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INTERNAL RECONSTRUCTION OF THE DUMI VERB: LEXICAL BASES AND STEM FORMATION[1]

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Abstract: Dumi (Tibeto-Burman, Nepal; ISO 639-3: dus) is a member of the Kiranti group, which is well known for its complex verbal morphology. Within Kiranti, Dumi and its closest neighbors, Khaling, Thulung, and Bahing, are noted for their rich systems of up to 10 vowels, and for the variety of alternations affecting verb stems. Using the data provided in the description by van Driem (1993), I show that an internally reconstructed base form, having essentially the structure of a Dumi phonological syllable (C_i)V(C_f) optionally followed by a stem augment T, contains all the information necessary to distinguish one regular Dumi verb from another, barring homonymy. A table of these base forms by extended rime, with rows representing final and postfinal consonants and columns representing the five reconstructed base vowels, defines the space of possible Dumi verb bases. I then show how the observed stem alternants (between one and five or more) of individual Dumi verbs, analysed into component alternations conditioned by different phonological and morphological contexts, are related to the base form. A final section presents phonological and morphological principles that have influenced the stem alternations, in the context of Kiranti typology and comparison. An index of all verb lexemes found in the source, with their reconstructed roots, classified by rime, is presented in an online appendix (http://halshs.archives-ouvertes.fr/halshs-00679576; oai:halshs.archives-ouvertes.fr:halshs-00679576).

Keywords: Tibeto-Burman, East Himalayish, Kiranti, Dumi, Kiranti morphology, verbal morphology, internal reconstruction.

1. INTRODUCTION

I apply the method of internal reconstruction to the analysis of the verb in Dumi (ISO 639-3: dus), a language of the Kiranti group of Tibeto-Burman, based on the copiously illustrated morphological description of van Driem 1993. Kiranti languages are noted for complex verbal morphology, with double agreement in person and number; within Kiranti, Dumi and its closest neighbors (Khaling, Thulung, Bahing) are noted for the variety of alternations affecting verb stems.

Internal reconstruction was first applied to the analysis of the verb in a language of the Kiranti group by the late R. K. Sprigg in an article on Limbu (1966). Sprigg sought to establish a single, "lexical-item phonological formula" for all of the information contained in the phonetically variable stems of the

[1] The reconstruction presented here in §§1, 2, 4, and 5 was presented and circulated at the first European Symposium on Himalayan Languages in Leiden in 1995. The author thanks Martine Mazaudon, Guillaume Jacques, and an LTBA reviewer for their suggestions.

verb. In so doing, he had two goals: first, to arrive at a single form suitable for comparative work, and second to identify "those stretches of the continuum, pieces, for which a prosodic statement [i.e. a phonological statement in the prosodic theoretical framework] can usefully be made"—that is, to arrive at a linguistic characterization of the alternating units in Limbu morphophonology.

Later studies which have proposed internally reconstructed forms (if not prosodic formulae) for Kiranti verbs are Allen 1975 (Thulung), Michailovsky 1975 (Bahing and Khaling) and 1985 (Limbu). My own studies of alternations and word-families led to a theory of the morphophonology of the Kiranti verbal base as essentially a phonological syllable with—in the case of transitive bases only—the possibility of a coronal postfinal. Word-families suggest that the postfinal is a no longer productive derivational stem-augment with applicative or causative sense. This applies to Dumi (van Driem 1993: 215-223).

Verbs in van Driem's glossary are identified by a conjugation number and a number of stem forms. In the first part of this article, I use this information to reconstruct a morphophonological base of the form $(C_i)V(C_f)(T)$ for each verb. These base forms contain all the information necessary to distinguish one Dumi verb from another. They are presented in a table organized by "extended rime" $(V(C_f)(T))$—the critical element in stem alternations. The table defines a space of possible Dumi bases in terms of reconstructed vowels and finals.

In the second part of the article I analyse the initially somewhat bewildering alternations between stems of the same verb. Each occurring phonological verb form is composed of a stem and affix strings. I follow van Driem in considering that, as in most Kiranti languages, a single affixal paradigm applies to all verbs, but that different classes of verb may show differences in alternation between stems. Here our methods diverge: where van Driem abstracts away from the actual phonology of the stems and alternations to arrive at a mechanical look-up procedure for "predicting" the stem forms (identified as Σ1, Σ2, etc.) for each conjugation, I analyse the alternations phonologically and relate each component directly to the morphophonology of the base and to the contexts in which the alternant appears. The fact that the alternations and their contexts are characterized in linguistic terms makes it possible in some instances to form hypotheses concerning their linguistic motivation and history.

In a final section some features of the Dumi verbal system are reviewed in the comparative and typological context of the Kiranti group.

2. PHONOLOGY

I begin with a review of Dumi phonology, in particular of the Dumi syllable canon, which fundamentally determines the inventory of possible verb bases.

The basic canon is $(C_i)V(C_f)$. The reconstructions proposed here assume this canon. Synchronically, syllabic nasals are found word internally, between the final of a preceding syllable and the initial of a following one. Initial consonant+glide sequences and a few exceptional clusters which are transcribed by van Driem (never word or stem-initially) are discussed in this section.

2.1. Initials and initial (non-glide) clusters

Van Driem (1993: 52-57) lists the initial consonants as *k, kh, g, gh, ŋ, (ʈh), t, th, d, dh, n, p, ph, b, bh, m, dz, y, r, l, w, s, h*. We will add the intial *ts*, which van Driem considers as a cluster, to this inventory opposite *dz*.[2]

Initial clusters are marginal, and will not be reconstructed. Dumi entirely lacks the *Cr* and *Cl* clusters found in Bahing, Thulung, and Khaling.[3] In this respect it resembles eastern members of the Kiranti group like Bantawa and Limbu (Michailovsky 1988b: 37-38). Exceptional sequences are found, however, in particular where suffix consonants pile up after the consonant final of a verb stem, as for example in *lupsti* 'they (dual) catch him', *lopmsti* 'I catch you (dual)'. The verb stem still has its usual form (see below) in such forms. In the examples just cited, the dual marker *si* has lost its vowel, while the 1s>2 marker *N* appears as a syllabic nasal.

2.2. Vowels

Eight vowel qualities are distinguished by van Driem for Dumi short vowels (*i, e, œ, ɨ, ə, a, o, u*) with an opposition of length on five of these (*i, e, a, o, u*). The vowel *œ* is rare.

2.3. Consonant+glide initial clusters

Van Driem describes *ts* as "the only cluster occurring in word-initial position", but he also transcribes initial clusters of the form *C+glide*: *Cy* and *Cw*. These are quite infrequent. About twenty-five entries in van Driem's glossary have such initials.

The distribution of CGV sequences suggests that the G, at least in origin, is part of the realization of the vowel, and that GV nuclei appear under the influence of the syllable initial or the final. One argument against reconstructing *Cw* and *Cy* consonant clusters as such is that the vowels that follow them are markedly different from those occurring after the independent syllable initials *w* and *y*. Thus word-initial *w* occurs almost exclusively before the vowel *a* (thirty examples, vs two for initial *wə* and one for *wo* [4]), while initial *Cw* occurs only before *o*. Initial *y* is almost never found before front vowels (one out of 30 examples) while roughly seventeen of the twenty-four examples of initial *Cy*- occur before front vowels (see below for the seven exceptions).

Initial *Cw* occurs in only two words, *mwo:* 'what' and *mwo:ʔu* 'thrush'. Although *mwo*- may be phonologically distinct from *mo*- (which occurs in a dozen words), the appearance of a labiovelar medial glide between a labial initial

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[2] Van Driem accepts *dz* as a phoneme on the grounds that there is no phoneme *z* (1993: 55), but the existence of phonemes *t* and *s* does not oblige us to consider the initial *ts* as a cluster, nor does acceptance of a phoneme *ts* rule out the possibility of *t+s* sequences word-internally.

[3] Van Driem cites as anomalous the word *na:mgrim* 'sunset', etymologized as *na:m* 'sun' + *gi:mni* 'to set' (1993: 58, 401).

[4] The example with initial *wo* is a verb related by suffix-derivation (§5) to a verb transcribed with initial *o*.

and a rounded vowel (and in no other context) does not appear to require reconstruction. Initial *Cy*, as mentioned above, occurs mainly before front vowels. Initial *Cyi* occurs only with initial *ŋ* (4 exx.), while *Cye* occurs mainly with the initials *ŋ* (3) or *s* (4), or before the final *r* (see §4.3.6). The seven exceptional examples of *Cy* with a non-front vowel are the stems *Cyək* (4), *Cyak* (2), and *Cyok* (1), which clearly reconstruct as **Cek* (§4.3.4).

2.4. Finals

Syllable finals (C_f) are the following: *p, t, k, m, n, ŋ, r, l, s, ʔ,* and zero.The finals *p, t, k* are pronounced unreleased, with a simultaneous glottal stop (van Driem 1993: 52). The finals *s* and *ʔ* are clearly of secondary origin and are not reconstructed in verb bases. Van Driem remarks that consonantal glottal stop *ʔ* (not to be confused with glottal hiatus) is in almost perfect complementary distribution with syllable-final *t*, but that there is etymological and comparative evidence linking it with the finals *p* and *k* in a few cases. In verb stems "morphophonemic verb stem final *t* is /ʔ/ before the first plural morpheme <-k>," (van Driem 1993: 56-58). Syllable-final *s* is very rare except where it appears in place of morphophonemic stem-finals *t* or *n* before suffixes with dental initials (§7.2; cf. van Driem 1993: 94,95).

Van Driem (1993: 58) cites a few words with syllable-final aspirates before syllable initials (e.g. *dəkhlœ* 'head'). These are not relevant to verb stems and are not reconstructed here.

3. THE VERB ACCORDING TO VAN DRIEM

In this section I briefly summarize van Driem's presentation of the Dumi verb. Van Driem writes:

> A verb in Dumi may have one or more different stems. Dumi verbs may be divided into various conjugations on the basis of paradigmatic stem alternation. A conjugation therefore is a fixed pattern of stem alternation, not a fixed set of flexional affixes. The flexional affixes of the intransitive, transitive and reflexive paradigms are constant throughout all conjugations. Once the conjugation of any given verb has been specified, it is predictable which stem will occur in a given inflected form. (van Driem 1993: 91)

In this way, van Driem assigns verbs to sixteen "conjugations", five intransitive and eleven transitive. The conjugation classes, with van Driem's count of the number of verbs belonging to each (my counts for vi-1, vt-1), are listed in Table 1.

vi-1	vi-2	vi-3	vi-4	vi-5
43	10	40	10	2

vt-1	vt-2a	vt-2b	vt-2c	vt-3	vt-4	vt-5a	vt-5b	vt-6a	vt-6b	vt-7
38	110	3	3	20+	12	3	3	10	3	1

Table 1: Dumi verb conjugations according to van Driem (1993: 91-116).

A verb lexeme in van Driem's system is identified by the infinitive, an identifier (e.g. "vt-1") specifying its transitivity and "conjugation number", and its phonologically recorded stem or stems. A typical verb is cited in van Driem's glossary as follows:

lopnɨ vt-3 luph/lup-lop 'catch'.

This notation indicates that *lopnɨ* 'to catch' is a transitive verb of "conjugation" vt-3, and lists three stem forms (apart from the "often unpredictable" infinitive stem (1993: 267)). These forms represent two separate stems, Σ1 (*luph/lup*) and Σ2 (*lop*), separated by a hyphen. Forms separated by an oblique in van Dreim's notation are described as conditioned variants (pre-vocalic vs pre-consonantal/pre-pause) of a single stem. In fact, a stem may have further variants which do not appear in the lexical entries and which van Driem (1993: 93-95, 113) accounts for by a number of morphophonological rules.[5]

A "conjugation" is a class of verbs having the same number of numbered stems (not necessarily of conditioned stem variants) and in which these stems have the same geometrical distribution in the paradigm, regardless of the precise phonological nature of the alternations. Verbs which have only a single stem (in van Driem's sense) are assigned to category numbers vi-1 and vt-1, and further conjugation numbers are assigned to classes of verbs roughly in the order of the number of different stems that appear in their paradigms (van Driem 1993: 91-95).

The distribution of stems in the paradigm is presented by van Driem in fourteen tables, one for each "conjugation" (except vi-1 and vt-1). Table 2 is typical of the tables for transitive conjugations.

<table>
<tr><th>A↓\O:</th><th>1s</th><th>1di</th><th>1de</th><th>1pi</th><th>1pe</th><th>2s</th><th>2d</th><th>2p</th><th>3s</th><th>3d</th><th>3p</th></tr>
<tr><td>1s</td><td colspan="5" rowspan="5">vt-3</td><td>Σ2</td><td>Σ2</td><td>Σ2</td><td>Σ1</td><td>Σ1</td><td>Σ1</td></tr>
<tr><td>1di</td><td colspan="6"></td><td colspan="3">Σ1</td></tr>
<tr><td>1de</td><td colspan="6"></td><td colspan="3">Σ1</td></tr>
<tr><td>1pi</td><td colspan="6"></td><td colspan="3">Σ2</td></tr>
<tr><td>1pe</td><td colspan="6"></td><td colspan="3">Σ2</td></tr>
<tr><td>2s</td><td>Σ1</td><td rowspan="6"></td><td rowspan="6">Σ1</td><td rowspan="6"></td><td rowspan="6">Σ2</td><td colspan="3" rowspan="6"></td><td>Σ1</td><td>Σ1</td><td>Σ1</td></tr>
<tr><td>2d</td><td>Σ1</td><td colspan="3">Σ1</td></tr>
<tr><td>2p</td><td>Σ1</td><td colspan="3">Σ1</td></tr>
<tr><td>3s</td><td>Σ1</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">Σ2</td><td rowspan="3">Σ1</td><td rowspan="3">Σ1</td><td rowspan="3">Σ1</td><td>Σ1</td><td rowspan="2"></td><td rowspan="3"></td></tr>
<tr><td>3d</td><td>Σ1</td><td>Σ1</td><td colspan="2">Σ1</td></tr>
<tr><td>3p</td><td>Σ1</td><td colspan="6">Σ1</td></tr>
</table>

Table 2: Stem distribution in conjugation vt-3 (van Driem 1993: 102)

In the table, the stem (identified as Σ1, Σ2, etc.) required for any finite form is found at the intersection of the row representing the person and number of the A[gent] and the column representing those of the O[bject]. The tables generally

[5] An example is the stem-form *huŋ* of the verb cited as *hɨŋ-nɨ* vt-1 *hɨŋ* 'to wait for' (see §7.3.2 below).

have the same number of cells as the table of verb agreement affixes for the corresponding transitivity type (vi or vt) (e.g. Tables 4, 5), excluding tense.[6]

The stems occurring in each table are assigned numbers beginning, "arbitrarily" (van Driem 1993: 95), with the stem that occurs in the 1s subject or 1s>3s form: this stem, wherever it appears in the paradigm, is given the identifier Σ1. Subsequent stem numbers are apparently assigned to new stems in order, as they are encountered in running through the paradigm by subject or agent (1s 1d, etc.)[7].

As an example, we may apply van Driem's system to construct the form 'he caught him' of the verb *lopni* vt-3 'catch' cited above. The required stem-number, Σ1, is "predicted" by looking it up in the stem-table for the conjugation vt-3, at the intersection of the row representing 3rd singular agent and the column representing 3rd singular object. Stem Σ1 is the first stem listed in the lexical entry for the verb: */luph/lup*. The affixation for the 3s>3s form, found in a table valid for all transitive verbs (van Driem 1993: 100; cf. the affixes in Table 5 below), is the suffix *-i*, so the prevocalic variant, */luph/*, is used. No further rules apply: the form is */luphi/*.

Van Driem's treatment of the verb is complete, but somewhat opaque. The treatment of stems, in particular, abstracts away from the phonology to consider only whether whole stems are the same or different. But we will see that the distribution of consonantal alternants, for example (to take a category which is still overly broad), is quite different from that of vocalic ones. Both are obscured if they are mixed together in global alternations of whole stems identified as Σ1, Σ2, etc. And it turns out that, apart from the correspondence, by definition, of Σ1 with the stem of the 1s subject or 1s>3 form, the stem-numbers have no other correspondence, either phonological or morphological, valid across conjugations.[8]

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[6] Tense is not regularly distinguished in van Driem's stem tables because it is rare for forms distinguished only by tense to use different stems (as opposed to prevocalic vs preconsonantal forms of the same stem). The only examples are 1st plural forms of verbs of the vi-5, vt-5a and vt-5b conjugations (8 verbs) with the unstable root-final N (§4.3.7), and a few forms of open A/O bases (Table 12) where past and non-past stems are distinguished by length.

[7] In the case of regular transitive verbs it is always sufficient to run down the column of 3d person object forms (see Appendix 1) to find an example of all stem types.

[8] Thus van Driem himself characterizes the stem used in the negative perfect gerund, not by stem number but as the "bare verb stem as it occurs in first plural forms" (1993: 240). Identifying this "bare verb stem" by stem number would have been a more complex affair:

Σ1 in classes vi-1, vt-1, vt-2abc, vt-6b
Σ2 in classes vi-2, vi-3, vi-4, vt3, vt-6a
Σ3 in classes vi-4, vt-4, vt-7
Σ2(present)/Σ3(past) (but which?) in class vi-5
Σ3(present)/Σ4(past) (same remark) in classes vt-5ab.

4. INTERNAL RECONSTRUCTION OF THE VERB BASE

In this section I propose an internally reconstructed base form for each verb in van Driem's glossary based on (1) the stems listed in van Driem's lexical entries, (2) the phonology of Dumi as outlined above, and (3) a theory of the Kiranti verbal base developed in previous studies of Khaling and Bahing (Michailovsky 1975) and of Limbu (Michailovsky 1985). In these studies, I showed that verb lexemes could be characterized by an internally reconstructed base form consisting of a monosyllable with the possibility of a postfinal dental consonant. The postfinal in many cases is an old derivational element with an applicative or transitivizing sense. Applying this theory to Dumi, I will identify each verb lexeme by an indication of transitivity and a reconstructed base of the form $(C_i)V(C_f)(T)$, the inventories C_i and C_f being essentially those of the phonological syllable, and T the postfinal. Thus the base is an internally reconstructed morphophonological object made up of reconstructed phonological elements. It is transcribed in small capital letters.[9]

In Bahing and Khaling, languages with ten phonological vowels, I showed that only five vowels needed to be reconstructed in lexical verb bases; this will also be seen to apply to Dumi.

The lists of stem form alternants provided in van Driem's lexical entries furnish sufficient information to reconstruct verb bases essentially without consideration of the distribution of the different stems. In a later section (§7), I will discuss the phonological and morphophonological principles governing the relation between reconstructed base forms and observed stems. This will require more detailed reference to the verbal paradigms, since stem-formation is influenced by the phonological form of suffixes and by the logical structure of the paradigm.

4.1. The table of verb bases by rime

The key to understanding the inventory and alternations of verbal bases is the rime. Brian Hodgson, author of the first study of a Kiranti language (1858) classified Bahing verbs by final consonants and transitivity.[10] Subsequent students (Michailovsky 1975, 1985; Allen 1975) have adopted this method, extending the classification to the rime in order to account for the distribution and alternations of vowels.

This is particularly useful for Kiranti languages with rich vowel systems, like Bahing, Khaling, and Thulung. It is clear from inspection of Dumi stems that there are distributional dependencies between vowels and finals, and that alternations may affect whole rimes and not only finals.

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[9] An alternative would be to mark bases with the root symbol √.

[10] Hodgson (1858: 402-407) identified 13 classes for Bahing, beginning as follows:
Transitives in "wo"; Intransitives in "wo". [i.e. open roots; -(w)o is the imperative suffix]
Transitives in "gno": Intransitives in "gno". [i.e. roots in -ŋ]
Transitives in "ko"; Intransitives in "ko". [i.e. roots in -k] , etc.

C_fC_{pf}		*-I-*	*-E-*	*-A-*	*-O-*	*-U-*
P	vi	iph [1] (vi-1)	iph-ep [2] (vi-3)	aːph-ap [1] (vi-1)	--	ɨph [1] (vi-1)
P	vt	--	iph-ep [1] (vt-3)	aːph-ap [1] (vt-1)	uph-op [4] (vt-3)	--
PT	vtt	ipt-iph [6](vt-2a) ipt-iph [1](vt-2c)	ept-iph [6] (vt-2a)	aːpt-aːph [5] (vt-2a) aːpt-aːph [2] (vt-2c)	opt-uph [3] (vt-2a) əpt-uph [1] (vt-2a)	ɨpt-ɨph [5] (vt-2a)
M	vi	im [1] (vi-1)	iːm-em [3] (vi-3)	aːm [3] (vi-1)	um-əm [2] (vi-3)	ɨm [1] (vi-1)
M	vt	im [1] (vt-1)	--	aːm [4] (vt-1)	um-əm [3] (vt-3)	ɨm [5] (vt-1)
MT	vtt	--	emd-em [1] (vt-2a)	--	əmd-um [1] (vt-2a)	--
K	vi	ik [1] (vi-1)	yəkh [1] (vi-1)	aːkh [1] (vi-1)	ukh-ok [3] (vi-3) okh [1] (vi-1)	ukh[3] (vi-1) ɨkh [3] (vi-1)
K	vt	--	ikh-yək [1] (vt-3) yəkh-yək [1] (vt-1)	aːkh [2] (vt-1)	ukh-ok [5] (vt-3)	ɨkh [1] (vt-1)
KT	vtt	ikt-ikh [4] (vt-2a)	yəkt-yəkh [2] (vt-2a) yokt-yokh [1] (vt-2a)	--	okt-ukh [2] (vt-2a) okt-okh [4] (vt-2a) əkt-əkh [1] (vt-2a)	ukt-ukh [3] (vt-2a) ɨkt-ɨkh [3] (vt-2a)
ŋ	vi	--	--	aːŋ [4] (vi-1)	uŋ-oŋ [2] (vi-3)	ɨŋ [1] (vi-1)
ŋ	vt	iŋ [3] (vt-1)	iŋ-eŋ [1] (vt-3)	aːŋ [1] (vt-1)	uŋ-oŋ [1] (vt-3)	ɨŋ [3] (vt-1)
ŋT	vtt	--	--	--	--	ɨŋd-ɨŋ [1] (vt-2a)
R	vi	ir [1] (vi-1)	ir-er [1] (vi-3)	ar [1] (vi-1)	--	ɨr [1] (vi-1)
R	vt	ir [2] (vt-1)	ir-er [1] (vt-3)	ar [1] (vt-1)	ur-ar [1] (vt-3) ur-ər [1] (vt-3)	ɨr [1] (vt-1)
RT	vtt	--	erd-ir [1] (vt-2a)	aːrd [1] (vt-2a) ərd [1] (vt-2a)	--	ɨrd-ɨr [1] (vt-2a)
L	vi	il [1] (vi-1)	--	--	--	ɨl [3] (vi-1)
L	vt	il [2] (vt-1)	--	al [3] (vt-1)	ul-əl [3] (vt-3)	ɨl [3] (vt-1)
T	vi	its-it [2] (vi-3)	iːts-et [5] (vi-3)	aːts-aːt [3] (vi-3)	uts-ot [3] (vi-3)	ɨts-ɨt [1] (vi-3) uːts-uːt [1] (vi-3)
T	vtt	iːt-iːts [7] (vt-2a)	et-iːts [2] (vt-2a) iːts-et [1] (vt-3)	aːt-aːts [7] (vt-2a)	ət-uts [4] (vt-2a) ot-uts [4] (vt-2a)	ɨt-ɨts [1] (vt-2a)
D	vtt	id-its [3] (vt-2a)	iːd-iːts-eːt [4] (vt-4)	aːd-aːts [3] (vt-2a)	od-ots [4] (vt-2a) uːd-uːts-oːt [1] (vt-4)	ɨd-ɨts [6] (vt-2a)

N	vi	--	--	aːnts-aːt [1] (vi-3)	ənts-oː-əʔ-ən [1] (vi-5) ənts-oː-ən-on [1] (vi-5)	ɨnts-ɨt [3] (vi-3)
NT	vtt	ind-ints[1](vt-2a) ind-ints[2](vt-2b)	end-ents [3] (vt-2a) end-ents-et [1](vt-4) end-ents-e-en[2](vt-5b)	aːnd-aːnts [2] (vt-2a) aːnd-aːnts-aːt-aːn[1](vt-5a)	ənd-ənts [1] (vt-2a) ənd-ənts-ət [1] (vt-4) ond-onts-o-on [1] (vt-5a) ənd-ənts-ən-ot [1] (vt-5b)	ɨnd-ɨnts [2] (vt-2a) ɨnd-ɨnts [1] (vt-2b)
∅	vi	iːy [8] (vi-1)	eː-iːy [5] (vi-2) eːy [1] (vi-1)	aː [1] (vi-1)	oː-uːy [1] (vi-2) oː-u(y)-ɨ [7] (vi-4)	
	vt	iː [2] (vt-1)	iːy-eː [3] (vt-6b) e [1] (vt-1)		a-uy-ɨ-o(ː) [6] (vt-6a)	

Key: stems Σ1-…-Σn [approximate no. of examples] (van Driem's conjugation no.)

Table 3: Reconstructed rimes of regular verbs (with stems and conjugations from van Driem 1993)

Table 3 is a taxonomy of Dumi verbal bases classified by rime and transitivity type. The rows are grouped by base-final, with each row of the table containing the verbs with a particular base-final (C_f) and transitivity type (vi, vt, vtt). Columns represent reconstructed base vowels.

Of the three transitivity categories, intransitives (vi) are as marked in van Driem's lexical entries. Van Driem's transitives have been divided into two types, ordinary transitives (vt) and T-transitives (vtt); the latter includes all verbs which have the postfinal T in the base form, and other transitives with dental finals (see below). Intransitive bases never have the postfinal.

In the reconstructed bases, the final consonants are derived straightforwardly from the prevocalic variant of van Driem's Σ1.[11] Briefly, if this stem ends in *pt* or *kt*, the base is reconstructed with final PT or KT respectively; if it ends in *md*, *nd*, *ŋd*, or *rd*, the base is reconstructed with MT, NT, ŊT, or RT. Otherwise, if there is a stem or stem-variant in *p(h)*, *t(s)*, *k(h)*, *m*, *ŋ*, *r*, *l*, the base is reconstructed with the corresponding phonological final. If a stem ends in *d* with no preceding consonant, the base is noted as CVD. This notation does not imply reconstruction of a phonological final **d*; in fact a few such verbs suggest that it represents T-transitives of the form CV∅-T, and possibly CVT-T—see §5.1. If there is no stem-final consonant (or only *y*, which is epenthetic (§7.4)) an open base (Ø final) is reconstructed.

Within each row of the table, verbs are grouped according to vowel or vowel alternation. Although all eight phonological vowels and a variety of alternations appear in the stems of verbs in the table, no more than five distinct vowels or alternations appear in most rows. Bases with bilabial finals—i.e. those in -P, -PT, -M, -MT—show this straightforwardly in the table. On the hypothesis that only five vowels need to be reconstructed, the verbs in each row are aligned in (at most) five columns, labelled I, E, A, O, U, on phonetic and distributional grounds. Briefly: verbs having an invariant stem vowel *i* are reconstructed with bases in I; those with any stem in *e* or *yə*, or the alternation *e*/*i*, with bases in E; those with *a* with bases in A; those with vowels *o* or *ə*, or alternations *o*/*u*, *ə*/*u*, *ə*/*o* with bases in O; those with *u* or *ɨ* with bases in U. Vowel length as noted by van Driem is not accounted for in the reconstruction (see §8.1.1).[12]

The reconstructed final consonant or consonants of the bases corresponding to a cell of the table are thus indicated in the first cell of the row in which it is located, and the reconstructed vowel by the header of its column.

Each cell of the table contains van Driem's lexical notation for the "conjugation" and the stem rime alternants[13] of the corresponding verbs, and the number of such verbs in his glossary by my count. Thus the correspondence

[11] The postfinal, which is important for identifying T-transitives, appears on this stem (used for the 1s>3 past form).

[12] In table 3, length is marked on stems which are long in a significant majority of cases.

[13] For reasons of space, where van Driem lists two variant stems separated by an oblique (see §3 above), only the first (the prevocalic variant) is shown in the table.

between the reconstructed base rimes and the conjugations and stem-rimes of van Driem's notation is easily found.

In most cases, a cell in the table corresponds to a single conjugation number and stem rime alternation in van Driem's notation, different from those of any other cell, which suggests that the two systems are equivalent in their capacity to distinguish one Dumi verb from another. In some cases, however, two of van Driem's conjugations or rime alternations have been assigned to a single reconstructed rime (i.e. to a single cell). I will return to these cases, and to others where the assignment of verbs to cells in the table requires comment, in §4.3.

4.2. The rime-space of possible verbal bases

The inventory of possible base categories (transitivity and extended rimes) is defined by the grid of Table 3.

All of the finals (including zero) of the Dumi phonological syllable canon are reconstructed as base finals (C_f), except for *s* and *ʔ*, which only occur as alternants of *t* or *n* in certain stems (§7.2.1). There are thus nine possible base-final C_f: P, T, K, M, N, Ŋ, R, L, Ø.

All eight of van Driem's phonological vowels occur in stems of one rime category or another, but only five base vowels, A, E, I, O, U, are reconstructed.

Reconstructed verb bases thus may have 90 possible extended rimes—i.e. 9 (finals) times 5 (reconstructed vowels) times 2 (presence or absence of a postfinal). It is useful to separate intransitives from transitives, so 45 cells are provided for the intransitives (these do not have the possibility of a postfinal), making a theoretical total of 135 cells. In fact, the table has only 120 cells because (1) no row is provided for the non-occurring LT category; (2) only two base categories are found to occur in place of the three theoretically possible extended rimes ØT, T, and TT (see §5 below); and (3) among bases with C_f = N, there is no opposition between T-transitives and plain transitives (see §4.3.7 below). But since I have no principled reason to exclude these possibilities, I will consider that there are 135 theoretically possible rimes. Of these, 94 are represented among the 279 verb bases in the table. This seems to be a reasonable occupancy rate for a template of this kind.

4.3. Notes on base rimes

In this section I will discuss certain apparently idiosyncratic synchronic rimes and alternations and my justification for integrating them into the general reconstruction as I have done. In some cases I believe that I have identified conditioned variation which justfies integrating two of the categories implied by van Driem's lexical entries into a single cell. Other minor differences for which no conditioning has been identified must certainly be taken into account, but have not been judged sufficient to bring the overall theory of the verb into question.

Regular processes of stem-formation and alternation will be discussed in §7, along with some further details of the base reconstructions.

4.3.1. The reconstructed vowel U (u, -ɨ-)

In all but velar-final CVC stems, the U vowel—but not the *u* alternant of the O vowel—is centralized and unrounded to *ɨ*. Thus it is logical to consider stems with the vowel *ɨ* as belonging to the U category. But this seems to pose a problem in the case of bases with C_f K: the cells representing the velar base-codas K and KT contain two sets of verbs in the U-vowel column, those with stem-vowel *u* and those with *ɨ*. This appears to indicate that six different stem vocalisms are in opposition in these contexts, invalidating the five-vowel reconstruction. On closer examination of the bases, however, the choice between *u* and *ɨ* before the final *k* appears to be conditioned by the initial: *ɨk* is found after bilabials, *y*, and (less certainly) *ts* ; *uk* is found elsewhere:

dukɲi DUK, DUKT ‘to stub, knock’
huːkɲi HUK ‘to bark’
lukɲi LUKT ‘to strike with the horns, to kick with the hind legs’
tsukɲi TSUKT ‘to point out’
uːkɲi UK ‘to crow, to emit a cry (esp. of fowl)’
bɨkɲi BUK ‘to bear young (of non-humans)’
phɨkɲi PHUK, PHUKT ‘to get up, to arise, to get someone up’
pɨkɲi PUKT ‘to heap up, to pile up’
tsɨkɲi TSUK ‘to be, to become, to happen to’
tsɨkɲi TSUKT ‘to understand (sth.), to know (sth.)’
yɨkɲi YUKT ‘to turn around, to grind, to mill’

(Verbs which conjugate as both transitive and intransitive are listed only once.) Thus the existence of stems in both *uk(t)* and *ɨk(t)* does not require the reconstruction of a sixth vowel. The opposition between *tsukɲi* and *tsɨkɲi* is unexplained, however, and is not reflected in the reconstruction.

The same conditioning seems to apply to the infinitives of open transitive bases with alternating back vowels (the O/A rime class: see §4.3.3 below):

dhuɲi DHO/A ‘to dig (e.g. a hole)’
dzuɲi DZO/A ‘to eat’
mɨɲi MO/A ‘(auxiliary) to do’
pɨɲi PO/A ‘to weave’
suɲi SO/A ‘to escort, to deliver; [ASPECT: “dimittive”]’
tuɲi TO/A ‘to put, to place; [ASPECT: “ponent tr.”]’

For some reason, this conditioning in open bases does not apply to intransitives (van Driem’s vi-4), which all have the centralized vowel *ɨ* in the infinitive. Thus the transitives *dzuɲi* and *tuɲi* have intransitive counterparts *dzɨɲi* ‘to be eaten’ and *tɨɲi* ‘[“ponent” intr.]’.

An alternation between *u* and *ɨ* under the influence of vowel harmony is discussed in §7.3.2 below.

4.3.2. The vowel O (ə~u, o~u)

The vowel *ə* (not preceded by the medial *y*) appears in alternations with *u*, in parallel to *o/u* alternations. It appears to replace *o* systematically before the stem finals *m* and *l*, and it also appears in some verbs before *r*, *t*, and *n*. This

distributional asymmetry, while not complete, suggests that no opposition between stem vowels *ə* and *o* needs to be reconstructed. Both are reconstructed as O. (See §4.3.7 on the transitive OT category.)

4.3.3. Open bases

Open bases in I and E are easily identified.

The open A category is occupied by the unique base KHA 'to be bitter', which has a single stem *kha,* but probably has a highly reduced agreement paradigm for semantic reasons.

Instead of the open U and O categories that might be expected, we find a single category, whose reconstruction is not straightforward. I have assigned transitive bases with *a~o~u~ɨ* stem-vowel alternation to the mid-vowel O category because the *o*/*u* alternation is entirely parallel to the *e*/*i* alternation of verbs of the E category. A second, suppletive base in A is reconstructed to account for the stem in *a*.[14] Intransitives in *o~u~ɨ* are reconstructed with the same base rime, because they have the same stem-rimes apart from the *a* alternant, which only appears in transitive forms with 3rd person object and therefore would not be expected to appear in the intransitive paradigm (see §7.4.3 below).[15] There are also some differences in stem vowel length. See §7.4.3 and §8.8 for further discussion.

4.3.4. Bases in EK(T)

No verb has a stem in *ek* or *ekt*, so there is no difficulty in considering *yə* as the allophone of *e* in this context. In the verb *lyəknɨ* 'to lick' (reconstructed base LEK), the stem in *lyək* is found to alternate with a stem in *lik*, just as stems in *e* (and only such stems) are found to alternate with stems in *i* before other finals. The EKT verbs do not show vowel alternation. Initial *Cyo* appears only in the verb *khyoknɨ* 'to hang up'; this base can be reconstructed KHEKT.[16]

4.3.5. Bases in AK(T)

The OK and OKT categories are clearly occupied by intransitive, transitive, and T-transitive verbs with *o*/*u* apophony. There is some uncertainty, however, concerning verbs with stems in *ok* or *okt* without apophony. It might seem tempting to fill the empty AKT category with the *okt* verbs of this type, especially since backing of *a* by syllable-final *k* is frequently observed in Kiranti languages (see Michailovsky 1975). However, the AK cells are already occupied by three verbs (one intransitive and two transitive) with the stem-vowel *a*. One of the OKT

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[14] In his entries for all but one intransitive verb of this type (his vi-4), van Driem has erroneously listed the stem in *ɨ*, which should be his Σ3, before the stem in *u*(*y*), his Σ2 (cf. van Driem 1993: 98). This error has been corrected in table 3.

[15] Van Driem (1993: 219) cites word families as evidence "that vi-4 and vt-6a [the O and O/A categories] and vi-2 and vt-6b [the E categories] are the intransitive and transitive versions of one and the same conjugation".

[16] This is consistent with comparative evidence: Thulung *kheak*, Khaling *'khekt*.

verbs has an intransitive partner with the OK rime and no apophony, *bokni* (vi-1) 'to be arranged'; this verb would have to compete with the intransitive *ha:kni* 'to open' as the representative of the AK category. For the present I reconstruct both alternating and non-alternating *ok(t)* as OK(T), with the difference unexplained. Note also that apophony is not found in the three verbs of the EKT category.

4.3.6. Bases in R

Final *r* has a perturbing effect on vowel quality. It is responsible for breaking in the verbs *pyerni* 'pinch' and *byerni* 'fly', reconstructed as PERT and BER. The influence of C_f *r* is also no doubt responsible for the rare vowel of *tœrni* 'to snap, to break' (base TAR?, non-alternating TOR?). Another unique rime in *r* is found in *wərni* 'to throw'. Since alternation might be expected in the ORT category, WART is reconstructed, attributing the vowel *ə* to the influence of either the initial or the final. The unique alternations *ar~ur* (*kharni* 'to pop (maize)') and *ər~ur* (*tsorni* vt 'to pay so.') are both reconstructed with the base rime OR.

4.3.7. Bases with dental finals N, T

Transitive verbs with pre-vocalic stems ending in a single dental stop are problematic because of the difficulty of distinguishing base-final C_f T from postfinal T. In principle there are three possibilities, CVT, CV-T (or CVØ-T), and CVT-T. But only two forms of the 3rd person object pre-vocalic stem (the only stem in which the postfinal normally appears, see §7.2) appear as likely candidates for these slots, *CVt* and *CVd*. No stem of the form *CVtt* is found. There is evidence that verbs with the *CVd* stem represent the CVØT category (§5.1), but I will simply list these bases as CVD, and those with the 3O stem *CVt* as CVT. Transitive verbs of these categories (and transitives of the NT category) are considered as T-transitives because (1) some of them clearly function as the T-transitive members of verb pairs (§5) and (2) their stems are distributed in the paradigm in the same way as those of T-transitives of the form CVCT (§7.2).

Among verbs of the OT category, intransitives have the stem vowel *o*, but transitives are of two types: in one the mid vowel alternant is *o* ; in the other it is *ə*. This difference is not reflected in the reconstruction. Similarly, in the OD category, only one verb shows mid-close vowel apophony parallel to that of the ED category while four do not; this anomaly is unexplained.

There is no opposition between transitive CVN and CVNT bases. I write CVNT because these bases have special transitive stems in some forms like those of other bases with the postfinal T (§7.2). In general, verbs with bases in N/NT show a greater number of types of stem alternation than predicted by our model (see Table 3), no doubt in part because of weakness of the final *n*. The reconstructed bases do not fully account for these.

4.3.8. Bases with alternating and non-alternating E and O vocalism

It may be noted that some cells corresponding to bases with E and O vocalism contain bases both with and without mid vs close stem vowel alternation. The

difference between these two types in closed (CVC or CVCC) bases is loosely linked to syllable structure (as is the alternation itself) and is not reconstructed—see §7.3.1 and §8.3 below.

4.3.9. Irregular verbs

The adoption of a relatively tightly constrained model for the verbal base leads to the identification of about forty "irregular" verbs. I have summarized these in §9, after the presentation of the regular verbal paradigm. Some of these, with minor vocalic variations, have already been discussed and integrated into the verb table. Others have irregularities which make their precise reconstruction uncertain. Given the much larger number of regular verbs, they do not seem *a priori* to invalidate the reconstruction.

5. WORD-FAMILIES: T-TRANSITIVES

The word families that will concern us here are pairs of semantically and derivationally related verbs: an intransitive or (very rarely in Dumi) transitive verb base has a T-transitive partner with a broadly "causative" (the term I will use here, following van Driem) sense. The derivation, which is not synchronically productive, consists in adding T to the underived base. The derived causative members of such pairs all fall into our category of T-transitives (vtt). Van Driem provides a list of some twenty-five Dumi verb pairs of this kind (1993: 215-223).

It should be noted that most formally T-transitive verbs do not have underived or intransitive partners.

Straightforward examples of pairs like KEP vi 'to adhere', KEPT vtt 'to cause to adhere' establish the framework for understanding more interesting cases. In the present section I will discuss the formation of T-transitives from verbs with open bases, and bases with velar nasal and dental finals.

5.1. Causatives of open bases

Pairs in which the underived member has an open base are exceptional in that the stems of the underived and T-transitive verbs are distinct throughout their paradigms. In the case of T-transitives derived from CVC bases, the stem with the T-augment only appears in a few forms with 3rd person objects in the T-transitive paradigm (§7.2).

Word families are the logical place to look for help in matching the observed CVT and CVD transitive bases with the theoretical possibilities CVT, CVØ-T, CVT-T. In fact, we find four verb pairs consisting of an open base and a derived causative; in three of these, the causative stem has the form *CVd-*. It therefore seems clear that at least some CVD bases represent the underlying CVØ-T category.

piːni (PI vi) 'to come'	*pitni* (PID vtt) 'to bring'
huːni (HO vi) 'to come, to appear'	*hoːtni* (HOD vtt) 'to fetch, to bring'
mɨni (MU vt) 'to do'	*mɨtni* (MUD vtt) 'CAUSATIVE'

(but cf. also *mɨnnɨ* (MUNT vtt) 'to do')

(In the last example, there may be some doubt as to the identity of the underived base.)

In one example, an open base has a causative partner of the form CVT:

dze:nɨ (DZE vi) 'to speak' *dze:tnɨ* (DZET vtt) 'to call, to address'

5.2. Causatives of bases in C_fT

There are about five intransitive-transitive pairs of verbs where both have the form CVT, but it is not clear that these represent derivation of CVT-T causatives from CVT bases because it is not uncommon in Dumi to find "labile" bases that are conjugated as both transitive and intransitive (van Driem 1993: 218).

In three pairs, a non-causative base CVT is related to a causative in CVD.

thɨtnɨ (THUT vi) 'to stretch'	*thɨtnɨ* (THUD vtt) 'to pull, to inhale'
tse:tnɨ (TSET vi) 'to be torn'	*tse:tnɨ* (TSED vtt) 'to tear'
setnɨ (SET vi) 'to be killed'	*setnɨ* (SED vtt) 'to kill'

The one clear observation to emerge from the derivations is that CVD bases do not appear as the non-causative members of pairs. They appear as the regular causative derivatives of open bases and perhaps of CVT bases.

5.3. Causatives of bases in ŋ

There is only one verb in ŋT in Table 3. This verb has an intransitive partner in ŋ. Another verb in ŋ has a causative in NT and still another a causative in D:

phɨŋnɨ (PHUŋ vi) 'to spread, emerge'	*phɨŋnɨ* (PHUŋT vtt) 'to cause to grow'
khoŋnɨ (KHOŋ vi) 'to come up'	*khotnɨ* (KHOD vtt) 'to bring up'
oŋnɨ (Oŋ vi) 'to enter'	*wotnɨ* (WONT vtt irr) 'to bring in'

It appears that the final velar nasal has been subject to loss or to assimilation, giving rise to T-transitives with dental rimes.[17] Deeper internal reconstructions *KHOŋT, *OŋT would therefore be justified.

6. INTRODUCTION TO THE VERBAL PARADIGM

Understanding the verbal paradigm is important for the study of stem alternations because many of these may be supposed to either reflect older derivational or morphological elements, or to reflect the influence of morphological elements, suffixes in particular. In addition, any analogical changes would be expected to follow the logical structure of the paradigm.

In some cases, where it seems clear that the form of the suffixes, or of earlier forms of the suffixes, has had a phonological influence on stems, I will point this out for further discussion in §8. Anomalies in some forms of the paradigm suggest analogical leveling.

[17] These developments have exact parallels in Bahing (Michailovsky 1975: 202-203) where verbs in *ŋ* are clearly related to directives in *nd* or *d*, sometimes preserving pre-velar vocalism, sometimes not.

6.1. General principles

Although essentially the same affixal paradigm applies to all verbs (van Driem 1993: 91), there are differences in stem-alternation between intransitive verbs (vi), transitives with unaugmented CVC bases (vt), and T-transitives (vtt).

I present the agreement morphology as based on two basic principles, (1) straightforward person and number marking, without regard to syntactic function, which is the most prevalent type in Dumi, and (2) a small number of specifically transitive forms, in particular a few 3rd person object forms, whose distribution will be found below to correlate with that of certain stem alternants.

I begin with the intransitive paradigm. Table 4 is the indicative paradigm of the intransitive verb KEP 'to stick' (van Driem 1993: 332). Except for the 3p prefix *ham-*, none of the affixes is peculiar to the intransitive paradigm; all occur in the transitive paradigm as well.

S	*past*	*non-past*
1s	kiph-ə	kip-tə
1di	kiph-i	kip-ti
1de	kiph-ɨ	kip-tɨ
1pi	**kep**-ka	**kep**-kɨta
1pi	**kep**-ki	**kep**-kiti
2s	a-kiph-a	a-kip-ta
2d	a-kiph-i	a-kip-ti
2p	a-kiph-ini	a-kip-tini
3s	kiph-a	kip-ta
3d	kiph-i	kip-ti
3p	ham-kiph-a	ham-kip-ta

Table 4: KEP (vi) 'to adhere', infinitive kepnɨ

Table 5 shows the paradigms of the verbs LOP (vt) 'to catch' (van Driem 1993: 109) and (again) KEP 'to stick'. Forms in the paradigm appear in pairs, with the past (unmarked) tense form listed above the corresponding non-past. Most of the affixes of the transitive paradigm are the same as those of the intransitive one and have the same semantics. The intransitive forms in the table are placed so as to bring out this correspondence: 1st and 2nd person transitive objects (in forms with 3s A) are indexed exactly as are intransitive subjects of the same persons.[18] But transitive forms may index the person and/or number of two arguments, and they use a few specifically transitive affixes which indicate syntactic function as well as person and number of the indexed arguments.

[18] This is a frequent, but far from universal, pattern in Kiranti paradigms. The fact that 1st and 2nd person S and O are indexed alike might suggest "split-ergativity". But these systems are only ergative to the extent that 1st and 2d person A is indexed differently from S and O. Even in the few cases where this might appear to be the case (1s>3s, 2s>3s), the affix in question is in most cases (as in Dumi) a mark of agreement with O, not A.

	1s O	*1di O*	*1de O*	*1pi O*	*1pe O*	*2s O*	*2d O*	*2p O*	*3s O*	*3d O*	*3p O*
1s A						lop-Nna lop-Nta	lop-Nsisi° lop-Nsisti°	lop-Nnini° lop-Ntini°	luph-u lup-tə	luph-ɨsɨ° lup-təsɨ°	lupkh-ɨnɨ° lup-tənɨ°
1di A									luph-i lup-ti		
1de A			key:	past non-past					luph-ɨ lup-tɨ		
1pi A									lop-ki lop-kiti		
1pe A									lop-ka lop-kɨta		
2s A	a-luph-ə a-lup-tə								a-luph-ɨ a-lup-ta	a-lup-si° a-lup-sti°	a-luph-ini° a-lup-tini°
2d A	a-luph-əsɨ° a-lup-təsɨ°								a-luph-i a-lup-ti		
2p A	a-luph-ənɨ° a-lup-tənɨ°								a-luph-ini a-lup-tini		
3s A	a-luph-ə a-lup-tə	a-luph-i a-lup-ti	a-luph-ɨ a-lup-tɨ	a-lop-ki a-lop-kiti	a-lop-ka a-lop-kɨta	a-luph-a a-lup-ta	a-luph-i a-lup-ti	a-luph-ini a-lup-tini	luph-ɨ lup-ta	lup-si° lup-sti°	luph-ini° lup-tini°
3d A	a-luph-əsɨ° a-lup-təsɨ°										
3p A	a-luph-ənɨ° a-lup-tənɨ°										

1s S	*1di S*	*1de S*	*1pi S*	*1pe S*	*2s S*	*2d S*	*2p S*	*3s S*	*3d S*	*3p S*
kiph-ə kip-tə	kiph-i kip-ti	kiph-ɨ kip-tɨ	kep-ki kep-kiti	kep-ka kep-kɨta	a-kiph-a a-kip-ta	a-kiph-i a-kip-ti	a-kiph-ini a-kip-tini	kiph-a kip-ta	kiph-i kip-ti	ham-kiph-a ham-kip-ta

Table 5: Indicative paradigms of LOP *vt 'catch' and* KEP *vi 'adhere' (van Driem 1993: 109, 332)*
(° indicates "secondary number marking")

In the transitive paradigm, suffixal agreement marking follows a hierarchical pattern in the limited sense that the "prime argument", that is, the argument which ranks highest on the person hierarchy 1 > 2 > 3, is always indexed for person and/or number. For example, in Table 5, all forms implying a 1st dual exclusive argument have the mark *ɨ/tɨ*; those with a 1st singular argument have one of the 1s markers *ə/tə* or *u* or *N*. If the prime argument is singular, the number of a second argument may be shown by a "secondary number marker" (forms marked ° in the table; see §6.5). Note that 2nd person agreement is marked by a prefix, independently of the hierarchy; only non-singular number of 2nd person prime arguments is indexed by a suffix

6.2. Prefixes

Table 5 shows the distribution of what I consider to be two partly overlapping, homophonous *a* prefixes: (1) a second person marker found on all forms implicating a 2nd person argument, except for 1>2 forms and imperatives,[19] and (2) an "inverse" marker used on 3>1 forms.[20] The inverse marker should also be present on 2>1 and 3>2 forms, but these are marked by the 2nd person prefix in any case, and Dumi forms never have more than one agreement prefix.[21]

As mentioned earlier, the 3rd plural agreement prefix *ham* (Tables 4 and 5) is used only in the intransitive paradigm.

6.3. Tense

The tense marker *t* is found in the suffix of all non-past[22] forms in both intransitive and transitive paradigms (van Driem 1993: 135). The past tense is unmarked.[23]

6.4. "General" agreement suffixes

I use the term "general agreement suffixes" for suffixes which appear in both the intransitive and intransitive paradigms and do not specify syntactic function.

Thus, for example, in Table 5, the suffix *ɨ/tɨ* (pa/np) shows agreement with a 1st exclusive dual argument which may be (1) the subject of an intransitive verb (*kip-tɨ* 'we (d) adhere'), (2) the object of a transitive verb (*a-lup-tɨ* 'he catches us

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[19] Kiranti languages that have agreement prefixes generally have a 2nd person prefix with exactly this distribution.

[20] "Inverse" forms are transitive forms in which the object ranks higher than the agent in the person hierarchy 1>2>3. The term is used here for convenience, to cover the 2>1, 3>1, and 3>2 parts of the paradigm.

[21] My analysis is in accord with Ebert's (1994: 22, 28) analysis of the functionally similar Khaling *i* prefixes. I also agree with her judgment that the overall paradigm does not reflect an inverse/direct opposition. Van Driem (1993:123) posits a single, "marked-scenario" prefix *a-*.

[22] The labels "past" and "non-past" are used as shorter equivalents to van Driem's "preterite" and "non-preterite". See van Driem 1993: 135-40 on the semantics of the tenses.

[23] The opposition between an unmarked tense and a tense marked by *t* is also found in other closely related languages (Khaling, Thulung, Bahing), but in these, *t* marks past, not non-past.

(d)'), or (3) the agent of a transitive verb (*lup-tɨ* 'we (d) catch him'). In the same way, the past suffix *i* indexes 2nd person (also 1st inclusive) dual arguments with all three functions. The past 1s marker *ə* marks only subjects (*kiph-ə* 'I adhered') and objects (a-*luph-ə* 'you catch/he catches me'), not transitive agents (cf. *lop-mna* 'I catch you', *luph-u* 'I catch him'). It is not, however, an explicitly intransitive/inverse or S/O marker: it is a general 1s marker part of whose distribution is pre-empted by specific transitive suffixes (below). In fact, the 1s morpheme *ə* also appears in the non-past suffix *tə*, which indexes 1s arguments regardless of function.

There is no general agreement suffix for 2nd or 3rd person. Although van Driem (1993: 122) presents *a* as a non-1st person marker, I will show below that the 1s marker *ə* is to be reconstructed **aŋ*, and thus at least in origin contains the same *a* (§8.4.2).

Although the general suffixes do not explicitly indicate transitivity or specify the case role of the argument indexed, these can sometimes be inferred from the presence or absence of other prefixes or suffixes in a given form.

6.5. Secondary number markers

In general, when the "prime argument" is non-singular, no other argument is indexed on the verb. But if it is singular, then non-singular number of the other argument—necessarily 2nd or 3rd person—is usually indicated by a "secondary number marker". The dual suffixes *si/sti* (past/non-past) (*sisi*/*sisti* in 1s>2 forms, *sɨ* (< **siŋ*) in other 1s forms) have only this function. Dual prime arguments are indexed by the general suffixes *ɨ/tɨ* or *i*/*ti*. Plural 2nd or 3rd person arguments, whether primary or secondary, are indexed by the suffix *(i)ni* (*nɨ* in 1s forms). Forms which show secondary number marking are indicated by "°" in Table 5.

Non-singular 3>3 forms use secondary number marking, although there is no "prime" argument by the definition given above (and if there were, the 3s index would be zero). Forms with a dual but no plural argument (3>3(d)) use the secondary dual marker, e.g. *lup-si* 'he caught them (d)', etc. Those with one or more plural arguments (3>3(p)) use the plural marker.

*6.6. Transitive 1>2 forms and 3rd person object (3O) "*u*-suffix" forms*

A small number of suffixes are exclusively reserved for transitive forms and explicitly index syntactic function as well as person and number. These suffixes, used with all transitive and T-transitive verbs, are (1) those which mark 1s>2 forms and (2) those used in certain past tense 3rd person object (3O) forms.

The 1s>2 forms begin with a nasal consonant, transcribed morphophonologically as *N*, and use secondary number marking for the 2nd person argument. *N* assimilates in point of articulation to the preceding stem-final; it is realized *n* after an open stem. The past suffixes are 1s>2s *Nna*, 1s>2d *Nsisi*, 1s>2p *Nnini*. The non-past suffixes add the marker *t*.

The special 3O suffixes appear only in the past tense and are clearly reflexes of the widespread Kiranti 3rd person object suffix **u*. They are the past 1s>3s

suffix *u* (<**uŋ*) and the past 2s/3s>3s suffix *ɨ* (<**u*) (see §8.4 below for the reconstructions). I will call forms with these suffixes "*u*-suffix forms".

The restriction of "*u*-suffixes" to the past tense will be discussed in §8.7. It is noteworthy that while in all other parts of the paradigm, the marker *t* is essentially added to the past suffix to form the non-past, this is not the case for the non-past partners of the *u*-suffixes. These non-past forms have no trace of **u*, but are based on unrelated general suffixes. Thus, in Table 5, *a-lup-tə* 'he catches me/you catch me' is related to the past *a-luph-ə* 'he/you caught me', but *lup-tə* 'I catch him' is not related to *luph-u* 'I caught him'. The 1>3ns forms have the same anomaly: before the secondary number markers, the suffix vowel is *ɨ* in the past but *ə* in the non-past.

7. STEM ALTERNATIONS

In this section I will show in outline how the stems observed in verbal forms can be derived from the bases reconstructed in §4. The main purpose is to describe the nature and distribution of stem alternations in linguistic terms, but I will also suggest hypotheses as to the origin of some alternations. These will be discussed further in a general Kiranti context in §8.

Forms of verbs with open bases require special treatment, no doubt because of interactions between stem and suffix vowels.

In analysing stem alternations, I will consider each type of alternation, and each of the larger categories of consonantal and vocalic alternations, separately, since they are largely independent of each other.

7.1. Stem finals of intransitive and transitive (vt) verbs

The main principles governing stem-final alternations of intransitive or transitive verbs (vt) with CVC bases are shown in Table 6. (T-transitive bases are treated separately below.) The basic division is between pre-vocalic and pre-consonantal stems.

base C_f	*pre-V*	*pre-C*	*examples in text (T = Table)*
Ø	Ø	Ø	vi: RE, LO; vt: BE, SO/A (T12)
p	ph	p	vi: KEP (T4, 5); vt: LOP (T5)
t	ts	t, etc.	vi: KHOT (T7)
k	kh	k	vi: PHUK (T7); vt: KOK (T9)
m	m	m	vt: LOM (T9, 10)
n/nt	nts	n, etc.	vi: LON (T7)
ŋ	ŋ	ŋ	vi: KHOŋ (T7); vt: HUŋ (T11)
r	r	r	vi: BER (T7)
l	l	l	

Table 6: Stem-finals of regular intransitive (vi) and transitive (vt) bases

The final consonant of a prevocalic stem functions as the initial of the following suffix syllable. This consonant, if it is an occlusive, is not only

released (unlike a syllable-final occlusive) but it is further reinforced by aspiration or affrication:

In the pre-vocalic stems of verbs in C_f P and K, the stem final is aspirated (*ph, kh*).

In the case of intransitive verbs in C_f T or N it is affricated (*ts*, *nts*). (Transitive verbs with these finals are T-transitives and have extra stems (§7.2).)

If the base-final is *m, ŋ*, or a resonant (*r, l*), it is segmentally unchanged but functions as an initial.

Table 7 shows forms of 4 intransitive bases. The verbs KHOT and LON illustrate the additional alternations affecting dental stem-finals (classes T, D, N/NT) before particular consonant-initial suffixes. These alternations are responsible for the extra stems listed by van Driem for these verbs, and for the notation "etc." in Table 8. Briefly, the coronal stem-finals are usually realized as *s* before suffix-initial *t* and as *ʔ* before *k*; stem-final *t* can be realized as *s* before *s* (the secondary number marker *si*) (van Driem 1993: 56-57, 94, 95).

As mentioned earlier, verbs in N(T) show a great variety of stems (Table 3); the details will not be treated here. The final of prevocalic stems of intransitive CVN bases is reinforced to *nts*; the preconsonantal stems in "general" forms are somewhat variable but usually resemble those of bases in final T, with no nasal. There is no opposition between transitive CVN and CVNT bases; all are conjugated as T-transitives (next section).

gloss:	to get up	to come up	to go	to emerge	to fly
base	PHUK-	KHOŊ	KHOT-	LON	BER
infinitive	phɨk-nɨ	**khoŋ**-nɨ	**khot**-nɨ	lən-nɨ	**byer**-nɨ
1s pa	phɨkh-ə	khuŋ-ə	khuts-ə	lənts-ə	byir-ə
1s npa	phɨk-tə	khuŋ-tə	khus-tə	ləs-tə	byir-tə
1di pa	phɨkh-i	khuŋ-i	khuts-i	lənts-i	byir-i
1di npa	phɨk-ti	khuŋ-ti	khus-ti	ləs-ti	byir-ti
1pi pa	phɨk-ki	**khoŋ**-ki	**khoʔ**-ki	ləʔ-ki	**byer**-ki
1pi npa	phɨk-kiti	**khoŋ**-kiti	**khoʔ**-kti	loː-kti	**byer**-kiti
3s pa	phɨk-a	khuŋ-a	khuts-a	lənts-a	byir-a
3s npa	phɨk-ta	khuŋ-ta	khus-ta	ləs-ta	byir-ta
class, ref.	vi-1, 97	vi-3, 333	vi-3, 333	vi-5, 99	vi-3, 332

Table 7: Intransitive verb forms showing stem allomorphs

7.2. Stem-finals of T-transitive bases

Table 6 does not fully cover the stem finals of T-transitive verbs (vtt), which include all transitive bases of the form CVCT (morphologically the clear T-transitives), but also CVD and CVT. I will start with CVCT bases. These verbs conjugate exactly like CVC bases, without the T-augment, in most of the paradigm, including all inverse and 1>2 forms. But they have different, supplementary stems, including the only stem in which the postfinal *t/d* appears,

used in a few 3rd person object forms, including the *u*-suffix forms. I will call these "special 3O stems/forms". The postfinal is realized as *t* after C_f *p* and *k*, and as *d* after C_f *m, n, ŋ,* and *r*. Table 8 shows the stem-final alternations of T-transitive bases (vtt). For the full distribution of 3rd person object forms, see Table 10.

base finals	*"general" suffix forms*		*"special 3O forms" (and corresponding non-past forms)*		*examples (T = table no.)*
	pre-V	*pre-C*	*pre-V*	*pre-C*	
PT	ph	p	pt	p	TUPT (T11)
T	ts	t, etc.	t	t	DHIT (T9)
D	ts	t, etc.	d	t	SED (T9)
KT	kh	k	kt	k	LUKT (T9)
MT	m	m	md	m	YOMT (T9, 10)
NT	nts	n, etc.	nd	n	BONT (T9)
ŊT	ŋ	ŋ	ŋd	ŋ	
RT	r	r	rt	r	

Table 8: Stem-finals of T-transitive bases

The past 1s>3s "*u*-suffix" forms of representative transitive (vt) and T-transitive (vtt) verbs and their non-past partners are shown in Table 9, with the inverse 3s>1s "general suffix" form for comparison.

base	*gloss*	*tense*	*3s> 1s (general sfx)*	*1s> 3s (u-suffix) and corresponding non-past*		*ref.*
			all verbs	*vt*	*vtt*	
LOM vt	to look for	pa	a-lum-ə	lum-u		347
		npa	a-lum-tə	lum-tə		
YOMT vtt	to hit	pa	a-yum-ə		yəmd-u	343
		npa	a-yum-tə		yəm-tə	
KOK vt	to know	pa	a-kukh-ə	kukh-u	—	346
		npa	a-kuk-tə	kuk-tə	—	
LUKT vtt	to butt	pa	a-lukh-ə		lukt-u	340
		npa	a-luk-tə		luk-tə	
SED vtt	to kill	pa	a-sits-ə		sid-u	349
		npa	a-sis-tə		sit-tə	
DHIT vtt	to follow	pa	a-dhits-ə		dhit-u	339
		npa	a-dhis-tə		dhit-tə	
BONT vtt	to touch	pa	a-bənts-ə		bənd-u	353
		npa	a-bəs-tə		bən-tə	

Table 9: Stems of vt and vtt bases in u*-suffix forms and their non-past partners*

As mentioned above, the T-augment characteristic of CVCT bases appears in what I call "special 3O forms": these include the *u*-suffix forms (§6.6: 1s>3s

(*yəmd-u*, *lukt-u* in Table 9) and 3s>3s) and related forms with non-singular 3rd person objects (1s>3d, 1s>3p, 2s>3p; 3>3(p); see Table 10).

In the case of the T-transitive CVD and CVT categories, the special 3O stems used with *u*-suffixes have only a single consonant final, but they are nonetheless distinct from the general stems because the morphophonemic stem-final is not affricated when it functions as a phonological initial before the vowel-initial suffix (e.g. *sid* in *sid-u* 'I killed him' vs *sits* in *a-sits-ə* 'he killed me').[24]

The special stems that occur in *u*-suffix forms are naturally "prevocalic". However, in the case of T-transitives (vtt), some features, both consonantal and vocalic, of these stems, and of the special 3O stems generally, are also found in their non-past partners, even though these have "general" suffixes beginning with the non-past marker *t*. This makes it necessary to set up pre-consonantal stems corresponding to the special 3O stems of T-transitive verbs. In Table 9, the non-past, preconsonantal partners of the *u*-suffix stems of SED, DHIT, and BONT have the finals *t*, *t*, and *n* respectively before the non-past suffix-initial *t*, instead of *s*, which appears in the "general" preconsonantal stem. Thus the non-past *sit-tə* 'I kill him' has the same "general" 1s suffix *tə* as the 3s>1s non-past *a-sis-tə* 'he kills me', but the stem, *sit*, is different: it appears to be a pre-consonantal adaptation (since *d* cannot function as a syllable-final) of the special *u*-suffix stem *sid*. In CVCT verbs, e.g. YOMT in the table, it is the stem vowel of the past *u*-suffix form which appears in the non-past, differentiating it from other forms with the same suffix (see §7.3.1 and Table 10).

To summarize: (1) T-transitive verbs have special 3O prevocalic stems in the past tense, distinct from the "general" prevocalic stem form, and (2) T-transitive verbs with mid/close stem-vowel alternations or the base rimes T, D, or NT have special 3O preconsonantal stems, apparently based on the past stems and different from the "general" preconsonantal stems, in the corresponding non-past 3O forms. For other T-transitive verbs, this stem (e.g. in *luk-tə* 'I butt him') is identical to the "general" preconsonantal stem (*a-luk-tə* 'he butts me') (Table 9).

7.3. Principles of stem-formation: vowels

Stem-vowel alternations are of the following three types:

- alternations between mid and close vowels: *e* (*yə* before *k*) ~ *i* and *o* (or *ə*) ~ *u*, in bases reconstructed with the vowels E and O, respectively. The distribution of mid/close alternants in open bases differs from that in closed bases.
- alternation between *u* and *ɨ* in transitive verbs with bases of the form (C)UC.
- alternations (*a*)~*u*~*ɨ*~*o* in open bases noted CO or CO/A.

7.3.1. Mid~close alternations in closed (CVC(C)) stems

Mid~close alternations (*e~i*, *o/ə~u*) occur in the stems of most bases with E or O vocalism. The mid-vowel alternants are diagnostic of the E and O base categories, distinguishing them from the I and U categories. The alternations can

[24] The fact that the final of the stem of *u*-suffix forms of CVT bases (e.g. *dhit* in the table) is not affricated might suggest an older **dhitt*.

be seen in the paradigms of LOP (vt) ‘to catch’ and KEP (vi) ‘to adhere’ (Tables 4, 5); of KOŋ (vi) ‘to come up’, KHOT (vi) ‘to go’, and BER (vi) ‘to fly’ in Table 7; and of LOM (vt) ‘to look for’ and YOMD (vtt) ‘to strike’ in Table 10. Stems with the mid-vowel alternant appear in bold in these tables.

A↓\ O:	*tns*	*3s O*	*3d O*	*3p O*
1s A	*pa* *np*	lum-u lum-tə	lum-ɨsɨ lum-təsɨ	lum-ɨnɨ lum-tənɨ
1de A	*pa* *np*	lum-ɨ lum-tɨ		
1pe A	*pa* *np*	**ləm**-ka **ləm**-kɨta		
2s A	*pa* *np*	a-lum-ɨ a-lum-ta	a-lum-si a-lum-sti	a-lum-ini a-lum-tini
2d A	*pa* *np*	a-lum-i a-lum-ti		
2p A	*pa* *np*	a-lum-ini a-lum-tini		
m	*pa* *np*	lum-ɨ lum-ta	lum-si lum-sti	lum-ini lum-tini
3d A	*pa* *np*			
3p A	*pa* *np*			

3s O	*3d O*	*3p O*
yəmd-u **yəm**-tə	**yəmd**-ɨsɨ **yəm**-təsɨ	**yəmd**-ɨnɨ **yəm**-tənɨ
yum-ɨ yum-tɨ		
yəm-ka **yəm**-kɨta		
a-**yəmd**-ɨ a-**yəm**-ta	a-**yəm**-si a-**yəm**-sti	a-**yəmd**-ini a-**yəm**-tini
a-yum-i a-yum-ti		
a-yum-ini a-yum-tini		
yəmd-ɨ **yəm**-ta	**yəm**-si **yəm**-sti	**yəmd**-ini **yəm**-tini

Table 10: 3rd object forms: LOM vt ‘to look for’, YOMD vtt ‘to strike’

I will present these alternations beginning with the past (unmarked) tense. My observation is that in the past tense, stem-vowel raising occurrs where the stem vowel appears in an open syllable, that is, when the morphophonological base final functions phonologically as the initial of a vowel-initial suffix. This is functionally equivalent to saying that the mid vowel appears (or is conserved) in closed syllables, that is, where it is followed by two consonants.[25] These correlations hold perfectly for past tense and non-finite forms of intransitive verbs.

Thus in the intransitive paradigm of Table 4, in the past tense, the stem-vowel is raised wherever it appears in an open syllable; the mid-vowel stem appears only before the 1st plural suffixes, which have consonant initials. The infinitive and other non-finite forms with consonantal suffix-initials also use the mid-vowel stem.

In transitive verbs, the mid-vowel stem appears in the non-finite forms and, in the past tense, in 1st plural forms as above, in the specifically transitive 1s>2 forms, which have suffix-initial *N*, and in reflexive forms, which have suffix-

[25] Roughly half of the CVCT bases in E and O lack mid/close stem-vowel alternation altogether and will be ignored in this section, along with bases in N or NT (LON, table 7; BONT, table 9), whose stem-vowels only appear in closed syllables and are never raised.

initial *nsi*. There is one exception in transitives with CVC bases: the vowel is raised in the 2s>3d and 3>3(d) forms before the secondary number marker *si*, for example in *a-lup-si* 'you (s) caught them (d)' (Table 5), and *a-sit-si* 'you (s) killed them (d)' (van Driem 1993: 349). The secondary agreement marker has an initial vowel in the 1s>3d forms: *luphɨsɨ* 'I caught them (d)', *sidɨsɨ* 'I killed them (d)' (see §8.4.3).

Finally, T-transitive verbs with CVCT bases have the mid-wowel stem in all the same forms as CVC transitive (vt) bases (1p and 1s>2 forms), but also in the *u*-suffix forms, in which the augmented CVCT stem occurs, and in a few further 3O forms. These again are forms in which the stem-vowel appears in a closed syllable, followed by two consonants, e.g. *yəmdu* 'I struck him'. Unlike the form *alupsi* cited above, the form *ayəmsi* 'you (s) struck them (d)' has the mid vowel in the closed stem syllable. The 3rd person object forms in which YOMD (vtt) 'to strike' has the mid stem vowel are compared with the corresponding forms of LOM (vt) 'to look for' (van Driem 1993: 347) in Table 10. The 1dp exclusive forms are included in the table to show that the verbs agree in stem-vowel alternant before "general" suffixes.

CVT and CVD bases, although they are T-transitives and have special stems in some 3O forms, have an open syllable and thus the raised stem vowel in these forms: e.g. *sidu* 'he kills him' (SED, Table 9).

Thus, in the past tense of consonant-final base verbs of all categories, we find the raised stem vowel in phonologically open syllables and the mid vowel in closed ones, where the morphphonemic stem-final is followed by a consonant-initial suffix—with an exception for the secondary number marker *si*.

This correlation is violated in the non-past, in the case of suffixes beginning with the non-past marker *t*. In the "general" forms of intransitive and transitive CVC bases (tables 4, 5) the non-past forms have the same raised stem-vowel as the past forms, but it appears in closed syllables, followed by the stem-final and the suffix-initial *t*. In the special 3O forms of transitives (LOM in the table) the raised vowel of the past form *lumɨ* 'he caught him' is found in a closed syllable in the non-past *lumta* 'he catches him'. In the case of CVCT (vtt) bases, it is the mid stem-vowel of the past 3O form (*yəmdɨ* 'he hit him') which appears in the corresponding non-past (*yəmta* 'he hits him'). The mid stem-vowel distinguishes these non-past forms of T-transitive verbs from other non-past forms of the same verbs which have the same "general" suffixes: thus for example *ayəmta* 'you strike him' (Table 10) differs from *ayumta* 'he strikes you'; the corresponding forms (*alumta*) of LOM 'to look for' are homophonous.[26] The only generalization that appears to hold is that the stems of non-past forms of verbs with mid-vowel bases have the same (mid or close) vowel as the corresponding

[26] Van Driem cites such stem differences in support of the observation that "apophony may result in differences between finite forms which carry the same affixes and would otherwise be homophonous" (1993: 117), but offers no general analysis of mid/close apophony in these or other forms.

past forms; the vowel of the non-past is determined by the syllable structure of the past form.

To resume, I describe the distribution of mid and close stem-vowels in forms of consonant-final bases with mid vowels as follows: (1) in the past tense, raised vowels occur in open syllables, mid vowels in closed ones, and (2) the non-past forms have the same stem-vowels as the corresponding past forms. There is an exception to (1) for the dual secondary number marker *si*.

7.3.2. Alternation between u *and* ɨ

It has been shown in §4.3.1 that the choice between *u* and *ɨ* as the stem vowel in some forms of bases with the U and UK rimes depends on the stem initial, so that in these contexts *u* and *ɨ* are in complementary distribution.

Van Driem (1993: 95, rule 7) notes that *u* and *ɨ* alternate in the following context: stems of the form *(C)ɨC* (i.e. from CUC bases with *ɨ*-stems), in which the stem-vowel *ɨ* is followed by a single consonant, have the alternant *CuC* before the 1s>3s past suffix *u*.[27,28] Van Driem plausibly attributes this alternation to vowel harmony. The stem vowel remains *ɨ* in *CɨCT* stems from CUCT bases.[29] Thus (Table 11) the verb HUŋ 'to wait for' (van Driem's *hɨŋ-nɨ* vt-1 *hɨŋ* (1993: 337)) has the stem *huŋ* before the suffix *u* in the past 1s>3s form, vs *hɨŋ* in the non-past *hɨŋtə* 'I wait for him' and in all other forms, while TUPT 'to strike' (1993: 116) has the stem *tɨpt* with the centralized vowel before *u* as elsewhere.[30]

base	*1s>3s, past*	*3s>3s, past*
HUŋ	*huŋu* 'I waited for him'	*hɨŋɨ* 'he waited for him'
TUPT	*tɨptu* 'I struck it'	*tɨptɨ* 'he struck it'

Table 11: Vowel harmony induced by u *but blocked by two consonants*

This phenomenon only affects CUC bases. The vowel *u* in the raised-vowel stem of COC bases is never fronted to *ɨ*, so there is no question of harmony: *luphu* 'I caught him', *luphɨ* 'he caught him' (Table 5).

7.4. Stems of open bases

As mentioned above, forms of open bases require special treatment.

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[27] The stem in *u* does not appear in van Driem's lexical notation for these verbs, which he places in his invariant category vt-1; it is accounted for by a separate morphological rule (1993: 95 rule 7). Note that *u* '1s>3s, past' is the only suffix with a back rounded vowel.

[28] This rule affects 20 verbs according to van Driem (1993: 95). The form *ɨdu* 'I roasted it' (van Driem 1993: 94) appears to be an exception

[29] The form *phuktu* 'I roused him' (van Driem 1993: 106) appears to be an exception, since elsewhere this verb has the stem vowel *ɨ*. *luktu* 'I butted him' is regular, because LUKT never has the stem vowel *ɨ* (see §4.3.1).

[30] The reconstruction of the suffixes *ɨ* and *u* is discussed below (§8.4.1).

7.4.1. Epenthetic consonants with open bases

When an open stem is followed by a suffix beginning with a vowel, either the suffix vowel is elided or an epenthetic consonant is inserted before it (see Table 12). Elision occurs with expected suffix-initial *a* and the 3O suffix *ɨ* <**u*. Epenthetic *y* appears between the stem and the "general" dual suffixes *i* and *ɨ*.[31] What I consider as "epenthetic *ŋ*" is in origin a 1st singular marker (van Driem 1993: 133; see §8.4.2, §8.5 below). In the intransitive paradigm, *ŋ* appears in the 1s past form, replaced by *y* (in all but one verb) after the stem-vowel *i* (van Driem 1993: 134). In transitives, *ŋ* appears in past 1s object forms and 1s>3 forms, but also in non-past 1s>3 forms, before the non-past marker *t*: e.g. *biːŋtə* 'I give to him' (see also Table 12). This is unexpected for an epenthetic consonant which elsewhere appears only in hiatus, and not before the non-past marker.

tr.	*tense*	*1s O/S*	*1de O/S*	*1pe O/S*	*2s O/S*	*2p O/S*	*3s O/S*	*3dO/S*
1s A	pa				su-nna	su-n'ni	saː-ŋ-u	saː-ŋ-ɨsɨ
	npa				su-nta	su-nti	sa-ŋ-tə	sa-ŋ-təsɨ
1de A	pa						su-y-ɨ	
	npa						su-tɨ	
1pe A	pa						su-ka	
	npa						su-k'ta	
2s A	pa	a-**so**-ŋ-ə					a-sɨ	a-sɨ-si
	npa	a-**so**-tə					a-sɨta	a-sɨ-sti
2p A	pa	a-**so**-ŋ-ə					a-**soː**-ni	
	npa	a-**so**-tənɨ					a-**so**-tini	
3s A	pa	a-**so**-ŋ-ə	a-su-y-ɨ	a-su-ka	a-**soː**	a-**soː**-ni	sɨ	sɨ-si
	npa	a-**so**-tə	a-su-tɨ	a-su-k'ta	a-**so**-ta	a-**so**-tini	sɨta	sɨ-sti

		1s S	1de S	1pe S	2s S	2p S	3s S	3d S
intr.	pa	**loː**-ŋ-ə	lu-y-ɨ	lɨ-ka	a-**loː**	a-**loː**-ni	**loː**	lu-y-i
	npa	**loː**-tə	lu-tɨ	lɨ-kta	a-**loː**-ta	a-**loː**-tini	**loː**-ta	lu-ti
intr.	pa	**reː**-ŋ-ə	riː-y-ɨ	riː-ka	a-**reː**	a-**re**ː-ni	**reː**	riː-y-i
	npa	**reː**-tə	riː-tɨ	riː-kta	a-**reː**-ta	a-**re**ː-tini	**reː**-ta	riː-ti

Table 12: CV bases: SO/A vt 'to escort', LO vi 'to begin', RE vi 'to laugh'

7.4.2. Mid~close alternations in open bases

The distribution of mid and close vowels in open stems is entirely different from that in closed stems. The mid alternant appears in intransitive 1s, 2sp, and 3s forms and in the corresponding forms of transitives, i.e. in 2,3>1s, 3>2sp, and 2p>3 forms. The infinitive has the close alternant except in the two verbs DZE vi 'to speak' and E vi 'to defecate'. (This difference is unexplained.) Table 12 shows the vowel alternations in stems of the following verbs: SO/A 'to escort'

[31] The suffix *i* appears in 1st dual inclusive forms not shown in Table 12.

(vt-6a, van Driem 1993: 114)[32]; LO ‘to begin’ (vi-4, van Driem 1993: 99); RE ‘to laugh’ (vi-2, van Driem 1993: 331).

Non-past forms have the same stem vowels as their past counterparts, occasionally with a difference in quantity (note 33). This leads to some by now familiar asymmetries. The non-past partners of (presumably) *u*-suffix forms of SO/A show different stem vowels from intransitive/inverse forms which in principle have the same “general” suffixes: *a-sɨ-ta* ‘you escort him’ has the raised stem-vowel of the past form *a-sɨ* ‘you (s) escorted him’, and is distinct from the intransitive/inverse form *a-**so**-ta* ‘he escorts you (s)’. Similarly, *a-bi:-ta* ‘you (s) give him’ (verb BE, van Driem 1993: 114) is distinct from the intransitive/inverse form *a-**be:**-ta* ‘he gives you (s)’ (past: *a-be:*). It thus appears that the past 3O form determines the stem used in the corresponding non-past (cf. §§7.2.2, 7.3.2).

The morphophonology of open-base forms, and *a fortiori* the source of their mid/close alternations, remain to be worked out. There is perhaps some correlation between the mid vowel alternant and past “general” suffixes (as observed on closed bases) with initial *a* or *ə* (< **aŋ*).

7.4.3. Alternations o~u~ɨ *(intransitive) and* a~u~ɨ~o *(transitive) in open bases*

As mentioned above (§4.3.3), the alternations *o~u~ɨ* in intransitive open bases (van Driem’s vi-4) and *a~u~ɨ~o* in transitives (vt-6a) are morphophonologically equivalent. The distribution of mid and close vowels is as described in §7.4.2 above. The transitive bases have an additional stem in *a*, which only appears in 1s>3 forms—forms absent from the intransitive paradigm.[33] The alternations are illustrated in the forms of SO/A ‘to escort’ in Table 12. (See §8.8 below.)

8. TYPOLOGICAL AND COMPARATIVE REMARKS

In the present section, some of the features of the Dumi verb are reviewed in the context of similar phenomena that have been observed elsewhere in the Kiranti group. A full comparative treatment is beyond the scope of the present article.

Many structural characteristics of the Dumi paradigm are widespread, although not universal, in Kiranti verb systems: the overlap between intransitive and inverse transitive forms, the divergence of some forms with 3rd person object (apparently due to a special 3rd person object marker), special 1>2 forms, the tense dependency of certain explicitly transitive forms.

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[32] Van Driem lists only short stems in lexical entries for transitive O/A bases, but states lengthening rules for some past forms with the *o* stem (Van Driem 1993: 113).

[33] Intransitives and transitives with the O rime (i.e. vi-4 and vt-6b) differ slightly in the distribution of *ɨ* and *u*: some transitives have *u* in the infinitive (§4.1) and all appear to have *u* in 1p forms; intransitives (except *honɨ* vi-2) have *ɨ* in both. A second difference is the length of the *o*-stem in 1s inverse/intransitive forms: long in 1s S forms of intransitive O-bases, short in the corresponding 1sO forms of transitive A/O bases (col. 1 of Table 12) and in other non-past forms. These differences are unexplained.

8.1. The vowel inventory

Five distinctive vocalisms have been reconstructed in Dumi verb bases. Among the East Himalayish languages of Nepal, Dumi belongs, with Bahing and Thulung, to a small group of western languages which are notable for their rich systems of eight to ten vowels, as compared with five or six in eastern languages such as Bantawa.[34] I have previously shown by internal reconstruction that the ten-vowel systems of Bahing and Khaling reflect only five categories (Michailovsky 1975: 192-199, 209-211). A similar argument has been made for Thulung (Allen 1975: 116-127), and here for Dumi. The precise mechanisms responsible for vowel proliferation differ from language to language.

8.1.1 Vowel quantity

Vowel quantity is reported by van Driem as pertinent on all vowels except *ə*, *ɨ*, and *æ*, which are described as always short. Minimal pairs are presented (Van Driem 1993: 51-52) to support the oppositions.

The distribution of quantity in verb stems is quite uneven, as indicated roughly in Table 3. Table 13 shows, for regular verbs, the number of bases whose stems have only short vowels and those which have at least one long stem, by base type (open or checked) and base vowel.

C-final base rime	*IC(T)*	*EC(T)*	*AC(T)*	*OC(T)*	*UC(T)*
short/long stem vowel	21/18	24/17	5/43	52/8	48/3

open base rime	*I*	*E*	*A (vi)*	*O (vi)*	*A/O (vt)*
short/long stem vowel	0/10	1/9	0/1	0/8	0/6

Table 13: Short/long vocalism in stems of closed and open bases

Considering only stems from consonant-final bases, long *a:* is much more frequent than short *a*, while long and short *i* are almost equally frequent. In the case of bases in E, stems in long *e:* are uncommon: in eleven of the seventeen verbs counted as having long stems, only the close-vowel stem alternant in *i:* is long. Long *o:* and *u:* are also uncommon.

Phonological quantity is reported in the neighboring, closely related languages Bahing (Michailovsky 1975), Thulung (Allen 1975), and Kulung (Tolsma 1999), but in all of these it is shown to be of secondary origin, in general a reflection of easily reconstructed syllable-finals. In Dumi, only the length of the open *o:* stem of the two intransitives of the ON rime category (Table 3) might be explained in this way. In Wambule, Opgenort finds two series, long and short, of five vowels each, and remarks, "phonemic length is attributed to the

[34] The sixth vowel of Bantawa is clearly secondary. Limbu, which is more distant both genetically and geographically, has seven vowels and an opposition of quantity in most closed syllable types (Michailovsky 2002:ix, xii). Hayu, on the western edge of Kiranti, also has seven vowels.

historical loss of a final, usually *k*" (Opgenort 2004: 98, 111). In verb stems, final velars alternate with long vowels (Opgenort 2004: 255-259), and I believe that all long vowels reflect final *k* or *ŋ*. For Khaling, length was not reported in Toba & Toba 1975, but recent fieldwork (Jacques, et al. 2012) has found an opposition of length partly independent of the previously noted tones. These oppositions are fully accounted for, partly by elements already present in the roots reconstructed by Michailovsky 1975 (which have essentially the same rimes as those reconstructed here for Dumi) and partly by newly-described morphology.

No comparable reconstruction appears possible for Dumi quantity within the theory of the verb base as presented here, except perhaps the length of the open *o:* stem of the two intransitives of the ON rime category (Table 3).

Although I have not been able to reconstruct an origin for Dumi quantity, I have held off simply assigning it to the reconstructed bases because I have some doubt as to its synchronic status. I regard this as a question for future research.

8.2. Centralization: harmony, initials and finals

We have seen that there is a tendency to centralization of back vowels in Dumi. The centralization/unrounding of the stem vowel *u* (base vowel U) is at once blocked by the velar final *k* and facilitated by certain initials (§4.3.1). It is also subject to harmony with the suffix *u* (van Driem 1993: 95; §7.3.2). This harmony is independent of the final, but it is blocked by a final sequence of two consonants. All of these phenomena have parallels in other Kiranti languages.

In Khaling, harmonic centralization may be blocked by velar stem-finals, which protect the back stem-vowels *o, u*, while backing is blocked by CC stem finals, which protect the central vowels of non-velar stems from backing to *o, u* under the influence of suffixed *u* (Michailovsky 1975: 210 Table 3, using data from Toba and Toba & Toba 1975[35]).

Bahing verb-stems show general back vs central vowel harmony with back and central suffix vowels (Michailovsky 1975: 198). In harmonically neutral contexts, back stem-vowels appear only before velar finals; front-rounded stem-vowels are found before other finals (Michailovsky 1975: 198).

Finally, in Thulung, the root vowels *o, u* are fronted after coronal initials, but the fronting is blocked by velar root finals. (Allen 1975: 116-118). Allen notes the following stem-vowel distribution:

roots with velar finals : *ə, ea* [ɛ], *oa* [ɔ], *o, u*
other roots :
with coronal initials : *i, e, a, eo* [ø], *iu* [y]
with other initials : *i, e, a, o, u*

[35] This source contains a relatively rich inventory of several hundred verbs, but only two forms for each (with the suffixes *nä*, 'INFINITIVE', and either *u* or *taa* '1S>3S/1S SUBJECT, NON-PAST'), so the full extent of harmony and the scope of the blocking rule are not known. The 1st singular suffix *taa* used with intransitive and open-base verbs is harmonically neutral like the infinitive suffix *nä*, so that evidence for harmonic effects is lacking for these verbs.

As in Dumi, the initial influences the stem vowel, but the rule is different: in Dumi, bilabial initials clearly induce centralization (§4.3.1).

8.3. Mid/close alternation

Stem-vowel raising in closed stems with E or O vocalism, like the vowel harmony of §8.2 above, appears superficially to be blocked by two following consonants, again excluding the non-past marker *t*. But this raising can not be attributed to vowel harmony, as it is independent of the quality of the suffix vowel.

The key to raising in the past tense appears to be syllable structure: the mid stem-vowel is conserved when it occurs before two consonants in a closed syllable, but raised when it occurs in an open syllable, where the morphophonological stem-final functions phonologically as the initial of the suffix. Non-past forms show the same mid or close vowel as the corresponding past forms.

To support the hypothesis of a causal relation phonetically, we may look for other evidence of open-syllable vowel raising, or of likely precursors like lengthening or diphthongization. In fact, there is one rather weak indication of an association between long quantity and raised vowels: of some twenty-eight verbs with closed bases showing regular *i/e* alternations, in which the close alternant is generally associated with a phonetically open syllable, twelve are transcribed by van Driem as having length on the close-vowel stem only (alternation *i:C/eC*), two have length on both stems, and the rest have only short stems. This asymmetry is not found in verbs with *u/o* alternations. (Long *u* is in fact quite rare.)

8.3.1. Absence of mid/close alternation

Mid/close alternation is regular with few exceptions in CV and CVC bases. Of fifty-nine CVC bases with mid vowels, only three lack mid/close alternation. (I exclude the two CVN bases of this type, see below.) Of twenty-four open bases with E or O vocalism, only two (both in E) lack *e/o* apophony. These irregularities are unexplained.

Lack of mid/close alternation is more comon in vtt bases. Of fifty-three such bases with mid vowels in Table 3, nineteen lack mid/close alternation. These include all verbs whose bases have the rimes OD, EKT, EMT, and ENT, and a few others. This may reflect a generalization of the inhibition of raising in closed syllables (i.e. before two stem-final consants) that is observed in the 3O forms forms of T-transitives (§7.3.1).

Two of the bases with non-alternating mid vowels are the CVN intransitives, whose prevocalic stems have the form *CVnts* and thus closed-syllable stem vowels.

8.4. Reconstructions of suffix morphology

Although the main aim of the present paper is to characterize the synchronic distribution of Dum stem alternants, I have suggested in a number of cases that "shallow" reconstruction of suffix morphology could lead to straightforward hypotheses as to the conditioning of these distributions. I will justify these reconstructions briefly here.

8.4.1. 1s>3s u *vs 3s>3s* ɨ

Although the vowels *ɨ* and *u* have both been shown to represent the U root vowel category in verb stems, they are clearly in opposition in distinguishing the past 3O suffixes *u* '1s>3s' and *ɨ* '3s>3s'. In fact, these suffixes both reflect the well-known Kiranti 3rd person object marker **u* , but the 1s>3s suffix *u* reflects an older **uŋ*, with the 1st singular marker *ŋ* (below), while the 3s>3s suffix *ɨ* reflects **u* alone.

The reconstructed forms of these suffixes are conserved in eastern Kiranti. Compare Limbu *hiptuŋ* 'I strike/struck him', *hiptu* 'he strikes/struck him'. For the phonological correspondence of the PK rime **uŋ*, cf. Thulung, Khaling, Kulung and Limbu *luŋ* 'stone' vs Dumi *lu*. For the rime **u*, cf. Dumi *kɨ* 'water', Khaling *ku*, Limbu *ku*.

8.4.2. 1s ŋ

The 1s agreement marker *ŋ* can be reconstructed on all 1s forms except 1s>2. The general 1s marker *ə* is reconstructed as **aŋ*. This correspondence is found in the clitic 'also': Dumi *yə*, Khaling *yo*, Limbu *aŋ*, although *o:* appears to be the more usual Dumi reflex of **aŋ* in full morphemes: Dumi *ho:* 'king', Limbu *haŋ*.

The marker *ŋ* is repeated on the secondary number markers *si* and *ni*, which in 1s forms are *sɨ, nɨ* < **siŋ, *niŋ*. Cf. PK **siŋ* 'wood', Dumi *sɨ*, Limbu *siŋ*. Thus the Dumi 1s>3p affix *ɨnɨ* reconstructs with final *ŋ* ; cf. Limbu *hiptuŋsiŋ* 'I strike/struck them'. (For the vowel preceding the suffixes *sɨ, nɨ*, see the next section.)

We have arrived at a unified explanation for the fact that 1s suffixes in Dumi have the vowels *u, ə*, and *ɨ* where the equivalent 2nd and 3rd singular forms have *ɨ, a*, and *i*. All of these vocalic traces of PK **ŋ* '1s' are in the direction of a velar (i.e. close, back) articulation.[36, 37]

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[36] Van Driem (1990: 42-43) remarked on the vocalism of 1s forms but did not directly reconstruct the suffix *ŋ*, probably because this marker appears **before** *u*, etc., in the 1s forms discussed below (§8.5).

[37] For van Driem (1993: 133-148), the 1s suffixes are:
ŋ, the 1s marker, retained only after open stems (see §7.4.1) ;
ə, 1s , except in 1s>3 past forms.
u 1s>3 past *portemanteau*, allomorph *ɨ* before the suffixes *si* and *ini* (which have the allomorphs *sɨ, ɨnɨ* in this context) ;
sɨ, allomorph of *si* '2, 3 dual', after *ə, u* ;
nɨ, allomorph of *(i)ni* '2, 3 plural' after *ə, u*.

8.4.3. The secondary number markers

The secondary number markers *si* and *ni* (*sɨ* and *nɨ* in 1s forms) are straightforward in themselves. In discussing stem-alternations above, I have suggested that reconstructions in which these markers are simply added to the forms with singular secondary arguments might account for the stem-alternants in certain cases (§7.3.1 and §7.4.2). But the only such forms observed synchronically are those with 1s object, cf. *lumə* 'he looks for me', *luməsɨ* (< **lumaŋsiŋ*) 'he looks for us (d)', *luməni* (< **lumaŋniŋ*) 'he looks for us (p)'. In 1s>3 forms we have *lumu* (<**lumuŋ*) 'I looked for him', *lumɨsɨ* (<**lumuŋsiŋ*) 'I looked for them (d)', *lumɨnɨ* (<**lumuŋniŋ*) 'I looked for them (p)'; it is not clear why the first suffix vowel is changed from *u* to *ɨ* in the 1s>3dp forms, unless it is by harmony with the vowel of *sɨ* and *nɨ*. Forms with 1s arguments are the only ones in which any vowel is preserved before **si* (perhaps protected by the lost *ŋ*), but *ni* always has a preceding vowel.

As examples of the reconstruction of non-1st person forms of a CVC base, we may consider *alumɨ* 'you (s) looked for him' (Table 10), *alumsi* 'you (s) looked for them (d)' (< **alumusi*), *alumini* 'you (s) looked for them (p)' (< **alumusi*). The **u* suffix of the singular-object form is elided before the dual marker *si*; its restoration in the reconstruction causes the stem-vowel to occur in an open syllable, which would account (by our hypothesis) for the raised alternant. The corresponding form of a CVCC base is reconstructed with the prevocalic 3O stem before the restored suffix vowel: *a-yəm-si* 'you strike them (d)' < **a-yəmd-usi*, justifying the mid stem vowel. The plural-object form *a-yəmd-ini* is reconstructed **a-yəmd-uni*; here, as in the non-past *alumtini* (< **alumtani*), harmony with the following vowel is invoked to explain the change of the initial suffix vowel *a* to *i*.

These reconstructions could account for certain of stem and suffix anomalies in forms with secondary number marking. Their weakness is that neither elision before *s* nor harmony between suffix vowels has been shown to be a regular phonological process in Dumi.

8.5. Reduplicative epenthesis

I have reconstructed the past 1s>3 suffix *u* as **uŋ*, *ŋ* being the reconstructed Dumi 1st singular marker. The only consonantal reflex of this marker in modern Dumi is found, after open stems only, **before** the suffix *u* and some other 1st singular suffixes (§7.4.1). I believe that this marker is in origin a copy of the 1st singular marker *ŋ* reconstructed above (§8.4.1). The synchronic form *a-beː-ŋ-ə* 'you/he gave to me' is thus reconstructed as **a*-BI-*ŋ-aŋ* and *biː-ŋ-u* 'I gave to him' as *BI-*ŋ-uŋ*; the suffix-final consonant has been lost after being reduplicated between open stem and suffix.[38]

[38] The suffixes *ɨ* (<**u*) and *a*, unprotected by an preceding epenthetic consonant, merge with open stems: cf. Dumi *biː* 'he gave him', *a-beː* 'he gave you'.

I have described a similar phenomenon in Bahing (where both the original and the reduplicated suffix consonant are preserved) as "reduplicative epenthesis": with open stems it gives rise to forms like *gi-m-tame* 'they gave him', *gi-k-takø* 'we gave him', etc. (Michailovsky 1975: 192).

In Dumi, the reduplicated *ŋ* appears in all 1s>3 forms, even in the non-past, where it is not in hiatus, e.g. *saŋtə* (<**sa-ŋ-taŋ*) 'I escort him'; *saŋtəni* (<**sa-ŋ-taŋniŋ*) 'I escort them', etc. Among 1s object forms, it appears in the past tense, e.g. *asoŋə* (<**a-so-ŋ-aŋ*) 'you escorted me' but not in the non-past *asotə* 'you escort me'. This asymmetry in non-past forms is unexplained.

8.6. Tense marking

The tense marker *t* occurs in the neighboring Kiranti languages, including Dumi's closest relative, Khaling (Toba 1979: 23), as a marker of past, not non-past (Thulung: Allen 1975: 134-136; Bahing: Grierson 1909: 333; Sunwar: Borchers 2008: 131-141).[39]

The formation of the non-past suffixes by adding the mark *t* to the past suffixes is remarkably regular, except that the non-past correspondents of 3O *u*-suffixes appear to be unrelated "general" suffixes. But some phonotactic rules—concerning the distribution of mid and close stem vowels (§7.3.1) or the epenthetic copy *ŋ*—that appear to hold for past tense forms are violated in non-past forms. These observations might suggest that non-past marking was only generalized after the contexts for these distributions had been established.

8.7. Transitivity and tense

As in most Kiranti languages, the Dumi verbal paradigm is organized around two partly conflicting principles: (1) straightforward person and number marking of the highest-ranked argument on a 1>2>3 person hierarchy, and (2) specific marking of the transitive 1>2 and 3rd person object categories. Conflict between these principles may be resolved in various ways. In Dumi forms with 3rd person objects, agent agreement is indicated using the same "general" suffixes as in intransitive/inverse forms (principle 1) in the non-past and in most past forms with non-singular agents, but special 3O suffixes are used in past forms with singular arguments (principle 2).

Table 10 shows the closely-related distributions of three phenomena related to transitivity and to 3rd person objects. (1) The *u*-suffixes *ɨ* and *u* appear in forms of all closed transitive bases. They are only present in past forms with singular A and O: 1s>3s, 2s>3s, and 3s>3s, but they might be reconstructed in some or all related forms with secondary number marking (§8.4.3). (2) The T-augment of T-transitives appears in the past in all 1s>3 forms, and in 2s>3sp and 3>3(sp) forms—wherever the syllable structure permits it. The reconstruction

[39] The LSI cites *t* as a mark of non-past in "Rai", remarking that this language is probably in fact Dumi (Grierson 1909: 373, 377). A non-past marker *t* is found in Athpare (Ebert 1997: 44-45), a Kiranti language considerably more remote geographically and genetically from Dumi than Khaling.

mentioned would provide a vocalic context allowing the augment to appear in dual-object forms. (3) In stems from CVCT bases with mid-vowels, the mid-vowel appears in all forms, past and non-past, with singular agent and 3rd person object. This mid vowel may have spread analogically from forms in which it occurs in a closed syllable due the presence of the postfinal, or it may suggest reconstructing a earlier, wider distribution of the postfinal (§8.4.3).

The association of 3rd person object marking with past tense might seem to be a morphophonological accident, but it is found elsewhere in Kiranti. In Limbu, most 3rd person object forms use past stems and do not distinguish tense (Michailovsky 2002:xvii). In Hayu, which is at least closely related to Kiranti, the 3rd person object marker *k(o)* (functionally comparable to Kiranti *u*) is limited to past tense forms (Michailovsky 1988a:88), and its applicative partner *t(o)* (which is related to the T of Dumi T-transitives) is tenseless.

8.8. Suppletive open bases

The open-base transitive verbs with a special 1s>3 stem in *a* have been reconstructed with two suppletive stems, one in O (accounting for stems in *o* and raised stems in *u* or *i*) and one in A, to account for the stem in *a*. In fact several Kiranti languages—including languages with no other stem-vowel alternations—have a small class of verbs, typically including the verbs 'to eat' and 'to put' (cf. Dumi DZO/A 'eat', TO/A 'to put', SO/A 'to escort, to deliver') with two stems, differing in stem-vowel. Thus Hayu has *dza*/*dzo* 'to eat', *ta*/*to* 'to put', etc., with the *o*-stem used in inverse, 1>2, 2>3, and non-past 3>3 forms, and the *a*-stem in 1>3 and past 3>3 forms (Michailovsky 1988: 101-103). In Khaling, 'to eat' is cited as *jönä* (infinitive) *jaangaa* (1st person) (Toba & Toba 1975); the alternation *ö/aa* occurs in five other open-stem verbs, including 'to put'. In all three languages, the stem in *a* is associated with 3O forms.

These alternations in the languages cited do not appear to be directly related to the stem vowel alternations in the same class of verbs in Limbu and in Bantawa (cf. Jacques 2010). In Limbu, for example, the *o*-stem appears in 3rd person object forms and has been attributed to fusion between a stem-vowel *a* and the suffix *u* (van Driem 1987: 392).

A full comparative study of these suppletions is beyond the scope of the present article.

9. IRREGULARITIES

The definition of a theoretical grid of possible verb base rimes, and of rules governing the formation of stems for each rime, leads to the identification of a certain number of irregularities or irregular verbs. This is the price to pay for having a clear idea of what is regular. Some examples of irregular stem consonants:

NAM 'to reek': irregular reinforced pre-vocalic stem *namph-*.

PHIŋ 'to send': irregular stem *phiŋs-* (perhaps evolving toward *phints-* (PHINT)?).

RIK 'to sway': pre-vocalic stem *rik-* where *rikh-* is expected.

PHUKT (?) 'to arouse': pre-vocalic general stem *phɨk* for expected *phɨkh*.[40]
gaːʔ 'to burn': irregular stem final. (Does not conjugate like hypothetical *GAT.)
MO/MUT (van Driem's mɨnnɨ 'to do') the only verb in van Driem's "anomalous" conjugation class vt-7 (van Driem 1993: 115).
Three verbs in PT (van Driem's class vt-2c) are irregular in using the general pre-vocalic stem in *ph* rather than the 3O stem in *pt* in the 3>3(p) past form.

Verbs with bases in N/NT show many stem-rime configurations with minor differences. Three T-transitive verbs in NT are irregular in using a stem in *nt* rather than the regular pre-consonantal 3O form in *n* (Table 8) in the 3>3(d) past (van Driem's class vt-2b). The six verbs in van Driem's vt-5a and vt-5b categories have five different stem-rime sets.

Some examples of irregular vocalism have already been mentioned: irregular rimes apparently induced by the final *r* (§4.3.6), the unique stem rime *yok*, irregular choice between *u* and *i*. The verb *meːpnɨ* 'destroy' is irregular, if the base is MEP, for using the mid vowel in 3O forms or, if it is MEPT, for lacking the stem in *pt*.

Several members of the group of aspectivizing auxiliaries are irregular by our anlaysis; these have not been covered above. An example is the pair of continuous aspectuals (used with intransitives and transitives, respectively). The intransitive is THIŊ/THO (vi irr.), van Driem's *thonɨ* vi-3 {*thiŋ-tho* }, which has the stem *tho* in the infinitive and 1p forms and *thiŋ* elsewhere; its transitive partner is THOT (vtt irr.), van Driem's *thotnɨ* vt-2a {*thot-thiŋ* }, which has the stem *thot* in 1s>2, 3O and 1p forms and *thiŋ* in the remaining general forms. (This pair may go back to an original *THOŊ and derivative *THOŊT; see §5.3.) A similar pair is LIŊ (vi irr.) (*linɨ* vi-3 {*liŋ-li* }) 'in a frolicsome manner' vs LUD vtt (*lɨtnɨ* vt-2a {*lɨd-lɨts* }) 'id.' (<*LUŊ, *LUŊT?). The "allative" aspectual pair PAT vi irr., PAD vtt irr. has irregular open stems in some forms. The "colligative" aspectual DET vtt irr. has an irregular open stem in the infinitive *deːnɨ*. The "profferative" aspectual KHONT vtt irr. is transcribed with irregular stems *khotnt*. This verb may be related to KHOT (< *KHOŊT §5.3) 'to bring up'.

I have counted about twenty-five irregular verbs, most with minor variants that do not cast doubt on the identity of the base. To these we could add another twenty which have no mid/close apophony (§8.3.1). There are some 250 regular verbs.

10. CONCLUSION

Starting with a general theory of the structure of the Kiranti verb, we have arrived at a morphophonological base form for every Dumi verb, containing all of the information needed to distinguish it from other verbs (barring homonymy). The bases belong to a space of possible Dumi verb bases which is mainly determined by internally reconstructed Dumi phonology. Although Dumi synchronically has eight phonologically distinct vowels, the reconstructed

[40] Van Driem (1993: 106) presents a full paradigm of this uniquely irregular verb to illustrate his vt-1 category.

phonology has only five, an important finding both for synchronic analysis and for comparison with related languages.

In studying the alternations that are at the source of the stem reconstructions, I have aimed at three types of result, in diminishing order of certainty: (1) phonological characterization of the alternations; (2) phonological and morphological characterization of the contexts in which each alternant appears; and (3) possible phonetic or morphological motivation in some cases.

I believe I have shown the synchronic utility of the reconstructions presented. The comparison of morphophonological base forms with similarly reconstructed forms of related languages will be the subject of a future article.

Phonologically informed comparative reconstruction of Kiranti morphology, of great interest in itself, can be expected to improve our understanding of the contexts which have given rise to stem alternations.

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