singh Chemjong's dictionary (n.d.) is mainly based.[2]

0.2 The Limbu verbal root. Limbu verbs are cited below in a root form, noted in capital letters (morphophonological transcription), which is arrived at by a process of internal reconstruction from the two stems on which all forms of a Limbu verb are based. If these roots look different from R. K. Sprigg's "Phonological formulae for the verb in Limbu" (1966), they nonetheless fall into essentially the same categories, based, according to my interpretation, on their final and postfinal elements.

Phonologically, the Limbu syllable may be open, may end in a glottal stop, or may have one of the consonant finals /p, t, k, m, n, ŋ/. There are no final consonant clusters. Verbal roots (morphophonological) in Limbu are either monosyllables of the types mentioned or extended monosyllables with postfinal elements -T or -S. In actually occurring (phonological) verbal forms, the postfinal element either functions as the initial of an affix syllable containing pronominal agreement markers or is dropped (see examples next section). There are also roots in -R and ʔR, although /r/ is never a syllable-final in Limbu (in verbal forms it functions as the initial of the affix syllable). The following is a complete list of the final

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[2] For an older dictionary, based on the Phedap dialect, see Senior (1908). The information in the LSI (3.1:283-304) is based on unpublished work by Senior.

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consonants and clusters found on Limbu verbal roots: -Ø, -S, -R, -ʔR, -P, -PT, -PS, -T, -TT, -TS, -K, -KT, -KS, -M, -MT, -MS, -N, -NT, -NS, -ŋ, -ŋT, -ŋS.[3]

0.3 Families of roots. In compiling the lists of word-families in the appendix, my rule has been to list every pair or triplet of roots having the same initial (± aspiration) and vowel, a plausible final correspondence (generally, common point of articulation), and some semantic connection. I have adopted Jim Matisoff's term "allofam" for "member of the same word-family", and his sign "⋉" to indicate this relationship where two allofams are cited together. In most of the families listed in the appendices §§A1-A4, 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 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), and HA:PS tr. 'cause to weep' is the S-allofam.

The following forms, based on the word-family just cited, show how the postfinals function as initials of the affix syllable in some forms and are dropped in others (leading, in the latter case, to homophony between forms of different allofams of the family). In general, the postfinals appear only in forms based on the past stem.

Root HA:P 'weep':

/kɛ-ha:p/	'you weep'
/kɛ-ha:pe/	'you wept' (phonetically [ha:be])

Root HA:PT 'mourn'

/kɛ-ha:p/	'he mourns/misses you'
/kɛ-ha:ptɛ/	'he mourned/missed you'

Root HA:PS 'cause to weep'

/kɛ-ha:m/	'he makes you weep'
/kɛ-ha:psɛ/	'he made you weep'

There are a few formal uncertainties; for example, *prima facie* it is not obvious whether a root in -T is the Ø-allofam (-T being taken as a root final) or the T-allofam (-T being taken as the postfinal, added to an originally open root) of its family. A similar uncertainty hangs over roots in -R and -ʔR, which in some cases seem to be related to -T and -N. A few families show other relationships, most commonly between stop and nasal finals (e.g. the series -ŋ ⋉ -KT ⋉ -ŋS in §A1). These uncertainties do not obscure the general picture, however.

0.4 Morphosyntax and semantics. Limbu morphosyntax is not our subject here, but a few remarks will be needed. Each verb root is cited with one of the notations "tr." (transitive), "itr." (intransitive), or "dep." (deponent), indicating which of the three distinct types of agreement morphology it takes. Briefly, intransitives and deponents show agreement with one argument, which I call the "subject" and which appears in the absolutive case (suffix zero).

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[3] Supplementary notes: Quantity is phonologically distinctive on all Limbu vowels except /e/ and /o/, which are only long. In the dialect studied (but not in all dialects), roots in -S (i.e. (C)VS) are all long; I would now transcribe them as (C)V:S. R.K. Sprigg (personal communication, 1980) has objected to my use of "root" for elements some of which are clearly derived, at least historically; "base" might be preferable.

Transitives show agreement with two arguments, the "subject", which appears in the ergative case (suffix -/lɛ/) if third person, absolutive if first or second person, and the "object", which appears in the absolutive.

Deponents differ from intransitives in third person agreement marking. In the third person, the intransitive pattern (ignoring number marking) is the following:

non-past: (PRESENT STEM) -Ø

past: (PAST STEM) -ɛ

Deponent verbs show no tense distinction, but have:

(PAST STEM) -u

The suffix -/ɛ/ with a third person argument (and no prefix) is peculiar to intransitives (e.g. /haːpɛ/ 'he wept', cited above), while the suffix -/u/ of deponents is also found in the transitive paradigm, where it always indicates a third person "object" e.g. /haːpsu/ 'he made him weep'. Thus a deponent is a monovalent verb which shows agreement with a third person subject in the same way as a transitive verb shows agreement with a third person object. In the first and second persons, deponents are indistinguishable from intransitives. Thus, for example, we find /mɛʔru/ 'he is/was fat' from MɛʔR dep. 'be fat'. There seems to be no clear semantic difference between intransitive and deponent verbs, except that the more "active" monovalent verbs (e.g. 'run', 'jump') are intransitive and not deponent.

It should be noted that the terms "intransitive", "transitive", "deponent", "subject", and "object" as used here are defined formally, on the basis of Limbu morphology, and are applied to individual verb roots (or to their arguments), while the semantic notions "causative", "applicative", etc., are used rather subjectively, but in a narrowly defined context, which is to express the semantic relation between the meanings of formally related verb roots (allofams).

1. Suffixed -S and -T on the Limbu verb

1.1 Families of three roots. In section A1 of the appendix are listed 21 triplets of verb roots which, allowing for formal uncertainty in a few cases, consist of Ø-, T-, and S-allofams, all with meanings in the same semantic area. In 20 of the triplets, the Ø-allofam is intransitive; most of the T-allofams and all of the S-allofams are transitive.

1.2 Postfinal -S. In all of the triplets, the S-allofam can be interpreted as a causative of the Ø-allofam. (Perhaps LIːKS and LɛKS are rather weak as causatives.) The same relation applies to 36 pairs of verb roots, each consisting of a Ø- and an S-allofam, listed in §A2. (The 37th pair, KO ⋉ KOS, listed first, seems to have no causative sense.) In every case, the S-allofam is transitive, a consequence of its causative sense. It also happens that in all but three cases the Ø-allofam is intransitive, but this does not seem to be a necessary consequence of being the non-causative member of a non-causative/causative pair. There is no reason to regard the families with transitive Ø-allofam, such as THUŋ tr. 'drink' ~ THUŋS tr. 'cause to drink, entertain with drink' or TUM tr. 'meet' ⋉ TUMS tr. 'assemble (a fire)', as exceptional. The triplet based on TEʔR tr. 'take away' raises a few problems, but the semantic relationship between TEʔR and its causative TES tr. 'send away' is straightforward.

Note that it is not the case that all, or even most Limbu verbs with postfinal -S are transitive (or, *a fortiori*, causative in sense); the generalization applies only to those with a Ø-

allofam. Similarly, transitives are in a minority only among verbs with Ø-postfinal that have T- or S-allofams, not among all verbs with Ø-postfinal.

1.3 Postfinal -T. The sense of the T-allofams of verbs in postfinal Ø (§§A1 and A3) is somewhat harder to pin down. Morphosyntactically, most of the T-allofams of verbs in postfinal -Ø (§§A1 and A3) are transitive, but there is a significant minority of deponents, discussed below (§1.31). Among the transitive T-allofams, in some cases the postfinal -T seems to give a causative sense little different from that of -S. Thus while THUŋ tr. 'drink' has a causative S-allofam THUŋS, CA tr. 'eat' has a causative T-allofam CAːTT tr. 'feed' and KU tr. 'carry' has a causative KUTT tr. 'cause something (object) to carry'. (It is unclear why these T-allofams are in -TT rather than -T.) Note also LUP itr. 'sink, be buried' ⋈ LUPT tr. 'bury, cover, fill in'. In the case of MAːR itr. 'be lost or finished' ⋈ MAːNT tr. 'finish off' ⋈ MAS tr. 'lose', two allofams seem to have become specialized with different senses, both causative.

In other cases, even where the T-allofam could, *prima facie*, be taken as a causative, it has an additional sense which I will call "directive", following Wolfenden (1929:66, for Tibetan); another possible term would be "applied" or, in some cases "benefactive" (taken, of course, to include "malefactive" as well). Thus we find mutTHA itr. 'fall' ⋈ mutTHAːNT tr. 'drop something on someone (object)' ⋈ mutTHAS tr. 'drop', where the T-allofam has the causative sense 'drop' of the S-allofam plus a directive sense, bringing the target, instead of the object dropped, into object position.

The four verbs 'to come' have a pattern of their own; the T-allofam has the sense of 'to come bringing something (object)' – a kind of "applied coming" – while the S-allofam has a more purely causative sense 'to send something or someone (object) toward the speaker or center of interest, e.g. to throw it, pass it, mail it, tell it to go, etc., without necessarily moving oneself'. The Ø-allofams are TA itr. 'arrive (near the speaker), appear, come', THAŋ itr. 'come up', JU itr. 'come down', PHɛN itr. 'come on the same level'.

The pairs of verbs including Ø- and T-allofams – or at least not including S-allofams – listed in §A3 raise no new semantic questions, although the pairs in -NT ⋈ -TT in particular pose problems of form.

1.31 Deponent T-allofams. Of the 21 triplets in §A1, five or six have deponent (see §0.4) T-allofams, in general with meanings very similar to those of the intransitive Ø-allofams. Most of these verbs were not very frequent in text or conversation, and it was difficult to detect (to say nothing of eliciting) a precise difference in meaning or use. However, there were some indications that the same -T suffix was at work in these deponent verbs. Consider the triplet NɔN itr. 'be left over' ⋈ NɔTT dep. 'be spoiled from being left too long (e.g. stale food or beer)' ⋈ NɔNS tr. 'to save, keep leftovers'. NɔT, the T-allofam, is deponent, hence monovalent, yet we might find a directive semantic element in the sense, which could be paraphrased 'to suffer the effects of being left over'. The T-allofam is indeed a directive version of the Ø-allofam, but the process expressed by the Ø-allofam is found to be directed at the subject of a deponent T-allofam rather than at the object of a transitive T-allofam. In this connection, it is undoubtedly relevant that the formal mark of a deponent verb is that it shows agreement with a 3rd person subject using the same morphology as a transitive verb uses to show agreement with a 3rd person object.

There are two cases of intransitive T-allofams. The first, KHɛKT itr./dep. 'be dried (of fruit or maize)' ~ KHɛŋ itr. 'dry or be smoked over a fire', has a deponent variant. The second family involved is POR itr. 'grow' ⋈ PONT itr. 'prosper, be numerous' ~ PHOS tr. 'increase';

here perhaps the T-allofam could be seen as 'to enjoy the benefits of growth', but I will not insist on it.

1.4 Families without Ø-allofams. Pairs of verbs in which one of the allofams has postfinal -T and the other -S are listed in 3A4, divided into two groups as follows: in §A4a the T-allofams are intransitive (13 roots) or deponent (2), and the S-allofams are transitive and semantically causative; in §A4b the T-allofams are transitive, plausibly directive versions of the S-allofams, which may be either intransitive (l0) or transitive (15).

These families differ somewhat from those listed in §§A2-3 in that most of them – in particular those in which the T-allofam or the S-allofam is intransitive – cannot be regarded as simply defective triplets from which the Ø-allofam is somehow missing, since such triplets do not have intransitive S- or (with two exceptions) T-allofams. The S-allofams of §A4b, and the T-allofams of §A4a seem rather to be comparable to the large number of Limbu roots in postfinal -T or -S which do not belong to families of roots and whose postfinals do not appear to have any link with the causative or directive suffixes. Perhaps a middle sense is suggested by the predominance of bodily functions and verbs 'to wear' among the S-allofams of §A4b, but such senses are far from absent among verbs in postfinals -Ø and -T. This is an area for further exploration.

2. Initial alternations in Limbu

The 30 pairs of Limbu verbs showing initial alternations are presented in §A5. Several of these word families also show differences in postfinals and have already been listed in §§A1-4. In each pair listed in §A5, an intransitive verb with an unaspirated stop initial has a transitive allofam with an aspirated stop initial. It should be noted that Limbu has two series of initial stops, unaspirated and aspirated; voicing is not distinctive and there is no tone. There is no phoneme */ch/; in causatives, /s/ is seen to function as the aspirate partner of /c/. One pair shows the alternation Ø- ~ /h/-. No initial alternations involving the nasals /m, n, ŋ/ or the sonants /j, r, l, w/ have been found.

Initial alternations associated with a causative or transitivizing sense in TB languages were noted by Hodgson, most clearly in his Bahing grammar (1857-8, reprint 1880:388), where he gives a list of seven pairs of verbs, and were thoroughly covered by Conrady (1896); cf. STC:124ff and Matisoff (1976:415-9). Limbu is typical of the family here. The history of these alternations, which the *Conspectus* puts back to PTB, is difficult to reconstruct precisely; an old prefix seems to be indicated. Many writers have plausibly associated them with the PTB *s- causative prefix, preserved in Tibetan, Jinghpaw, and Nung (STC:105ff), and in Kham (West Nepal), which has a productive causative prefix sə- (Watters 1973:126-8). It is possible that the two types of causative allofams in Limbu, those with aspirate initials and those with suffixed -S, are to be traced to the same morpheme *s. (Conrady proposed [1896:43] that Tibetan prefixed **s-** and certain **-s** suffixes were the same element). It is not clear why this **s-** prefix should give /h/- in Limbu (and in Hayu and Bahing) in alternation with vocalic initials, when the normal reflex of PTB initial *s is /s/.

3. TB dental suffixes

3.1 Comparative review

3.11 Transitivizing suffixes. Wolfenden (1929:56-6) proposed that the suffix -d ~ -s (depending on the preceding final) marking the perfect in many Tibetan verbs had originally had a directive sense, which survived in another form in a few pairs of verbs in which an

intransitive without a suffix was paired with a transitive bearing a suffix. He associated this suffix with the -tu ~ -du ~ -ru ~ -su suffix of the Tibetan "terminative" case, which he regarded as of locative origin but as having a general manner-adverbial sense. Such developments, from locative to verbal adjunct, are widely known; Wolfenden himself cites the Malay locative and passive marker di.

Benedict, in his chapter on dental suffixes (STC §20), retains only *-t as a causative or directive element for PTB; he cites examples from Tibetan, Kachin, and Bahing-Vayu. A Kachin example is məni 'laugh' ⋉ mənit 'laugh at'; cf. Limbu ET ⋉ ETT in §A3. In Hayu (Vayu) the benefactive/applicative paradigm of the transitive verb is marked either by a set of suffixes with initial /t/ (in opposition with a non-applicative set in initial /k/) or, in certain cases, a root in -/t/ (in alternation with an open root) (Michailovsky 1981). In Bahing, there is evidence, similar to that in Limbu but much less extensive, for an old transitivizing -t suffix (Michailovsky 1976:200-202). We find the same kind of evidence in Khaling (*ibid*. 213) and in Thulung (Allen 1975:132).

Further morphological study could reveal more parallels in other branches of TB. For example, Bauman and Okrand (1972) detected a dental suffix underlying tonal alternations in the Chin verb and related it to PTB -t (but the sense is not a transitivizing one). Weidert also reconstructs dental suffixes here (1979:94ff).

Thus the Limbu transitivizing -t has a solid pedigree, at least in the Bodic side of the family.

There is less comparative evidence for a transitivizing -S, even in East Himalayish/Bahing-Vayu. However, I have found both -T and -S postfinals similar to those of Limbu in Bantawa (dialect of Dilpa), e.g. in the triplet I 'laugh' ⋉ ITT 'laugh at' ⋉ IS 'cause to laugh'.

The relation of transitivizing suffixes to aspect markers is interesting. The Tibetan postfinals serve often to mark the perfect form of the verb. In Bahing, -/t/- is the mark of the past tense (Michailovsky 1976 Tables 4 and 6; this is apart from its preservation as a transitivizing suffix on a few verbs only). A clue to this development may be provided by Limbu, where the main difference between the past and the present stems of the verb is that the postfinal element is dropped from the present (see examples §0.3).

3.12 "Middle" -s(i). Benedict (STC:98) mentions a "suffixed -s(i) ~ -so used to form a type of 'middle voice'", with evidence from Kanauri, Nung, and Bahing-Vayu. Note that this element is often reconstructed with a vowel; Bauman (1975:93) reasonably chooses *-si.[4] In Bahing, reflexives are formed by adding intransitive suffixes to the root, which is augmented by a postfinal -S, often followed by an epenthetic vowel **i** before a consonant (Michailovsky 1976:200, 202 [mis-numbered "203"] - 203 [mis-numbered "202"]). Thulung has a reflexive -/si(t)/ (Allen 1975:74). The Hayu and Limbu reflexive suffixes are probably related; they contain an affricate [ts] rather than a sibilant. In Hayu, the reflexive suffixes contain an element -/tse/ ~ -/tsi/.[5] Limbu has a reflexive suffix -/ciŋ/. In addition, it is at least possible that the postfinal -S in the examples of §A4b has a middle sense.

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[4] The o of Benedict's -so alternant is in fact the Bahing imperative marker.

[5] Except in duals. The -s (or -ś) in the Hayu forms cited in STC:98-9, in fact [x], is not a middle suffix but an allophone of root-final -/t/ before the homorganic initial /ts/ of the reflexive suffix; it appears equally well before suffix-initial /t/ of the nonreflexive form siśto 'kill!' cited in the same place. All of the Hayu forms cited by Benedict are from roots in -/t/. See Michailovsky 1981.

3.13 Suffixed -n. Suffixes in -n have been noted in a variety of TB languages, although Wolfenden tried to assign this element to the roots. The *Conspectus* cites Tibetan derived adjectives and nouns, and scattered transitive verbs in Tibetan, Kanauri, and Lushei as bearing suffixed -n (STC:102-3). I have not identified an -n on Limbu verb roots, but there are a number of examples which might point to a nasal suffix marking derived nominals, e.g. /can/ 'clothing' ⋈ CAKS tr. 'wear'; /paːn/ 'word' ⋈ PAːT 'speak'. It is not clear, however, whether what is at work here is a suffix -n or perhaps a reduced form of the suffix -/ma/ found on infinitives and a few derived nouns such as /tɛmma/ 'handle' ⋈ TɛM tr. 'hold'.

3.2 Phonological typology and the TB dental suffixes. Very few suffixes have been reconstructed for TB, and it is generally supposed that the proto-language, like many of the daughter languages, was of an isolating character and largely monosyllabic. The *Conspectus* (96) lists only the "gender" suffixes *-pa (masculine) ⋈ *pa 'father' and *-ma (feminine) ⋈ *ma 'mother', the related -pa ~ -ba nominalizing suffix, *-la (masculine, animals), and perhaps a subordinating/genitival *-ki ~ *-gi. The dental suffixes, except perhaps for the "middle" *-s(i), are reconstructed without a vowel, since there is no evidence for one, suggesting that they were originally added to morphemes without overstepping the boundary of the already loaded PTB syllable.

Benedict asserts that "all three [dental] suffixes appear only in roots with vocalic or semivocalic ending, in accordance with the general TB phonemic rule that consonant clusters occur only in root-initial position" (STC:98), a restriction that would have reduced their functional utility. Of course, Written Tibetan has syllable-final clusters with postfinal **-s**, plus the controversial postfinal -d (*da drag*) in -nd, -rd, -ld, but these are dismissed as belonging to "modern, derived forms" (STC:13) or, in the case of *da drag*, as phonologically conditioned. In fact, elsewhere in the family syllable-final clusters seem to be almost unknown, as in Limbu.

It remains to be explained, however, why PTB non-syllabic suffixes should have been limited to dentals, in contrast to the rich variety of PTB prefixes. I believe that this limitation can be explained only if we assume that these suffixes originally functioned as postfinals in syllable-final consonant clusters. Greenberg has noted the favor that coronal consonants enjoy as the final elements in syllable-final consonant clusters in the following universal implication (1965:28): "Every language with final clusters contains at least one cluster with a final obstruent in the dental-alveolar region." English speakers will think of the English suffixes -ed, en, and the overworked -(e)s; a recent theory of the English syllable (Selkirk, n.d.) states the rule: "The second consonant of the syllable coda must be a coronal." In the light of these typological considerations, the very fact that PTB non-syllabic suffixes are limited to dentals suggests that they were not only added to open syllables, but also to closed ones, and that they must have functioned as postfinals in syllable-final consonant clusters of morphological origin.

APPENDIX: Families of Limbu Verbal Roots

A1. Families with Ø-, T-, and S-allofams

-Ø ⋈ -ːT ⋈ -S

TA itr. 'come, arrive, appear' ⋈ TAːT tr. 'bring' ⋈ TAS tr. 'reach (an object), cause to arrive (in /paŋsu taːsu/ 'he-sent-him he-caused-him-to-arrive (at a place)')

YU itr. 'come down' ⋈ YUːT tr. 'bring down' ⋈ YUS tr. 'send down'

-Ø ⋈ -ːTT ⋈ -S

KHE itr. ‘quarrel’ ⋈ KHETT tr. ‘quarrel over sth. (obj.)’ ⋈ KHES tr. ‘cause or incite to quarrel’

-Ø ⋈ -ːNT ⋈ -S

mutTHA itr. ‘fall’ ⋈ mutTHAːNT tr. ‘drop sth. on so. (obj.)’ ⋈ mutTHAS tr. ‘drop sth. (obj.)’

-P ⋈ -PT ⋈ -PS

CIP itr. ‘be quiet, ?stop (of rain)’ ⋈ CIPT dep. ‘stop (of rain)’ ⋈ SIPS tr. ‘turn off (e.g. radio)’

CɔP itr. ‘dry up, evaporate’ ⋈ CɔPT dep. ‘dry out (e.g. a field or a pot of rice cooking)’ ⋈ CɔPS tr. ‘dry (e.g. by letting water out of a rice paddy, boiling water out of food, etc.)’

LUP itr. ‘sink, be buried’ ⋈ LUPT tr. ‘bury, cover, fill in, fatten (a pig)’ ⋈ LUPS tr. ‘pile up’

HAːP itr. ‘weep’ ⋈ HAːPT tr. ‘mourn so. (obj.)’ ⋈ HAːPS tr. ‘cause to weep’

-K ⋈ -KT ⋈ -KS

LIːK itr. ‘become domesticated (of an animal)’ ⋈ LIːKT tr. ‘pass a parasite or infection to so. (obj.)’, ?dep. ‘be infected’ ⋈ LIːKS tr. ‘insert sth. (obj.) into an opening’

-ŋ ⋈ -ŋT ⋈ -ŋS

CAŋ itr. ‘be in a state of erection, ?have an erection’ ⋈ CAŋT dep. ‘have an erection’ ⋈ CAŋS tr. ‘cause so. (obj.) to have an erection’

-ŋ ⋈ -KT ⋈ -ŋS

KHIŋ itr./dep. ‘be stretched (e.g. a drum head); extend across sth. (e.g. clouds over the sky)’ ⋈ KHIKT tr. ‘cover (by stretching sth. over)’ ⋈ KHIŋS tr. ‘stretch’

KHɛŋ itr. ‘dry, be smoked (over fire)’ ⋈ KHɛKT itr./dep. ‘become dried up (of fruit), be dried (of maize)’ ⋈ KHɛŋS tr. ‘dry [over fire], smoke’

THAŋ itr. ‘come up’ ⋈ THAKT tr. ‘bring sth. up from below’ ⋈ THAŋS tr. ‘send sth. up from below’

-ŋ ⋈ -KT ⋈ -KS

YUŋ itr. ‘sit’ ⋈ YUKT tr. ‘ride, sit on’ ⋈ YUKS ‘set down, keep’

Lɛŋ itr. ‘wander’ ⋈ LɛKT tr. ‘exchange; cross (a ridge or river)’ ⋈ LɛKS tr. ‘turn sth. over’

-?R ⋈ -NT ⋈ -S

TE?R tr. ‘take away’; surit TENT tr. ‘winnow in wind’ (/surit/ ‘wind’) ⋈ TES tr. ‘send away’

-ːR ⋈ -(ː)NT ⋈ -S

POR itr. ‘grow’ ⋈ PONT itr. ‘prosper, be numerous’ ⋈ PHOS tr. ‘increase’

MAːR itr. ‘be lost, run out, be finished’ ⋈ MAːNT tr. ‘finish off’ ⋈ MAS tr. ‘lose’

SɛːR itr. ‘separate’ ⋈ SɛNT tr. ‘separate, distinguish, butcher (meat)’ ⋈ SɛS tr. ‘separate, scatter’

-N ⋈ -TT ⋈ -NS

NɔN itr. ‘be left over’ ⋈ NɔTT dep. ‘be spoiled from being left too long (e.g. stale beer, rice cooked over too low a fire)’ ⋈ NɔNS tr. ‘save, keep leftovers’

PHɛN itr. ‘come (on the same level)’ ⋈ PHɛTT tr. ‘bring (on the same level)’ ⋈ PHɛNS tr. ‘send (on the same level)’

A2. Families with Ø- and S-allofams

-Ø ⋈ -S

KO itr. ‘be burned (in a fire)’ ⋈ KOS itr. ‘hot’ (This pair is semantically unlike the others.)

niŋwa TA itr. ‘be pleased’ ⋈ niŋwa TAS tr. ‘please’ (niŋwa ‘mind’; cf. the family based on TA itr. ‘come’ in §A1.)

MU itr./dep. ‘be intoxicated’ ⋈ MUS tr. ‘intoxicate’

-P ⋈ -PS

THAːP itr. ‘be seen, be visible’ ⋈ (ni) THAːPS tr. ‘expose to view’ (/ni/, present stem of NIS tr. ‘see’)

THUP itr. ‘collapse’ ⋈ THUPS tr. ‘demolish’

YɛP itr. ‘stand, be standing’ ⋈ YEPS tr. ‘stand sth. up’

-M ⋈ -MS

KAM itr. ‘be habituated’ ⋈ KAMS tr. ‘habituate so.’

TUM tr. ‘meet so.’ ⋈ mi (‘fire’) TUMS tr. ‘assemble a fire’

HUM itr. ‘sink in’ ⋈ HUMS tr. ‘insert; plant (a seedling)’

-ʔR ⋈ -S (perhaps should be placed in §A4a below)

paːn (‘word’) KHɔʔR itr. ‘stutter, have a speech defect’ ⋈ KHɔS tr. ‘obstruct’

-ːR ⋈ -S (perhaps should be placed in §A4a below)

IːR itr. ‘go around’ ⋈ IS tr. ‘stir’ ⋈ HIS tr. ‘turn around’

PɛːR itr. ‘fly’ ⋈ PHɛS tr. ‘cause to fly’

PHIːR itr. ‘shrink, become thin’ ⋈ PHIS tr. ‘reduce sth. in size’

SOR itr. ‘wake up’ ⋈ SOS tr. ‘wake up’

HER itr. ‘dry (in sun)’ ⋈ HES tr. ‘dry (in sun)’

HɔːR itr. ‘burst open (e.g. dike or abscess)’ ⋈ HɔS tr. ‘*id.*’ (and perhaps ⋈ HɔND tr. ‘open’, but the short vowel is odd)

-T ⋈ -TS/-S (perhaps should be placed in §A4a below)

TIːT itr. ‘flame up’ ⋈ THIːTS tr. ‘cause to flame up’

TɛːT itr. ‘break open (esp. when overripe or overcooked)’ ⋈ THɛS tr. ‘break or split open (a fruit or carcass)’

-N ⋈ -NS ~ -S

YɔN itr. ‘collapse’ ⋈ YɔNS ~ YɔS tr. ‘demolish’

-K ⋈ -KS

AːK itr. ‘be uprooted’ ⋈ AːKS tr. ‘uproot’

ɛK itr. ‘break (of a stick, etc.)’ ⋈ ɛKS tr. ‘break’

ɔK itr. ‘fall off, come loose (esp. from a cliff or slope)’ ⋈ ɔKS tr. ‘pull off, pull loose’

CɛK itr. ‘break’ ⋈ SɛKS tr. ‘break’

TUK itr. ‘hurt; be ill’ ⋈ TUKS tr. ‘hurt’

P-niŋsaŋ PUK itr. ‘be heart-broken’ ⋈ P-niŋsaŋ PUKS tr. ‘to stop caring’ (“P-” represents a pronominal prefix, here agreeing with the experiencer.)

POK itr. ‘get up’ ⋈ PHOKS tr. ‘get someone up’

MɛK itr. ‘run out (of supply)’ ⋈ MɛKS tr. ‘finish off’

LUK itr. ‘be completed (esp. a story)’ ⋈ LUKS tr. ‘complete, get to the end (e.g. of a story, digging a long yam)’

LUːK itr. ‘fall off (e.g. fruit from a tree)’ ⋈ LUːKS tr. ‘shell (maize), shake down (fruit), strip (taro leaves)’

-ŋ ⋈ -ŋS

Iŋ itr. ‘become known (of news)’ ⋈ IŋS tr. ‘spread (news)’

KAŋ itr. ‘be dried or heated at the edge of the fire (e.g. bread, a yam, etc.)’ ⋈ KAŋS tr. ‘dry at the edge of a fire’

KEŋ itr. ‘fall’ ⋈ KEŋS tr. ‘cause to fall, knock down’

TUŋ tr. ‘bend’ ⋈ TUŋS tr. ‘bend’

Tɔŋ itr. ‘fit together, agree, be reconciled’ ⋈ TɔŋS tr. ‘settle (a dispute); mix together’

THUŋ tr. ‘drink’ ⋈ THUŋS tr. ‘cause to drink, entertain’

HIŋ itr. ‘live’ ⋈ HIŋS tr. ‘bring someone up; rear; raise’

Hɔŋ itr. ‘be pierced ⋈ HɔŋS tr. ‘pierce’

A3. Families with Ø- and T-allofams (or two T-allofams)

-Ø ⋈ -ʔR

Tɔ tr. ‘sew’ ⋈ TɔʔR tr. ‘have something sewn for someone (obj.)’

THA tr. ‘keep (only in composition)’ ⋈ THAʔR tr. ‘put aside, keep (?for someone (obj.))’

-Ø ⋈ -TT

KU tr. ‘carry’ ⋈ KUːTT tr. ‘have someone (obj.) carry something’

maŋ (‘spirit’) KHɔ obj. + tr. ‘worship spirits’ ⋈ maŋ KHɔːTT tr. ‘exorcise spirits from someone (obj.)’

CA tr. ‘eat’ ⋈ CAːTT tr. ‘feed’

SA tr. ‘convey or deliver’ ⋈ SAːTT tr. ‘deliver something to someone (obj.)’

-P ⋈ -PT

THAP itr. ‘be born’ ⋈ THAPT tr. ‘give birth to someone’

SUP tr. ‘shut (e.g. a door, eye)’ ⋈ SUːPT tr. ‘shut something in, cover something’ (vowel length unexplained)

-R ⋈ -ʔR

YOR dep. ‘have enough’ ⋈ YOʔR tr. ‘add something into a bargain; give a second helping of something’

-R ⋈ -NT

SɔːR itr. ‘slide down, drip’ ⋈ SɔːNT tr. ‘slide’

-ʔR ⋈ -NT

ɔʔR itr. ‘fall off, break off’ ⋈ ɔNT tr. ‘break off, remove a bit of something; pick (maize)’ ?⋈ ɔS tr. ‘spit out’

phɛtLAʔR itr. ‘be ruined, spoiled’ ⋈ phɛtLAːNT tr. ‘ruin, spoil something’

HAʔR dep. ‘be lit, burn’ ⋈ HAːNT tr. ‘light’

-T ≍ -TT

ET itr. ‘laugh’ ≍ ETT tr. ‘laugh at someone’

KɛT itr. ‘arrive’ ≍ KɛTT tr. ‘deliver’

PAːT itr. ‘speak’ ≍ PAːTT tr. ‘say something (to someone [obj.])’

WAːT tr. ‘put on, wear (ornaments)’ ≍ WAːTT tr. ‘put ornaments on someone [obj.]’

-N ≍ -NT

THɔN tr. ‘endure’ ≍ THɔːTT tr. ‘endure’ (?dialect variation)

-N ≍ -TT

IːTT itr. ‘be excessive’ ≍ IːNT tr. ‘imitate someone’ (here -NT seems to mark the directive allofam (if this is a family); in the following exx., -TT marks the directive)

CɔNT tr. ‘push’ ≍ CɔTT tr. ‘move’

PINT itr. ‘jump (up)’ ≍ PITT tr. ‘jump across something; jump to a point’

LɔːNT itr. ‘exit’ ≍ LɔːTT tr. ‘extract something’

-K ≍ -KT

THɔK tr. ‘work (metal), pound’ ≍ THɔKT tr. ‘have (jewelry) made for someone (obj.)’

-ŋ ≍ -KT

HAŋ tr. ‘send’ ≍ HAKT tr. ‘send something to someone (obj.)’

A4. Families with T- and S-allofams

A4a T-allofam intransitive or deponent

-PT ≍ -PS

KHIPT itr. ‘adhere’ ≍ KHIPT tr. ‘adhere to something (obj.)’ ≍ KHIPS tr. ‘stick something on something (obj.)’

HAPT dep. ‘get stuck or tangled’ ≍ HAPS tr. ‘cause something (obj.) to catch on something; hang something up’

-TT ≍ -TS

WETT itr. ‘heal, get well’ ≍ WETS tr. ‘cure, heal’

-NT ≍ -NS

tak KɔNT itr. ‘wander’ ≍ KɔNT tr. ‘tour’ ?≍ KɔNS tr. ‘stir’

-KT ≍ -KS

KHɛKT itr. ‘spark; pop (of a squashed louse)’ ≍ KHɛKS tr. ‘strike (a spark); pop (a louse)’

KHɛːKT itr. ‘be damaged (of a nicked blade)’ ≍ KHɛːKS tr. ‘damage (a blade)’

CIːKT itr./dep. ‘cool off, feel cold’ ≍ CIːKS tr. ‘spread to cool (esp. grain for fermentation); cool’

CɛKT itr. ‘tear’ ≍ CɛKS tr. ‘tear’

THɔKT itr. ‘fight’ ≍ THɔKS tr. ‘incite to fight’

NAKT itr. ‘be fooled; be forgetful or negligent’ ≍ NAKS tr. ‘fool someone’; itr. ‘become crazy’

PHɔKT itr. ‘explode’ ≍ PHɔKS tr. ‘set off (explosion)’

MUKT itr. ‘ring, sound’ ≍ MUKS tr. ‘sound, play (instrument)’

YɛːKT itr. ‘be worn down’ ⋈ YɛːKS tr. ‘chew; grind (teeth)’

wa (‘liquid’) RɔKT itr. ‘be wet, soaked’ ⋈ waRɔKS tr. ‘wet, soak’

LAKT dep. ‘boil’ ⋈ LAKS tr. ‘boil’

LOKT itr. ‘run’ ⋈ LOKS tr. ‘cause someone to run’

A4b T-allofam transitive

-PS ⋈ -PT

IPS itr. ‘sleep’ ⋈ IPT tr. ‘put someone to bed’

KHAPS tr. ‘cover oneself with bedclothes (obj.)’ ⋈ KHAPT tr. ‘cover someone (obj.) with bedclothes; roof’

YUPS tr. ‘wear (a waistband)’ ⋈ YUPT tr. ‘tie (a waistband) on someone (obj.)’

SIːPS tr. ‘insert, especially a stick under the eaves to hang things on’ ⋈ SIːPT tr. ‘repair a thatch roof (obj.) by inserting extra thatch in an upward direction in thin places’

-S ⋈ -ʔR

NAS itr. ‘be tired’ ⋈ NAʔR tr. ‘desist, leave something alone’

PɛS itr. ‘vomit’ ⋈ PɛʔR tr. ‘vomit on’

PHES itr. ‘fart’ ⋈ PHEʔR tr. ‘fart at’

PHɛS tr. ‘spread (a mat), lay (flooring)’ ⋈ PHɛʔR tr. ‘spread a mat for someone (obj.) to sit on’

SES itr. ‘urinate’ ⋈ SEʔR tr. ‘urinate on someone (obj.)’

HUS tr. ‘pass on (news)’ ⋈ HUʔR tr. ‘teach someone (obj.)’

-S ⋈ -T

KIS itr. ‘be afraid’ ⋈ KIT tr. ‘fear something (obj.)’

LAS (irr. pres. stem /laːt/) itr. ‘enter’ ⋈ LAːT tr. ‘keep something (obj.) for oneself; take in (a wife)’

-S ⋈ -TT

khaUS tr. ‘perform a ritual’ ⋈ UːTT tr. ‘call someone’

ES tr. ‘defecate’ ⋈ ETT tr. ‘defecate on something (obj.)’

KHAS itr. ‘be sated (with food)’ ⋈ KHAːTT tr. ‘satisfy someone (obj.) (with food)’

NIS tr. ‘see’ ⋈ kusiŋ NIːTT tr. ‘recognize, understand’ ⋈ NIːT ‘count, read’

PHOS tr. ‘stir’ ⋈ PHOTT tr. ‘stir’

LOS tr. ‘use something (obj.) to sit or sleep on’ ⋈ LOTT tr. ‘surface something (obj.) by spreading earth over it; spread something under a carpet (obj.)’

HAS tr. ‘share something (obj.)’ ⋈ HAːTT ‘share something out to others (obj.)’

-S ⋈ -NT

LIS tr. ‘insert one’s hand (obj.) into something’ ⋈ LIːNT tr. ‘tunnel under or through something’

-KS ⋈ -KT

KOKS tr. ‘use something (obj.) as a pillow for oneself’ ⋈ KOKT tr. ‘prop someone (obj.) up, especially on a pillow; raise (a bid)’

KHUːKS tr. ‘wear (a hat or head-covering)’ ⋈ KHUːKT tr. ‘put (a hat or head-covering) on someone (obj.)’

CAKS tr. ‘wear, put on (clothing)’ ⋈ CAKT tr. ‘dress someone (obj.)’
NUːKS itr. ‘return, go back’ ⋈ NUːKT tr. ‘give or get something back; answer’
LAːKS itr. ‘dance’ ⋈ LAːKT tr. ‘trample’

A5. Families with initial alternations

Ø- ⋈ H-
IːR itr. ‘go around’ ⋈ HIS tr. ‘turn, divert’

K- ⋈ KH-
KAːNT i tr. ‘be wounded’ ⋈ KHAːNT tr. ‘wound’
KEKS itr. ‘be hooked, caught, tangled in something’ ⋈ KHEKS tr. ‘tie, attach’
taKɔNT itr. ‘wander’ ⋈ KHɔNS tr. ‘stir’

C- ⋈ S-
CIP itr. ‘be silent’ ⋈ SIPS tr. ‘turn something off’
CUP itr. ‘fill in (e.g. of pierced ear-lobe)’ ⋈ SUP tr. ‘shut, close’
CUPS itr. ‘gather’ ⋈ SUPS tr. ‘gather’
CUːT itr. ‘be completed’ ⋈ SUːT tr. ‘finish something’
CɛK itr. ‘break (of long, solid object)’ [also ɛK] ⋈ SɛKS tr. ‘break (a long, solid object)’
CONT itr. ‘fall over’ ⋈ SONT tr. ‘fell, knock over’
(?CɔNT tr. ‘push’ ⋈ SɔNT tr. ‘stretch’)

T- ⋈ TH-
TIːKT itr. ‘peel off (especially of skin)’ ⋈ THIːKT tr. ‘peel, husk, unwrap’, probably related to:
TIːKS itr. ‘be pulled back (of foreskin, exposing glans)’ ⋈ THIːKS tr. ‘pull back (foreskin)’
TIMS itr. ‘be full’ ⋈ THIMS tr. ‘fill’
TIːT itr. ‘flame up’ ⋈ THIːTS tr. ‘cause to flame up’
TUŋ itr. ‘bend, be bent’ ⋈ THUːKS tr. ‘bend double, bend’ (perhaps separate roots)
TU?R itr. ‘be bent double’ ⋈ THU?R tr. ‘bend double’
TɛKT itr. ‘be sufficient, reach a certain quantity’, tr. or imps./dep. ‘be sufficient for’ ⋈ THɛKT ‘insert’
TɛːKS itr. ‘tear’ ⋈ THɛːKS tr., ‘tear’

P- ⋈ PH
PAːKS itr. ‘come undone’ ⋈ PHAːKS tr. ‘undo, untie’
PAŋS tr. ‘send, cause someone to do something’ ⋈ PHAKT tr. ‘permit someone to do something’
PIːKS itr. ‘fall out’ ⋈ PHIːKS tr. ‘pull out (e.g. a weapon)’
PINT itr. ‘jump’ ⋈ PHINT tr. ‘cause to jump’
PI?R itr. ‘be dented’ ⋈ PH?R tr. ‘dent something’
PUNT itr. ‘become unblocked or uncovered ⋈ PHUNT tr. ‘open (e.g. a bottle)’
PU?R itr. ‘break (of string)’ ⋈ PHU?R tr. ‘break (string)’
PɛNT itr. ‘slip down (e.g. trousers. landslide)’ ⋈ PHɛNT tr. ‘undo, remove clothes’
PɛːR itr. ‘fly’ ⋈ PHɛS tr. ‘cause to fly’
POK itr. ‘get up, rise’ ⋈ PHOKS tr. ‘rouse, get someone up’

POR itr. ‘grow’ ≍ PHOS tr. ‘increase’

PɔTS itr. ‘be in a high place or suspended ≍ be hired’ PHɔTS tr. ‘put in a high place; hire’

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Epilogue (1996)

This article was written for the 12th International Conference on Sino-Tibetan Languages and Linguistics, held in Paris in October, 1979, and slightly revised for publication during 1980. It finally appeared in Thurgood et al. 1985, and is reprinted here with the permission of *Pacific Linguistics*.

Although the type of stem-final morphology presented here had previously been observed in Kiranti languages (see §3.11), this was the first systematic presentation, thanks largely to the fact that Limbu presents the clearest and most extensive evidence. It was followed and commented on by Weidert and Subba (1985:80-81), Sprigg (1985), van Driem (1987:245-267), etc., and, for Bantawa, by Sprigg (1989, 1992). (Rai 1985 is an independent presentation of Bantawa.)

The paper has not been revised for the present publication except in one respect. In the original version, the IPA symbol "j" ("yod") was used for the sound usually transcribed as "y" in South Asian languages. I have here changed the transcription to "y". I have not changed the notation of vowel length as suggested in note 3 because this would require extensive discussion. I should remind readers that the Limbu vowels e and o are generally realized as long (or else glottalized, but never distinctively short); it will be noted that they pattern with the long vowels in some categories of roots.

I will present my view of Limbu phonology, and of the morphophonology of verbal stems, in a future publication. I have discussed many of the relevant issues in Michailovsky 1986.

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