Internal reconstruction and the Dumi verb

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1. Introduction

In his analysis of the Limbu verb, R. K. Sprigg sought to establish a single, "lexical-item phonological formula" for all of the information contained in the phonetically variable stems of the verb. In so doing, he had two goals: first, to arrive at a single form suitable for comparative work (internal reconstruction), 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 bring the morphophonological analysis to bear on an issue in synchronic phonological theory. Sprigg offered the fact that the "pieces" identified were longer than single phonemes as proof of the superiority of the prosodic theory of J.R. Firth over the "phoneme theory" (Sprigg 1966).

I propose here an analysis of the Dumi verb, based on the copious material and the thorough description of van Driem (1993, review Michailovsky 1996), with broadly similar objectives, leading to a motivated account of the morphophonology of the verbal bases and to internal reconstructions suitable for comparison. The theoretical framework is loosely phonemic, but much of the analysis centers on the rime, a unit longer than the phoneme.

My point of departure, reflecting the development of Kiranti (or East Himalayish) linguistic studies since Sprigg's article, is a theory of the form of the verbal lexeme in Kiranti. According to this theory, the Kiranti verb essentially has the form of a Kiranti syllable with an optional dental postfinal element. This is a modest theory of local application, not a law of nature. However, it turns out that this kind of theory is useful in the study of objects which have a history and which bear inherited characteristics some of which may not be optimally designed in view of their synchronic function.

Based on the theory of the Kiranti verb, I propose a canonical form for the Dumi verbal base encoding all the information necessary to distinguish one regular Dumi verb from another. The different stems which appear in the verbal paradigm and to which the tense and agreement markers are affixed can be derived from this verbal base. The base has a straightforward phonological interpretation, making it suitable for comparison with bases in related languages.

2. The form of verb lexemes

In Kiranti languages there are essentially no "conjugations" in the sense of different sets of affixes used with different categories of verbs, except insofar as the the set of transitive affixes is more extensive than the intransitive set because of their double agreement. The main difficulty in the verbal paradigm, apart from the sheer number of affixes, is the morphophonology of the stem, in particular the stem final consonants, and, in the case of Dumi — as in Bahing and Khaling (Michailovsky 1975) — apophony of the stem vowel.

2.1 Van Driem's conjugations

To account for the stem alternations, van Driem assigns verbs to 16 "conjugations", 5 intransitive (vi-1 to vi-5) and 11 transitive (vt-1, 2a, 2b, 2c, 3, 4, 5a, 5b, 6a, 6b, 7). The identification and numbering of the different conjugations is based on the number of different stems used by verbs of each category and their distribution in the verbal paradigm. Categories vi-1 and vt-1 use a single stem throughout their conjugation, and the other categories of verbs are assigned conjugation numbers roughly in order of the number of different stems that appear in the paradigm of each type (van Driem 1993:91-95). As van Driem notes, "a relationship of some sort obtains between a verb's conjugation and its stem final." (1993:95). In fact, as I will show in §3, once this relationship is defined and the base rimes are established, the conjugation numbers can be dispensed with.

2.2 The verbal base

The theory of the Kiranti verb lexeme as consisting of a syllable with optional dental postfinal was first proposed in a study of Bahing (Michailovsky 1975:200) and later applied to Limbu (Michailovsky 1985, Sprigg 1985). Its practical value is that it serves as the basis for a motivated account of the morphophonology of verbal stems.

In Dumi, the verb lexeme may be described as consisting of a phonological syllable (Ci)V(Cf) with, in the case of certain transitive verbs, a postfinal dental element -T; the canonical form is thus (Ci)V(Cf)(-T). I call this the verbal "base" — it could also be called the "root" — with the reserve that the postfinal -T is in some cases clearly an old derivational element with a directive sense (see the examples cited in §4). However, most verbs which formally have a postfinal -T are not members of word-families and do not have any obvious directive sense. Note that I no longer use the term "root" for the (Ci)V(Cf) part isolated from (Ci)V(Cf)-T bases as in Michailovsky 1975 or as in Rai 1985 for Bantawa.

The key to the morphophonology of the verb in any Kiranti language is what I will call the *extended rime* of the base — that is, the vowel, final, and postfinal. Before presenting a categorization of Dumi verbal bases based on this principle, I will briefly introduce some of the distinctive phonological or morphonological elements that are found in the different positions of the base canon. Most of the discussion will be of the extended rime, with a few remarks about the inventory of initials to the extent that these affect the following vowels.

2.3 Initials and initial clusters

Ci is a single consonant (*k*, *kh*, *g*, *gh*, *ŋ*, *T*, *Th*, *d̥*, *d̥h*, *t*, *th*, *d*, *dh*, *n*, *p*, *ph*, *b*, *bh*, *m*, *ts* (see below), *dz*, *y*, *r*, *l*, *w*, *s*, *h*). I will have little to say about the syllable-initials as described by van Driem (1993:52-57), except as concerns clusters. No clusters are reconstructed here for Dumi.

It is obvious that Dumi entirely lacks the C*r*- and C*l*- clusters found in Bahing, Thulung, and Khaling. In this respect it resembles the eastern members of the Kiranti group like Bantawa and Limbu. However, van Driem considers initial *ts*- as a cluster, and he also recognizes initial C*y*- clusters. In my view, there is no compelling reason not to consider initial *ts*- as a single phoneme, like *dz*-. C*y*- clusters cannot be dismissed synchronically, given van Driem's description, but their status, especially in verb lexemes, is at best marginal.

2.3.1 Initial C*y*-

Initial C*y*- is found before *i*, *e*, and *ə*, and, in one verb, before *o*. It does not appear before the vowels *ɨ*, *u*, or *æ*, nor in verb stems before *a*. This distribution is quite

different from that of the initial *y*-, which occurs before all vowels except *æ*, and mainly before *a* and *o*.

There are half a dozen verbs in *ŋyi*- or *ŋye*-. However, the oppostions *ŋi*- vs *ŋyi*- and *ŋe*- vs *ŋye*- appear to be quite marginal. There is no example of *ŋe*-, and no verb base with *ŋi*-. In nouns we find *ŋi*- but not *ŋyi*-; one of the two examples with initial *ŋi*-, *ŋitso* 'ear', is clearly (van Driem 1993:403) related to the verb *ŋyiːnɨ* 'to hear', with initial *ŋyi*-. It thus apears unnecessary to consider *ŋy*- as distinct from *ŋ*- in the reconstruction.

Three other verbs have initial C*ye*-. The base PYERD (? PERD) 'to pinch' has the stems *pyerd*- and *piːr*-; the alternation between *ye* and *iː* suggests that *y* is part of the realization of the vowel. I suspect that the final *-r* may be responsible for vowel breaking in this verb and in BYER- (? BER) 'to fly' (stems *byer*-, *byir*-). I have no explanation for the *y* of *syennɨ* 'to know'.

The sequence C*yə*- occurs only in a half-dozen stems of the form C*yək*-, which clearly represent the -EK or -EKT base rime categories (§3.3). No verb has a stem in *-ek* or *-ekt*. Therefore I would not consider C*y*- as a cluster in this context, but rather *yə* as a (single) vowel, allophone of *e*. This probably applies as well to the only reported instance of C*yo*- in the language, in *khyoknɨ* 'to hang up', which I suppose is somehow equivalent to *khyək*- (base ?KHEK). (This is consistent with the comparative evidence: Thulung *kheak*-, Khaling √*khekt*-.)

It thus appears unnecessary to reconstruct C*y*- clusters for Dumi. It is not unlikely, however, that medial *y* is marginally phonologized synchronically, particularly as the Dumi are bilingual in Nepali, which is rich in such clusters.

2.4 Vowels and apophony

Although 8 vowel qualities are distinguished for Dumi short vowels, with an opposition of length on 5 of these, only 5 distinct vowel qualities or alternations are found in verb bases with a given final consonant (or final plus postfinal), and therefore only five vowels — symbolized as A, E, I, O, U — are reconstructed in verb bases here. I am not at all sure that length should be reconstructed in Dumi (Limbu is another story); it is very unevenly distributed, and it is clearly secondary in neighboring languages. I do not account for length in the reconstructed bases; in many cases, long and short stems are found to alternate.

Many verbs show apophony, that is, stem alternants with different phonological vowels. The most frequent types of alternation are between the stem vowels *e* and *i*, in roots which we will reconstruct with E vocalism, and between *o* and *u*, in verbs with O vocalism.

2.5 Finals

There are 9 possiblities for the Cf position (*p*, *t*, *k*, *m*, *n*, *ŋ*, *r*, *l*, and zero) in verb bases of the form CiVCf. The phonological syllable finals *-s* and *-ʔ* are of secondary origin and are not reconstructed in verb bases. (The verb *gaʔnɨ* 'to burn' is considered as irregular here.)

2.6 Postfinals: bases of the form CiVCf-T

The one postfinal, represented morphophonemically as -T, appears in the prevocalic alternant of the stem used in *direct* forms[1] — that is, in Dumi, 1s→3, 2s→3, and 3→3

[1]. The structure of the verbal paradigm is outside the scope of the present paper, but it will be necessary occasionally to identify individual forms. Abbreviations: 1s = 1st person singular, etc., d = dual, p = plural, i = inclusive, e = exclusive. The notation 1s→3 indicates a transitive form showing agreement with a 1s ergative actant (roughly, an agent) and a third person object. Descriptions like

forms — of certain verbs, here called T-transitives. It is realized as *-t* after Cf *p* and *k*, and as *-d* after Cf *m*, *n*, *ŋ*, and *r*. It is rare after Cf *m*, *ŋ*, and *r*, and does not appear after *l*.

3. Classification of regular verbs by extended rime

The categories of regular verbs as I reconstruct them are arranged according to their extended rimes in Table 1. Each row represents a final or final plus postfinal (separating intransitive, transitive, and T-transitive bases), and each column one of the 5 reconstructed vowel categories (generally ignoring length). The number of possible extended rimes is theoretically about 90 — i.e. 5 (reconstructed vowels) times 9 (finals) times 2 (presence or absence of a postfinal) — of which roughly 75 actually occur in verb bases. The table has 125 slots because intransitives are separated from transitives; 97 of these are represented in verb bases. No slots are provided for the theoretically possible *-LD category in the table.

For each reconstructed extended rime category thus defined, the table lists the alternating stem-rimes (as identified by van Driem and listed in his lexical entries) that occur in the verbal paradigm of verbs of that category. The number of regular verbs belonging to the category is shown in square brackets, and the conjugation number according to van Driem's system between parentheses. In the remainder of this section the categories shown in table 1 are discussed. Table 2, which I will not discuss in detail, illustrates the use of the stems in selected regular verb forms. Stems used in table 2 that are not listed in table 1 are (according to van Driem's analysis) the pre-consonantal, pre-pause forms of listed stems, conditioned by the suffix-initial according to regular rules (1993:91-95), and not distinct stems.

3.1 The vowel *-u-*/*-i-*

The U vowel — but never the *-u-* alternant of the O vowel — is very generally centralized in Dumi verb stems. This is uniformly the case in bases before the finals *-ŋ*, *-p*, *-m*, *-r*, *-l*. Before *-k*, the realization appears to depend on the initial: we find *-ik* after bilabials, *y-*, and (?) *ts-*; *-uk* elsewhere:

dukni	'to stub, knock'
hu:kni	'to bark'
lukni	'to gore, strike with the horns, to kick with the hind legs'
tsukni	'to point out'
u:kni	'to crow, to emit a cry (esp. of fowl)'
bikni	'to bear young (of non-humans)'
phikni	'to get up, to arise, to get someone up'
pikni	'to heap up, to pile up'
tsikni	'to be, to become, to happen to'
tsikni	'to understand (sth.), to know (sth.)'
yikni	'to turn around, to grind, to mill'

"transitive 1p form" cover all transitive forms showing agreement with a 1p actant (whatever the function of this actant). It happens that all 1p forms (for a given rime) use the same stem (here we must add "for a given tense" to cover the 1p forms of a few verbs in -N), as do all 1d, 2d and 2p forms, respectively. The term *direct* is reserved for 1s→3, 2s→3 and 3→3 forms, which may have a different stem from the corresponding inverse (i.e. 3→1s) forms. There are special "I-you" 1s→2 forms; 1de,pe→2 and 2→1de,pe forms are identical to 1de,pe→3 and 3→1de,pe forms, respectively. See table 2 for selected examples.

I have listed verbs which conjugate as both transitive and intransitive only once, so as not to exaggerate the size of the sample. The opposition between *tsukni* and *tsɨkni* is unexplained and not reflected in the reconstruction.

The same conditioning seems to apply to the infinitive of open transitive bases with alternating back vowels (van Driem's vt-6a conjugation):

dhuni	'to dig (e.g. a hole)'
dzuni	'to eat'
suni	'to escort, to deliver; [ASPECT: dimittive]'
tuni	'to put, to place; [ASPECT: ponent tr.]'
pini	'to weave'
mini	'(auxiliary) to do'

For some reason, this conditioning in open bases does not apply to intransitives: *dzuni* and *tuni* have intransitive counterparts *dzini* 'to be eaten' and *tini* '[ponent intr.]'.

Another indication that *u* and *i* constitute a single category is the fact that they alternate under vowel harmony (van Driem 1993:95 rule 7): stems C*i*C- (with non-zero Cf but no postfinal) have the alternant C*u*C- before the 1s→3s preterite suffix *-u*. It is interesting that this vowel harmony is generally blocked if two consonants intervene between the suffix *-u* and the stem vowel. (The forms *ɨdu* 'I roasted it' and *phuktu* 'I roused him' (van Driem 1993:94,106) are exceptions to this rule.) The same rule applies in Khaling (Michailovsky 1975 :10). For example, verbs in -P (category a in the table) have the vowels or alternations a/i, e, ä, waa/o, a/u, with the alternants after the oblique appearing before the suffix -u, whereas vowels in -PT (category b) have a, e, ä, waa without alternation.

3.2 Open bases

Bases with open rimes are somewhat problematic. Open bases of the I and E categories are common. Bases with alternating (*-a~*)*-o~-u~-i* (the *-a* alternant occurs only in certain transitive direct forms and thus is absent from intransitives) are also numerous; I represent their base vowel as V. I suspect that they represent the A category. The -A category is also occupied by the unique base KHA 'to be bitter', which apparently has only the stem *kha:-* (but does this verb have a complete agreement paradigm?). The only verb in the -O category is *hu:ni* 'to come' (HO), with *o~u* alternation.

The infinitive stem of intransitive verbs of the -E category is problematic. In the reconstructed intransitive -E category there are two verbs whose infinitive stem has *-e:* and three whose infinitive stem has *-i:*; the internal reconstruction does not account for this difference. Note that van Driem does not include the infinitive in his lists of stems because it is his citation form (a sensible choice for practical reasons) and thus is always present in the lexical entry in any case (1993:267).

It may be noted that the stem apopophony for intransitive and transitive verbs of certain categories appears to be reversed. For example, in the top two rows of the E column of table 1, intransitives have stem-1 (∑1) *e:* vs ∑2 *i:y* (according to van Driem's numbering), while transitives have the opposite. This is entirely an artefact of van Driem's method of numbering stems. In fact, as is usual in Kiranti languages, intransitive forms with 1st or 2d person subject are comparable to transitive inverse forms with 1st or 2d person object, not to direct forms with 1st or 2d person agent. Bearing this principle in mind, comparable parts of the two paradigms use comparable stems. Compare, for example, the forms of 'laugh' with the corresponding inverse forms of 'give' in table 2 (e.g. 'I laughed' with 'he gave me' and 'we (pi) laughed' with 'he gave us (pi)').

On the derived T-transitives of verbs with open bases, see §4.3.

3.3 Bases in -K

No verb has a stem in *-akt*; verbs with direct stems in *-okt* and no apophony are reconstructed in the -AKT category. Backing of *a* by syllable-final *-k* is typical of Kiranti languages (see Michailovsky 1975), but it should be noted that in word-families (§4.1), directives of this category appear to be associated with non-directives in -OK.

Verbs in Cf -K (and -P) have a stem alternant with an aspirated base-final stop before certain suffixes which begin with a vowel (van Driem 1993:93). The aspirated stem-final functions phonologically as an initial.

3.4 Bases in -P

Van Driem's vt-2c category covers three T-transitive verbs in -PT which are irregular in that they use the aspirated stem in 3→3 (except 3s→3s) forms (like ordinary transitives in -P) instead of the augmented direct stem in *-pt*.

3.5 Bases in -R

Final *-r* appears to have a perturbing effect on vowel qualities in general (see the remark on *-ye-* in *pyerni* and *byerni* in §2.3.1 above). The unique verb with the vowel *æ* is *tærni* 'to snap, to break' (?TAR, ?TOR). Another unique rime in *-r* is found in *wərni* (?WARD) 'to throw'. The irregular alternation *ar~ur* occurs in *kharni* 'to pop (maize)' (?KHOR); *ər~ur* (as in TSOR vt 'to pay so.') is considered as regular.

3.6 Bases in final dental stop

Transitive verbs with direct stems ending in a single dental stop are problematic because of the difficulty of distinguishing Cf *-t* from postfinal -T. I will simply list these bases as CVT and CVD, according to the form of their direct stem. Note that no stem of the form *CV*tt-* occurs. I will return to the question of the underlying structure in §4. A similar problem is posed by the fact that all transitives with Cf -N have *-nd* in the direct stem, so that it is not clear whether bases of the underlying forms CVN and CVN-T can be distinguished.

Transitive bases of the -OT category are of two types: in one the open vowel alternant is *o;* in the other it is *ə*. This difference, which may be related in some way to a difference between transitive and T-transitive bases (note that it does not apply to intransitives), is not reflected in the reconstruction. Similarly, in what we reconstruct as the -OD category, only one verb shows apophony parallel to that of the -ED category while four do not; this anomaly is unexplained.

3.7 Bases in -N

Bases in -N show great irregularity. This corresponds to my experience in the neighboring language Bahing (1975:204), where I found great variablity between speakers and even between elicitations for these verbs. Of some 30 Dumi verbs with Cf -N, van Driem gives full paradigms for 11, all different in one way or another. I have resorted to some approximations in the table; question marks indicate the presence of stem-alternants without giving their precise form, where this appears to be variable. Since I cannot define what is regular, I do not identify irregular verbs in these categories. One clear source of irregularity is mentioned below in §4.2.

4. Remarks on word families and postfinal -T

Van Driem gives a complete list of these word families (1993:215-223); here only a few points bearing on internal reconstruction are discussed.

The derivation of bases with a directive sense by the addition of the postfinal is straightforward after Cf -P and -K: a base in -K has a derived directive in -KT, etc. No directive derivative of a base in -M, -R, or -L has been identified.

4.1 Bases in -AKT

The hypothesis that non-alternating stems in *-okt* represent the -AKT category is not supported directly by directive derivations; directives with such stems appear to be related to verbs in -OK.

bhokni (BHAKT) vt 'to arrange'	*bokni* (BOK) vi irr. 'to be arranged'
yəkni (? YAKT) vt 'to serve out to'	*yokni* (YOK) vi 'to divide up'

The verb *bokni* is irregular in lacking apophony; *yəkni* has an unexplained vocalism without apophony. The difference in aspiration between *bokni* and *bhokni* is unexplained. Note that Dumi (like Khaling and the eastern Kiranti languages) does not have causative/non-causative pairs of verbs related by the manner of articulation of the initial consonant.

4.2 Directives of bases in *-ŋ*

Only one verb in *-ŋ* has a derived directive in -ŋD. However, another has a directive in -nD and still another in -D:

phiŋni (PHUŋD) vt 'to cause to grow'	*phiŋni* (PHUŋ) vi 'to spread, emerge'
khotni (KHOD) vt 'to bring up'	*khoŋni* (KHOŋ) vi 'to come up'
wotni (WOND) vt irr 'to bring in'	*oŋni* (Oŋ) vi 'to enter'

These developments have exact parallels in Bahing (Michailovsky 1975:202-203),[2] where verbs in *-ŋ* are clearly related to directives in *-nd* or *-d*, sometimes preserving pre-velar vocalism, sometimes not.

4.3 Directives of open bases and bases in Cf -T

Word families are the logical place to look for help in matching the observed transitive bases of the forms CVT and CVD with the theoretical possibilities CVT, CV-T, CVT-T. In fact, we find 4 verb pairs consisting of an open base and a derived directive; in 3 of these, the directive stem has the form CV*d*-. It therefore seems likely that verbs in -D represent the underlying CV-T category.

PID vt 'to bring'	PI: vi 'to come'
HO:D vt 'to fetch, to bring'	HO: vi 'to come, to appear'
MUD vt 'CAUSATIVE'	MV vt 'to do'

There is one example of a directive in -T related to an open base:

DZE:T 'to call, to address'	DZE: 'to speak'

There are about five pairs of verbs where an intransitive in -T is related to a transitive also in -T, but it is not clear that these represent the derivation of CVT-T from CVT because it is common in Dumi to find bases that are conjugated as both transitive and intransitive (van Driem 1993:218). In three pairs, a directive in -D is related to a non-directive base in -T.

THUD 'to pull, to inhale'	THUT 'to stretch, to be elongated'
TSE:D 'to tear'	TSE:T 'to be torn'
SED 'to kill'	SET 'to be killed'

One verb in -N has a directive in -T; one verb in -T has a directive in -ND:

tsotnɨ (TSOT) vt 'to move up'	tsonnɨ (TSON) vi 'to hop forward'
bənnɨ (BOND) vt 'to feel, to touch'	botnɨ (BOT) vi 'to get riled up'

The following pairs of aspectualizers (almost all highly irregular verbs — see appendix) may also be considered:

LɨD vt 'FROLICSOME'	LI vi irr. 'FROLICSOME'
THOT vt irr. 'CONTINUOUS'	THO vi irr. 'CONTINUOUS'
PAD vt irr. 'ALLATIVE'	PAT vi irr. 'ALLATIVE'

[2]. The two pages cited are printed out of order and misnumbered due to a printing error.

The one clear fact is that bases in -D do not appear as the non-directive members of pairs. It is not clear what has happened to the theoretical CVT-T category; probably it has merged with CVT or possibly with CV-T.

4.4 Directives of bases in -N

Bases in -N are found to have transitives in -ND in the following pairs:

ta:nni (TA:ND) 'to bring down'	*ta:tni* (TA:N) vi 'to come down'
lənni (LOND) vt 'to bring out'	*lənni* (LON) vi 'to come out, to emerge'
inni (UND) vt 'to fell'	*inni* (UN) vi 'to be felled'

Again it is not clear if there is a difference between transitive and T-transitive bases in -ND.

4.5 Lack of apophony in T-transitives

Lack of apophony in the E and O categories is found in the T-transitive categories -OD, -EKT, -EMD, -END and in certain individual T-transitive verbs. The -EP, -ERD, -OKT, -OPT, and -OMD categories, however, do show apophony. If apophony in these categories is partly due to vowel harmony (which has not been shown) it may be that the double stem-final partly blocked the harmonic effect, as it seems to block the harmonic influence of the suffix *-u* on stem vowels of the U category (see §3.1 above).

5. Conclusion

Starting with a theory of the structure of the Kiranti verb, we have arrived at a principled classification and reconstruction of Dumi verbal bases. This has obvious synchronic value, in addition to providing an internally reconstructed form suitable for comparison with similar forms in related languages.

One corollary of this theoretically motivated approach is the identification of about 30 irregular verbs (as against some 250 regular ones). These are listed in the appendix. Most of these show rather minor irregularities in the vowel; not surprisingly, a good number of the more seriously irregular verbs are aspectivizing auxiliaries. It must be borne in mind, however, that we have not covered vowel length or verbs in -N entirely satisfactorily. The existence of irregular verbs is not in itself a defect; on the contrary it is a small price to pay for having a clear notion of what is regular. Of course, if a different, but still coherent and motivated, definition of regularity in Dumi were to be shown to result in a smaller set of irregular verbs, it would be worth considering.

Another result of the present paper is the reconstruction of a system of five distinctive vocalisms (ignoring length) in Dumi verb bases. Among the East Himalayish languages of Nepal, the western languages Bahing, Thulung, Dumi and Khaling are notable for their rich systems of 8 to 10 vowels, as compared with 5 or 6 in more easterly languages such as Bantawa. It has previously been shown by internal reconstruction, however, that the 10 vowel system of Bahing reflects only 5 categories (Michailovsky 1975:192-199), and a similar argument has been made for Thulung (Allen 1975:116-127) and sketched out, based on incomplete data, for Khaling (Michailovsky 1975:209-211). The present paper has made the same case for Dumi, which is closely related to Khaling and more fully described.

The apophony of verbal stems in Bahing has been explained (Michailovsky 1975:192-199) as resulting from two phonological effects: the influence of stem-finals on the vowel and vowel harmony with the suffix vowel. I have not been able to give a phonologically motivated account of the apophony of the verbal stems in Dumi. This probably would require the reconstruction of an earlier stage of the affixes of the verbal paradigm.

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Appendix: Irregular verbs

Irregular stem finals

Irregular pre-consonantal stem in *-ʔ*: *gaʔnɨ* 'to burn'.

Irregular prevocalic stem in *-mph-*: NAM vi 'reek'.

Irregular stem in *-ŋs-* in 1d and 2dp and in 1s and 2s inverse forms: PHIŋ vt 'send'.

Irregular lack of aspiration of stem-final *-k* (§3.3): RIK vi irr. 'to sway', PHUKT vt irr. 'to get so. up'. The latter, van Driem's paradigm example for his vt-1 category (1993:106) clearly belongs rather to his vt-2a category, apart from being irregular.

T-transitive verbs in -PT using the aspirated stem (regular for non-T-transitive verbs in -P) in 3→3 forms with at least one 3p actant (van Driem's vt-2c category): I:PT 'to put to bed', BAPT 'to upset', TSAPT 'to be able'.

Irregular rimes

Unique rime *-yok*: *khyokɨ* (? KHEK) 'to hang up' (§2.3.1).

Irregular rimes in -R (§3.5): *pye:rɨ* (? PE:RD) 'to pinch', *byerɨ* (? BER) 'to fly', *tærɨ* (? TAR) 'to snap, to break', *wərɨ* (? WARD) 'to throw', *kharɨ* (? KHOR) 'to pop (maize)' (alternation *ar~ur*).

Stem vowel *u* for expected *ɨ* (and vice-versa): *tu:tɨ* (TU:T) vi 'to be visible' (length is rare in the *u* category), *tsukɨ* (TSUKT) vt 'to point out', *phuktu* (PHUKT) 'I roused him' (see note 3), *ɨdu* (UD) 'I roasted it' (see note 4).

Stem vowel *ə* for expected (?) *o*: *yəkni* (? YAKT) vt ‘to serve out to’ (directive of YOK vt ‘to portion out’), *tsəpni* (? TSOPT) vt ‘write’ (unique alternation *əpt~up*).

Irregular in the use of the *e*-vowelled stem *me꞉p*-, expected in 1p forms, in direct forms. (This would be regular for a T-transitive.): *me꞉pni* (? ME꞉P) vt ‘to destroy’

Sole member of van Driem’s vt-7 conjugation: *minni* vt irr., ‘to do’.

Irregular lack of apophony (see also §4.5)

opni (OPT) vt irr. ‘to strike (fire)’, *bokni* (BOK) vi irr. ‘to be arranged’, *dhyəkni* (DHYəK) vi ‘to be plugged up’, *pətni* (POT) vt imps. ‘to bloom’ (the non-direct, non-1p stem *pəts*- (without apophony, for expected **puts*-) is irregular. The verb always shows 3s impersonal agent agreement, but the irregular stem possibly occurs in inverse forms with the sense ‘to menstruate’.)

Two open stems apparently of the -E category: *neni* ‘to put’, *tsam tse꞉ni* (TSE꞉) vi ‘to be happy’ (if this base shows person agreement).

Irregular aspectivizers

LIŋ vi irr. ‘FROLICSOME’: 1p and infinitive stem *li*-; *liŋ*- elsewhere.

THOT vt irr. ‘CONTINUOUS’: direct, 1p, and infinitive stem *thot*-; *thiŋ*- elsewhere.

THO vi irr. ‘CONTINUOUS’: 1p and infinitive stem *tho*-; *thiŋ*- elsewhere.

PAD vt irr. ‘ALLATIVE’: direct stem *pad*-, other stems have the irregular vowel *ə*; irregular open stem *pə*- in 1p forms.

PAT vi irr. ‘ALLATIVE’: irregular open stem *pa*- in 1p and infinitive forms; elsewhere *pəts*- (irregular alternation).

de꞉ni (DET) vt irr. ‘COLLIGATIVE’: irregular open infinitive stem.

khotnni vt irr. ‘PROFFERATIVE’ and *khotnni* vt irr. ‘to offer’: irregular stem finals -*tnd*, etc.

Table 1: Reconstructed rimes and stems of regular Dumi verbs

-CT		-I-	-E-	-A-	-O-	-U-
-Ø	intr.	iːy [7] (vi-1)	eː-iːy [5] (vi-2)	aː [1] (vi-1) oː-ɨ-u(y) [7] (vi-4)	oː-uːy [1] (vi-2)	
-Ø	tr.	iː [2] (vt-1)	iːy-eː [3] (vt-6b)		--	
-K	intr.	--	yəkh [1] (vi-3)	aːkh [2] (vi-1)	ukh-ok [3] (vi-3)	ukh/ɨkh [6] (vi-1)
-K	tr.	--	ikh-yək [1] (vt-3)	aːkh [2] (vt-1)	ukh-ok [5] (vt-t3)	ɨkh [1] (vt-1)
-KT	tr.	ikt-ikh [4] (vt-2a)	yəkt-yəkh [2] (vt-2a)	okt-okh [4] (vt-2a)	okt-ukh [2] (vt-2a)	ukt/ɨkt-ukh/ɨkh [6] (vt-2a)
-P	intr.	iph [1] (vi-1)	iph-ep [2] (vi-3)	aːph-ap [1] (vi-1)	--	ɨph [1] (vi-1)
-P	tr.	--	iph-ep [1] (vt-3)	aːph-ap [1] (vt-1)	uph-op [4] (vt-3)	--
-PT	tr.	ipt-iph [7](vt-2a,c)	ept-iph [6] (vt-2a)	aːpt-aːph [7] (vt-2a,c)	opt-uph [3] (vt-2a)	ɨpt-ɨph [5] (vt-2a)
-ŋ	intr.	--	--	aŋ [4] (vi-1)	uŋ-oŋ [2] (vi-3)	ɨŋ [1] (vi-1)
-ŋ	tr.	iŋ [3] (vt-1)	iŋ-eŋ [1] (vt-3)	aŋ [1] (vt-1)	uŋ-oŋ [1] (vt-3)	ɨŋ [3] (vt-1)
-ŋT	tr.	--	--	--	--	ɨŋd-ɨŋ [1] (vt-2a)
-M	intr.	im [1] (vi-1)	iːm-em [3] (vi-3)	aːm [3] (vi-1)	um-əm [2] (vi-3)	ɨm [1] (vi-1)
-M	tr.	im [1] (vt-1)	--	aːm [4] (vt-1)	um-əm [3] (vt-3)	ɨm [5] (vt-1)
-MT	tr.	--	emd-em [1] (vt-2a)	--	əmd-um [1] (vt-2a)	--
-R	intr.	ir [1] (vi-1)	ir-er [1] (vi-3)	ar [1] (vi-1)	--	ɨr [1] (vi-1)
-R	tr.	ir [2] (vt-1)	ir-er [1] (vt-3)	ar [1] (vt-1)	ur-ar/ər [1/1] (vt-3)	ɨr [1] (vt-1)
-RT	tr.	--	erd-ir [1] (vt-2a)	ard/ərd [1/1] (vt-2a)	--	ɨrd-ɨr [1] (vt-2a)
-L	intr.	il [1] (vi-1)	--	--	--	ɨl [3] (vi-1)
-L	tr.	il [1] (vt-1)	--	al [3] (vt-1)	ul-əl [3] (vt-3)	ɨl [3] (vt-1)
-T	intr.	its-it [2] (vi-3)	its-et [5] (vi-3)	aːts-aːt [3] (vi-3)	uts-ot [3] (vi-3)	ɨts-ɨt [1] (vi-3)
-T	tr.	it-its [7] (vt-2a)	et-iːts [2] (vt-2a)	at-ats [7] (vt-2a)	ət/ot-uts [3/4] (vt-2a)	ɨt-ɨts [1] (vt-2a)
-D	tr.	id-its [3] (vt-2a)	id-its-et [4] (vt-4)	aːd-aːts [3] (vt-2a)	od-ots [4] (vt-2a) ud-uts-ot [1] (vt-4)	ɨd-ɨts [7] (vt-2a)
-N	intr.	--	--	ants-at [1] (vi-3)	ənts-oː-?-? [2] (vi-5)	ɨnts-ɨt [3] (vi-3)
-NT	tr.	ind-ints[3](vt-2b)	end-ents [3] (vt-2a)	and-ants [2] (vt-2a)	--	ɨnd-ɨnts [3] (vt-3)
-NT	tr.	--	end-ents-?[3](vt-4,5b)	and-ants-at-an[1](vt-5a)	ənd/ond-?-? [3] (vt-4,5a,5b)	

Table 2: Selected Dumi verb bases with forms from van Driem 1993

Intransitive bases:

gloss	to come up	to stick	to get up	to say	to emerge	to laugh	to begin
base	KHOŋ-	KEP-	PHUK-	A:T-	LON	RE:	LV
infinitive	khoŋ-nɨ	kep-nɨ	phɨk-nɨ	a:t-nɨ	lən-nɨ	ri:-nɨ	lɨ-nɨ
1s npt	khuŋ-tə	kip-tə	phɨk-tə	a:s-tə	ləs-tə	re:-tə	lo:-tə
1s pt	khuŋ-ə	kiph-ə	phɨkh-ə	a:ts-ə	lənts-ə	re:-ŋə	lo:-ŋə
1di pt	khuŋ-i	kiph-i	phɨkh-i	a:ts-i	lənts-i	ri:-yi	lu-yi
1pi pt	khoŋ-ki	kep-ki	phɨk-ki	a:ʔ-ki	ləʔ-ki	ri:-ki	lɨ-ki
(source)	(vi-3; 333)	(vi-3; 332)	(vi-1;97)	(vi-3; 332)	(vi-5; 99)	(vi-2; 331)	(vi-4; 99)

Transitive bases: inverse and 1d, 1p, 2d, 2p forms (same stems as corresponding intransitive forms):

gloss	to wait	to catch	to butt	to like	to follow	to look at	to teach	to give	to escort
base	HUŋ-	LOP-	LUK-T-	YA:D-	DHIT-	SYEND-	TSEND-	BI:-	SV-
infinitive	hɨŋ-nɨ	lop-nɨ	luk-nɨ	ya:t-nɨ	dhit-nɨ	syen-nɨ	tsen-nɨ	bi:-nɨ	su-nɨ
3→1s npt	a-hɨŋ-tə	a-lup-tə	a-luk-tə	a-ya:s-tə	a-dhis-tə	a-syes-tə	a-tses-tə	a-be:-tə	a-so-tə
3→1s pt	a-hɨŋ-ə	a-luph-ə	a-lukh-ə	a-ya:ts-ə	a-dhits-ə	a-syents-ə	a-tsents-ə	a-be:-ŋə	a-so-ŋə
3→1di pt	a-hɨŋ-i	a-luph-i	a-lukh-i	a-ya:ts-i	a-dhits-i	a-syents-i	a-tsents-i	a-bi:-yi	a-su-yi
3→1pi pt	a-hɨŋ-ki	a-lop-ki	a-luk-ki	a-ya:ʔ-ki	a-dhiʔ-ki	a-syeʔ-ki	a-tsen-ki	a-bi:-ki	a-su-ki

Transitive bases: direct forms (3s object)

1s→3s npt	hɨŋ-tə	lup-tə	luk-tə	ya:t-tə	dhit-tə	syen-tə	tsen-tə	bi:-ŋtə	sa-ŋtə
1s→3s pt	huŋ-u	luph-u	lukt-u	ya:d-u	dhit-u	syend-u	tsend-u	bi:-ŋu	sa:-ŋu
3s→3s npt	hɨŋ-ta	lup-ta	luk-ta	ya:t-ta	dhit-ta	syen-ta	tsen-ta	bi:-ta	sɨ-ta
3s→3s pt	hɨŋ-ɨ	luph-ɨ	lukt-ɨ	ya:d-ɨ	dhit-ɨ	syend-ɨ	tsend-ɨ	bi:	sɨ
3d→3s npt	hɨŋ-sti	lup-sti	luk-sti	ya:-sti	dhi-sti	syen-sti	tse-sti	bi:-sti	sɨ-sti
3d→3s pt	hɨŋ-si	lup-si	luk-si	ya:s(/t)-si	dhis(/t)-si	syen-si	tsent-si	bi:-si	sɨ-si

Transitive bases: “I-you” forms:

1s→2s pt	hɨŋ-ŋna	lop-mna	luk-ŋna	ya:t-nna	dhit-nna	syet-nna	tse-nna	thi:-nna	su-nna
(source)	(vt-1; 337)	(vt-3; 109)	(vt-2a; 340)	(vt-2a; 342)	(vt-2a; 339)	(vt-4; 350)	(vt-5b; 112)	(vt-6b; 114)	(vt-6a; 114)

Abbreviations: pt = past, npt = non-past; “source” is the conjugation number and page number in van Driem 1993.
Note that certain suffixes have an added initial ŋ- or y- after an open stem.