Na-khi and Proto-Lolo-Burmese:  
A Preliminary Survey
Marc Okrand

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1. Na-khi is a Tibeto-Burman language spoken around
the town of Likiang (or Li-chiang) in Yunnan, southern China.
It has been classified (by Matisoff 1972) as a member of
the Mosoid branch of the Loloid group of Lolo-Burmese
languages within the Tibeto-Burman stock. The data upon
which this preliminary survey is based are exclusively
from Rock (1963) who makes a definite distinction between
Na-khi and the related Moso.

Rock points out that the Chinese refer to all the
people of the Likiang area as Moso, and have done so for the
past hundred years. Earlier writings, however, indicate
that there were (at least) two tribes in the area, the Mo
and the Hsieh (or, more fully, the mó-mán\(^a\) and the xie-mán\(^b\)
— the 'Mo barbarians' and the 'Hsieh barbarians' — see
Rock, p. xxvii). In Chinese, when the two groups were
spoken of together, mó and xie were juxtaposed in the
phrase mó xie èr zhòng mán\(^c\) 'Mo [and] Hsien two kinds
barbarians' or 'the two barbarian (tribes) Mo and Hsieh'
(Rock, p. xxvii). This, coupled with the fact that xie
was pronounced so when referring to a tribe could have
given rise to the use of Moso to refer to both the Mo and
the Hsieh. Rock believes that the name Hsieh ([ɕiɛ] in IPA)
is in fact a Sinicization of the kʰi ([ɕi]) of Na-khi
(p. xxviii).

The Moso (the 'Mo barbarians') are separated from the

\(^{\text{a}}\) mó-mán\(^a\)
\(^{\text{b}}\) xie-mán\(^b\)
\(^{\text{c}}\) mó xie èr zhòng mán\(^c\)
Na-khi by the Yangtze river, and, though their language is closely related to Na-khi, the two tribes must communicate by means of Chinese (Rock, p. xxvi).

Rock's dictionary is based on the Na-khi written language, rather than the spoken colloquial. The Na-khi writing system, a combination of pictographs and syllabic characters, probably goes back to earlier than the 13th century (Rock, p. xx). Thus, the dictionary contains 'many archaic words' and, furthermore,

many words [have] been omitted for which no pictographs exist. Thus, the number of sound complexes found in the Dictionary are not those of the colloquial of which more exist, but those of the written language. [Rock, p. xvi]

The phonetic values given to the various written symbols are based upon a dialect of Na-khi spoken not in the town of Likiang itself (where, according to Rock, there is too much influence from Chinese so that the natives cannot pronounce certain words anymore), but rather in villages to the north and west of Likiang, in the Yangtze Valley. Only the priests read the Na-khi writing, and there is a difference between the literary language and the colloquial, as can be seen when Rock provides both forms.

Lacking a complete analysis of Rock's dictionary, it was thought best to retain his transcription system for comparative purposes, even though it is quite clear that his system could be simplified. In any event, his system is as follows:

I. Initials

<table>
<thead>
<tr>
<th>p'</th>
<th>t'</th>
<th>ts'</th>
<th>ch'</th>
<th>t'kh(y)</th>
<th>k'</th>
<th>ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>as'</td>
<td>dt</td>
<td>ts</td>
<td>ch</td>
<td>gky</td>
<td>gk</td>
<td></td>
</tr>
<tr>
<td>ds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>d</td>
<td>tz</td>
<td>dsn</td>
<td>gy</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>bs</td>
<td>dd</td>
<td>dz</td>
<td>azn</td>
<td>gg</td>
<td>gg</td>
<td></td>
</tr>
<tr>
<td>mt</td>
<td>nd</td>
<td>nds</td>
<td>ndsh</td>
<td>ngy</td>
<td>ng</td>
<td></td>
</tr>
<tr>
<td>mb</td>
<td>nd</td>
<td>ndz</td>
<td>ndzh</td>
<td>n</td>
<td>ng</td>
<td></td>
</tr>
<tr>
<td>sf</td>
<td>ss</td>
<td>sh</td>
<td>kh(y)</td>
<td>kh</td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>v</td>
<td>sz, z</td>
<td>zh</td>
<td></td>
<td>gh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>ny</td>
<td>ng</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>w</td>
<td>l</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ll</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There are five major points of articulation, indicated in columns: labial (p', etc.); dental (t', etc. and ts', etc.); alveolar (actually alveo-palatal) (ch', etc.); palatal (or palatalized velar) (t'kh(y), etc.); and velar (k', etc.). In addition, there is a glottal spirant (h) and ṭn, a voiced uvular (or pharyngeal) fricative (Rock, p. xxi). Furthermore, a word may begin with no initial consonant (zero-initial), Ø in the chart.

Rock distinguishes 14 manner series (some of them confined to single points of articulation), though what some of the distinctions really are is not all that clear. In any event, the manners (indicated in the chart in rows) are: voiceless aspirated stop (or fortis affricate) (p', etc.); voiceless aspirated affricate, lenis (ds'); voiceless unaspirated stop (or fortis affricate) (bp, etc.); voiceless unaspirated affricate, lenis (ds'); voiced stop (or affricate), lenis (b, etc.); voiced stop (or affricate), fortis and long (bb, etc.); prenasalized stop (or affricate), lenis (mb, etc.); prenasalized stop (or affricate), fortis (mb, etc.); voiceless fricative (ff, etc.); voiced fricative (v, etc.); nasal (m, etc.); fortis and long dental nasal (nn); semi-vowel and lateral (w, etc.); and fortis and long lateral (ll). What the difference between his sz (which he identifies with IPA [z]) and his s might be cannot be determined.

There are a few important peculiarities about the transcription. Rock describes kh as a palatal fricative, which justifies considering the sequence t'kh(y) a palatal affricate (the y is written before vowels other than i). There is a sequence k'hu in addition to khyu, but the former may be related to h (cf. 3khu and 3hu, both glossed as 'stomach of a ruminant'). It seems as though the only palatalized velar to become an affricate is the voiceless aspirated one t'khy (or [t\'k\'y]), probably from earlier *k'y.

Note that ng is the velar nasal [ŋ], while both ng and nng are prenasalized velar stops. Unaspirated ch is rare (occurring only in the syllable cher), as are ff and v. In one case Rock transcribes fa 'to ferment' (rather than ffa), but this is a loan from Chinese fa. There are several other unique initials:

dgy  dtgy  tgy (tky)  dty

The first three of these perhaps represent remnants of a dental prefix. t'khy occurs as an alternate form in a single word, 3tgye - 3tkhye 'cremate', where, maybe, the prefixed palatalized unaspirated voiceless velar has become an unaspirated palatal affricate (paralleling t'khy).
sequence dty occurs in only one word, ʒdtyu 'tc bojż', but this seems to have developed from ʒdgyu 'to boil'.

II. Rhymes.

(a) simple vowels and diphthongs

\[
\begin{align*}
\text{i} & \quad \text{i} & \quad \text{u} & \quad \text{u} \\
\text{ü} & \quad \text{i}u & \quad \text{ou} \\
\text{e} & \quad \text{ue} & \quad \text{o} & \quad \text{o} & \quad \text{wuo} \\
\text{ö} & \quad \text{er}(h) \\
\text{a} & \quad \text{ą} & \quad \text{AW/Ü} \\
\text{(w)uą} & \quad \text{oa} & \quad \text{(ua)} & \quad \text{wuą} & \quad \text{ąa}
\end{align*}
\]

A macron represents vowel length, though long vowels are rare except in words with zero-initial (and there is no word "I"). The symbols are fairly straightforward except as follows: I is a high front vowel, 'slightly centralized' (Rock, p. xxxI). ü is a high front rounded vowel following all initials other than gn, kh, kh, ndd, ll, gg and ngg, where it is a high back unrounded vowel. (This is Rock's list, but there is no word knu in the dictionary.) ö is front rounded [oe]; â is [ε]; ü is [u]; both aw and o are [o] (though aw is often confused with a). er is a 'retroflexed mid-central vowel with slight pharyngeal constriction' (Rock, p. xxxi); ern is the same as er, but written in what Rock identifies as Chinese loan words; âr is probably the same, slightly lower, following only h. wuą (ua after initial w) has 'prominence' on a; wuą (ua) after initial w) has 'prominence' on u (Rock, p. xxxii). Finally, ąa is a 'low back vowel with laryngeal constriction like Arabic ąasin' (Rock, p. xxxi).

(b) nasalized rhymes

un
\[
\begin{align*}
\text{uęń} \\
\text{on}
\end{align*}
\]

\[
\begin{align*}
\text{an} & \quad \text{än} \\
\text{uan} & \quad \text{uän}
\end{align*}
\]

Nasalized rhymes in Na-kni are secondary, and have nothing to do with nasal finals in Proto-Lolo-Burmese.
(c) other rhymes

-\textit{v} -\textit{ugh} -\textit{ung} -\emptyset

-\textit{v} is a 'voiced labio-dental fricative, used in syllabic position after \textit{g, gk, k', dd, nd, dt, l}' \cite{Rock, p. xxxii}. It is also found after \textit{ng} and \textit{n}, though Rock points out that the sequence \textit{nv} is 'nasalized syllabic \textit{v}' \cite{Rock, p. xxxii}. There is no sequence \textit{mv} or \textit{ngv}, so any nasal before \textit{v} is simply realized as nasalized \textit{v}.

-\textit{ugh} occurs only in the sequence \textit{ghugh} (and \textit{gh-} occurs only before -\textit{ugh}). Rock says that \textaccentuml{u}{e} following \textit{gh} is [\textit{w}] (see above), but what final \textit{gh} is is not clear, since there are no final consonants in \textit{Na-khi} (besides this and -\textit{ung}).

-\textit{ung} is apparently [\textit{un}] and occurs only in the sequence \textit{ch'ung}. Its status in not certain.

-\emptyset represents zero-rhyme, allowing for the syllables \textit{ds, dz, ss, ts}.

III. Tones

There are four tones in \textit{Na-khi}, indicated by a superscript number preceding the syllable. The contours of the tones are:

1. low falling
2. mid level
3. high, short
4. 'from low to high rising, modulated' \cite{Rock, p. xx}

Rock notes that tone 4 'occurs mostly in loan words from the Chinese or Tibetan languages' \cite{Rock, p. xxxv}. No \textit{Na-khi} words with Lolo-Burmese cognates have been found in tone 4, so we may ignore it for the rest of this survey.

2. The reconstructed Proto-Lolo-Burmese (\textit{PLB}) forms are taken from Matisoff 1972, Burling 1967, or are reconstructed by me, usually based on written Burmese (\textit{wB}). The reconstructed in Burling 1967 have been modified to fit the schema presented in Matisoff 1972. Several reconstructions were obtained from Matisoff by personal communication.

2.1. In the chart below, the \textit{PLB} and \textit{Na-khi} (NK) initial correspondences are shown. Glosses refer to the actual forms listed in Appendix A.
<table>
<thead>
<tr>
<th>PLB</th>
<th>NK</th>
<th>examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;voiceless &gt; NK aspirated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*p</td>
<td>p'</td>
<td>bubble, chaff, decision, lose, male, open, price, tie up, untie, white</td>
</tr>
<tr>
<td>*Ç-p</td>
<td>p'</td>
<td>vomit</td>
</tr>
<tr>
<td>*t</td>
<td>t'</td>
<td>handspan, sharp</td>
</tr>
<tr>
<td>*Ç-t</td>
<td>t'</td>
<td>emerge</td>
</tr>
<tr>
<td>*ts</td>
<td>ts'</td>
<td>break in two, ten</td>
</tr>
<tr>
<td></td>
<td>also t'kh</td>
<td>bore (see discussion below)</td>
</tr>
<tr>
<td></td>
<td>also ch'</td>
<td>wash (see discussion below)</td>
</tr>
<tr>
<td>*Ç-ts</td>
<td>ts'</td>
<td>bite down onto</td>
</tr>
<tr>
<td>*c</td>
<td>ch'</td>
<td>medicine</td>
</tr>
<tr>
<td>*V-c</td>
<td>ds'</td>
<td>goat (see discussion below)</td>
</tr>
<tr>
<td>*ky</td>
<td>cn'</td>
<td>weigh (see discussion below)</td>
</tr>
<tr>
<td></td>
<td>also t'kh</td>
<td>deer, sweet (see discussion below)</td>
</tr>
<tr>
<td>*k</td>
<td>k'</td>
<td>basket, bitter, crossbow, cup, dog, foot, horn, smoke, steal</td>
</tr>
<tr>
<td>*Ç-k</td>
<td>k'</td>
<td>year</td>
</tr>
<tr>
<td>*krw</td>
<td>ch'</td>
<td>daughter-in-law (see discussion below)</td>
</tr>
<tr>
<td>*C-kr</td>
<td>ch'</td>
<td>six (see discussion below)</td>
</tr>
<tr>
<td>*k-r</td>
<td>t'kh'</td>
<td>ant (see discussion below)</td>
</tr>
</tbody>
</table>

*voiced > voiced (fortis or lenis), sometimes voiceless unaspirated (conditioning unknown)

<p>| b       | b        | enjoy, swollen, vulva         |
|         | also bb  | give, hatch, write           |
|         | also bp  | carry                         |
| *d       | d        | ability, insect              |
|         | also d'1 | beseech, weave              |
|         | also     | alive                        |
| *dz      | --       | (no examples)                |
| *j (dž)  | dzh      | market                       |
| *gy      | dzh      | debt                         |
| *g       | g        | body, crooked                |
|         | also gk  | empty (?)                    |</p>
<table>
<thead>
<tr>
<th>PLE</th>
<th>NK</th>
<th>examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>*preglottalized</td>
<td>voiceless &gt; voiceless aspirated (see discussion below)</td>
<td></td>
</tr>
<tr>
<td>*?p</td>
<td>p'</td>
<td>male, grandfather</td>
</tr>
<tr>
<td>*?t</td>
<td>t'</td>
<td>cut by blow</td>
</tr>
<tr>
<td>*?ts</td>
<td>ts'</td>
<td>build</td>
</tr>
<tr>
<td></td>
<td>ch'</td>
<td>lung (see discussion below)</td>
</tr>
<tr>
<td>*?c</td>
<td>--</td>
<td>(no examples)</td>
</tr>
<tr>
<td>*?ky</td>
<td>--</td>
<td>(no examples)</td>
</tr>
<tr>
<td>*?k</td>
<td>?</td>
<td>(examples not very good; see 'cold', 'dry', 'fear' and discussion below)</td>
</tr>
</tbody>
</table>

*preglottalized voiceless > voiceless unaspirated (see discussion below)

| *?b  | bp   | father, frog, porcupine                                                |
| *?d  | dt   | box, mutual action, place, thousand                                   |
| *?dz | ch   | join, joint                                                            |
| *?j  | --   | (no examples)                                                          |
| *?gy | gky  | little bit                                                             |
| *?g  | gk   | branch, outer covering (also 'between' and 'roast' -- see discussion below) |

*prenasalized, voiced or voiceless > prenasalized voiced (fortis or lenis, conditioning unknown)

| *Np  | mb   | fall over                                                              |
|      | mbb  | explode                                                                 |
| *Nb  | mb   | bee, to fly                                                            |
| *Nt  | --   | (no examples)                                                          |
| *Nd  | nd   | poison                                                                  |
| *Nts | --   | (no examples)                                                          |
| *Ndz | nds  | bridge, tooth                                                          |
|      | ndz  | eat                                                                     |
| *Nc  | --   | (no examples)                                                          |
| *Nj  | --   | (no examples)                                                          |
| *Nky | --   | (no examples)                                                          |
examples

B
k(r)
g
gr
s

NK
ndsh
ndsh
ng
ngy
ndz

beat
fear
nine
lac
tree

nasal or prefixed nasal > nasal (except *mr — see below; see also footnote 5)

-m
-m
-m(y)

-m(i)

-n(i)

female, fire, mushroom, negative, sky, thumb
blow, dream
son-in-law
eye

l>*ny
n

ny
black, smell

also

ny
knead, sun, two (Rock writes nyi, never ni; the palatalization is due to the following NK ı)

also

nn

you

also

n

nn

bean, lips

heart

(y)

ny

fish

(ng)

I (see discussion below)

also

n

silver, weep (before NK -v; see discussion of rhymes, above)

also

w

five (see discussion below)

lottalized nasal > voiceless fricative

m
n

ny

q

ff

h

--

--

feather
deep, drive, ear, red, rib

(no examples)

(no examples)
<table>
<thead>
<tr>
<th>PLB</th>
<th>NK</th>
<th>examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>*spirant</td>
<td>ss</td>
<td>blood, dry-2, know, three</td>
</tr>
<tr>
<td>*s</td>
<td>sh</td>
<td>otter</td>
</tr>
<tr>
<td>*sr</td>
<td>sh</td>
<td>breath, kill</td>
</tr>
<tr>
<td>*C-s</td>
<td>ss</td>
<td>iron, meat</td>
</tr>
<tr>
<td>*Nš</td>
<td>sh</td>
<td>new</td>
</tr>
<tr>
<td>*C-š</td>
<td>z</td>
<td>child, descend</td>
</tr>
<tr>
<td>*z</td>
<td>zh</td>
<td>leopard (before NK i)</td>
</tr>
<tr>
<td>*z</td>
<td>ss</td>
<td>he (devoicing unexplained)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>voiced lateral &gt; voiced lateral (fortis or lenis)</strong></td>
</tr>
<tr>
<td>*l</td>
<td>l</td>
<td>fathom, four, grandchild, hand, maggot, road, stone, warm, wrap</td>
</tr>
<tr>
<td>*l</td>
<td>ll</td>
<td>boat, bow, come, heavy (before NK ū)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>preglottalized lateral &gt; voiceless fricative</strong></td>
</tr>
<tr>
<td>*ʔl</td>
<td>h</td>
<td>moon, wind (air), winnow</td>
</tr>
<tr>
<td>*ʔl</td>
<td>kh</td>
<td>tongue (before NK į)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>semi-vowel &gt; semi-vowel</strong></td>
</tr>
<tr>
<td>*w</td>
<td>w</td>
<td>far (?)</td>
</tr>
<tr>
<td>*y</td>
<td>y</td>
<td>right, sheep, sleep, take</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>prefixed semi-vowel &gt; voiced (usually) stop (see discussion below)</strong></td>
</tr>
<tr>
<td>*C-w</td>
<td>b</td>
<td>flower, pig, sole</td>
</tr>
<tr>
<td>*C-w g</td>
<td>b</td>
<td>bear, egg, head</td>
</tr>
<tr>
<td>*C-w gk</td>
<td>b</td>
<td>hide (?)</td>
</tr>
<tr>
<td>*k-r-w</td>
<td>bp</td>
<td>leech (cf *preglottalized semi-vowel, below)</td>
</tr>
</tbody>
</table>
PLB   NK     examples

*preglottalized semi-vowel (few examples)
*?w  ff   rodent (cf. *prefixed semi-vowel, above)
<"k-r-w y  antelope

*r  > varicus (usually zero) (conditions unknown)
*r  Ø    bone, chicken, copper, shadow
    also z    laugh
    also gh   skin (?)

*?r  > voiceless fricative
*?r  h    eight, gold, night, stand
    also kh  hundred (before NK i)
    also kh  rain (before NK ü)

*h  > n
*h  h    food, may

Special development: *mr and *?mr (see discussion below)
*mr  zh   horse (and other examples in discussion)
*?mr sh   high, say, thrum (and other examples in discussion)

Several aspects of the PLE:NK initial correspondences are worth special discussion.

(1) Prefixes: For the most part, the only prefixes generally reflected in Na-khi are *N (prenasalization) and *? (preglottalization). These two will be discussed separately below.

Outside of the resonant initials, the other prefixes (indicated *C-, *Ø-, *V- and even *s-) usually have no effect whatsoever. This is clearly the case before stops and affricates and, significantly, before nasals. Na-khi maintains a distinction between *s- and *?- before nasals, such that *s- has no effect while *?- results in a voiceless fricative. This might indicate that in some words (those indicated *s-) the prefix was lost before *s > *?-, while in others (those indicated *?-) it was retained and was involved in subsequent sound change. On the other hand,
the difference may indicate separate origins for "s- and "ʔ-
words (Proto-Tibeto-Burman "s- and "H-) maintained in PLB,
at least in Mosoid. The evidence is far too scanty to
determine whether the prefix "V (rather than "C) has anything
to do with the lenis, rather than fortis, affricate initial
in 'goat' NK ʔds'I < PLB "V-cit.

Despite the general disregard for prefixes, there
are two cases in which the prefix 'won out' over the root-
initial: NK šhου-ndo 'to be ashamed' < PLB š-rak; and
NK šēr 'seven' < PL šiʔ < PLB šnīt. In both cases, the
spirant + sonorant cluster became a spirant in Na-khi.

There is one case in which a dental prefix seems to have
been preserved: NK ʔdgyu - ʔdtyu 'boil' cf. PLB ʔgyak 'to
boil', "ʔgyak 'cause to boil'. The Na-khi forms seem to
point to something like PLB ʔ-d-gyak. The first NK form
is probably the more archaic, found only in the phrase
ʔdgyu-lmūn-la 'boil dead chicken' which is the name of a
funeral rite. The second NK form could easily have come
from the first.

The case of prefixed resonants is more complex, and
will be discussed separately below.

(2) Prenasalization: Na-khi (or Na-khi and Moso), in
some cases, provides the only evidence for reconstructing
prenasalized initials in certain PLB words. Since PLB
words with prenasalization justified by evidence from other
languages (e.g. voiced stops in Lahu) have prenasalized
initials in Na-khi, it was felt proper to add prenasalized
alternants to the PLB reconstructions whenever Na-khi had
a prenasalized initial. Thus, the words in which only Na-khi
points to a *prenasalized initial are:

bee, bridge, eat, to fly, lac, nine, tooth, tree

Since the distinction between prenasalized voiced and
voiceless stops (and affricates) was lost in Na-khi, there
is no way to determine, for the above words, whether the
initial should be reconstructed with a prenasalized voiced
or voiceless consonant. Thus, the prefix "N- was simply
added to whatever initial happened to occur in the non-
prenasalized alternant(s).

Note, finally, that the prenasalized spirant in 'tree'
becomes a prenasalized affricate in Na-khi: NK ndžer <
PLB N-sik or N-siŋ (NK gives no clue here regarding
stop vs. nasal ending).

(3) Pre-glottalization: In stopped syllables, a distinction
must be recognized between preglottalized voiced and voiceless
stops (and affricates) to account for certain tonal
phenomena (see Matisoff 1972). In Na-khi, this distinction
is not affect tone, but it is apparently maintained in
initial. Thus, in stopped syllables which must (for
usual reasons) be reconstructed with preglottalized
celess stops (or affricates), Na-khi shows aspirated
ps (or affricates):

build, cut by biow, lung

Syllables reconstructed with preglottalized voiced
ps (or affricates), Na-khi has unaspirated voiceless
ps (or affricates):

branch, join, joint, mutual action

In stopped syllables showing an alternation between
zed and voiceless preglottalized initials, therefore,
correct ancestor of the Na-khi cognate may be
determined by the aspiration or lack of aspiration of the
khi initial. Thus,

PLB *?kyik - *?gyik - *gyik 'little bit'
NK 3gkyi 'small' < *?gyik

PLB *?kuk - *?guk 'outer covering'
NK 3gkv 'skin of a fruit; shell of an egg' < *?guk

Both cases, the lack of aspiration in Na-khi points
the preglottalized voiced alternant. (*gyik can be
minated as the ancestor of NK 3gkyi 'small' on the
of tonal development -- see below.)

Thus far, in PLB reconstructions, no distinction
been kept between preglottalized voiced and voiceless
ials in non-stopped syllables, since there was no
ence (segmental or tonal) for such a distinction.
Na-khi seems to maintain the distinction in stopped
ables, however, there is no reason to suppose that it
not do so in non-stopped syllables. Thus, *preglottalized
stopped syllables with aspirated initials in Na-khi
be reconstructed with PLB preglottalized voiceless
als, and those with non-aspirated initials in Na-khi
be reconstructed in PLB voiced initials. (See examples
ed in the chart above.)

Since PLB preglottalized voiced stops seem to regularly
NK unaspirated stops, while PLB voiced stops at least
ly give NK voiced stops, this difference, perhaps,
be used to choose between preglottalized and plain
ial alternants:

PLB *gra2 - *?gra2 'between'
NK 2gko < *?gra2
and perhaps:

\[ \text{PLB} \quad ^{1}\text{gaŋl} \quad \text{"?gaŋl} \quad \text{'roast, broil'} \]

\[ \text{NK} \quad ^{1}\text{gkwua} \quad \text{'a hearth; cooking place; furnace'} \quad < \quad \text{"?gaŋl} \]

In both cases (or, if the second is not a good set, in the case of 'between'), the voiceless unaspirated -- rather than voiced -- initial in Na-khi may be evidence for the preglottalized PLB form.

If this is so, then perhaps the Na-khi voiceless unaspirated reflexes of ?LB voiced initials may really be reflexes of preglottalized variants. See: 'alive', 'carry', and perhaps also 'empty'.

Of course, things are never as regular as they appear. We also find PLB \(^{2}\text{tap} \quad \text{'adhere, stick together'}, \quad \text{WB thap} \quad \text{'place on one another; add to; repeat, do again'}, \quad \text{NK} \quad 3\text{lda} \quad \text{'to add to; additional'}. Here, Na-khi shows an unaspirated, rather than the expected aspirated, voiceless initial. Whether this is really an exception or points to a PLB \(^{2}\text{d-} \quad \text{variant cannot be determined at this time.}

Note also the sets:

\[ \text{PLB} \quad ^{1}\text{Nkrak} \quad \text{"?kрак} \quad \text{"Nkraŋl} \quad \text{'cold'} \]

\[ \text{NK} \quad ^{3}\text{t'khi} \quad < \quad \text{"?kрак} \]

\[ \text{PLB} \quad \text{"?kрак} \quad \text{'dry, dried up'} \]

\[ \text{NK} \quad ^{3}\text{gko} \]

cf. \text{WB} \quad \text{khrok}

\[ \text{PLB} \quad \text{"grok} \quad \quad \text{"Nkrok/"?krok} \quad \text{'fear, frighten'} \]

\[ \text{NK} \quad ^{3}\text{cher} \]

If the Na-khi word for 'cold' is really cognate to the PLB form, it does show the expected aspirated reflex of the PLB preglottalized voiceless initial, with palatalization (due to the \(^{3}\text{r} \quad \text{?} -- \text{see below}). The word for 'dry', however, has the same PLB initial (indeed, same PLB reconstruction) as 'cold', but a non-palatalized, unaspirated reflex in Na-khi. This might point to a \(^{2}\text{g-} \quad \text{variant, or else maybe the Na-khi is related to the Burmese word, which, lacking further data, may easily descend from PLB \(^{2}\text{gruk or the like. The word for 'fear' involves a simplex/causative pair. The PLB \(^{N-} \quad \text{variant is the simplex, and the \(^{?}- \quad \text{the causative. The plain voiced initial variant is also simplex, so there may be another causative version \(^{?}\text{grok as the Na-khi unaspirated initial (and gloss) suggest (despite the palatalization).} \]
(4) Medial glides and affricates: Except with velars and the special cluster *(r)m, medial glides *r, *w, *y play no part in the Na-khi initial reflexes. Furthermore, it is probably safe to say that the medial *w is best considered part of the rhyme, even with the velars.

The sequence velar + *y usually gives rise to the Na-khi palatalized velar series, including the affricate t'kh(y) (e.g., 'deer', 'sweet'), and the palatalized velar stops gky (e.g., 'little bit'), etc. Sometimes, however, the initial is further fronted to the alveo-palatal series; thus:

PLB *kyin¹ 'weigh' NK ²ch'i
PLB *gyoy² 'debt' NK ²dzhu 'an account; a debt; a claim'
PLB *Ngyök - *Nkyök 'beat/shake' NK ¹ndshi 'to strike; to beat'

The Na-khi word for 'weigh' may be the wrong cognate, since there is another form ¹gkyi 'a scale; a balance; to weigh' which better fits the tone correspondence (²ch'i would have to be considered an irregular tone correspondence -- see below), but its initial points to a variant *?gyin¹, for which there is no further evidence. What happened in the other two examples is not clear, since both gyu and ngyi do occur in other Na-khi words.

The situation is even more complicated in the case of medial *r. Here there are examples in which the *r either has no effect (or may be part of the rhyme), such as 'between', 'crossbow', 'dry', 'foot', 'horn'; has a palatalizing effect, as in 'ant', 'cold'; fronts all the way to an alveo-palatal, as in 'daughter-in-law', 'six'; or does something else.

Included in the 'something else' category are:
PLB *kruq² 'Jew's narp' > NK ³kwuo; PLB *Ngrip 'lac' > NK ³ngye 'resin'. What Rock means by the transcription kwuo is not clear, since aspirated stops are written ḳ and unaspirated by ḡ.

There is not enough data yet to determine whether the final has any influence on what *r does to the initial.

It is possible that the various reflexes of velar + *y or *r are further complicated by the fact that there is not perfect regularity in the reflexes of the PLB affricates *ts and *c (and their voiced, prenasalized and preglottalized counterparts). Thus, in addition to 'regular' correspondences of *ts (etc.) to ts (etc.) and *c (etc.) to ch (etc.) we find:
*dental > alveo-palatal

PLB  \texttt{tsiy} > NK \texttt{ch'ër} 'wash'
*tsut > \texttt{ch'ër} 'lung'
*dzak > \texttt{chung} 'join'
*dzik > \texttt{chër} 'joint'

*dental > palatal (palatalized velar)

PLB *tsow > NK \texttt{t'khyu} 'bore'

*palatal > dental

PLB *\texttt{V-cit} > NK \texttt{ds'ı} 'goat'

In the case of 'wash' and 'joint', perhaps the following PIb *i is involved in the palatalization, though 'goat' goes exactly the other way around.

At this point, we can do no more than to admit that the status of affricates, especially alveo-palatal and palatal, whether from PLB affricates or velar + *y or *t, is unsure, and requires a great deal more work. It is likely that the finals are involved, since the finals -ër, -ung and -ı are rather restricted.

(5) *mr and *m?mr: There appears to have been a special development of the PLB initials *mr and *m?mr, resulting in Na-khi zh and sh respectively. The examples of this development, some of which are not included in Appendix A because of various other complications, include:

*mr > zh
'grass' *mruk - *mrak > 1zhou
'horse' *mran > 2zhwa
'noise' WB mran NK 1zhër
'snake' WB mrwe NK 1zhı

*m?mr > sh
'high' *mraq > 1shwa
'say' *mrwak > 3shou

We may perhaps also include: WB mranq 'gash obliquely, or any way', NK 2shwa in 'shwa-3ds-ı castrated goat' (*mranq ??); PLB *mranq 'see', NK 1shu 'search' (*mranq ??); WB mru 'minute particle of floating dust', NK 1shou 'sand' (*mru ??); WB mrit-cha 'thrum, the threads by which the warp of a new piece to be woven is connected in the loom', NK 1shi 'to stretch or spread the thread on a loom' (*mrit-t ?? or open syllable variant ??).

The most convincing pair of examples is 'horse' and 'high', in which the only difference in PLB is the preglottalization,
The only difference in Na-khi is the voicing of the alveolar. The suggested cognate in 'castrated goat' also follows this pattern perfectly. The evidence for the nasalization in 'hign' is not from Na-khi alone, but shared for PLB in general (see Burling 1967:84); and justifies positing *mr for the other NK sh words.

Not all the examples above are sure ones. NK ʃher may be related, rather, to WB sam 'sound' and LIsu 'a noise' (Lisu form, from Hope, provided by Graham Good, personal communication), implying PLB *sam or alike. Likewise, the word for 'sand', NK ʃshou, may be related to PLB *say (though the tones would be irregular), also meaning 'sand'.

In any event, there are no counter-examples. One possible counter-example is the set:

WB mri NK ʃman 'tail'

But r is aberrant, however (see Benedict 1972:64), the PLB reconstruction being *mi - *mi, though here it looks a bit more like the Proto-Tibeto-Burman form (Benedict 1972:64).

6) *w: The Na-khi words corresponding to PLB words starting with *w have complex developments, involving, e.g., PLB prefixes or else the nature of certain PLB stems with zero-initial. Only one example was found in *w becoming NK w: PLB *wiy 'far' > NK ʃwu 'far, unt'. This may not be a good cognate, however, since a tone 3 corresponds to PLB stopped syllables (see 5). On the other hand, perhaps the Na-khi form reflects a stopped variant such as *wit. The rounding of PLB after w in Na-khi is not all that strange, especially it is seen that *-it corresponds to NK o even with a preceding w: PLB *rit > NK ʃho 'eight'.

Whether 'far' is a good cognate or not, the correspondence is certainly the rarest one. More common is *w > NK d stop. Two voiced stops are involved here, b and g. NK b words are:

PLB *wat NK ʃba - ʃbaw 'flower'
*wak ʃtu 'pig'
*waə ʃtoa 'sole'

Interestingly enough, all three of these words have Proto-Burman (PTB) reconstructions with initial bilabial (PTB forms are all from Benedict 1972):

PTB *bwat 'flower'
*pak = *pwak 'pig'
*pa = *pwa 'sole'
The implication, perhaps, is that Na-khi, at least, retained these stops before "w and the w was lost due to lack of contrast between ba and bwa, while the other Lolo-Burmesian languages treated the stop as a prefix, and dropped it before w. That is, there may have been a sequence like:

$$PTB \ *bwat > PLB \ *bwat > NK \ 1ba \ - \ 1baw \ 'flower'$$
$$\ *pwak > \ *bwak > \ 1bu \ 'pig'$$
$$\ *pwa > \ *bwa^2 > \ 2boa \ 'sole'$$

On the other hand, it is possible that "w simply developed into NK b, though this seems less likely than the above interpretation due to other reflexes of "w, discussed below.

When a prefix is reconstructed in PLB, Na-khi develops either a voiceless unaspirated bilabial stop initial (bp), or else, if the prefixation caused (or became) preglottalized Na-khi shows the expected voiceless fricative:

$$PLB \ *k-r-wat > NK \ 3bp\ddot{o} \ 'leech'$$
$$\ *k-r-wak > \ 3ff\ddot{u} \ 'rodent, rat'$$

Why these two identical PLB initial sequences should develop differently is not apparent, but perhaps the PTB ancestors again shed some light: PTB "r-pat 'leech', "rwak 'rodent'. Again, the PTB form for 'leech' might point to a PLB "k-r-bwat, and that for 'rodent' to PLB "k-r-wak. The sequence "k-r- could have given rise to pre-NK preglottalized initials: Pre-NK "bwat 'leech', "wak 'rodent'. Then, as with the words for 'pig', etc., the w was lost after the bilabial stop. The normal reflex for "b is bp, and that for "w should be ff. (This is also support for treating the words for 'pig', etc., as coming from PLB "bw- rather than simply "w-.)

In addition, there are a few words where PLB "w seems to correspond to g or gk. In two of these words, however, the PLB reconstruction is simply "u. Since there is no contrast between "u and "wu (and, perhaps, "\ddot{u}, if such a reconstruction is necessary), these can, for the time being at least, be considered examples of "w-

$$PLB \ *u^3 = *wu^3 = *\ddot{u}^3 > NK \ 2g\ddot{v} \ 'egg'$$
$$\ *u^2 = *wu^2 = *\ddot{u}^2 > \ 2gkv \ 'head'$$
$$\ *wam^1 . > \ 1gkv \ 'bear'$$

Once again, the PTB reconstructions may prove helpful: PTB "s-gaw 'head'. If this PTB "s- prefix gave rise to preglottalization, there would be a PLB form "g\ddot{u} which would develop quite regularly into NK "gkv. By analogy, we may posit PLB "g\ddot{u} > NK "gv 'egg'; PLB "gwam > NK "gkv
bear'. The set appears even more regular if we reconstruct *gwu* rather than *gu*. Then, the *w* is lost before *u*, or else the velar initial (or prefix) has a labial component which does not show up before *u* (cf. the apparent relationship between *q* and *w* below).

(7) *r*: The fate of PLB *r* in absolute initial position seems to be complete (or almost complete) loss. Thus, PLB *r* > NK ꞌØ in 'bone', 'copper', 'shadow'. Its effect might be felt in 'chicken' as laryngealization: PLB *k-rak* > *rak* > NK ꞌla. Similarly, the laryngeal aspect might be involved in PLB *NK*rim > NK ꞌghūgh 'skin, hide', though here the tone correspondence is irregular.

There appears to be one (unexplainable, if cognate) case of *r > z*, again with laryngealization: PLB *ray* > (NK ꞌray is ꞌirrig.)

How the development of initial *r* ties in with that of medial *r* (see above), if it does at all, is not apparent, except in those cases where medial *r* seems to be lost.

(8) *ŋ*: Na-khi initial *ŋ* is very rare, the only good cognate being PLB *ŋa* > NK ꞌŋ-go 'I'. The Na-khi vowel here seems to point to labialization, and the only cause of this labialization could be PLB *ŋ*. This is not as ad hoc as it may seem, as the possessive form of the first person pronoun (with tone shift) ꞌŋ-go-ŋ-go 'my, mine' has an alternate form with initial ꞌwu-ŋ-go 'mine'. Note also the Na-khi word for 'five': PLB *ŋa* > NK ꞌwu. (Of course, the possibility that ꞌwu 'mine' and ꞌwu 'five' are loans from Chinese [Mandarin ꞌwō and ꞌwu respectively] cannot be ignored.)

The other good cognate with PLB *ŋ* should be reconstructed with medial *y* (as PTB suggests): PTB *ŋyā* > PLB *ŋ(y)a* > NK ꞌnyi 'fish'. In this light, how NK ꞌnyu 'self, me' fits in with *ŋa* (if it does) is not clear. It may be due to the rarity of NK *ŋ* and represent simply ꞌngo > *ngo > *nyu with the palatal nasal (the closest in point of articulation to the velar) being far more frequent. As noted earlier, all nasals go to ꞌn before *y* ('silver', 'weep').

2.2. In general, no attempt has been made to account for all the various Na-khi reflexes of the Proto-Lolo-Burmese rhymes. What follows, then, is merely a list of correspondences with conditioning factors pointed out only where they are fairly obvious. The logical next step in working Na-khi into PLB is to determine the distribution of Na-khi initials vs. rhymes.

As with the list of initial correspondences, the glosses refer to words to be found in Appendix A.
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<tr>
<td>*-waq</td>
<td>u</td>
<td>open</td>
</tr>
<tr>
<td>*-iŋ</td>
<td>ĕr</td>
<td>tree (?) -- see *-ik</td>
</tr>
<tr>
<td></td>
<td>ü</td>
<td>heart (after n or nn; the nasalized vowel is in the colloquial form; cf. &quot;-aŋ reflex of 'you' vs. 'dream'”)</td>
</tr>
<tr>
<td></td>
<td>un</td>
<td></td>
</tr>
<tr>
<td>*-uŋ</td>
<td>v</td>
<td>beseech, stone, thousand (after NK dd, ɬ, dt)</td>
</tr>
<tr>
<td>(or *-oŋ)</td>
<td>u</td>
<td>bubble (after NK p’)</td>
</tr>
<tr>
<td>*-ruŋ (or *-roŋ)</td>
<td>wuo</td>
<td>Jew’s harp (after *k &gt; k)</td>
</tr>
<tr>
<td>*-an</td>
<td>---</td>
<td>(no examples)</td>
</tr>
<tr>
<td>*-in</td>
<td>i</td>
<td>weigh</td>
</tr>
<tr>
<td>*-un</td>
<td>---</td>
<td>(no examples)</td>
</tr>
<tr>
<td>*-am</td>
<td>u</td>
<td>fathom, iron, otter, road</td>
</tr>
<tr>
<td></td>
<td>un</td>
<td>smell (after NK n)</td>
</tr>
<tr>
<td></td>
<td>o</td>
<td>bridge, rib</td>
</tr>
<tr>
<td></td>
<td>v</td>
<td>bear (after NK g)</td>
</tr>
<tr>
<td>PLB</td>
<td>NK</td>
<td>examples</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>---------------------------</td>
</tr>
<tr>
<td>-wam</td>
<td>-ö</td>
<td>swollen</td>
</tr>
<tr>
<td>-yam</td>
<td>-i</td>
<td>to fly</td>
</tr>
<tr>
<td>-im</td>
<td>--</td>
<td>(no examples)</td>
</tr>
<tr>
<td>-um</td>
<td>-u</td>
<td>three</td>
</tr>
<tr>
<td></td>
<td>-v</td>
<td>warm (after ː)</td>
</tr>
<tr>
<td>*-a</td>
<td>-a</td>
<td>box, father, frog, place (after labials and dentals)</td>
</tr>
<tr>
<td></td>
<td>-aw</td>
<td>bitter (after k')</td>
</tr>
<tr>
<td></td>
<td>-i</td>
<td>&quot;antelope, meat, right (after &quot;(?)y or &quot;(?)&quot;)</td>
</tr>
<tr>
<td></td>
<td>-ǐ</td>
<td>eat (after ndz)</td>
</tr>
<tr>
<td></td>
<td>-ü</td>
<td>come (after ʰ, thus NK ū is [w])</td>
</tr>
<tr>
<td></td>
<td>-o</td>
<td>child, I (after *z, *ŋ)</td>
</tr>
<tr>
<td></td>
<td>-ā</td>
<td>ear, moon, thumb (after h or m)</td>
</tr>
<tr>
<td></td>
<td>-un</td>
<td>female (after m; cf. 'thumb', 'negative')</td>
</tr>
<tr>
<td></td>
<td>-uàn</td>
<td>negative (after m; cf. 'female', 'thumb')</td>
</tr>
<tr>
<td></td>
<td>-uà</td>
<td>five (after NK w; really same as &quot;-a &gt; -a&quot;)</td>
</tr>
<tr>
<td></td>
<td>-u</td>
<td>male (after p'; PTB *-wa)</td>
</tr>
<tr>
<td>*-wa</td>
<td>-ü</td>
<td>handspan, rain (the latter begins with NK kh, thus NK ū is [w], but front rounded [ü] in 'handspan')</td>
</tr>
<tr>
<td></td>
<td>-oa</td>
<td>sole (after b)</td>
</tr>
<tr>
<td>*-ra</td>
<td>-o</td>
<td>between</td>
</tr>
<tr>
<td></td>
<td>-a</td>
<td>bee (or *-ya)</td>
</tr>
<tr>
<td>*-ya</td>
<td>-i</td>
<td>fish, hundred (see also 'bee')</td>
</tr>
<tr>
<td>*-ay</td>
<td>-a</td>
<td>laugh (after *r &gt; z)</td>
</tr>
<tr>
<td></td>
<td>-i</td>
<td>knead</td>
</tr>
<tr>
<td></td>
<td>-ā</td>
<td>ten</td>
</tr>
<tr>
<td></td>
<td>-ēr</td>
<td>ten</td>
</tr>
<tr>
<td>*-way</td>
<td>-ue</td>
<td>chaff</td>
</tr>
<tr>
<td></td>
<td>-a</td>
<td>tie up, tooth</td>
</tr>
<tr>
<td>PLB</td>
<td>NK</td>
<td>examples</td>
</tr>
<tr>
<td>-----------</td>
<td>-----</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>/*-raw</td>
<td>-'a</td>
<td>enjoy</td>
</tr>
<tr>
<td>or /*-yaw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*/-i</td>
<td>-i</td>
<td>fire, insect, penis (?)</td>
</tr>
<tr>
<td></td>
<td>-I</td>
<td>know (after ss)</td>
</tr>
<tr>
<td>*/-iy</td>
<td>-i</td>
<td>deer, market, sun</td>
</tr>
<tr>
<td></td>
<td>-är</td>
<td>copper, medicine, wash</td>
</tr>
<tr>
<td></td>
<td>-ür</td>
<td>wind (air), winnow (after */ʔl &gt; h)</td>
</tr>
<tr>
<td></td>
<td>-ū</td>
<td>boat, bow, heavy (after li, thus ü = [w])</td>
</tr>
<tr>
<td></td>
<td>-ūgh</td>
<td>skin (?)</td>
</tr>
<tr>
<td></td>
<td>-u</td>
<td>far, four</td>
</tr>
<tr>
<td></td>
<td>-v</td>
<td>grandchild (after l)</td>
</tr>
<tr>
<td></td>
<td>-ö</td>
<td>red (after */ʔn &gt; h)</td>
</tr>
<tr>
<td>*/-wiy</td>
<td>-ö</td>
<td>dog</td>
</tr>
<tr>
<td></td>
<td>-än</td>
<td>blood (after ss (!))</td>
</tr>
<tr>
<td></td>
<td>-v</td>
<td>silver</td>
</tr>
<tr>
<td></td>
<td>-a</td>
<td>gold (after */ʔr &gt; h)</td>
</tr>
<tr>
<td></td>
<td>-o</td>
<td>dry-2</td>
</tr>
<tr>
<td>*/-riy</td>
<td>-ö</td>
<td>foot</td>
</tr>
<tr>
<td></td>
<td>-ēr</td>
<td>untie</td>
</tr>
<tr>
<td>*/-(r)wiy</td>
<td>-ēr</td>
<td>daughter-in-law</td>
</tr>
<tr>
<td>*/-u</td>
<td>-v</td>
<td>egg, head (after NK velars)</td>
</tr>
<tr>
<td></td>
<td>-ü</td>
<td>take (after y)</td>
</tr>
<tr>
<td>*/-ru</td>
<td>-ö</td>
<td>porcupine</td>
</tr>
<tr>
<td></td>
<td>-ēr</td>
<td>white</td>
</tr>
<tr>
<td>*/-uw</td>
<td>-u</td>
<td>grandfather, price (after labials)</td>
</tr>
<tr>
<td></td>
<td>-v</td>
<td>body, nine, smoke, steal, weep (after PLB velars)</td>
</tr>
<tr>
<td></td>
<td>-o</td>
<td>horn (after */kr &gt; k̂)</td>
</tr>
<tr>
<td></td>
<td>-ö</td>
<td>bone (after */r &gt; Ø)</td>
</tr>
</tbody>
</table>
PLB  
NK  
examples

-űn  
mushroom (after m)
-űan  
sky (after m)
-űn  
-ű  
feather (after *?m > ff)
-a  
carry
-i  
sweet (?)
-ăr  
green (after *?ny > h)

*-oy  
-u  
debt

*-ow  
-u  
bore (?)

2.3. In open syllables, (that is, those not ending in PLB "-p, "-t, "-k), with remarkably few exceptions PLB Tone *1 became Na-khi tone 1, and PLB Tone *2 became Na-khi tone 2 (Rock's tone numbers just happen to work out very nicely). Examples of *1 > 1 are:

bear, boat, bridge, deer, drive, enjoy, fathom, to fly, gold, green, handsom, high, I, insect, iron, knead, laugh, mushroom, otter, porcupine, rain, red, rib, right, road, roast, sheep, silver, smell, sweet, take, ten, thousand, tree (may be stopped), untie, warm, weep, white

Examples of *1 corresponding to Na-khi tone 2 do exist; they are relatively few and I have no explanation for them. Perhaps, however, tone sandhi, which is quite common in the language, is involved somehow. The words showing *1 > 2 are:

body, come, dream (may be stopped), foot, horn, hundred, skin (?) sun, tooth, weigh (?), wind, you

Examples of *2 > 2 are:

antelope, bee, beseech, between, bitter, blood, tone, bore (?), bow, box, carry (?), chaff, child, copper, daughter-in-law, debt, dog, ear, eat, empty (?), fire, fine, food, four, frog, grandchild, grandfather, he, head, heavy, horse, Jew's harp, know, male (or "3), market, meat, medicine, negative, nine, place, price, seven, sky, sole, steal, wash

There are only four exceptions to this correspondence. In three, *2 corresponds to Na-khi tone 1: 'penis', 'smoke', 'three'. In the fourth, *2 corresponds to Na-khi tone 3, suggesting, as will be seen, a stopped variant: 'far'.
There are fewer examples of PLB Tone *3 than *1 or *2. In almost all cases, *3 > NK tone 2:

dry-2, egg, father, feather, male (or *2),
open, stone, swollen, thumb, tie up, winnow

Here are two examples of alternation, involving the literary vs. colloquial forms:

*3 > 2 (literary) - 3 (colloquial): 'heart'
*3 > 2 (colloquial) - 1 (literary): 'moon'

Finally, there is one example of *3 corresponding to Na-khi
one-l ('female'), but compare this to 'thumb' which may
contain the same morpheme.

The Proto-Lolo-Burmese stopped syllables are more
interesting. As Matisoff (1972:5) points out, Na-khi (and
osoid in general) did not undergo the checked syllable
onal split found in all the other 'Loloid' languages (thus
justifying the setting up of two branches of Loloid: Mosoid
on the one hand, Loloish on the other). There are, however,
two Na-khi tones corresponding to PLB checked syllables:
and 3. Citing data from Moso, Matisoff (1972:5) notes:

it appears that all checked syllables beginning
with voiced or pre-nasalized stops, the lateral 1,
finals, or zero have low pitch (11), while those
beginning with plain or aspirated stops or
spirants have high pitch (55), so that tone is
automatic and non-distinctive in checked syllables.

The Moso low pitch corresponds to Na-khi tone 1, and
the high pitch to tone 3. Generally speaking, Matisoff's
observations apply to the Na-khi data. There are examples
of lateral and nasal initial words in tone 3 (the high
pitch), but these are few indeed compared with the lateral
and nasal initial words in low tone 1. Furthermore, there
are only about a dozen prenasalized words occurring in tone
1 -- quite an insignificant number compared to those occurring
in tones 1 and 2 (from stopped and non-stopped PLB syllables).
From a synchronic perspective, however, tone is certainly
not automatic and non-distinctive in proto-stopped syllables,
Once it does serve to distinguish la from la etc., there
being nothing in Na-khi itself to determine whether la
should have tone 1 or 3, or even if la is a checked or
non-checked syllable in PLB.

If, on the other hand, we take an historical viewpoint,
the assignment of tone 1 or 3 is automatic. As will be
explained below, the type of PLB initial determined whether
the checked syllable developed into the Na-khi high tone
(tone 3) or low tone (tone 1). Note that, leaving out all
the details, this sounds exactly like the underlying mechanism
of the Loloish tonal split: the type of initial determined the
tonal class (high or low) of the checked syllable. The major
difference between the Loloish tonal split and the Na-khi
split is that in Loloish, the type of initial can frequently
be determined only by the tonal reflex, while in Na-khi the
various types of PLB initials are, for the most part, reflected
differently. Thus, since Na-khi has a great number of different
kinds of initials, the tone class (tone 1 or tone 3) can,
to a rather large degree, be determined from the type of
initial.

What all this may lead to, then, is that the mechanism
for a checked syllable tonal split can be ascribed to Loloish
in general (not just Loloish), but the details (no doubt
involving the maintenance vs. loss of various initial
distinctions) are different.

The details of the Na-khi tonal split are fairly simple:
voiced initials (including voiced stops, affricates, fricatives,
and prenasalized stops, affricates and fricatives) gave the
low tone class (NK tone 1); voiceless initials (including
voiceless stops, affricates, fricatives, and preglottalized
stops and affricates) gave the high class (NK tone 3). It
is important to note that if the prefix is reflected in Na-khi
(as are *N- and *?-), the voicedness of the prefix is taken
into account (*N- is voiced; *?- is voiceless) and this --
not the voicedness of the root initial consonant -- is what
determines the tonal class of the syllable. If the prefix
is not reflected in Na-khi (such as those transcribed *C-,
*?- , *V-, as well as *S-), then the prefix is ignored as
far as the tonal class is concerned, and the voicedness of
the root initial consonant determines the tonal class.

There are some exceptions to this analysis, but it
seems to hold up in by far the majority of cases.

Examples of PLB voiced initials (as defined above)
giving rise to Na-khi tone 1 in stopped syllables are:

ability, bean, beat, black, blow, chicken, crooked,
descend, explode, eye, fall over, fear, flower,
give (?), hand, hatch, lac, leopard, pig, poison,
shadow, tree, two, weave

Only three cases of Na-khi tone 1 coming from a stopped
syllable with PLB *voiceless initials were found among the
vocabulary used principally in this survey (Appendix A):

PLB *C-tik - *ti₂ > NK ¹ddù "one"
"prat > ¹p'i "decision"
"*mri-t > ¹shi "thrum"

The word for 'one' is unusual in other Lolo-Burmese languages.
For example, although the PLB form has a voiceless initial,
both written Burmese and Lahu show plain (rather than
expected aspirated) initials: WB tac, Lahu tê. Perhaps this points to something like *dik - * isize, which would account for the WB and Lahu, as well as the Na-khi initial and tone.

The word for 'decision' is poorly supported (being reconstructed on WB evidence alone: WB phrat-ca 'a decision in writing') and the Na-khi may, perhaps, not even be cognate.

The word for 'thrum' is also based on WB: WB mritt-cha 'thrum, the threads by which the warp of a new piece to be woven is connected in the loom'; the preglottalized variant is added to account for Na-khi sh (rather than zh) in shi 'to stretch or spread the thread on a loom'. Since the low tone occurs with a voiceless initial within Na-khi, this may point to an open syllable, PLB Tone 1, alternant, something like *mrîyî.

Examples of PLB voiceless initials (as defined above) giving rise to Na-khi tone 3 are:

add (?), ant, ashamed, basket, beat, bite down onto, branch, break in two, breath, build, cold, crossbow, cup, cut by blow (?), deep, dry, eight; emerge, fear, goat, join, joint, kill, leech, little bit, lose, lung, may, mutual action, new, night, outer covering, rodent, say, sharp, six, stand, tongue, vomit, year

There are a number of exceptions here (that is, a number of examples of tone 3 words coming from PLB voiced initials). Note, for example, PLB *dat > NK 3dta 'alive'. The initial here is also irregular: we would expect, ideally, NK d (or dd) from *d. If this can be used as evidence for a preglottalized variant *dat, both the Na-khi tone and initial are regular.

Another exceptional set is:

PLB *gyak 'boil'

*?gyak 'cause to boil'

NK 3dgyu - 3dtyu 'boil'

As was noted earlier, this is a unique set, perhaps implying a prefixed dental of some kind. Whatever the case, the fact that the tone is also apparently irregular (if the Na-khi comes from *d-gyak or the like) is of no major consequence in such an aberrant form.

Compare also PLB *wak - *wak 'hide', NK 3gkaw 'to hide (clouds hide sun or moon)'. This is similar to the case of 'head' (see the above discussion on the reflexes of *w); if the Na-khi form comes from *gkwak, it is perfectly regular.

We would expect PLB *5-nut > NK 3nun 'lips' to behave like 'bean', 'black' and 'eye' and have an initial nasal with
tone 1 (since the "s- prefix does not affect the Na-khi initial). Either this is a true exception, or else sandhi may play a role: the full colloquial form for 'lips' is \(_{3}^{3}\text{nun}-\text{b}i\).

Since there is no contrast in PLB between "yip and "?ip, the set PLB "yip > NK \(_{3}^{3}\text{yi} \ 'sleep' may be evidence for an actual glottal stop initial (at least in some pre-Na-khi form). The "? being voiceless, would, quite regularly, give tone 3.

As with 'lips', the set PLB "z-mak 'son-in-law' > NK \(_{3}^{3}\text{mun} is either a true exception, or else a result of sandhi, the full form in Na-khi being \(_{3}^{3}\text{mun}-\text{ghug}'\).

There are two more sets which, if cognate, must be considered true exceptions:

PLB "byet 'vulva' > NK \(_{3}^{3}\text{bi} 'vagina'

"Npuk - "Nbuk 'write', NK \(_{3}^{3}\text{bb}er < "buk (?)

Finally, two sets may lead us to change our views on the lack of influence of 'lost' prefixes on tone:

PLB "k-luk > NK \(_{3}^{3}\text{lv} 'maggot'

"lip 'wrap, roll up' > NK \(_{3}^{3}\text{lv} 'wrap; wind up like a string on a stick'

In the word for 'maggot', it appears that the prefix, though leaving no trace in the Na-khi initial, has contributed to the high tone 3. This is a counter-example to the assumption that prefixes which do not affect the initial do not affect the tone either. The word for 'wrap' on the other hand, has no evidence for such a prefix, yet it too turns up in NK tone 3. The evidence for PLB "lip 'wrap' is scant, the form reconstructed on the basis of WB lip 'wrap, roll up', with some support from Lahu liy 'to coil', though Matisoff (in his unpublished Lahu-English Dictionary) follows this word with the notation '(Loan?)'. Perhaps there are some instances of lost prefixes affecting the tone (though they would be likely to be lost voiceless prefixes) as in Loloish. If not, we leave this preliminary look at Na-khi and Proto-Lolo-Burmese with no idea about how words with voiced initials ever got into Na-khi tone 3.
APPENDIX A
Cognate Sets

The Na-khi and Proto-Lolo-Burmese forms used in preparing the preceding analysis are listed below, in alphabetical order according to the English gloss used to refer to them throughout the text. Letters following the PLB forms refer to the source of the reconstruction:

B Burling 1967 (retranscribed after Matisoff 1972)
C obtained from James A. Matisoff by personal communication in spring, 1973
M Matisoff 1972
N supplied by me as the proposed source for the Na-khi reflex, based on regular sound correspondence in other sets
O supplied by me, usually reconstructed on the basis of Written Burmese alone, sometimes with corroboration from Loloish

ABILITY "dat O 'able, know how, be skilled in', NK ¹d'ə 'ability, power'
ADD "?tap M 'adhere, stick together', NK ³dta 'to add to; additional'; cf. WB thap 'place one on another; add to; repeat, do again'
ALIVE "dat M 'be alive', NK ³dta 'alive, living'
ANT *k-rwak M, NK ³t'khyo-²lo; also PLB *p-rwak - *s-rwak M
ANTELOPE *ya² B,C 'antelope, serow, mountain goat', NK ²yi 'serow'
ASHAMED *s-rak M, NK ³shou-¹ndo 'to be ashamed'; also *g-rak M
BASKET *kak M, NK ³k'o 'a basket made from a small bamboo' (also in other terms for 'basket')
BEAN *(s-)nok M, NK ¹nun 'yellow pea', ¹nun-²dze 'a very small bean'
BEAR *wam¹ B, *gwam¹ N (see above discussion on *w), NK ¹g²v
BEAT *Nyök - *Nkyök M 'beat, shake', NK ¹ndshi 'to strike; beat'; *g'yor N, NK ³dshi-'dshi 'to shake; to wiggle (like a large animal shaking its body')
BEE *tya² E, *Nbra² N, NK ²mb'ə 'a bee, a honey bee'; cf. PTB *bya = *bya - *bra (Benedict 1972)
BEGGAR *duq² or *dog² O 'ask for, demand', NK ²ddv 'to beseech; to implore beseechingly'
BETWEEN "*gra' C, NK 'gko; also *gra' C

BITE DOWN ONTO "*tsat M, NK 'ts'aw

BITTER "ka' E, NK 'k'aw

BLACK "(s-)nak M, NK 'na

BLOOD "swiy' B, NK 'ssan

BLOW, to "s-mut M, NK 'mun

BOAT "*liy' C, "*liy' N, NK 'llyu 'a boat; a wooden rowboat'

BODY "gwol O, NK 'gv, 'gv- 'mun

BOIL "gyak M 'boil', "gyak M 'cause to boil', "d-gyak N 'boil' (see discussion on prefixes above), NK 'dgyu - 'dtyu 'boil'

BONE "ruw' C, NK 'r'

BORE "ntsuk - "ntsuk M 'pierce/stab', "tsow' M 'thorn', NK 't'kyu 'to bore; to bore a hole'; cf. NK 'ndshwu 'to drive a stake into the ground'

BOW "*liy' C 'bow, slingshot', NK 'lllyu 'má 'a bow'; also "*liy' C

BOX "*da' N, O, NK 'dta 'ssaw 'box locked; a locked box'; also "*da' O

BRANCH "*gak M, NK 'gko 'branch detached from tree'; also "*kak M

BREAK IN TWO "tsat - "*tsat M 'break in two, cut through, conclude', NK 'ts' - 'ts'er 'to cut -- used for other objects than grain; mainly employed for cutting soft objects as rope'

BREATH "*C-sak M, NK 'ssaw

BRIDGE "dzam' B, "Ndzam' N, NK 'ndso 'a wooden bridge'

BUBBLE "puq' or "pog' O, NK 'p'u 'a bubble; to leaven'

BUILD "*tsuk M, NK 'ts'u 'to erect; to construct; to build'

CARRY "buw' C, B 'carry on back', "*buw' ? N -- see discussion on preglottalization above), NK 'bpa - 'bpa 'to carry on the back'; cf. NK 'mbu 'to carry on the shoulder'

CHAFF "pway' B, O, NK 'p'u 'ue - 'pp'u 'ue (unique occurrence of pp')

CHICKEN "k-rak M 'chicken, fowl', NK 'la'

CHILD "za' C, NK 'zo 'sgn', 'zo- 'bbu 'holding a child; pregnant'; also "tsa' C

COLD "*krak M, NK 't'khi; also "Nkrak - "Nkrañ M

COME "la' B, NK 'llyu 'come, coming'
COPPER *griy^2 B,O, NK ^2erh (transcription implies loan from Chinese)
CROOKED *gok M, NK 1^gvr 'crooked'; bent; twisted'
CROSSBOW *krak M, NK 3^k'a 'to shoot (bow and arrow)'
CUP *kwak B,O, NK 3k'wua
CUT BY BLOW *^tök M 'cut by blow, hack away at', NK 3^t'u 'to take out; or cut out as a chip from a log'; also *Ntök M
DAUGHTER-IN-LAW *krwiy^2 C, NK ^2ch'er-^2mä
DEBT *gyoy^2 C, NK 2dzhu 'an account; a debt; a claim'; also *Ngyoy^2 C
DECISION *prat O, NK 1p'i 'to decide; to judge; verdict; decision'
DEEP *^nak M, NK 3^ho; also *^nak M
DEER *kyiy^1 B,O 'barking deer', NK 1^t'khi 'deer (yellow deer)
DESCEND *zak M, NK 1^zaw
DOG *kwiy^2 C, NK 2^k'o
DREAM *s-maq^1 M, NK 2^muŋ; also *s-mak M
DRIVE *^naq^1 O 'to drive along, drive away', NK 1^ho 'to drive, as cows, sheep, horses, etc. together'
DRY *^krak M, NK 3^gko; cf. WB khrok (see discussion on preglottalization above)
DRY-2 *swiy^3 O 'become dry', NK 2^ssö
EAR *^na^2 B,O, NK 2^hâ, 2^hâ-^1dsu (colloquial); also *^na^2 B,O
EAT *dza^2 B, *Ndza^2 N, NK 2^ndzI
EGG *u^3 B, *gu^3 N (see discussion on *w above), NK 2^gv
EIGHT *^rit M, NK 3^ho
EMERGE *^C-twak - *^twak M, NK 3^t'u 'to drive out; chase; exit; go out'; also *Ntwak M; also NK 3^ndü 'to chase; drive out'; also *^dwak M
EMPTY *^gak^2 C (see discussion on preglottalization above), NK 2^gwua 'unreality; emptiness; void'; cf. NK 1^k'wua 'empty'; cf. 'roast'
ENJOY *byaw^1 O 'enjoy one's self; be happy', *braw^1 N, NK 1b'a 'pleased; happy; delighted'; cf. *PTE *pro (Benedict 1972)
EXPLODE *Npuk M, NK 1^mbbb 'to explode; blow up'; also *^puk M
EYE *(s-)myak M, NK 1^miu - 1^niu
FALL OVER "Np(y)ap M, NK ɬmbiū 'to collapse'  
FAR "wiy₂ C, NK ɬwu 'far, distant' (NK points to a stopped syllable variant: "wit ???)
FATHER "ʔba³ O, NK ɬ-ʔbpa (colloquial)
FATHOM "lak₁ C 'fathom, arm-spread', NK ɬlu 'a length measure between two rounded outstretched arms; the arms are held as if embracing someone'; cf. NK ɬlēr 'to estimate; to fathom' (this last form might point to a stopped variant: "lak ???)
FEAR "Nkrok M, NK ɬndshēr 'fright; to have a fright; frightened; fear'; "ʔkrok M, "ʔgrok N, NK ɬchēr 'to startle, frighten'; also "grok C; also NK ɬzhēr 'to be afraid', ɬgkyi 'to be afraid' (how this word family fits together is not entirely clear)
FEATHER "muw³ B 'feather/body hair', "ʔmuw³ N, NK ĵfū 'hair; the hair of all animals except sheep, yak and goats; also the feathers of all birds'
FEMALE "ma³ B 'female suffix', NK ɬmun 'female'
FIRE "mi² C, NK ɬmi; also "ʔmi² C
FISH "qa² B, "ŋya² N, NK ɬnyi; cf. PTB "ŋya (Benedict 1972)
FIVE "qa² B, NK ɬwuà
FLOWER "sə-wat M, "bəwat N, NK ɬba- ɬbaw
FLY, to "byam₁ C, "Ntyam₁ N, NK ɬmbi (colloquial)
FOOD "haw² O 'cooked rice', NK ɬhaw
FOOT "krio₁ C, NK ɬk'o
FOUR "liy² C, NK ɬlu
FROG "ʔpa² B, "ʔba² N, NK ɬbpa
GIVE "bək M, NK ɬbbū 'give, present, offer'
GOAT "v-čit M, NK ɬds'I
GOLD "ʔtwiy₁ C, NK ɬha 'gold, yellow'
GRANDCHILD "liy² C, NK ɬl-ʔbbū; also "ʔliy² C
GRANDFATHER "ʔpuw² C, NK ɬ-ʔp'u, ʔp'u
GREEN "ʔnuw₁ P,O, NK ɬhār 'green, the color of faded turquoise'; also "nuw₁ B,O
HAND "iak M, NK ɬla
HANDSPAN (?) "twa₁ C, NK ɬt'ū 'a measure; the section of a grain box consisting of boards of equal width; each width of such a toard is called one ɬt'ū. When the box is full it is said to contain so many ɬt'ū of grain'
HATCH "bək O, NK ɬbbū 'to hatch (as an egg)'

HE *zaŋ² C 'he/she/it', NK ²ssI
HEAD *u² B, *ŋgu² N (see discussion on *w above), NK ²gkv
HEART *s-nin³ M, NK ²nnū 'heart, mind'; cf. NK ³nun-²mä (colloquial); also *s-nik M
HEavy *liy² C, NK ²llū; also *tiy² C
HIDE, to (?) *wak - *wak M, *gwak N (see the discussion of tone above), NK ³gkaw 'to hide (clouds hide sun or moon')
HIGH *mraŋ¹ B, O, NK ¹shuwa; also *mraŋ³ B, O
HORN *krw¹ B, O, NK ²k'o
HORSE *mraŋ² B, O, NK ²zhwua
HUNDRED *ra¹ C, *rya¹ N, NK ²khi; cf. PTE *r-gya (Benedict 1972) probably = *g-rya
I *qa¹ B, NK ¹engo
INSECT *di¹ O 'earthworm', NK ¹di 'insect'
IRON *šam¹ B, NK ¹shu
JEW'S HARP *kruq² or *kroq² O, NK ²kwuo-¹kwuo
JOIN *dzak M, NK ³chung 'to unite; to join; connect up'; also NK ³chung-²chung 'to join together; put together'
JOINT *dzik M, NK ³chēr 'a bone joint; a joint'
KILL *C-sat M, NK ³ssū
KNEAD *nay¹ B, O, NK ¹nyi 'knead; rub, as between hands'
KNOW *si² - *si³ O, NK ²ssI
LAC *grip M 'lac, pine resin', *Ngrip N, NK ¹ngye 'resin'
LAUGH *ray¹ C, NK ¹lz'a
LEECH *k-r-wat M, *bwat N (see discussion on *w above), NK ³bpo
LEOPARD *zik M, NK ¹zhēr; cf. NK ²ndshi (points to pre-nasalized, open-syllable variant?)
LIPS *s-nut O, NK ³nun_, ³nun-¹bi (colloquial)
LITTLE BIT *ŋyik M, NK ³gkyi 'small'; also *kyik - *gkyik M; cf. NK ³gkyi 'a span; between index finger and thumb' (how all this fits together, if it does, is unclear)
LOSE *pyck O, NK ³p'i 'to lose (to get lost); to lose oneself'; also *byok - *byok O
LUNG *tsut M, NK ³ch'ēr; also *tsi² M
MAGGOT *k-luk M, NK ³lv; also *k-lug' M
MALE *pa³ - *pa² B, O, NK ²p'u; cf. NK ¹bbü 'male', but only used with animals as yak, goat, muskdeer, half-breed yak and serow' (the NK aspirated form may come from either of the PLE variants)
MARKET *jiy² O, NK ²dzhi
MAY *hut O, NK ³hu 'may, in conjunction with ²bä', ²bä ³hu 'it shall be; may that be (done); may that be (fulfilled), expressing a wish' (NK ²tä = 'to do')
MEAT *ßa² B, NK ²sni
MEDICINE *ciy² C, NK ²ch'ër
MOON *²la³ C, NK ²hä, ²här-²nä (colloquial); cf. NK ¹lä (literary)
MUSHROOM *muw¹ B 'mushroom, fungus', NK ¹mun 'a specimen; mould; sample; custom'
MUTUAL ACTION *³dak M, NK ³dta 'together'; also *Ndak M
NEGATIVE *ma² B 'negative prefix', NK ²muän 'not'
NEW *C-šik or *V-šik M, NK ³shi
NIGHT *³rak M, NK ³haw 'night; to sleep'
NINE *guw² C, *Nguw² N, NK ²ngv
ONE *C-tik M, NK ¹ddū (see discussion on tone above); also *ti² M
OPEN *pwaq³ O, NK ²p'u 'to open, as a gate'
OTTER *sram¹ (Benedict 1972:107), NK ¹ssu-²zo 'a river otter'; ¹shu-²zo (colloquial)
OUTER COVERING *³guk M, NK ³gkv 'skin of a fruit; shell of an egg'
PENDULUM (?) *³mi² C > *³nyi² C,B, *mi² > *nyi² N, NK ¹nyi
PIG *wak M, *bwak N (see discussion on *w above), NK ¹bu
PLACE *³ta² B, *³da² N, NK ²dta 'to place; to put'
POISON *³dok M, NK ¹ndv; also *dok - *³dok M
PORCUPINE *³bru¹ B,N, NK ¹tö-²szï
PRICE *puw² B, NK ²p'u 'price of an object'
RAIN *³rwal C, NK ¹khü; also *rwal C
RED *³nyi¹ B,O, NK ¹hö; also *nyi¹ B,O
RIB *³nam¹ C, *³nam¹ N, NK ¹ho
RIGHT (side) *yal B,O, NK ¹yi
ROAD *³aml C 'road, path', NK ¹lu 'to travel'
ROAST (?) *³kan¹ C 'roast, broil', *³gan¹ N, NK ¹gkwua 'a hearth; cooking place; furnace' (cf. 'empty'); also *gan¹ C
RODENT "k-r-wak M 'rodent, rat', *wak N (also Matisoff 1970:31 -- see discussion on *w above), NK ʒfů 'rat' 

SAY *mrwak O 'utter, speak', *mwrwak N, NK ʒshou 'to say; to tell; to relate'

SEVEN *snit > *N-šit - *ši2 M, NK ʒšer 

SHADOW *k-rip M 'shadow, shade', NK ʒơ 'shadow of an object or person or image; a reflection', 1ndaw-ʒơ 'shadow'; cf. NK ʒơ 'shadow; image of an object reflected; shade'

SHARP *tak - *g-tak M, NK ʒt'a (the NK may come from either PLB form)

SHEEP *yaq1 B, NK ʒyū 

SILVER *gwiyi1 O, NK ʒnv 

SIX *c-kroko M, NK ʒch'wua 

SKIN (?) *(Nk)riy1 C, NK ʒghůh 'skin; hide, of either an ox or cow; a fresh skin, uncured'

SKY *məw̪ ʒ B,C, NK ʒmən - ʒmən 'heaven' (the second alternant is 'the more correct rendering' [Rock, p. 274]) (Rock [p. 273] comments on the pronunciation of ʒmən: 

The sound is pronounced through the nose, while ʒmən = not, is pronounced with side open mouth with accent on the ə.

SLEEP *yip M 'sleep', *yip M 'put to sleep', *yip N 'sleep' (see discussion on tone above), NK ʒyɨ 'sleep' 

SMELL *nam1 C, NK ʒnun 'to smell' 

SMOKE *kuw2 C, NK ʒmən-1k'vv 'smoke; smoke arising from a fire', ʒmən-1k'v (colloquial) 

SOLE *wa2 B 'sole, palm', *bwa2 N (see discussion on *w above), NK ʒbəa 'sole of foot; palm of hand' 

SON-IN-LAW *z-mak M, NK ʒmən-2ghůh 

STAND "ramp M, NK ʒhů 'to stand (erect); to stand up; standing; to dwell in a place' (Rock [p. 176] comments: 'It is nearer ʒhů, the difference in the pronunciation of these two diphthongs is almost indistinguishable.') 

STEAL *kuw2 B,C, NK ʒk'v 

STONE *k-lok3 M,O, NK ʒlv; also *k-lok M 

SUN *niy1 C, NK ʒnyi 'sun; day-time'; also NK ʒnyi-1dzni 'day-time' 

SWEET *kyuw1 C, NK ʒlt'khi 

SWOLLEN *bwam3 O, *bwam3 N, NK ʒbů 'swollen, as a swollen wrist; coarse in texture; thick; large; great in circumference'; cf. RTE *bwam = *(s-)twam (Benedict 1972) 'swollen'
TAIL *mi² B, NK ²man; also *?mi² B
TAKE *yu¹ C 'take, hole', NK ¹yü 'to take (in the hand)'
TEN *tsay¹ P,O, NK ¹ts'ä (in counting) - ¹ts'ër (prefixed by 1, 2, 3, etc.)
THOUSAND *?dun¹ or *?dog¹ N,O, NK ¹dtv
THREE *sum² B, NK ¹ssu
THRU M *mri·t O > WB mrit-cha 'thrum, the threads by which
the warp of a new piece to be woven is connected in the
loom' (Judson 1921:790), *?mri·t N, NK ¹shi 'to stretch
or spread the thread on a loom'
THUMB *lak-ma³ O, NK ¹la-²mä (the first syllable is 'hand';
the second is the one of interest here -- cf. 'negative'
and 'female')
TIE UP *pway³ O 'bind together, connect', NK ²p'a 'to tie up'
TONGUE *m·lyak M 'lick', *?lyak M 'cause tolick', NK ³khi 'tongue'; cf.
*?lya¹ C 'tongue'
TCOTH *dzway¹ C, *Ndzway¹ N, NK ²ndsa 'fangs, of a predatory
animal; canine teeth'
TREE *šik - *slin¹ M, *Nsik or *Nslin¹ N, NK ²ndzër; cf.
NK ²ss 'wood; tree' (NK ²ss might go back to the non-
prenasalized variants. Perhaps we may ignore the tone
problem, since it should be quite difficult to determine
the tone of a syllable with has no vowel and is voiceless
throughout.)
TWO *nit M, NK ¹nyi; also *ni² - *?nit M
UNTIE *priy P,O,N, NK ¹p'ër; also *briy¹ - *?briy¹ O
VOMIT *C-pat M, NK ³p'ü
VULVA *e(y)et M, NK ³ti 'vagina'
WARM *lum¹ C, NK ¹lv
WASH *tsiy² O 'to wash', NK ²ch'ër
WEAVE *dak M, NK ¹ddaw; also *tak - *rak - *k-rak M
WEEP *nuw¹ C,P, NK ¹nv
WEIGH *kyin C, NK ²ch'i 'to weigh (as on a scale)'; cf.
NK ³gkyi 'a scale; a balance; to weigh' (what the
relationship between the two NK words and the PLE
form [or other variants] is is not clear)
WHITE *pru¹ E,O, NK p'ër
WIND (air) *?liy¹ C, NK ²här; also *liy¹ C
WINNOW *?liy³ O, NK ²här-¹lër
WRAP *lip O 'wrap, roll up', NK ³lv 'wrap; wind up like a
string on a stick'
APPENDIX B
Suggestive Sets

In the list that follows are additional Na-khi words and possible Written Burmese or Proto-Lolo-Burmese cognates or related words. These words were not included in the preceding analysis, either because of insecurity about their actually being cognates, or else due to some kind of irregularity. It was felt best to deal with as many 'regular' cases as possible (that is, cut 'irregularity' down to a minimum) before considering other evidence.

A few of the following sets are sure cognates, but are included here, rather than in Appendix A, because of some doubtfulness about the PLB form.

ACHE  NK¹ngu; cf. WB kuik

AWAKE  NK³non 'to disturb, to annoy', PLB *nuw² C 'be awake', *nuw² C 'to awaken'

BRAIN  NK²gkv-³ffú (²gkv = 'head'), PLB *nok - *²nok - *³nuw² M

BUG/VERMIN  NK²bā-¹di 'an insect; a worm (colloq.)', ²bbēr-¹ddēr 'a caterpillar of the type of army worm which appears overnight and devours crops', ²bbū-²k'o 'a snail', ²mber-¹dzi 'mosquito', ²mber-1ler 'ordinary house-fly'; PLB *buw² - *²buw² C

BUTTERFLY  NK²p'ā-¹lā; cf. WB lip-pya (pya 'bug')

BUY  NK¹ha, PLB *way¹ B O

CATTLE  NK³non 'domestic animals, cattle' LCAN < Tibetan nog 'cattle'; also NK¹nnū 'domestic animals', ¹mun 'ox', PLB *nwa² C 'cattle'

CHAIN, KEY, LOCK  NK²ndzu-¹gkv 'key', PLB *Nts(r)ok (this is the only example of ndzu in Rock's Dictionary)

CHANGE  NK²bbūe 'to change; transform', ³bpiu 'to change into; to metamorphose', ²bpa 'to change into; to produce, as by sexual intercourse', ²blu 'change; to change into'; Proto-Lolo "p¹ B, WB pōg 'change; be altered; alter'

CHIP  NK³bpa 'a chip of wood', WB pōk 'to make a motion similar to that in chopping wood', WB thāq-pōk 'chip (noun)' (in Judson 1956, but not Judson 1921)
CHOKE NK ʔho 'to choke', WB naŋ 'to stop in the throat; to choke' (Could NK come from a preglottalized variant?)

CLIMB, ASCEND NK ʔndo 'to ascend, to step up as on a ladder; to climb, climbing', PLB *Ntak - ʔtak M (Tone is the problem: NK could come from a *ʔ open-syllable variant, maybe.)

COLLAPSE NK 3mbiu, PLB *pak - ʔpak M

COMB NK 3bbær 'a comb'; WB phraŋ - phi 'to comb, brush', WB b'í 'a comb, brush', Lahu pê ~ p'í 'to comb', Lahu pê-kâ ʔa comb

COMPLETE, FINISH NK ʔbpiu 'to complete; to perfect; to finish', WB praŋ 'to be full', WB phraŋ 'fill, complete, replenish', WE pʁí 'be done, completed', Lahu pê 'be finished, completed'

CROW NK 3gkyi-ʔgkan 'a species of crow; the chough', ʔlâ-1gk'a 'a crow (Corvus)' WB kyi-kân

CUT OBLIQUELY NK ʔshwua 3ds'i 'castrated goat', WB mrwâq 'gash obliquely, or any way'

DEFECATE NK ʔt'khye, WB khyê

DIE NK ʔshi 'dead', 3ssu 'dead', PLB *siy1 C, PTB *siy = *sey (Benedict 1972)

DISTRIBUTE NK 3zhwua 'to deal out; to count out', WE we 'to distribute; to dispose' (Regarding the initial zh- in NK, cf. NK ʔzhwua 'superlative in Li-chiang; to the north of Li-chiang the word 1wuà is used.)

DO, PERFORM NK ʔtâ 'to do; perform; make', WB pru' 'do, perform, commit'; cf. NK 1bo 'to perform a duty or request'

DOVE, PIGEON NK 3gko 'the crane', 3gko 'a hawk'; PTB *m-kraw 'dove' (Benedict 1972), WE khyûi - khrûi 'dove', Modern Burmese džû, Lahu gô 'dove'

DRAW WATER NK 1wu, PiB *k-rok - *k-wok M 'pick up'; also NK 3gwua 'dip out; scoop; draw (water)'

DRINK NK 1t'û, PLB *Ndaŋ1 - *ʔdaŋ1 M

DROP/DRI? NK ʔndshêr 'dew; a dew drop', ʔndzhêr 'dew; a dew drop; a drop of water', PLB *Ntsak M 'drop (n.) to drip'

DUCK NK 3aw 'tame duck', ʔmb'á 'wild duck', WB b'áî, wâm-b'âî 'duck'; cf. also NK 1b 'goose', WB gân 'gocse'

DWELL NK 3nyi 'to lodge at; to dwell', WB ne

EMBERS NK 3ffû 'charcoal; embers', 3ffû-1gyi (colloquial), WB mi-hmun' 'embers' (mi = 'fire'); cf. also NK 3khû 'charcoal'

FEATHERS OF ARROW NK 3kho 'feathers of an arrow', ʔlû-2ssî 3kho 'id.'; WB hmrâ-rawk 'feather of an arrow' < hmrâ 'arrow' + rawk 'leaf' (perhaps NK points to PLB *ʔrawk)
FERN NK 1ndi 'the bracken or eagle fern', 2ndi-3li 'bracken fern -- in connection with another syllable the word 1ndi is read in the second tone for the sake of euphony'; Lahu då 'bracken fern'

FIELD NK 2llü 'field; fields', WB lai 'rice fields'; cf. Kuki-Naga *low 'field' (Benedict 1972:66); cf. also NK 1llü 'to plow'

GIRDLE NK 2bbüe-3gkü 'a girdle', 3gkü 'to wear', WB khâ-pân 'girdle' < khâ 'waist' + pân 'go round the end of a thing'

GO AROUND NK 3khü-2khü 'to circumambulate; to go around; to make a circuit; to circle around; to surround', WB hlañ 'to turn around', WB wuik 'to curve around; to round', WB wuig 'surround'

GOOD NK 2gkaw, 2gv, WB kâq

GRASS, WEED NK 1zhou, PLB *mrük ~ *mrak; cf. NK 2szü 'grass'

HANG UP-1 NK 2ch'i 'to suspend', WB chwài

HANG UP-2 NK 1ha 'to hang up; hang on; hang over the shoulder; to carry a bag by straps hung crosswise over shoulder and chest'; cf. NK 2ha-2mâ 'suspended on', WB lwai 'hang from the shoulder'; Lahu hù 'hang anything up'

HAVE NK 1dgyü 'to have, to possess, there is', 2dgyü 'there is; has; possession'; Proto-Lolo *dzol B, Lahu cò, Lisu dzol B (cf. 'boil' in Appendix A)

HOUSE NK 1gyi, WB ?im, PTB *kim = *kyim ~ *kyum (Benedict 1972)

INTESTINE NK 2bbü, PLB *u1 B (the tone is a problem, but cf. 'pig', 'flower', 'sole' in Appendix A)

LAYER NK 3dtü 'a story; layer; stratum', WB ?ethap 'layer' (cf. 'add' in Appendix A)

LEFT (side) NK 2wan - 2wuan, WB tai, WB lak wài (lak 'hand'), Lahu më, PTB *bay = *bway (Benedict 1972) (Regarding w and b and bw, cf. 'flower', 'pig', 'sole' in Appendix A, and 'intestine' in Appendix B)

LIQUOR NK 2zhi 'wine', 3dsu 'a type of liquor; distilled from three sheng of rice', PLB *Ndžil N

MIX NK 3ho 'to mix; to live together', WB hnô in: râ-hnô 'to mingle', pywâm-hnô 'mixed together' (The tone is a problem, but WB implies PLB *?naw? or the like, so perhaps NK comes from *?nak; cf. 'drive' in Appendix A.)

MONKEY NK 1yü, 3â-1yü (colloquial), PLB *myom M (Could the NK have dropped the *m- as if it were a prefix?)

MYSELF NK 2wu 'self; myself' (see discussion on *g above)

NEEDLE NK 1gko, PLB *k-rap ~ *rap M (cf. 'water' below)
NOISE NK 1zhër, WB mrañ 'sound; produce sound'; also WB sam, ʔesam 'sound', Lisu syê (Hope's form, provided by Graham Thurgood, personal communication) 'a noise'

NOSE NK 3nyi-1mien, PLB *s-na1 C; cf. NK 1nun 'to smell' (Regarding the (yjï in NK, cf. 'snot'; PLB *nàp M, Jinhpaw ñep - ñàep - ñyep)

ODOR NK 2bô, WB hmwê 'smell sweet, be fragrant' (This form and 'wrong' below perhaps suggest that NK b comes from a prefixed m or *?m, or else, maybe, a *b = *?m or *?m in PLB. On the other hand, this may just be coincidence.)

OPEN-Z NK 3haw 'to open the mouth', WB hlac 'to open'

PHEASANT NK 2hóa 'Tibetan eared-pheasant', WB rac 'pheasant'; cf. NK 2ffû 'the stone pheasant' (NK may point to *?rw- or the like)

POLITE NK 3dgyû-2dgyu 'formality; politeness', WB kyo' so 'polite', kyo' 'fine, executed with taste; genteel, polished' (cf. 'boil' in Appendix A; 'have' in Appendix B)

POWER NK 1bu 'power; to give a person power; to invest one with power', Lisu wâ (Hope form, from Thurgood) 'manpower', Lisu wâ (ibid.) 'manpower, laborer', Lahu wâ 'to work' (Regarding NK b, general Lolo-Burmese w, cf. 'flower', 'pig', 'sole' In Appendix A.)

RAKE, SWEEP NK 1b'a 'to sweep or rake in; a piece of board with a handle with which grain is raked in', PTB *pyak = *pywak 'sweep' (Benedict 1972) (cf. 'comb' above)

SAME NK 3ddv-1ddv 'the same; alike', WB tu 'to be like' (The NK syllable ddv occurs in names only)

SAND NK 1shou, WB mru 'minute particle of floating dust'; also WB säi 'sand', PLB *say2 B 'sand'

SÁW (tool) NK 2ffû, WB hlwa'

SEARCH NK 1shu 'search; look for', PLB *mrañ B,0 'see'; cf. WB hra 'to search for'

SISTER-IN-LAW NK 3hòa-2mâ 'sister-in-law. This term is used by the wife of a man when calling her husband's sister. A sister-in-law will call her brother's wife ʔmâ-ʔt'khi', WB yok-ma' (i.e., perhaps NK suggests ʔyok.)

SLAVE NK 1wu, PLÈ *kywan1 C (Perhaps NK dropped the initial *ky-)

SNAKE NK 1zhi, WE mrwe < *mrui (Benedict 1972)

SNOW NK 2mbe, PLB *wa2 C 'nail' (If related, maybe NK < *Ntwa2; cf. 'flower', 'pig', sole' in Appendix A.)

SOUR NK 2gkyi, WB khyañ

SPT, SALIVA NK 3gki-3p'i - 3gkyi-3p'i 'to spit', 3gkyi 'saliva', 3gyi-1ddër 'saliva', Lahu cf 'spit, saliva' (cf. 'water' below)
STAR NK ¹g kü, ²gh ügh in: ³k'v-²gh ügh 'evening star', WB krai, P'TB *s-ka r = *s-ka r (Benedict 1972)

TEA NK ¹l ä, WB lak-phak-khrok 'dried tea leaf' (phak 'leaf', khrok 'dry') (cf. 'hand' *lak > NK ¹la; perhaps the NK word for 'tea' is a loan)

TESTICLE NK ²lan, PLB *(r-)*lek M (This is the only syllable lan in Rock's Dictionary.)

THIGH NK ¹p'ï 'thigh', ¹p'ï-²gko 'the crotch, the groin', WB poq 'thigh', poq-chyan 'groin'

THIN NK ²ndsaw, WB sê 'slim' (NK suggests *Ns-, cf. 'tree' in Appendix A)

TIME NK ¹ddü ¹dgyu 'once', ¹ddü 'one', WB ²ekrim 'a time, turn', hnac-krim 'twice' (cf. 'boil' in Appendix A, and 'have' and 'polite' in Appendix B)

WATER NK ¹gyi, PLB *riy¹ B, O; cf. NK ²ds'i 'wet, drenched' (cf. 'needle' above)

WINTER NK ²ts'u, WB chôq 'cold season'

WRONG NK ²bpä, WB hmâ (see 'odor' above)

NOTES

¹ This look at Na-khi's place in Lolo-Burmese is intended to be only a preliminary one. The goal, in pulling words out of Rock's Na-khi dictionary, was not to be complete -- not to find all the cognates -- but rather to find examples of the various Proto-Lolo-Burmese initials, rhymes and tones so as to get a general idea of how Na-khi fits in. Given limitations of time (mainly) and resources, even this goal was only partially attained.

Furthermore, since this survey was undertaken before certain changes in Proto-Lolo-Burmese reconstructions were suggested (cf. Graham Thurgood's contribution to the present volume, for example), some of the comparisons are 'out of date' if not simply wrong.

Nevertheless, it is clear that Na-khi is loaded with information about Proto-Lolo-Burmese. If nothing else, by hinting at what Na-khi offers towards an understanding of the history of its linguistic family, this paper encourages further research, involving going back to Rock's dictionary with a magnifying glass as well as reassessing our picture of the proto-language. Such further examination would hopefully solve some of the problems mentioned in the present work, as well as weed out what are no doubt all too numerous errors.
2 Paul K. Benedict says the following about Rock's Na-khi material:

Rock, though by nature a good linguist, has had no linguistic training and has been unable to cope with the formidable phonology of Moso [Na-khi]. His record is not wholly consistent, especially as regards tone marks, and his description of Moso speech sounds ... leaves many points in doubt. The writer [i.e., Benedict] ... has had the advantage of discussions with Rock on some of these points. [Shafer and Benedict 1939:364]

Benedict's interpretations of Rock's transcriptions will be noted where appropriate. As regards inconsistencies in tone, however, there appears to be some kind of tone sandhi going on in Na-khi compounds involving one of the three main tones shifting to another. Whether this apparent sandhi phenomenon is real, or, as Benedict suggests, a result of inconsistency remains to be analyzed. Benedict, incidentally, made his remarks about 20 years before the appearance of Rock's dictionary; even so, they remain quite useful.

3 Benedict agrees: 'Rock's dt, bp, and gk are simply unaspirated surd stops' (Shafer and Benedict 1939:364).

4 Benedict says: 'Rock's bb, dd, and gg are perhaps aspirated sonants, though one hesitates to postulate phonemes so foreign to Burmish-Loloish phonology in general' (Shafer and Benedict 1939:364).

5 Benedict comments, 'Rock's nn and ll are best interpreted as surd n and l (n and l)' (Shafer and Benedict 1939:364). Benedict may well be correct here (though a lack of a corresponding mm and ngng becomes all the more striking), but nn was considered identical to n (and ll to l) for purposes of this present comparison. If Benedict is correct, perhaps Na-khi contains evidence for *n (> Na-khi n) vs. *s-n (> Na-khi nn). See the list of correspondences to follow.

The question of l vs. ll is different. ll occurs only before the vowel ù, whereas l occurs before numerous vowels (including ü). However, ù stands for front rounded [ü] (IPA [y]) following l, but for back unrounded [u] following ll (see description of vowels). On the other hand, l occurs before v, which Benedict (see footnote 8) considers an alternate symbol for [w].

6 According to Benedict, 'Rock described to the writer [Benedict] a Moso element that is unmistakably a labial trill (ᵉ)... but this sound cannot be traced in his recording' (Shafer and Benedict 1939:364-5).
Rock transcribes a breve for what is here rendered (for typographical convenience) with a hacek (e.g. ũ for Rock's u).

Benedict suggests interpreting Rock's 'vocalic v as a back unrounded high vowel (u) [that is, [u]]' (Shafer and Benedict 1939:364).

REFERENCES


