

SINO-CAUCASIAN

This paper is an attempt of verifying the Sino-Caucasian hypothesis, first proposed in Starostin 1982 and Starostin 1984. The hypothesis was accepted and elaborated by some scholars (V. Blazhek, J. Bengtson, S. Nikolaev, V. Shevoroshkin, M. Ruhlen) and more or less violently opposed by others (L. Sagart, A. Vovin, S. Yakhontov), so it still has not gained universal consensus.

I shall start — as is universally required in such cases — with outlining the system of phonetic correspondences between the languages in question.

This requires perhaps one preliminary remark. I cannot get rid of a feeling that most of the criticism — including the criticism of such distinguished scholars as S. Yakhontov — is due to the complexity of phonological correspondences between the languages in question. Unfortunately, this is not something that can be amended through any amount of additional research. Correspondences between very complex phonological systems — and SC, especially NC systems probably belong to the most complex in the world — are bound to be complex. So if the reader wants to see a plain and simple system of correspondences between SC families, he might as well stop reading this text right now and join the camp of critics.

I. ROOT STRUCTURE

The original root structure appears to have been similar to PNC, i. e. CV(R)CV. It is basically preserved everywhere except PST, where it developed — as a result of the general process of monosyllabification — into CVC (on the rules of this simplification see below). In other families the first syllable also may occasionally become unstable and drop — but only if it starts with a laryngeal consonant.

Verbs in PNC usually have a root structure =V(R)CV(R), with = denoting the position of prefixed class markers. The historical status of the initial syllable here is debatable: it may have been a prefix itself, especially in cases when it is not preserved in Yenisseyan (in ST it never leaves any traces). There are many cases where we have to reconstruct verbal root structures like *CVRV or *RVCV, based on ST and Yenisseyan evidence, while in NC their reflexes look like *=VRCV (with a reduction of the

second vowel, and a regular development -CR- > -RC-). But there are also rather numerous cases when PNC =V- corresponds to PY =V- that indicate the archaic nature of this vowel.

Monosyllabic roots with the structure CV existed, but were typical only for pronouns.

It seems very probable that we also have to reconstruct trisyllabic roots of the type CVCVCV for quite a number of stems. These structures, however, are very unstable even in PNC, where the second vowel tends to be lost. If such a root has a structure CVCVRV, it usually yields PNC *CVCRV > *CVRCV (clusters "stop+resonant" being prohibited), while in PST it loses the first vowel or the first syllable altogether.

In modern languages verbal and adjectival stems frequently contain prefixed class markers, going back to original animate *u- (masc.), *i- (fem.), and inanimate *w-/*b-, *r-/*d-. These morphemes (as well as personal pronominal morphemes) could also precede nominal roots, acting as possessive markers. In a number of cases they could have become reanalyzed as part of root (so called "petrified" class markers): such cases are well known in NC and Yenisseian, and a lot of ST desemantized prefixes can have the same origin. Class prefixation probably accounts for a number of cases when Yenisseian has a prefixed ?V- syllable, like *ʔa-lit 'woman' < *λ(w)ṛ-dV, *ʔa-lVp 'tongue' < *ʔānpV̄, *ʔa-niŋ 'mind' < *nōmqī, *ʔə-maʔs 'thorn' < *mhāncī, *ʔi-pVl 'asp tree' < *phātV̄, *ʔu-lV(?)k 'bladder' < *rēxGwV (~ l-), *ʔV-silV 'bird' < *čHwīlV̄, *ʔalVs- 'hundred' < *Hlōšwě; *ʔasq- / *saq- 'guilt' < *SVrQV etc.

The PNC root morpheme possessed also several features that are extremely important for understanding the original SC system and ways of its development:

1) Clusters with laryngeals and w: these are the only types of clusters that were possible in morpheme-initial position, which is why such clusters appear "quasi-phonemic". Clusters with laryngeals could also appear in non-initial position and most of the apparently "unmotivated" resonant losses can be accounted for exactly by the resonant's position within such clusters (see Starostin...)

2) Vowel distinction in length.

3) Morpheme-wide distinction in tenseness.

Since all these features belong to the reconstructed PNC system, we cannot be completely certain about their phonetic realization; however, it seems important that those features, originally reconstructed only for PNC,

help to explain many details of phonetic development in other SC languages.

II. DISTINCTION IN TENSENESS

This distinction can be reconstructed in PNC for most roots containing sibilants, affricates, velar or postvelar consonants. It was most probably present in other roots (e.g. with labial or dental stops), but has become unrecoverable due to the merger of consonant reflexes. In our NC reconstruction we denote it by an understroke sign under the first "tense" consonant in the root. In the vast majority of cases consonants in "tense" morphemes yield "tense", or "strong" reflexes in daughter languages that keep tenseness as a distinctive feature.

The most straightforward match for PNC tenseness can be found in Yenisseyan, where it appears to regularly correspond to the glottal stop *-ʔ- (yielding in modern Ket tones 2 and 3 in mono-/disyllables and 5 in polysyllables). Cf.:

PNC tense : PY ? [57]

PNC	PY	PSC
*=ě _̣ ĀĒ	*ʔaʔl	‘middle, half’ (PSC *=ě _̣ ĀĒ)
*=aqV	*ʔaʔK- (~x-)	‘cavity, open’ (PSC *=ăxqV)
*=u _̣ lwV	*ʔaʔl-bət (~x-)	‘to rest, quiet’ (PSC *=ŵ _̣ lwV)
*=ăGĀ-r	*ʔaʔq (~x-)	‘to hold’ (PSC *=ăxGĀr)
*Gă	*ʔeʔk (~x-)	‘twenty’ (PSC *HŴxGV)
*mħăncĭ (~-ě)	*ʔəʔmas (~x-, -äs)	‘nettle, thorn’ (PSC *mħăncĭ ~-ě)
*wHĭr _̣ V	*ʔiʔχ(V)	‘male deer or goat’ (PSC *Hĭr _̣ xkV)
*=ă[r] _̣ lwĀ	*ʔuʔul (~x-, -G-, -χ-)	‘smooth, even’ (PSC *=ă[r] _̣ lwĀ)
*χ _̣ onV	*ʔuʔun (~x-, -G-, -χ-)	‘trap, net’ (PSC *χ _̣ onV ~ *χH _̣ onV)
*=ü _̣ ĀV	*beʔl (~w-, -r)	‘to copulate’ (PSC *=ŵ _̣ ĀV)
*ćăqwă	*siʔk (~g-, -χ)	‘scoop, vessel’ (PSC *ćăxqwă)
*świmHV	*doʔŋa	‘three’ (PSC *świmHV)
*lHĭq _̣ wĀ	*dVʔG-	‘a k. of bird’ (PSC *lHĭq _̣ wĀ)
*něqwē	*dVʔqVn (/ -χ-)	‘chaff; rush’ (PSC *nĭqwē)
*qwant _̣ V	*giʔit	‘to smear, scrape’ (PSC *xq _̣ wint _̣ V (/ *xq _̣ wint _̣ V?))
*kwil _̣ tV	*giʔd	‘intestine; fat’ (PSC *kwil _̣ tV)
*=V _̣ lwVn	*jəʔŋ	‘semen, roe’ (PSC *=ŵ _̣ lwVn)

PNC	PY	PSC
*GHǎlGi	*qoʔq (~χ)	‘dirt, dung’ (PSC *GHǎlGi (~ -ē))
*=HiḵwV-n	*kiʔ	‘to spin’ (PSC *=Hi[g]wǎV)
*kHwǎnǝV	*giʔs	‘foot, paw’ (PSC *kHwǎnǝV)
*kwǐjɕV	*k[uʔu]s (~g-)	‘spirit, appearance, demon’ (PSC *kwǐjɕV)
*purV-χV	*pəʔr (~r₁)	‘boil, bladder’ (PSC *pórV)
*pĩnɕwǎ	*piʔt (~d)	‘glue, resin’ (PSC *pĩnɕwǎ)
*mǎswV	*puʔs	‘dirt, mould’ (PSC *mǎswV)
*ʔǎwqV	*qǎʔj	‘mountain, hill’ (PSC *ʔǎqVwV)
*qwǎpǎ	*qǎʔp (~b)	‘vessel’ (PSC *qwǎpǎ)
*qwata (~-ě-)	*qeʔt (~χ-)	‘belly; pregnant’ (PSC *qwá[t]ǎ)
*qǎnʔV	*qəʔn	‘louse, flea’ (PSC *xqǎnʔV)
*GwǎtV	*qoʔt (~χ-)	‘way, road, passage’ (PSC *Gwǎ[t]ǎV)
*χwǐrkV	*qoʔK(V)ŋ (~χ-)	‘forest’ (PSC *χkwǎrkǎV)
*ḵwVnV	*qoʔn- (~χ-, -ɔ-)	‘fir-tree branch’ (PSC *ḵwǎVŋV)
*cārGwV	*saʔqa	‘squirrel, weasel’ (PSC *[c]ǎrxgwǎV)
*ʔwĩnɕǎ	*siʔn-	‘spring, well’ (PSC *ʔwĩ[c]ǎnǎV)
*ǕakwV-	*tǎʔk-	‘white’ (PSC *[ʃt]ǎkwV)
*=əɕǝr-	*təʔər	‘to freeze; snow’ (PSC *=əstǝr)
*čhǎrV	*təʔlap- (~r-)	‘crust’ (PSC *štǎrV)
*hrěGwē	*tuʔxVn	‘to comb, scrape’ (PSC *hrěxgwē)
*=īwGUn	*wVʔχ-	‘to pull’ (PSC *=īwxgUn)
*qěleqǐ	*xaʔq	‘wood’ (PSC *xqěleqǐ)
*HwǐqV	*xiʔ-G	‘day’ (PSC *HwǐxqV)
*=VwǝVn	*xuʔs-	‘to sleep’ (PSC *HǎVwsVn)
*hwǎlsǎ	*ʔiʔs (~x-)	‘stick, fork’ (PSC *hwǎ[ǎ]lsǎ)
*qHǎćwa (~ -e)	*χǎʔʒ	‘skin; cloth(es)’ (PSC *qHǎćwa)
*ǝiHwV	*duʔ(χ)-	‘breath; vapour, smoke’ (PSC *ǝiHwV)
*qǐdV (~ -ä-)	*qəʔt	‘dust, soil’ (PSC *xqǎdV)
*Hrémkwǐ (~ -ǐ)	*rəʔq-	‘dirt’ (PSC *Hrémxkwǐ)
*qHwǎrtV	*guʔda	‘to tie, belt’ (PSC *xqwǎrtǎV)
*śwōl(H)V	*daʔr₁	‘tube, vein’ (PSC *śwǎlHV)
*śǎmʔV (~ -ʔ-)	*deʔ(ʔ)n	‘milk, nipple’ (PSC *śǎnʔwV)
*qǎnVɕwV	*qeʔs	‘dirt, rubbish’ (PSC *qǎnɕwV) (~ *xq-)
*jəmGe (~ -i)	*kuʔw-	‘coal, ashes’ (PSC *HǎmgV)

PNC	PY	PSC
* <u>ɕ</u> wirV	*saʔr ₁	'dried fruit or grass' (PSC *cwórV)
*Gwǎlɿ	*kiʔl (~g-, -r)	'hole, pit' (PSC *xGwǎlɿ)
* <u>ʕ</u> wěʔǝ (~ -ǎ)	*ʔuʔl (~x-, j-)	'mould, sludge, dust' (PSC *ʕwǎʔV)
*HVI <u>G</u> wV(l)	*doʔq (~ -χ)	'to swallow' (PSC *ʔVxGwV)
* <u>k</u> ǎwɿV	*qoʔl (~χ-, -r)	'ravine, river' (PSC *xkǎwɿV)
* <u>ʕ</u> V <u>χ</u> V	*ʔiʔ(G) (~ x-, j-)	'shed' (PSC *ʕVxkǎV)
* <u>ʕ</u> ǎfrV	*jVʔra	'snake, worm' (PSC *ʕǎfrV)

PNC lax : PY 0 [79]

PNC	PY	PSC
*=V <u>ʕ</u> V	*ʔalVη (~x-)	'to wear; a k. of clothing' (PSC *=V <u>ʕ</u> V(η))
*mōnqī (~-ē)	*ʔan[i]η	'to think; heart, soul' (PSC *nōmqī)
*=[i]mcŪ	*ʔēs-	'to say, tell' (PSC *=ēmcŪ)
*ʔVrswV̄	*ʔasVr	'a k. of vessel; boat' (PSC *ʔVswV̄rV)
*zō	*ʔaʒ	'I' (PSC *zV)
*=argwV-n	*ʔakV-	'to stay, leave' (PSC *HrāgwV)
*ʔwirqV(-nV)	*ʔāχ- (~x-)	'sack, basket' (PSC *ʔwērχqŪ)
*=içǎ	*ʔes-	'to put' (PSC *=ēçǎ)
*fūʒwĀ	*ʔete	'sharp' (PSC *fūʒdwĀ)
*=HēwχV(n)	*ʔəqan (~h-, x-, -ə-)	'to cook, bake, roast' (PSC *=HŪwxkV̄n)
*hǎkwV (~ f-)	*ʔəqe	'bush, branch' (PSC *hǎkwV)
*ʔəmkV	*ʔəke (~x-)	'louse, small insect' (PSC *ʔəmkV̄)
*=ēǎwV(l)	*ʔil (~ x-, -l-, -r)	'to break, tear' (PSC *=īǎwV̄l)
*jəmcō	*ʔise	'bull; beef' (PSC *Himcō)
*fǎqwinV̄	*ʔin- (~x-)	'(finger)nail; peg' (PSC *xǎqwinV̄)
*būǎV (~ w-)	*ʔul- (~x-)	'handle' (PSC =ōǎV̄)
*=fǎçV	*ʔute (~x-)	'full' (PSC *=fǎçV̄)
*=HūqV-n	*ʔux-	'long, big' (PSC *HūxqwV̄)
*χwim(V)pV	*ʔop- (~ x-, -b)	'to swallow' (PSC *χwǎmpV̄)
*H[o]kV	*b-[ə]k- (~w-)	'to search, find' (PSC *HōkV̄)
*bīnʒě	*bis-	'fly, wasp' (PSC *pV̄nʒě)
*çhwěme	*cəŋe	'hair' (PSC *çhwǎmé)
*=āčǎn	*čāŋ- (~c-)	'to pull, lead' (PSC *=āčǎŋ-)

PNC	PY	PSC
*čiqwV (~ *ć-)	*čēke	‘a k. of plait, splinter’ (PSC *čēxq̄wV̇)
*čərbV	*čip	‘dog’ (PSC *čirbV̇)
*=HiχV	*dōq-	‘to fly’ (PSC *HṼxkV̇)
*qōgV	*gīq-	‘back’ (PSC *xq̄VxgV̇)
*q̄wəlʔă	*gulam (~k-)	‘cover, lid’ (PSC *xq̄wəlʔă)
*=āsA	*hVs-	‘to be, stay’ (PSC *=āsÁ)
*λĂl(H)V	*jēl (~ʔ-, x-)	‘arrow, harpoon’ (PSC *λălHV̇)
*Ăäpi (~-e)	*jēpe	‘leaf’ (PSC *Ăäpí)
*jVcwĚ	*jūta	‘mouse’ (PSC *jṼstwĚ)
*=[i]swV	*kas- (~g-)	‘to take’ (PSC *=VswV̇)
*q̄HwirdV	*kəd-	‘a small animal’ (PSC *xq̄Hwir[d]V̇)
*kwVrV	*kərVd (~g-, -ʒ)	‘throat’ (PSC *kwVrV̇)
*GHwV̇H̄V	*kila	‘crow, jackdaw’ (PSC *xGHwV̇H̄V̇)
*bilʒV (~-ō-, -ä-)	*pis	‘hair (feather; whiskers)’ (PSC *bilʒV̇)
*mṼnxV	*pixe	‘man’ (PSC *mṼnxV̇)
*q̄ar[H]V	*qār(ı)- (~χ-)	‘a relative’ (PSC *q̄V̇r[H]V̇)
*q̄wērčV̇	*qēʒ- (~χ-)	‘stick, pole’ (PSC *xq̄ērčwV̇)
*qwăqwV̇ (~ χ)	*qək- (~χ-)	‘ladle, vessel’ (PSC *qwăqwV̇ (~ χ))
*qāmVçV	*qənte (~χ-)	‘ant, grasshopper, etc.’ (PSC *qāmstV̇)
*=HĩGĀ	*qo (~χ-)	‘ice; to freeze’ (PSC *=HĩGĀ)
*qā(w)qā	*kəq-	‘dirt, rubbish’ (PSC *xqā(w)qā)
*=HimGwV	*qomat- (~χ-, -ɔ-)	‘small’ (PSC *GwVmV̇)
*χōmfV	*qoń (~χ-)	‘beads’ (PSC *χũńfV̇ ~ *xk-)
*=aGwV(n)	*qoń- (~χ-)	‘to lose’ (PSC *=aGwV̇ń-)
*kārV	*qorVn- (~χ-, -ɔ-, -l-)	‘black; coals’ (PSC *xkārV̇)
*k(w)inV	*qōń-	‘bone, cartilage’ (PSC *xkwenV̇)
*qwănV	*qVm- (~χ-)	‘woman’ (PSC *qwănV̇)
*qēhlV (~ -t-)	*qVqVr	‘bitter’ (PSC *xqēhlV̇ (~ -t-))
*rħăłwV̇	*řoq-	‘liquid; milk’ (PSC *rħăłwV̇)
*çEnχV(n)	*saŋ-	‘to search, ask’ (PSC *çänχV̇)
*=aswVn	*siń-	‘grease, dirt’ (PSC *=aswV̇ń)
*śwănĩ	*siń	‘year; old’ (PSC *śwVnĩ)
*hāmçĚ	*su-	‘half’ (PSC *hāmçĚ)

PNC	PY	PSC
*ćāŁwV	*sur	'blood; red' (PSC *ćāŁwV̄)
*=ām̃Ě	*sūj	'to swim, bathe' (PSC *=ām̃Ě)
*čāpV	*tap-	'ring, circle' (PSC *stVpV̄)
*dwĩχi (~ -ĩ-)	*tiχ	'snow' (PSC *dwĩχi (~ -ĩ-))
*tāqV (~ -ā-)	*tVχV (~ -G-)	'vessel' (PSC *[t]āqV̄ ~ *dāqV̄)
*čhaľē	*toL- (~ -c-, č-)	'fence' (PSC *čhVľē)
*=iqwV	*xu-	'to sit, dwell' (PSC *=ixqwV̄)
*=ērçŮ	*xus-	'warm, to heat' (PSC *HērçŮ)
*hVřq̃wĚ	*χiGVÍ (~ *χiχVÍ)	'wide' (PSC *hVřq̃wĚ)
*GěGVbV	*χupi	'a k. of bird' (PSC *Gě(GV)bV̄)
*HarχU	*huxV-	'to speak, shout' (PSC *HarχŮ)
*çikwī	*tāGV (~ -c-, -χ-)	'rope, belt, thread' (PSC *çexķwV̄)
*GHwālcV	*xus(V)	'stick, pole' (PSC *GHwālcV̄)
*tāpV	*top-	'vessel' (PSC *[t]āpV̄)
*čHVdV	*cVt-	'bridegroom, husband' (PSC *čHVdV̄)
*=HěχwV	*ʔat-aq- (~ -x-)	'to pour, scatter' (PSC *=HěχkwV̄)
*hķwēľV̄	*χol	'palate, cheek' (PSC *xķwēľV̄)
*ᵛHwadVrV	*qVt-	'river, bank' (PSC *ᵛHwadV̄)
*HrīķwV	*ʔuK- (~ -x-)	'to dig out, cavity' (PSC *HrēķwV̄)
*χēľHe (~ -a)	*xire	'hand, sleeve' (PSC *χVľHé)
*GwHVbV̄	*χ[o]p	'top, heap' (PSC *GwHVbV̄)

The correlation appears to be quite straightforward, but there occur exceptions of which the most abundant group is:

PNC	PY	PSC
*=HuǰV-n	*ʔēǰ-	'clear (of weather)' (PSC *=HǰV̄)
*ǰārśwī	*ʔēs- (~ -x-)	'strap' (PSC *ǰārśwā)
*=ēm̃V	*ʔiGV (~ -ʔ-, -χ-)	'sharp, to whet' (PSC *Hím̃x̃V̄)
*h̃q̃wēñē	*kūñ (~ -g-)	'a k. of small predator' (PSC *x̃q̃wēñē)
*dHāq̃wĀ	*tuGV (~ -ū-)	'nape; back' (PSC *dHāq̃wĀ)
*ǰāñkwV̄	*tuñ (~ -ū-)	'skin, shape' (PSC *sdāñkwV̄)
*λHībV	*ʔipV (~ -x-, j-)	'wind, steam' (PSC *λHībV̄)
*hāľsV (~ -ī-, -ī-)	*ʔV̄si	'feather, wool' (PSC *hāľsV̄)
*Hλ̃əlv (~ -ō-)	*jiľ- (~ -x-, ʔ-)	'jaw; gills' (PSC *Hλ̃əlv̄)
*q̃əñh̃ə/*q̃əmh̃ə	*q̃āñə	'a k. of large bird' (PSC *q̃V̄ñh̃ə)

PNC	PY	PSC
*dV̄G(w)V	*tōq	‘cock’ (PSC *dV̄G(w)V̄)
*q̄Hwač̣i	*q̄iž- (~χ-)	‘hole, to dig’ (PSC *q̄HwV̄č̣i)
*cwākV	*tāk- (~c-,č-)	‘a k. of shoe’ (PSC *stwākV̄)

In all of these cases both vowels are (or can be) reconstructed as long both in NC and Yenisseeian, so we can in fact formulate an additional rule: In PY vowel length of the first syllable — which is preserved in Yenisseeian only before a long vowel in the second syllable (see below) — suppresses the glottal stop.

The Yenisseeian parallels, however, do not tell us much about the phonetic nature of this feature in PSC. We can hardly reconstruct a glottal stop here because various kinds of laryngeals (including the glottal stop) are already present within clusters in PNC, and reconstructing an additional laryngeal that has disappeared (yielding tenseness) in PNC does not seem very reasonable.

Let us now look at the ST evidence. The general rules of the root structure development here are the following:

1. *HV(R)CV > *CV
2. *CV(R)CV > *CVC

The second rule, however, is frequently violated in root structures like *CVRV which in ST can result both in *CVR and *CRV. It appears that the distribution of these two types of reflexes is in very good correlation with the PNC tenseness and PY *-ʔ-, cf.:

PNC CVRV ^L	PY CVC-	PST CRV	PSC
*kwīlʔi		*Kru ‘hand, elbow’	*kwīlʔi
*kwVrV	*kərVd (~g-, -ʒ)	*khrōw (~gh-, qh, Gh-) ‘throat’	*kwVrV̄
	*qorVT (~χ-)	*k[r]i (~-e(j)) ‘crow’	*xkVrV̄
	*par ₁ - (~-r̄-)	*prā(k) ‘bifurcation’	*bVrV̄
*qar[H]V	*qār(i)- (~χ-)	*K ^w rij (~ *Kruj) ‘a relative’	*q̄Vr[H]V̄
*gālV (~-t-)	*qol̄- / *qal̄-	*kV-liH ‘armpit; to tickle’	*xgālV̄
*qwīrhV		*k-rua ‘horn’	*χqwērV̄
*kwīrV		*k(h)rej (~-əj) ‘leg’	*kwīrV̄
*kīwrV		*k-rō ‘hair’	*kīwrV̄
*ñigVrV	*ʔikVl (~-x-, -r)	*k(r)əj (~ g-, q-, G-, -s) ‘near’	*ñigVrV̄
*swüre		*srāj ‘sand’	*swVrē

PNC CVRV^L PY CVC-

*=VgVl
 *=arkV
 *qǎlV̄
 *χērǎ
 *qǎrē
 *Gw̄rʔi
 *q[ǎ]rV
 *=ŋr̄q̄wǎ
 *kw̄arV
 *kirV
 *Hā-χuʔV

PST CRV

*klaH 'to lie, fall'
 *kriā(H) (~g-, -ŋ) 'to walk, go'
 *krā (~g-) 'house'
 *k-rā 'grass, shrub'
 *k-rij 'earth, dirt'
 *q^wrā 'stalk'
 *khriǎH 'a k. of weed, cereal'
 *grī 'old, ripe' 901
 *k^wrǎH (~g^w-) 'vessel'
 *Krij 'knife'
 *(K-)lu 'long, far'

PSC

*=VgV̄l-
 *kVrV̄
 *xqǎlV̄
 *xkērǎ
 *qǎrē (~xq̄-)
 *Gw̄rʔi
 *xq̄(w)VrV̄
 *xq̄(w)VrV̄
 *k^wārV̄
 *kirV̄
 *χwV̄lV̄

PNC CVRV^T PY CVʔC-

*gālV (~-l-) *gǎl- (~k-, -o-)
 *malšwV *bV(ʔ)sVl
 *piʔr-
 *=iGwǎr *qǎ(ʔ)r- (~l-)
 *saʔr-
 *=ǎçǎ- *tǎʔar
 *HVq̄Vr
 *=Hīçǎl (~-l) *tu(ʔ)r- (~l-)
 *Gwǎlʔi *kiʔl (~g-, -r)
 *χwǎlʔē (~-ǎ) *ʔuʔl (~x-, -j-)
 *k̄iwV *qoʔl (~χ-, -r)
 *q̄lʔi
 *=ilq̄wVl
 *šārī (~-ū)
 *=Hožǎl
 *çǎV (~-ǎ)
 *Gūlʔe (~-a)
 *kw̄arV
 *ʔiʔur-
 *HlākV̄
 (*Hāl̄kV̄)

PST *CVR

*kāl (~g-, G-)
 'stick, pole, stump'
 *ṇār 'face'
 *Par 'tasty, sweet; pungent'
 *kār 'dry'
 *śal (~-ǎ-, -l) 'sharp'
 *sēr (~ch-) 'freeze, cold'
 *G(h)ǎr (~χ-, ʔ-)
 'wet, to soak'
 *cheʔ 'clean, naked, bare'
 *ghuar(H) 'hole, pit'
 *trǎ (~d-)
 'mould, sludge, dust'
 *khāl (~gh-, qh-) 'river, ravine'
 *kh^wēr (~gh^w-) 'elbow, hand'
 *qh^wl 'to twist, bend'
 *śar 'nit, louse'
 *čer 'to press, strain'
 *Cal (~-ǎ-) 'tree, wood'
 *Kōr 'grain, seed'
 *ghōr 'a k. of vessel, scoop'
 *[ś]ūr (~-ǎ-) 'to strain, sift'
 *Gh(j)ǎl 'lame'

PSC

*gālV
 *ṇwālšV̄
 *bVrV̄
 *=i-xGǎr-
 *çV̄lHV
 *=ǎstǎ-
 *HVq̄Vr-
 *=Hīstǎl-
 *xGwǎlʔi
 *χwV̄lʔV
 *xkǎwV̄
 *xqwV̄lʔi
 *=q̄wV̄V̄
 *šārī (~-ū)
 *=Hóžǎl
 *çǎV̄
 *Gólʔe
 *kw̄arV̄
 *ʔiśdur-
 *Hǎ[χk]V̄V̄

PNC CVRV ^T PY CV?C-	PST *CVR	PSC
*=ǎǧǎ-r	*ghër 'to take, hold'	*=ǎxǧǎ-r
*=irχwVr	*[χ ^w]ār(H) 'to rejoice'	*=írχwVr-
*=Vǧǎl	*giǎr 'to cut, knife'	*=Vxǧǎl-
*q̣wVrē	*Q ^w īr 'fallow, to cultivate land'	*q̣wVrV
*ǰǎlV	*ćel (~ -r) 'to spread out, flat'	*sdǎlV
*ǧwōrǰe	*qh ^w ār (~*G ^w -) 'a k. of small animal'	*ǧwōrǰe
*=HilVqVr (~ *=HiqVlVr)	*xǰāl 'to laugh, joke'	*=HíqVl-
*ǧwǰǎli	*śǎl 'a k. of foliage tree'	*ǧwǰǎli
(~ ǧ-, -ǧ-, -ǧ-)		
*χ[ǎ]lV	*qāl(H) 'burden; back'	*[χ]VlV
*ǰǎlV	*cāj (~ ǰh-, -l) 'whole; save'	*ǰǎlV
*ǰwhǎri	*cer (~-iǎ-) 'star, shine'	*ǰwhǎri

There are several exceptions, of which a very regular type is provided by roots with two lateral or liquid consonants, which, instead of an expected structure *RLV or *LRV — impossible in ST — preserve the structure *RVL (*LVL):

PNC	PY	PST	PSC
*=i(r)ŁwVr	*?a(?)r(u) (~x-)	*ǎǎl 'to deceive'	*=eŁwVr-
*=ēǎwV(l)	*?il (~x-, -ǎ-, -r)	*rūl (~-uaǎ) 'to break, tear'	*=īǎwVl-
*=iǎǎV		*rial 'thin'	*=iǎǎV
*ǎwōri ~ *rēǎwi		*r[ua]l 'wheel, roll'	*ǎwōrí

The first rule (*HV(R)CV > *CV) also knows exceptions. It is always observed when the laryngeal is non-labialized (numerous examples see *passim*). This is also true for roots like *=VCV (where the position of the laryngeal is occupied by changing class markers). However, when the laryngeal is labialized (*HwV(R)CV), Sino-Tibetan sometimes preserves the first syllable instead of the second. Although examples are not so numerous, it appears that the distribution here is exactly the same as for the *CVRV structure, i. e. the first syllable is preserved in cases of "tense" phonation in North Caucasian and glottal stop in Yenisseian, cf.

PNC *ǎwōrqē 'mountain ridge, boundary' : PST *?wǎk 'space, territory'

(PSC *h_w[ǝ]rxqwē)

PNC *ʔwəlq̣wě (~ *h-, -ǝ) 'roof', PY *ʔiʔ(G) 'loft, store' : PST *ʔōk 'house, room' (PSC *ʔw[ǝ]lxq̣wě 'roof, house')

PNC *ʔwǎxwV 'bottom, below' : PST *ʔok id. (PSC *ʔwǎxkwV 'bottom')

whereas the second syllable is preserved in cases of "lax" phonation in North Caucasian and no glottal stop in Yenisseian, cf.

PNC *h_wēm_gV 'hole, window' : PST *k(h)āh 'opening' (PSC *h_wīm_gǞ)

PNC *hwiri 'lake, pond', PY *xur₁ 'water' : PST *ri(a)j 'water' (PSC *hwiri 'water, lake')

PNC *ʔwǎIV 'hole, burrow', PY *ʔol (~ x-) 'grave' : PST *rīw 'to pierce, burrow' (PSC *ʔwǎIǞ)

PNC *ʔwirqV(-nV) 'sack; shirt', PY *ʔāχ- 'sack' : PST *g(h)aw 'a k. of basket or sack' (PSC *ʔwǎrxq̣Ǟ 'sack, basket')

PNC *ʔwēǎV 'grass' : PST *l[ǝ]wH 'wees' (< PSC *ʔwēǎV)

PNC *hwimhV (~-ǝ-) 'string, lace', PY *ʔāŋ 'string' : PST *ñīH 'sinew, bowstring' (PSC *hwēŋhǞ)

Such a development in ST strongly suggests that what we are dealing with here is a distinction in the position of dynamic accent:

PSC *C₁VCV > PNC *CVCV, PY *CV?C, PST *CVC
 PSC *CVC₁V > PNC *CVCV, PY *CVC, PST *CCV
 (in cases when the second C is a liquid)

We should note that a number of verbal *CVCV roots appear in PNC as *(H)VCVC (where = stands for a changing class prefix; see below on morphology). The historical nature of the "presyllable" *(H)V is somewhat unclear: unlike the similar *(H)V- in verbal roots of the type *(H)VCV it seems to be always lost both in ST and Yenisseian and may in fact be just a parasitic epenthesis between the class markers and the root.

III. VOWEL DISTINCTION IN LENGTH

PNC, PST and PY all possess length distinctions. However, the correspondences between long and short vowels here are far from transparent.

Only in PNC the distinction in length can be reconstructed both for

word-medial and word-final vowels. It turns out that PNC word-final length/shortness is of crucial importance for the developments in PY and PST.

PY short vowels normally correspond to PNC short ones, and long — to long ones. However, if the second vowel is short, the first vowel becomes also short:

PNC	PY	
*ʔrānǻE	*ʔa(?)χV	‘six’ (PSC *ʔrǻnǻǻ)
*lHiq̄wǻ	*dVʔG-	‘a k. of bird’ (PSC *lHéq̄wǻ)
*qānʔV	*qəʔn	‘louse, flea’ (PSC *xqānʔǻ)
*GwātV	*qoʔt (~χ-)	‘way, road, passage’ (PSC *Gwá[t]ǻ)
*cārGwV	*saʔqa	‘squirrel, weasel’ (PSC *[c]árxgwǻ)
*hwāl̄sǻ	*ʔiʔs (~x-)	‘stick, fork’ (PSC *hw[ǻ]lsǻ)
*ǵāǵě	*seʔs	‘larch’ (PSC *ǵāǵě)
*ǵāLwV	*sur	‘blood; red’ (PSC *ǵāLwǻ)
*GwHVbǻ	*χ[o]p	‘top, heap’ (PSC *GwHVbǻ)

This peculiar assimilation in length seems to have operated even on a wider scale in ST, where, in fact, the length of the main vowel with a few exceptions corresponds to the length of the final vowel in PNC, as shown in [Starostin 2000]. Since this text was published only in the proceedings of the Moscow conference, I shall reproduce it here as a whole:

Genesis of the long vowels in Sino-Tibetan

External connections of Sino-Tibetan with North Caucasian may give us a clue to the origin of the Sino-Tibetan long vowels (tentatively reconstructed on the basis of deng distinction in Middle Chinese and the length contrast in Kuki-Chin).

In Proto-North-Caucasian the opposition "long-short" is reconstructed both in medial and in final position (the root is usually disyllabic). It turns out that the medial length does not correspond to anything in Sino-Tibetan. However, if one takes into consideration the length of the final vowel (reconstructed on the basis of accent features in some West Daghestan languages, and reflected in the development of the root structure and adjacent consonants, see NCED 79-86), the following tendency seems to be observed:

- 1) PNC roots with final short vowels tend to correspond to PST roots

with short vowels;

2) PNC roots with final long vowels tend to correspond to PST roots with long vowels.

In both cases we have about 30 examples demonstrating the formulated rule and about 10 exceptions (unfortunately, in very many cases there is not enough Caucasian evidence to reconstruct the final vowel length, which explains the relatively small number of relevant cognates).

Thus in the prehistory of Sino-Tibetan there could have occurred a shift of final vowel length to the preceding syllable, after which all final vowels were shortened, and ultimately dropped — resulting in the well known monosyllabism of the PST root.

Consider the following examples:

A. Short : Short

1. PNC *ʔlēǎ 'night' : PST *rǎk 'evening; 24 hours' (PSC *ʔlēǎ)
2. PNC *ʔwīncǎ 'spring, source' : PST *ciǎŋ (~ʒh-) 'well, pond' (PSC *ʔwī[c]ǎnǎ)
3. PNC *bhǎǎwǎ 'small cattle' : PST *Pǎk 'cattle; rich' (PSC *bhǎǎwǎ (~-ě))
4. PNC *bǐmǎ 'hoof, foot' : PST *phǎl (~-ǎ-, -ǎ-) 'calf, part of leg' (PSC *bǐmǎ)
5. PNC *bVnǎwǎ 'belly, stomach' : PST *pǎk id. (PSC *bVnǎwǎ (~ pǎ-, -xǎ-))
6. PNC *cwǎǎmǎ 'gall' : PST *sǎŋ (/sǎŋ) 'liver, bitter' (PSC *cwǎǎŋǎ)
7. PNC *ǎǎqǎwǎ 'scoop, wooden vessel' : PST *ǎǎk 'cup, ladle' (PSC *ǎǎqǎwǎ)
8. PNC *dwǎnǎ 'pit' : PST *thuǎŋ (~ dh-) 'empty, hole' (PSC *dwǎnǎ)
9. PNC *Gǎmǎǎ (~-ǎ) 'tongs, pincers' : PST *khǎm (~ qh-) 'tongs' (PSC *Gǎmǎǎ)
10. PNC *hwnǎǎqǎ 'meat soup, broth' : PST *nǎk 'meat' (PSC *hwnǎǎqǎ)
11. PNC *Hǎǎǎ / *ǎǎǎ 'arm' : PST *tǎǎH 'hand, arm, wing' (PSC *ǎǎǎ)
12. PNC *Hǎǎǎwǎ 'dirt; dust' : OC 陸 *ruk 'ground, dry land' (PSC *Hǎǎǎwǎ)
13. PNC *ǎǎǎwǎ 'heart' : PST *ǎǎǎ / *ǎǎǎ 'breast' (PSC *ǎǎǎwǎ)
14. PNC *ǎǎǎwǎ 'mouse' : PST *ǎǎ(s) 'marten; rat, mouse' (PSC *ǎǎǎwǎ)
15. PNC *ǎǎǎwǎ 'a k. of bird' : PST *ǎǎk / *ǎǎŋ 'a bird of prey' (PSC *ǎǎǎwǎ)

16. PNC *mēṣV̄ 'tail' : PST *mōjH id. (PSC *mēṣV̄)
17. PNC *mēlčī 'tongue' : PST *m-lāj / *m-lāt 'tongue' (PSC *mēlčī)
18. PNC *nēkwī 'oath; to swear' : PST *ṇiāk^w 'to abuse, maltreat' (PSC *ṇēkwī)
19. PNC *nḥāḷwV̄ / *ḷhṵwānV̄ 'a k. of insect' : PST *t-lūṇ 'insect' (PSC *ḷwāṇHṼ)
20. PNC *qām(ḡ)(w)ā (~-ō) 'knee' : PST *kūk 'bent, curved' (PSC *xqām(x)q(w)ā (~-ō))
21. PNC *qwindā 'wall, fence' : PST *Gh^wān 'garden' (PSC *qwindā)
22. PNC *rāḷī 'intestines; meat' : PST *rāk 'sinew, intestine(s)' (PSC *rV̄ḷī)
23. PNC *rēṇḡwā 'butter, oil' : PST *rāṇ 'food, provisions' (PSC *rēṇḡwā)
24. PNC *rḥāḷwV̄ 'milk, butter' : PST *rjiāk 'thick fluid, liquid grease' (PSC *rḥāḷwV̄)
25. PNC *wāmčō 'moon' : PST *ṛ^wāt 'moon, light' (PSC *wāmčō).
26. PNC *wirēqā 'sun' : PST *xruāk 'bright, sunshine' (PSC *hwērī-
*HwīxqV̄)
29. PNC *ṣwērḥī 'name' : PST *Cā 'name, concept' (PSC *ṣwērḥī)
30. PNC *Hḷōnū 'bottom' : PST *ḷāṇ 'floor' (PSC *Hḷōṇū)

B. Long : Long

1. PNC *ṛxwīrī (also metathesized: *ṛīxwī) 'bridle, rope' : PST *rīa 'rope, thread' (PSC *ṛV̄xwV̄)
2. PNC *bōrGwV̄ 'stall, shed; tower' : PST *[b]ōk (PSC *bōrGwV̄)
3. PNC *bV̄rLVmē 'funeral stretcher; ladder' : PST *(t)-lōṇH 'frame, grating' (PSC *bV̄rLVṇwē)
4. PNC *cīrqā 'carpet' : OC 簀 *crēk 'mat' (PSC *cīrqā).
5. PNC *čūqā (~č-, č-) 'neighbour' : PST *chōk (~ *ḡh-) 'bandit' (PSC *čōqā).
6. PNC *čwīnhV̄ 'flea, nit' : PST *cūH (~ ḡ-) (PSC *čwīnhV̄)
7. PNC *dwīq(w)V̄ 'log, stump' : PST *tūṇ (~ *d-) (PSC *dwāxq(w)V̄).
8. PNC *farnē 'horse, mare' : PST *mrāṇH (PSC *xmarṇē).
9. PNC *Gwāḷā 'doe, hornless goat' : PST *k(h)ī 'wild goat' (PSC *xGwV̄ḷā)
10. PNC *hrēGwē 'comb' : PST *P-rōk 'to scratch, scrape' (PSC *hrēxgwē)
11. PNC *ḥāṇḡwā (~-ə-, -ō-) 'wood-grouse' : PST *Kōṇ (~ Q-) 'white grouse, wild goose' (PSC *ḥāḡ(k)wVṇV̄).
12. PNC *ḥnārkwV̄ 'urine' : PST *nēk^w 'urine, dirt' (PSC *ḥnārkwV̄).
13. PNC *HkālV̄ ~ *HḷākV̄ 'dirt' : PST *t-liāk 'mud, swamp' (PSC *HḷākV̄).
14. PNC *HmVGV̄ 'thirst, thirsty' : PST *māk 'love, be greedy' (PSC *HmVGV̄)
15. PNC *kirḥē 'luck, virtue' : PST *KāH id. (PSC *kirḥē)

16. PNC * $\lambda_e\lambda_e$ 'a k. of bird (cock, partridge)' : PST * $t\text{-l}\ddot{e}k^w$ 'a k. of bird' (pheasant, lark) (PSC * $\lambda_e\lambda_e(w)\ddot{e}$).
17. PNC * $m\ddot{a}hn\ddot{i}$ (~- $\ddot{u}$) 'brain' : PST * $n\ddot{u}H$ id. (PSC * $m\ddot{V}hn\ddot{u}$ ~ * $n\ddot{V}hm\ddot{u}$)
18. PNC * $m\ddot{h}\ddot{a}zn\ddot{e}$: PST * $m\ddot{a}n$ (~- $\ddot{u}$ -) 'gate, door' (PSC * $m\ddot{h}\ddot{a}zn\ddot{e}$)
19. PNC * $m\ddot{o}w\chi\ddot{e}$ 'wool' : PST * $m\ddot{a}w$ 'hair' (PSC * $m\ddot{o}w\chi\ddot{e}$)
20. PNC * $n\ddot{H}wG\ddot{A}$ / * $G\ddot{H}w\ddot{n}\ddot{A}$ 'arm, shoulder' : OC 肩 * $k\ddot{e}n$ 'shoulder' (PSC * $xG\ddot{H}w\ddot{V}n\ddot{A}$)
21. PNC * $\dot{q}\ddot{a}m\ddot{o}$ 'trough, wooden vessel' : PST * $q(h)\ddot{a}m$ 'box' (PSC * $\dot{q}\ddot{a}m\ddot{o}$)
22. PNC * $\dot{q}wVrV\dot{q}\ddot{V}$ 'frog' : OC 𪛗 * $k^w\ddot{r}\ddot{a}k$ id. (PSC * $x\dot{q}w\ddot{V}rV(\dot{q}\ddot{V})$)
23. PNC * $\acute{s}w\ddot{a}n\dot{q}\ddot{i}$ 'gum, ink' : PST *(s)- $m\ddot{a}k$ 'ink' (PSC * $\acute{s}w\ddot{a}n\dot{q}\ddot{i}$)
24. PNC * $\acute{k}w\ddot{e}m\ddot{t}\ddot{i}$ (~- $\ddot{o}$) 'lip' PST * $kh\ddot{a}m$ 'lip, mouth' (PSC * $\acute{k}w\ddot{e}m\ddot{t}\ddot{i}$).

C. Exceptions

a) Short : Long

1. PNC * $\ddot{r}\ddot{e}Gw\ddot{E}$ 'yoke' : OC 𪛗 * $\ddot{r}\ddot{e}k$ 'yoke-ring' (PSC * $\ddot{r}\ddot{e}xgw\ddot{E}$ 'yoke'; but cf. also PNC * $\ddot{r}\ddot{i}kwV$ 'yoke stick').
2. PNC * $b\ddot{h}\ddot{e}r\dot{c}\ddot{i}$ (~- $\ddot{e}$) 'wolf; jackal' : OC 𪛗 * $pr\ddot{a}t\text{-}s$ 'mythical predator' (PSC * $b\ddot{h}\ddot{e}r\dot{c}\ddot{i}$ (~- $\ddot{e}$); see, however, notes below)
3. PNC * $b\ddot{H}\ddot{V}rg\ddot{A}$ 'a beast of prey' : OC * $pr\ddot{a}k$ 'mythical predator' (PSC * $b\ddot{H}\ddot{V}rg\ddot{A}$)
4. PNC * $b\ddot{o}l\dot{c}w\ddot{i}$ 'millet' : PST * $phr\ddot{e}(s)$ (PSC * $b\ddot{o}l\dot{c}w\ddot{i}$)
5. PNC * $m\ddot{a}r\lambda w\ddot{A}$ 'cloud' : PST * $m\ddot{u}k$ 'fog' (PSC * $m\ddot{a}r\lambda w\ddot{A}$)
6. PNC * $n\ddot{e}w\dot{q}\ddot{u}$ 'tear, pus' : PST * $nu\ddot{a}k$ / * $nu\ddot{a}n$ 'pus' (PSC * $n\ddot{e}wx\dot{q}w\ddot{V}$)
7. PNC * $\acute{t}H\ddot{a}n\dot{k}\ddot{o}$ 'drop' : PST * $ti\ddot{a}k$ (~ d-) id. (PSC * $[\acute{t}]H\ddot{a}n\dot{k}\ddot{o}$)
8. PNC * $Hr\ddot{e}m\dot{q}\ddot{i}$ 'road' : PST * $ri\ddot{a}n$ / * $ri\ddot{a}k$ id. (PSC * $Hr\ddot{e}m\dot{q}\ddot{i}$).
9. PNC * $lh\ddot{e}m\dot{L}w\ddot{i}$ 'earth' : PST * $li\ddot{n}$ 'field; forest' (PSC * $lh\ddot{e}m\dot{L}w\ddot{i}$).
10. PNC * $L\ddot{e}t\ddot{V}$ 'war' : PST * $r\ddot{a}t$ (PNC * $L\ddot{e}t\ddot{V}$).

b) Long : Short

1. PNC * $\acute{l}\ddot{a}wq\ddot{V}$ 'many, enough' : PST * $l\ddot{o}k$ 'abundant, much' (PSC * $\acute{l}\ddot{a}w(x)q\ddot{V}$)
2. PNC * $n\ddot{e}q\ddot{w}\ddot{e}$ 'chaff' : PST * $n\ddot{e}k^w$ 'a k. of rush, cane' (PSC * $n\ddot{e}q\ddot{w}\ddot{e}$)
3. PNC * $q\ddot{w}\ddot{a}q\ddot{w}\ddot{V}$ 'trough; basket' : PST * $Ku\ddot{a}k$ 'a receptacle' (PSC * $q\ddot{w}\ddot{a}q\ddot{w}\ddot{V}$)
4. PNC * $\chi\ddot{i}n\dot{k}\ddot{i}$ 'dumpling' : PST * $\chi\ddot{a}n$ 'meat soup' (PSC * $\chi\ddot{a}n\dot{k}\ddot{i}$)
5. PNC * $\acute{d}\ddot{a}n\ddot{?}\ddot{i}$ (~- $\ddot{u}$) 'cheek; gum' : PST * $t\ddot{a}n(H)$ (~ d-) (PSC * $\acute{d}\ddot{a}n\ddot{?}\ddot{i}$); see, however, notes in the glossary below.
6. PNC * $H\ddot{h}u\dot{L}\ddot{V}$ 'sleeve, wing' : PST * $l\ddot{a}k$ 'hand, arm, wing' (PSC * $H\ddot{h}u\dot{L}\ddot{V}$).
7. PNC * $\acute{c}\ddot{a}f\ddot{h}w\ddot{e}$ 'whey; home-brewed beer' : OC 酒 * $\acute{c}\ddot{u}?$ 'wine' (PSC

*čǝh̥wə); see, however, notes in the glossary below.

D. Dubious cases include:

1. PNC *ʔrǎnǎE 'six' (with both short and long final vowel reflected): PST *rūk 'six' (PSC *ʔrǎnǎǎ, see comments below).
2. PNC *kiŋ 'farmstead, hut' : PST *g(h)ual 'village, district' (PSC *kiŋ; shortness in PST is based on the Chinese form, which is aberrant also in other respects).
3. PNC *ǎəmǎǎ 'roof, top' : PST *ǎǎŋ (OC 揚 *ǎǎŋ, but Lush. hlǎŋ, tlǎŋ) (PSC *ǎǎŋǎǎǎ)
4. PNC *hwVmVli 'face' : PST *mǎǎ (OC 面 *mǎn-s, but Lush. hmǎl) (PSC *hwVmV[li]).
5. PNC *ʔwǎlǎwǎ (~ *h-) 'roof' : PST *ǎǎk (PWC *b-ǎa; but Av. ʔ-oǎ:ó, pl. ʔ-oǎ:ǎ-bi points rather to a long final vowel) (PSC *ʔw[li]ǎǎwǎ).
6. PNC *fǎǎǎwǎ 'bone' : PST *rǎk / *rǎŋ 'bone' (the root may reflect a merger with PNC *rǎǎǎ (/ǎǎǎǎ) 'hand-bone') (PSC *fǎǎǎwǎ).

IV. CLUSTERS WITH LARYNGEALS

As shown in Starostin 1996, clusters of resonants with laryngeals are directly responsible for loss of certain resonants in Sino-Tibetan. My paper devoted to this subject was presented on a symposium in Hong Kong in 1994 and published in the Journal of Chinese Linguistics. Since this publication is also hard to obtain, I shall reproduce it here as well — but with some modifications concerning individual etymologies that had been replaced during the course of the past years.

It is always pleasant for a comparative linguist to discover some new, non-trivial rule of correspondence. In the case of macrofamilies like Nostatic or Sino-Caucasian, this is still more exciting, because non-trivial correspondences are actually the main subjective proof of relationship (while general correspondences and statistic considerations supply the objective evidence). In this paper I would like to demonstrate one case of this kind of correspondences. What makes it significant is that it was discovered already after the general set of correspondences between the North Caucasian and Sino-Tibetan languages was formulated, but basically on the same corpus of evidence — which, to my opinion, is in itself a proof that the bulk of Sino-Caucasian etymologies is not just a set of randomly picked words tied together by artificially established phonetic rules.

While reconstructing the Proto-North-Caucasian (PNC) system, we (the author of this paper and S. L. Nikolayev) proposed a rather complicated set of clusters of laryngeals and resonants, in order to explain various patterns of word-medial and word-final resonant correspondences in North Caucasian languages. The basic idea was that in root structures like CVRHV or CVHRV resonants could have become weakly articulated and dropped (sometimes leaving behind nasalization), while in the pure structure CVRV resonants were normally preserved (except in the West Caucasian languages, where they were usually lost in all contexts). In this respects root structures like CVRHV behaved just like the general CVRCV-roots, where medial resonants also reveal a strong tendency to fall out. On the other hand, in some North Caucasian languages (notably in Proto-Lezghian) some medial -RH-clusters resulted in "tense" (or geminated) resonants (-RH- > -R:-). Here I will not go into the details of the PNC reconstruction (see NCED, pp. 38-199). It will suffice to say that for PNC the following types of medial clusters of laryngeals and resonants can be postulated:

Rʔ	Rʔ	ʔR	ʔR
Rh	Rh	hR	hR
Rɦ	Rɦ	ɦR	ɦR

Below I will try to show, that Proto-Sino-Tibetan (PST) always has resonants corresponding to PNC plain resonants and the clusters Rʔ, Rʔ, ʔR, but has a 0-reflex (sometimes a -j or -w-glide) corresponding to all other PNC clusters. The only exceptions are clusters with *-m- (in PNC), where the resonant is normally preserved in all combinations. Note that *ʔR behaves in a different way than *Rʔ — probably because of an early merger of *ʔR and *hR (or *ɦR) in the prehistory of Sino-Tibetan.

The behaviour of *-j- and *-w- is not studied in this paper because no clusters of these resonants and laryngeals can be reconstructed for PNC. Consider the following examples:

A. PNC *r : PST *r

PNC *pírV : PST *phjǃr 'to fly' (PSC *pírV)

PNC *hīgVrV : OC *g(h)ərʔ 'near' (PSC *hīgVrV)

PNC *kírV (~-ē-) 'belly, chest' : PST *kēr 'inside, interval' (PSC *kírV (~-ē-))

PNC *gōrV (~-ī-) 'stick, log' : PST *Kār 'stick, stake' (PSC *górV)

PNC *šārī (~-ū) 'worm' : PST *šar 'louse' (PSC *šārī (~-ū))

PNC *hāzārV 'enclosure' : PST *žerH 'granary' (PSC *hāsdārV)

PNC *rʔ, *rʔ : PST *r

PNC *t̥wōrʔi 'nipple, pimple': PST *dhūr 'smallpox, blister' (PSC *[t̥]wōrʔi)

PNC *Gwōrʔe 'hare' : PST *qh^wār (~*G^w-) 'badger' (PSC *Gwōrʔe)

but PNC *r̥h, *h̥r, *ʔr : PST *0 (-j, -w)

PNC *χwōrhV 'village, farmstead': PST *qh^wə 'village' (PSC *χwōrhV)

PNC *kirhē 'luck, virtue' : PST *KāH 'blessing' (PSC *kirhē)

PNC *l̥āhrV 'snake' : PST *lāj 'snake' (PSC *l̥āhrV)

PNC *qw̥r̥r̥V 'field, arable land': PST *(r)Qa 'earth' (PST *qw̥r̥r̥V)

PNC *xw̥r̥r̥V 'vein': PST *(r)Kiw 'sinew' (PSC *xw̥r̥r̥V)

B. PNC *l : PST *r (/l)

PNC *m̥h̥wVlV 'nose': PST *mūr 'point, tip; mouth' (PSC *m̥h̥wVlV)

PNC *muhalV 'mountain': ST > PKC *mual 'mountain' (PSC *muha[h]V)

PNC *tālV 'kennel, spring': PST *dhel 'pond' (PSC *tāl[l]V)

PNC *l̥ōli 'colour': PST *rōlH 'bright, sparkling, shining' (PSC *l̥ōli)

PNC *lʔ, *lʔ : ST *r (/l)

PNC *t̥wēlʔe (~-l-) 'beam, log': PST *Tur 'pole, stick' (PSC *t̥wēlʔe (~-l-))

PNC *k̥VlʔV (~-l-, -l-) 'white': PST *Kār 'white' (PSC *k̥VlʔV)

PNC *ʔwilʔă (~-l-, -l-, -l-) 'wheel': PST *q^wār 'round' (PSC *ʔw[é]lʔV)

PNC *q̥lʔi 'hand': PST *Kh^wer 'fist, hollow of hand' (PSC *xq^wlʔi)

PNC *Gwālʔi 'hole, pit' : PST *ghuar(H) 'hole' (PSC *xGwālʔi)

PNC *χ[ā]lʔV 'burden, load' [in NCED erroneously reconstructed as *χ[ā]lʔV on p. 1069, but correctly on p. 665] : PST *qāl(H) 'burden; back' (PSC *χ[ā]lʔV)

but PNC *l̥h, *fl : PST *0 (j)

PNC *q̥h̥lV (~-l-) 'bitter': PST *ghā 'bitter' (PSC *xq̥h̥lV (~-l-))

PNC *rōlfi (~-l-, -l-) 'dirt, mire, pus': PST *rej 'pus, gleet' (PSC *rōlfi)

PNC *cōjwīlV 'autumn, winter': OC *čiw 'autumn' (PSC *cōjwīlV).

C. PNC *l : PST *l

PNC *h̥kwěfV̄ 'neck, throat, palate': PST *Kal (~t) 'jaw, cheek' (PSC *xkwěfV̄)

PNC *ʒǎfV 'branch': PST *jǎl 'branch' (PSC *jǎfV̄)

PNC *baʔV (~ə-, -l-) 'wool': PST *PVI 'wool, hair' (PSC *bǎfV (or *pVhVfV ?))

PNC *gaʔV (~l-) 'stick, pole': PST *kāʔ (~g-) 'pole, club' (PSC *gǎfV)

PNC *phǎfV (~f-, -i-, -l-) 'a k. of tree': PST *bhūl 'root, stalk, tree' (PSC *phǎfV̄)

PNC *HǎiʔwVfV 'seed, root; kin, clan': PST *t-riaʔ 'soil belonging to one family' (PSC *HǎiʔwVfV̄)

PNC *bHōrʔwVfV 'snake': PST *Prūl 'snake' (PSC *wHōrʔwVfV̄ (~ *b-))

PNC *LwěfV 'enclosure, fence': PST *rǎl 'hedge, fence' (PSC *LwěfV̄)

PNC *LǎfV̄ 'war, fight': PST *rǎʔ 'war, enemy' (PSC *LǎfV̄)

PNC *kiʔū 'hut, farmstead': PST *g(h)ual 'village, district' (PSC *kiʔū)

PNC *dwǎh̄ 'stick': PST *tǔl 'awl' (PSC *dwǎh̄)

PNC *cǎfV (~ǎ-) 'branch, tree': PST *Cǎl 'wood, grove' (PSC *cǎfV)

PNC *ʔ : PST *l

PNC *ʔaʔfV̄ 'step': PST *khāl (~qh-, Gh-) 'to step over; to ford' (see under PSC *xkwěfV̄, with a discussion of contaminations in PST)

PNC *ʔwěfV̄ 'mould': PST *t-rǎʔ 'dust' (PSC *ʔwVfV̄)

but PNC *f̄h, *h̄h : PST *0 (j, w)

PNC *ciʔh̄V̄ 'tooth': PST *Coj 'fang, canine tooth' (PSC *št̄h̄h̄V̄)

PNC *lǎfV̄ 'foot, track': PST *la 'foot' (PSC *lǎfV̄)

PNC *Gwǎf̄ho (~ə) 'gossip, offence': PST *G(h)ōw 'revile, offend' (PSC *Gwǎf̄h̄o)

PNC *bǎf̄h̄h̄o (~ǎ) 'edge; lip': PST *phǎH (~ bh-) 'cheek; upper jaw' (PSC *bǎf̄h̄h̄o)

D. PNC *n : PST *n/m

PNC *ʔwēni (~ ʔw-, -u) 'sound, movement of air': OC *ʔəm 'sound' (PSC *ʔwēni (~ -u))

PNC *χōnV̄ 'obstacle, trap': PST *χānH 'net' (PSC *χōnV̄)

PNC *h̄cwinV̄ 'night, sleep': PST *chēn 'night, darkness' (PSC *h̄[c]wínV̄)

PNC *mhǎnV- 'warm; weak, loose': PST *nām 'soft, weak, fluffy' (PSC *mHǎnV)

PNC *fǎnV 'mountain': PST *ŋǎm 'height, precipitous' (PSC *xŋwǎnV)
 PNC *sǐnǒ (~-ǒ) 'long bone; edge, wedge': PST *sen 'nail' (PST *sǎnǒ)
 PNC *GHwǐnĀ 'shoulder, arm; armpit': OC *kēn 'shoulder' (PST *xGHwǐnĀ)

PNC *nʔ, *nʔ, *ʔn : PST *n/m

PNC *dwānʔV 'musical instrument, drum': PST *tǔm 'musical instrument' (PSC *dwānʔV)
 PNC *tʷōnʔe 'manger, trough': PST *tiām 'jar, bottle' (PSC *tʷōnʔe)
 PNC *ɿwǐnʔV 'season': PST *Gǔn (~χ-) 'season, time' (PSC *[ɿ]wǐnʔV)
 PNC *mfǎʔnē 'door, door frame': PST *mīn (~-ū-) 'gate, door' (PSC *mfǎʔnē)
 PNC *qǒnʔV 'enclosure, building': PST *kʷān 'compartment, residence' (PSC *xqǒnʔV)
 PNC *GwǐnʔV 'house, farmstead': PST *qǐm (~ *qʷǐm) 'house' (PSC *GwǐmʔV)

but PNC *nɦ, *fɦ, *nɦ, *nɦ, ʔn : ST *0 (w,j)

PNC *xǎnfɦ 'water': PST *χǔ(-s) 'wet, moisture' (PSC *xǎnfɦ (-ǔ))
 PNC *mǎfnī (~ *nǎfmī, -ū) 'brain': PST *nū, *nū-k 'brain' (PSC *mǎfnū)
 PNC *kʷǐnhV 'smoke': PST *ghiw 'smoke' (PSC *kʷǐnhV)
 PNC *ʔwǐnhV 'malt, young sprouts': PST *ʔ[ə]j 'sprout, shoot' (PSC *ʔwǐnhV)
 PNC *čwǐnhV 'flea': PST *čū 'flea' (PSC *čwǐnhV)
 PNC *čwǐnhV 'salt': PST *Cāj (/ *Cuāj) 'salt' (PSC *čwǐnhV)
 PNC *fanɦV (~ *χw-) 'fish': PST *ŋ(j)ǎ (PSC *xŋwanɦV)
 PNC *hwǐʔnV 'blood': PST *s-ʔʷij 'blood' (PSC *hwǐʔnV)
 PNC *lǐʔwni (~-ʔ-) 'skin (of an animal)': PST *lwV(j) 'skin, to skin' (PSC *lǐʔwni (~-ʔ-))
 E. PNC *n/*m : PST *ŋ

PNC *farnē 'horse, mare': PST *mrā(ŋ) 'horse' (PSC *xmarnē)
 PNC *kʷǎrnV 'young (of an animal)': PST *kruŋ 'to be born; fresh sprouts' (PSC *kʷǎrnV)
 PNC *sǐnV 'blue, green': PST *chēŋ 'green' (PSC *sVŋV)
 PNC *Gwǎnmē 'stack, heap': PST *q(h)ʷVŋ (~ʷ-) 'heap' (PSC *Gwǎnmē)
 PNC *čwǎjmē 'gall; anger': PST *sǐŋ (/ -n) 'liver; bitter' (PSC *cwǎjŋē)

PNC *Hǎwǎmā (~-ē) 'wind; smell': PST *luan 'air, wind' (PSC *Hǎwǎmā (~-ē))

PNC *Hǎōnǔ 'bottom': PST *t-lǎn 'floor' (PSC *Hǎōnǔ)

PNC *nǎ, *nǎ? : PST *n

PNC *čǎnǎV 'new': PST *sǎn (/sǎn) 'new' (PSC *čǎnǎV)

PNC *qǎnǎV 'louse, nit': PST *khǎn (~ gj-) 'beetle, a k. of insect' (PSC *xǎnǎV)

PNC *dǎnǎ (~-ū) 'cheek; gum': PST *tǎn 'flat part of body' (PSC *dǎnǎ)

PNC *qǎnǎū 'flat surface': PST *Kwan 'cheek' (PSC *qǎnǎū)

[Here there is no 0-correspondence for clusters of the *nh-type, because all such cases fall into type D, see above].

F. PNC *m : PST *m

PNC *hǎwǎmV 'summit, top, protruding edge': PST *khǎm 'bank, edge' (PSC *xǎwǎmV)

PNC *tǎmV 'wing, shoulder': PST *[t]ām 'carry on the shoulder' (PSC *tǎmV)

PNC *čǎwǎm (~-ä-, -i) 'eyebrow': PST *chām 'hair of head' (PSC *čǎwǎm)

PNC *kǎm 'hide, bark; dandruff': PST *kuam 'leather, skin' (PSC *kǎm)

PNC *ǎmV 'bushes': PST *cōm (~ ǎ-, -ū-) 'thicket' (PSC *ǎmV)

PNC *lǎmV 'bridge': PST *lǎm 'road, path' (PSC *lǎmV)

PNC *cǎmV (~ ǎ-) 'tip, point': PST *ǎm 'edge' (PSC *ǎmV)

PNC *lǎmV 'lick': PST *lem 'tongue; to lick' (PSC *lǎmV)

PNC *qǎmV 'fruit stone': PST *kuam 'a k. of fruit, nut' (PSC *xǎwǎmV)

PNC *čǎw[ǎ]mV 'how much': PST *c(h)ām 'as much as, as good as' (PSC *cāmV)

PNC *mǎ, mǎ, mǎ, mǎ : PST *m/n

PNC *čǎwǎmǎV 'eagle': PLB *ǎm 'hawk, kite' (PSC *čǎwǎ[m]ǎV)

PNC *ǎmǎ (~-ū) 'place of the popular assembly': PST *Kjam 'yard' (PSC *ǎmǎ)

PNC *ǎmHV 'three': PST *sūm 'three' (PSC *ǎmHV)

PNC *ǎmV 'hyena, wolf': PST *ǎm 'bear' (PSC *ǎmV)

PNC *qǎmǎ 'trough, cradle': PST *q(h)ām 'box' (PSC *qǎmǎ)

PNC *č(w)ŲmhV 'span': PST *cūm (~ *ć-) 'span, measure' (PSC *čŲmhV)
 PNC *ķēmhV 'arc; an arched, curved body part': PST *k(h)ūm 'curved, bent' (PSC *ķēmhV)
 PNC *tūmhV (~tŵi-, -h-) 'kernel, stone of fruit': PST *[t]öm (~-ū-) id. (PSC *tūmhV)

In verbal roots no clusters of the type *RH or *HR can be reconstructed for PNC (aside from semantics, verbal roots are formally characterized as roots allowing changing agreement prefixes). Resonants can also disappear in such roots in daughter languages, but this is due to morphological reasons: reinterpretation of root-final *-r, *-l or *-n (*-m is very rare, and *-l can not be distinguished from *-l in verbal roots) as suffixes, due to confusion with real participial morphemes, and the following loss of resonant conjugation.

Absence of *RH/*HR-clusters in verbal roots seems to be a common Sino-Caucasian feature: in these roots ST languages always preserve resonants. Cf.:

PNC *=iGwÄr 'dry, to dry': PST *kār 'dry' (PSC *=i-xGÄr-)
 PNC *=əçör 'to freeze, turn to ice': PST *sēr 'sleet, hail' (PSC *=əstör-)
 PNC *=ig(w)Vr 'to wrap, fold, bend': PST *kuar 'crooked, bent' (PSC *=igwVr)
 PNC *=iųwVl 'to feed, eat': PST *q(h)^wiör 'bring supply of food to' (PSC *=iųwVl)
 PNC *=imžĚr 'to bake, roast': PST *čiar 'to fry, cook' (PSC *=imžĚr)
 PNC *=iŧVr 'to run': PST *t(h)ūr 'to hasten, run' (PSC *=iŧVr)
 PNC *=irχwVr 'to rejoice': ST *[χ^w]ār(H) 'to rejoice' (PSC *=irχwVr-)
 PNC *ųiųur- 'to milk, strain, filter': ST *[ś]ör 'to strain, filter' (PSC *ųísdu-)
 PNC *=i(r)ŁwVr 'to deceive': PST *t-lolH 'to miss; not do a thing' (PSC *=eŁwVrŲ-)
 PNC *= [a]rkVr (<-l?) 'to fall': PST *Krīl 'to fall, drop' (PSC *iVkvVrV ~ *rVkvVrV)
 PNC *=HožĀl 'to milk; to filter': PST *čer 'to strain, filter, press' (PSC *=HóžĀl)
 PNC *=ičwĒl ~ *=ilčwĒn 'to count; understand': PST *žh[a]ŋ 'skilful' (PSC *=ilčwĒn)
 PNC *=ēλwV(l) 'to burst, tear': PST *rūl (~-ua-) 'to demolish, ruin' (PSC *=iλwVl-)

- PNC *=iǰǰlV 'thin': PST *ral 'thin, watery' (PSC *=iǰǰlV)
- PNC *=aǰVl 'to dangle, shake': PST *G(h)ōl (~-ual) 'to shake, swing' (PSC *=aǰVl)
- PNC *=igwVl 'to lose, hide': PST *kol (~-j) 'to hide, conceal' (PSC *=igwVl)
- PNC *ǰikwVn 'to eat': PST *kōm (~-g-) 'to hold in mouth' (PSC *ǰikwVn-)
- PNC *=HārǰVn 'to see, to find': PST *qēn 'to see, to know' (PSC *=HārǰVn)
- PNC *=HēwχVn 'warm, to boil, kindle': PST *kǎn 'to roast' (PSC *=HēwχkVn)
- PNC *=HäGwVn 'to tremble, be afraid': PST *[kh]ǰmH 'to fear' (PSC *=HäGwVn-)
- PNC *=aswVn 'to glue, paste': PST *sēn 'grease, oil' (PSC *=aswVn-)
- PNC *=ilqVn 'to work': PST *gǰōn 'to work, toil' (PSC *=ilxqVn-)
- PNC *=hǎkwan 'to kindle; light': OC *k^wān 'light' (PSC *hǎkwanV)
- PNC *=ācĒ(n) 'to take, catch': PST *chēn 'to gather up' (PSC *=ācVn-)
- PNC *=[i]šwV(n) 'to gather, take': PST *šūm 'to hold, catch, embrace' (PSC *=[i]šwVn-)
- PNC *=HəχwAn 'to quarrel, fight': PST *K[ō]m (~ Q-) 'to quarrel, fight' (PSC *=HəχwAn- (~ -xk-))
- PNC *=əǰwVn 'be enough, sufficient': PST *Qōm (~ -ū-) 'fitting, sufficient' (PSC *=əǰwVn)
- PNC *=ēfVn 'to get lost, to steal': PST *ǰǎn 'to hide, conceal' (PSC *=ēfVn)
- PNC *=āčĀn 'to lead, to be led, go': PST *čǎn 'to lead, arrange' (PSC *=āčĀn-)
- PNC *=ičwĒn 'to cleave, cut, chop': PST *č(r)ēm 'to cut off, chop' (PSC *=ičwĒn- (~ št))
- PNC *=irχwVn 'to spin, plait': PST *ǰ^wēn 'to wind, coil' (PSC *=irχwVn)
- PNC *=ǎǎwVn 'similar': PST *lōm 'same, equal' (PSC *=ǎǎwVn-)
- PNC *HərčwVn 'to become cloudy': PST *ǰǎn 'to rain continuously' (PSC *HərčwVn-)
- PNC *=VwsVn 'to sleep': PST *chīm 'fall asleep' (PSC *HǰwsVn)
- PNC *HǎǰĒm- 'clean, pure': PST *chian 'clear, pure' (PSC *Hǎǰǰw-)
- PNC *=ēčVn- 'to chew': PST *ǰhiēm 'to chew' (PSC *=ēčVn- (~ št))
- PNC *=ǎlcŬm 'to measure': PST *ch[ū]n 'to measure, calculate' (PSC *=ǎlcwVn-)

Exceptions:

PNC *=ātVr 'to leave, let': PST *dhǎ / *thǎ 'to place, put' [here PY and

Burushaski also do not reflect *-r, which means that it is probably suffixed in PNC] (PSC *=ätV)

PNC *HuǰVn 'to clear up': PST *čǎj 'to clear up' (PSC *=HVǰǰV)

PNC *λwǎł?V 'wind': PST *lūj 'wind' (PSC *λwǎł?V)

PNC *ǰimhV 'a big bird (pigeon, owl)': PST *tīw 'bird' (PSC *ǰimhV)

Thus, despite a number of exceptions (quite understandable in the field of prosody), we see that the general rules for the transformation of root structures in Sino-Tibetan are quite clear and are directly related to prosodic features and laryngeal clusters reconstructed independently in PNC and PY.

Now I shall proceed to the segment phonemes and their reflexes in PNC, Burushaski, Yenisseeian and PST.

V. VOWELS

The vocalic system of Proto-Sino-Caucasian is very far from being satisfactorily reconstructed. This is due to several factors: a) the general difficulty of reconstructing temporally remote vowel systems. It will not be an exaggeration to say that vowels are very hard to reconstruct in any family older than three to four thousand years of divergence; b) all subgroups of Sino-Caucasian possess more or less productive systems of Ablaut (vocalic alternations), both in nominal and verbal stems. This adds additional problems that can be resolved only after extremely thorough morphological analysis of all individual subgroups and languages.

Nevertheless, on the basis of statistical analysis of the available evidence we can propose a very tentative system of vowels for Sino-Caucasian, with the following (very rough and preliminary) system of correspondences:

Phoneme	NC	ST	YEN	BURU
i	i, e	e, i (i)	i	i
e	e, i	a, ə	a, e (ä), ə	a, e
ä	ä	a, i, e	e (ä), ə	i, a, e
ı	ı, ə	i, i	i, i	i
ə	ə, i	a, ə, e	a, ə, o	o, a
a	a	e, a, ə	a (ɔ), e (ä), ə	a, e (i)
u	o, u	u, o	o (ɔ), u	u, o
o	o, u	ə, a	u, ə, o	a, o (u)

Abundant examples for these correspondences can be found in the text of this paper, *passim*. Several additional remarks are needed:

1) The above correspondences account only for the behaviour of non-final vowels. As for the final (Auslaut) vowels, they are for the most part preserved only in NC. ST preserves the original Auslaut only in cases like *HVCV > *CV, i. e. when the final syllable is the only one preserved. Yenisseian and Burushaski occasionally preserve the final vowel, but more often than not drop them altogether, and no rules for this phenomenon have been put forward so far. Thus, at the present time, the PSC system of final vowels is just a projection of NC reflexes.

2) In verbal and adjectival morphemes the first vowel (normally preceded in NC by class markers) is very often lost in all other branches of the family. The loss is practically total and unconditional in ST; the rules of vowel loss in Burushaski and Yenisseian are not yet clear. It will be possible to formulate those rules only after further investigation of SC comparative grammar and morphonology, since it is very probable that vowels were lost or preserved depending on the usage of prefixed class markers and other auxiliary morphemes. In many cases one cannot even exclude that there were no vowels at all, and NC added new (automatic) vowels just to provide a connecting sound between the prefix and the first consonant of the root.

3) Adjacent (both preceding and following) *w can cause secondary labialisation of vowels in Sino-Tibetan (mostly in the vicinity of non-velar consonants, but sometimes in this position as well), as well as in Yenisseian and Burushaski (that have lost all consonantal traces of the labial glide). Proto-North-Caucasian is definitely the most archaic branch in this respect, too.

I hope that subsequent research will allow to formulate more precise rules for vocalic correspondences and developments.

VI. CONSONANTS

PSC	PNC	PST	PY	Bur
p	p	ph, -p	p	ph-, p
p̣	p̣, b	p-, -p	b	p
b	b	p, ph, -p	p	b
m	m	m	b-/p-/w-, m	m
w	w (u)	w/0	0-, w/0	b-, 0(u)

PSC	PNC	PST	PY	Bur
t	t	th, -t	d	th
ṭ	ṭ	t, -t	d	t, ṭ (ḍ)
d	d	t, th, -t	t	t, ṭ (ḍ)
n	n	n	d-, n	n
r	r	r	ʔ-/t-, r, r ₁	d-, r
c	c	ch/s, -t	s	s
ç	ç	C, -t	c, s	ś- ~ ṣ-, s
ṣ	ṣ	ch, ʒh	ʒ, s	s
s	s	s (/ch), -0	s, d-(Vʔ)	d-, s
z	z		ʒ	ʒ
ć	ć	ć, ʒh, -t	ž-, s	s/ś, ć/ç, -ž
č	č	ć, ʒh, ś, -t	s, c	ć(h), ʒ/ʒ, -ž
ǰ	ǰ	ć, -t	s, ʒ	ǰ-/ǰ-, s/ś(/ṣ)
ś	ś	s (/ch), -0	s, d-(Vʔ)	d-, ś/ṣ(Ṽ)
ž?	ž		ž	
ř	r	rj ₁ , r	ř	d-, r
ń	n	ń-, ŋ	ń, n	n
j	j	j	j, 0	j, 0
č	č	ć, ʒh	č-/(/ǰ-), s	ś/ṣ, ć/ç, -ž
č	č	ć, ʒh	č, ǰ	ś/ṣ, ć/ç, -ž
ǰ	ǰ	ć, ǰ	ǰ	ć/ç, ǰ
š	š	ś-, -0	s, d-(Vʔ)	s/ś/ṣ
Ḳ	Ḳ	r(..L), -k	j-, χ	lt-, lt/l
Ḳ	Ḳ	Ḳ, l, r(..L), -k/-ŋ	j-, l, l̥	lt-, lt/l
Ḳ	Ḳ	Ḳ, l, -k	r, r ₁	lt-, lt/l
Ḳ	Ḳ	l, Ḳ	j-, l, l̥	lt- (l̥-), ld
Ḳ	Ḳ	l-, -Ḳ, -l	d-, r ₁ , r	l
l	l	r	d-, l ~ r, r ₁	l
k	k	k-, -k	g, -k-	k(h)
ḳ	ḳ	kh, gh, -k	g-, -k, -g-	k
g	g	k-, -k	k	g
x	x	χ-, -0	x, χ ~ G	h
Y	Y	g	q ~ χ	

PSC	PNC	PST	PY	Bur
ŋ	n	ŋ	b-, ŋ	0-, ŋ
q	q	qh-, G-, x-, ʏ-; -k/-ŋ	q-, q/G	q(h), ʏ
q̇	q̇	Gh-, q; -k, -ŋ	q-, q/G	q(h), ʏ
G	G	q, qh-, [G(h)-], k/-ŋ	x-/χ-, q/G	q(h), ʏ
χ	χ	χ, ʏ, qh ^w -, -0	χ, x	h
ɸ	ɸ	G-, q-, , -j/-w	χ, G	0/ʏ
ʔ	ʔ	0 (ʔ); ʔw > ʔ ^w - ~ ʏ-	ʔ-, j; ʔw > h/x	0/h/j
ʔ̇	ʔ̇	0; ʔ̇w > χ ^(w) -	ʔ-, j, 0; ʔ̇w > h/x	0/h/j
ʔ̆	ʔ̆	0; ʔ̆w > ʔ ^w -	ʔ; ʔ̆w > h/x	0/h/j
h	h	0; hw > ʔ ^w (/ʏ-, w-)	ʔ-, j; hw > h/x	0/h/j
ɦ	ɦ	0; ɦw > j-, w- (/ʔ ^w -)	ʔ-, j	0/h/j
ħ	ħ	0; ħw > ?	ʔ-, j; ħw > h/x	0/h/j
xm?	f	m	w-	
xŋ?	x	ŋ		
ŋw	m	ŋ	b-, ŋ	m-, -n/-m
xŋw	f	ŋ	b-, ŋ	h-
xq	q	k, g, -k	x	qh, ʏ, -q
xqw	qw	k, g, -k	x, g	k, g
xq̇	q̇	gh, (k)	q, χ, x	qh, ʏ
xq̇w	q̇w	k, kh	x, g	k, g
xG	G, (ɸ)	g, kh	q, χ, x	qh, ʏ, q
xGw	Gw	ghw, kw	k	k, g
sd	ʒ	c(h)	t	c (~ ch, ɕh)
st	c	ch/s, -t(s), -s	t	c
sɬ	ɕ	ch/s	t	c (~ ɕ)
śd	ʒ	ś ~ ʒh	?	ch
śt	c	ć	?	?
śɬ	ɕ	ć, Ćh	t	?
šd	ʒ̣	ć	t	ć(h), ʒ̣
št	č	ǰ	t	?
šɬ	č	?	t	čh
xg	g	k~q, -ŋ, -k	q, x, χ	g
xk	χ	k-, -k	q-, q/G (ʔχ)	h-, -q-, -ʏ
xk̇	k̇	k-, kh- ~ gh- ~ qh-, -k	q, G, χ	qh, ʏ, -q

1. *Laryngeals*

Laryngeals in general are very unstable phonemes and tend to disappear easily. They are most numerous and best reconstructed in PNC, with the following correspondences in other families. A general rule (for which many examples are given throughout the text) is simplification of initial clusters of the type *HC- / *CH- to *C- in all branches except NC.

A. North Caucasian

PNC has a rich system of laryngeals (*ʔ, *ʔ̥, *ʕ, *h, *ħ, *ɦ) that are, however, rather unstable (best preserved in Proto-Lezghian, lost completely in West Caucasian) that are probably archaic, but tend to merge in other subgroups.

There is, however, a small group of cases where other languages do not reveal any traces of laryngeals or, as a matter of fact, any consonants at all:

PSC	PNC	PST	PY	Bur
*ʔǎqVwV 'hill'	*ʔǎwqV	*[qh ^w]i	*qǎʔj	*qhū
*ʔǎ-dV 'naked'	*ʔǎdV	*thjā-nH (~dh-)	*ta- / *tə(t)-	*that
*ʔəns̥t̥Ě 'ten'	*ʔənc̥Ě	*[ʒh]Vj	*tu-ŋ, *tu-kŋ	
*ʔǎdV 'interrog. stem'	*ʔǎdV	*tū-		

It is worth noting that in all these cases PNC has initial *ʔV- — which may therefore represent a historical prefix, although its function is not clear yet.

B. Yenisseeian

In PY we reconstruct a distinction of *ʔ- and *h- in initial position. We should note, however, that *h- is very rare before narrow *i and *u, and was probably substituted in PY by *x- in this position. Although there is not much material available, it appears that initial PY *ʔ- represents all PSC non-labialized laryngeals, while combinations of the type *Hw- are reflected as *h- / *x-. Cf.

*ʔǎp̥V̄ 'father' (PNC *ʔǎbV̄(jV), PST *p(h)aH, Bur. *'-pe) > PY *ʔob

*ʔV̄nstw̄ 'door' (PNC *ʔǎnc̥w̄) > PY *ʔa(ʔ)t-

*ʔǎms̥i 'breathe; be tired' (PNC *ʔǎms̥a, PST *siā, Bur. *'-s) > PY *ʔes

*hǃnǃ 'now' (PNC *h[ä]nV, PST *n[ə]) > PY *ʔen
 *hǃlsV 'feather, wool' (PNC *hǃlsV) > PY *ʔǃsi
 *hǃšdwǃ 'sharp' (PNC *hǃšwǃ) > PY *ʔete

but:

*=Vʔwǃǃ 'to go' (probably represented as *ʔVʔwVǃ > *ʔwVʔwVǃ in early PY) > PY *hejVǃ
 *HwVǃǃ 'island; valley' (PNC *HwVǃV) > PY *h[e]j-
 *ʔwǃhri (~ -e) 'army' (PNC *ʔwǃhri, PST *rǃH, Bur. *hol) > PY *ha(?)r-
 *hǃwiri 'water, lake' (PNC *hǃwiri, PST *ri(a)j, Bur. *hurǃ-) > PY *xurǃ
 *HwǃqǃV 'day, sun' (PNC *HwǃqǃV) > PY *xiʔ-G, *xi-Ga

All intervocalic laryngeals are usually rendered as -j- or -0-, depending on the vocalic context:

*=Vʔwǃǃ 'to go' (PNC *=VʔwVǃ, PST *ʔwǃ(-ǃ), Bur. *né-) > PY *hejVǃ
 *HwVǃǃ 'island; valley' (PNC *HwVǃV) > PY *h[e]j-
 *bǃhu 'owl' (PNC *bǃhu) > PY *puʔj
 *=ǃhV 'small, young' (PNC *=ǃhV, PST *ǃāwH) > PY *b-eʔjin
 *=ǃhwǃ 'coire' (PNC *=ǃhwV) > PY *ʔaj- (~x-)
 *mVhǃ 'berry' (PNC *mVhV (/hVǃmV), PST *mǃj) > PY *pi
 *Hmǃfwǃ 'wind, odour' (PNC *HmǃfwV, Bur. *méjan) > PY *bej
 *ǃVǃǃ 'bow, arrow' (PNC *ǃǃǃV, PST *ǃǃVj) > PY *cu(?)

In one case (*wǃ- 'to do') PY has preserved w (cf. PNC *=ǃhwV, PST *ʔwǃ[iǃǃ]) because of an early vowel reduction.

Initial syllables with laryngeals are occasionally dropped, usually in multisyllabic structures:

*ʔwǃ[c]ǃǃǃ 'spring, well' (PNC *ʔwǃncǃǃ, PST *ciǃǃH (~ ʒh-)) > PY *siʔn-
 *ʔwǃǃǃ 'eye' (PNC *ʔwǃǃǃ, Bur. *'-l-ǃ, *il-) > PY *de-s (< *ʔwǃǃǃ-cǃ(hǃ), lit. 'one eye')
 *hǃnšwǃ 'earth, soil' (PNC *hǃn(V)šwǃ) > PY *su(?) (~č-)
 *hǃmǃǃ 'half' (PNC *hǃmǃǃ) > PY *su-

Unlike ST, however, in PY such a loss is quite rare.

C. Burushaski

This language distinguishes between initial h- and 0-, but occasionally also reflects laryngeals as j- (a variation between h-, 0- and j- is also quite frequent). Cf.:

- *ʔi 'this' (PNC *ʔi, PST *ʔi) > Bur. i-
 *ʔǫpV 'father' (PNC *ʔǫbV(jV), PST *p(h)aH, PY *ʔob) > Bur. *'pe
 *ʔwǎlV 'hole, grave' (PNC *ʔwǎlV, PST *rǫw, PY *ʔol (~x-)) > Bur. *-úl-kiş
 *ʔlV 'to look' (PNC *ʔlV, PST *ʔǎ(H)) > Bur. *-ltV-r-
 *ʔVǎwV 'last year' (PNC *ʔVǎwV) > Bur. *él-den
 *ʔǫmşwV 'to stop up' (PNC *ʔǫmşwV) > Bur. -śá-
 *ʔǎmsi 'breathe; be tired' (PNC *ʔǎmsa, PST *siā, PY *ʔes) > Bur. *'-s
 *ʔwǎlǫ 'eye' (PNC *ʔwǎlǫ, PY *de- (< *le-)) > Bur. *-l-čí, *il-
 *ʔǫnGwV (*ʔǫGw(V)nV) 'heel' (PNC *ʔǫnGwV) > Bur. *-ǫǎn
 *ʔǫj[ǫ]wǎ 'goat' (PNC *ʔǫjǫwǎ) > Bur. *acás
 *hemǎǎ 'dream' (PNC *hemǎǎ, PST *mǎŋ (/ *mǎk)) > Bur. *-wélǫi
 *hV 'not' (PNC *hV) > Bur. *a-

but:

- *ʔǎrV 'plain, field' (PNC *ʔǎrV, PST *rǎj, PY *ʔ[ǎ]rV (~h-)) > Bur. *har
 *ʔwǎlgǫ 'lamb, kid' (PNC *ʔwǎlgǫ (~i,-u)) > Bur. *hǎlgit
 *ʔǫlǫwǫ 'nine' (PNC *ʔǫlǫwǫ) > Bur. *huncó
 *ʔVrstV 'stick' (PNC *ʔVrstV) > Bur. *hurç
 *ʔwǎ(rV) 'front' (PNC *ʔwǎ(rV)) > Bur. *jar
 *eʔ(w)Vr 'to sit, rest' (PNC *eʔ(w)Vr, PST *ʔǎr) > Bur. *hur-
 *ʔwǎrǫ(k)V 'mountain pass' (PNC *ʔwǎrǫV) > Bur. *hayóc
 *ʔwamhV 'a k. of predator' (PNC *ʔwamhV, PST *ʔwǎm) > Bur. *ja[m]
 *ʔw[ǫ]lxǫwe 'roof, house' (PNC *hǎlǫwǎ (~ ʔw-), PY *ʔiʔ(G) (~x-)) > Bur.
 *ha[k] / *jak
 *eVhwV 'shine' (PNC *eVhwV, *hwǎri, PST *ʔwǎ(t)) > Bur. *ǫǎri
 *hwǎri 'water, lake' (PNC *hwǎri, PST *ri(a)j, PY *xurǫ) > Bur. *hurV-
 *hV[ǫ]rxǫwǎ 'boundary, ridge' (PNC *hVǎrxǫwǎ, PST *ʔwǎk (~qh-), PY
 *ʔa(?)k- (~x-, -x-)) > Bur. *hurgó
 *tǫwǎhV ~ *hǫwǎV 'foot' (PNC *tǫwǎhV / *hǫwǎV, PST *tǎH (~d-)) > Bur. *-hút-
 *ǎhV 'face, edge' (PNC *ǎhV, PST *ji) > Bur. *-ú-rV / *hV-rV
 *hVǎmgV 'hole' (PNC *hVǎmgV, PST *k(h)ǎH) > Bur. *hin
 *hǎlǎV 'branch' (PNC *hǎlǎV) > Bur. *ǫǎltar

*ʔwəhri (~ -e) 'army' (PNC *ʔwəhri (~ -e), PST *rāH, PY *ha(?)r-) > Bur. *hol.

Loss of initial syllables with laryngeals is not typical for Burushaski, but can occur in some verbal or adjectival roots, especially when additional suffixes are added:

*=VʔwVŋ 'to go' (PNC *=VʔwVn, PST *ʔwä(-ŋ), PY *hejVŋ) > Bur. *né-
 *HVʒV 'hurt, pain' (PNC *HVʒV(w), PY *ʔāʒ- (~x-, -ʒ-)) > > Bur. *ʒa-k
 *ʔämćó 'a k. of fruit' (PNC *ʔämćó, PST *čhiəH (~ ʒh-)) > Bur. *mićil / *bićil
 *=hōstV 'full' (PNC *=hōčV, PST *ch[ā]ŋ, PY *ʔute (~x-)) > Bur. *či-k

All intervocalic laryngeals are lost (being occasionally replaced by -j- or -w-):

*śwīʔē 'a k. of cereal' (PNC *śwīʔē) > Bur. *śō
 *pVhVŋ 'feather' (PNC *pVhVŋ) > Bur. *phol-
 *hŋwāhV 'tooth, peg' (PNC *hŋwāhV, PST *ŋ(r)iā) > Bur. *me
 *HmēfwV 'wind, odour' (PNC *HmēfwV, PY *bej) > Bur. *méjaŋ
 *hwmēfwā (~ -ə) 'water, wet' (PNC *hwmēfwā (~ -ə), PST *mūjH (~ -j-))
 > Bur. *mái
 *wŋfwV 'cattle' (PNC *wŋfwV, PST *wa) > Bur. *biwá

D. Sino-Tibetan

Apart from a few exceptions concerning initial labialized laryngeals that were dealt with above PST follows a simple rule: syllables starting with a laryngeal are lost, both word-initially and word-finally. In this respect it resembles quite closely Proto-West-Caucasian. Cf.:

PSC	PNC	PST	PY	Bur
*ʔwərxqÚ 'sack, basket'	*ʔwirqV	*g(h)aw	*ʔāχ- (~x-)	
*ʔāʒV 'sick, ill'	*ʔāʒĒ	*ʒhaj		
*ʔāntV 'dirt, sand'	*ʔantV	OC *thāʔ		
*ʔəmkV 'louse, small insect'	*ʔəmkV	*mōŋ / *mōk	*ʔāke (~x-)	
*ʔūpV 'father'	*ʔōbV(jV)	*p(h)aH	*ʔob	*'pe
*ʔwəlV 'hole, grave'	*ʔwəlV	*rŋw	*ʔol (~x-)	*-úl-kiş
*ʔārV 'plain, field'	*ʔārV	*rāj	*ʔ[ā]rV(~h-)	*har
*ʔwī[c]VŋV	*ʔwīncV	*ciəŋH (~ ʒh-)	*siŋn-	

PSC	PNC	PST	PY	Bur
'spring, well'				
*ʔikwVn 'to eat'	*ʔikwVn	*kām(H) (~g-)		
*ʔiĭV 'to run'	*ʔiĭV	*t-lāj(H)		*hulʒa-
*ʔwēĭV 'grass, weed'	*ʔwēĭV	*l[i]wH		
*ʔísdur- 'to strain, sift'	*ʔiʒur-		*[ś]ūr (~ō-)	*char-
*ʔēmV 'uncle, elder brother'	*ʔēmV	*m[iǎ]-ŋ (with a nasal suffix)		
*ʔānV(jV) 'mother, aunt'	*ʔānV(jV)	*nējH		
*ʔirλwV 'male'	*ʔirλwV	*laH		
*ʔiĭV 'to look'	*ʔiĭV	*t-lǎ(H)	*ʔV(?)l- (~r₁)	*-ltV-r-
*ʔārśwǎ 'strap'	*ʔārśwǎ	*sǎ (r-)	*ʔēs- (~x-)	
*ʔwǎnŋV 'ear'	*ʔwǎnŋV	*nǎH	*ʔǎ-gde / *ʔǎ-qtV	
*ʔāmćó 'a k. of fruit'	*ʔāmćó	*čhiǎH (~ ʒh-)		*mićil / *bićil
*hVnV 'now'	*h[ǎ]nV	*n[ǎ]	*ʔen	
*hVĭV 'breath, spirit'	*h[ǎ]ĭa	*lǎ	*ʔir₁- (~x-)	
*himV 'spot, mole'	*hīmV (~ʔ-, -ǎ-)	*majH (~ejH)		
*hwǎrhV 'swarm'	*hwǎrhV	*r[ua]H		
*hwVmVli (~ǎ) 'face'	*hwVmVli (~ǎ)	*meĭ		
*hwēŋhV 'rope, sinew'	*hwimhV (~ŋ-)	*hǎH	*ʔāŋ (~x-)	
*halV(hV) 'weak'	*hǎlVhV	*lǎH (-k)	*ʔēl (~x-, -r)	
*hwirí 'water, lake'	*hwiri	*ri(a)j	*xur₁	*hurV-
*=hǎstV 'full'	*=hǎstV	*ch[ǎ]ŋ	*ʔute (~x-)	*čik
*hVrǎwǎ 'wide'	*hǎrǎwǎ	*qʷāŋH	*χiGVl (~ *χiχVl)	
*hǎmxGVwV 'mouth'	*hǎmxGVwV (~ǎ)	*khuā(H)	*χo(?)we	
*mǎhwVlV 'tip, nose'	*mǎhwVlV	*mūr		
*hwVmĭV (~ *hw-) 'red'	*hwVmĭV	*t(i)ǎ(H) (/ *taj(H))		
*hǎgVrV 'near'	*hǎgVrV	*k(r)ǎj (~ g-, q-, G-)		
*hemĭǎ 'dream'	*hemĭǎ	*mǎŋ (/ *mǎk)	*-wélʒi	
*hwmēhVā (~ -ǎ)	*hwmēhVā	*mǎjH		*mái

PSC	PNC	PST	PY	Bur
'water, wet'	(~ -ə)	(~ -ǎ)		
*hǎχ(k)wVŋV 'grouse'	*hǎŋχwā (~ -ə-, -ǎ-)	*Kōŋ (~ Q-)		
*hŋwVǎVŋV 'wide'		*λoŋ		
*hápárV 'a k. of worm'	*hábárV	*p(j)VrH (~ *b-)		

In non-initial position:

PSC	PNC	PST	PY	Bur
*hŋwměhwā (~ -ə)	*hŋwměhwā (~ -ə)	*mǔjH (~ -ǎ)		*mái
'water, wet'				
*[l]ǎŋwV 'river, water'	*hŋwǎV (/ *lǎŋwV)	*lujH		
*kǎŋV 'small'	*kǎŋwV	*k(j)ǎj		
*(x)qǎhwV	*qǎhwV	*Kā		
'a k. of vegetable'				
*tǎhwě (~ -ǎ) 'rope, loop'	*tǎhwě (~ -ǎ)	*Ta		
*tŋwǎV 'foot'	*tŋwǎV	*tǎH (~ d-)		*-hút-
*λwǎŋwV 'millet, rice'	*λwǎŋwV	*lǎwH (~ λ-)		
*yŋwǎŋi 'help'	*yŋwǎŋi	OC *wǎŋ		
*çVǎŋV 'bow, arrow'	*çǎŋV	*sVj	*cu(?)	
*rǎŋV 'time; noon'	*rǎŋV	*T-rǎw		
*mVhǎŋV 'berry; bud'	*mVhǎŋV (/ *hVmV)	*mǎj	*pi	
*mǎhwV 'grain, seed'	*mǎhwV	*m(r)ǎw		
*hŋwǎhǎŋV 'tooth, peg'	*hŋmǎhwǎŋV	*ŋ(r)ǎi		*me
*çǎŋwǎ (~ šŋ-) 'alcohol'	*çǎŋwǎ ~ *çǎŋwǎ (~ -ǎ)	OC *cuŋ (~ č-)		
*wǎŋwV 'cattle'	*wǎŋwV	*wa		*biwá
*ŁǎŋV 'soot, coal'	*ŁǎŋV	*t-lǎ		

etc.

Initial laryngeals are present in Sino-Tibetan only in two cases:

- if they reflect labialized laryngeals in a stressed syllable (word structure *Hwǎŋ(R)CV; examples see above, p...)
- if they constitute the only consonant in the root.

As a result of the above processes, word-initial laryngeals became extremely rare in PST. Below are all examples of ST laryngeal reflexes of PSC laryngeals:

PSC	PNC	PST	PY	Bur
*ʔ				
*ʔa 'that, this'	*ʔǒ (/ *ha-)	*ʔa		
*ʔa 'to be'	*ʔa	*ʔǎ (~ ʔ-)	*ʔa	*b-a- (with a secondary prefix)
*ʔi 'this'	*ʔi	*ʔĩ		*i-
*=VʔwVŋ 'go'	*=VʔwVn	*ʔ ^w ǎ(-ŋ)	*hejVŋ	*né-
*=eʔ(w)Vr 'sit, rest'	*=eʔ(w)Vr	*ʔēr (~ *ʔ-)		*hur-
*ʔwǎxkwV 'bottom'	*ʔwǎxwV	*ʔok		
*ʔw[í]lxqǔwě 'roof, house'	*ʔwǎlqǔwě (~ *h-, -ĩ)	*ʔōk	*ʔiʔ(G)	
*h				
*=ǎhwV 'to do'	*=ǎhwV(r)	*ʔ ^w [i]ǎj (q-)	*wV̄-ǎ-	
*=ǎhV 'small'	*=ǎhV	*ʔāwH (*ʔ-)	*b-eʔjin	
*=VhwV 'shine'	*=VhwV, *hwēri	*ʔ ^w a(t) (but cf. *war = *hwēri)		*jári
*hwĩʔnV 'blood'	*hwěʔnV	*ʔ ^w ij		
*f				
*fw[ǎ]rxqwē 'boundary'	*fwǎrqē	*ʔ ^w ik	*ʔa(ʔ)k- (~x-, -x-)	*hurgó
*=ǎfwV 'face, edge'	*=ǎfwV	*ji		*-ú-rV / *hV-rV
*fwé(m)ti 'worm, leech'	*fwē(m)ti	*wǎt		
*fwV 'not'	*fwV	*Ha (*ja)		*a-
*ʕ				
*ʕwéni (~ *ʔw-) 'air movement'	*ʕwēni (~ ʕw-, -u)	*ʔəm		
*ʕwámħV 'wolf, bear'	*ʕwamħV	*ʔ ^w ǎm		*jam
*=ēʕwVn 'to lose, hide'	*=ēʕwVn	*ʔǎnH (or *ʔǎnH (~ ʔ-))		
*ʕ				
*ʕwǎnGV 'odour'	*ʕwǎnGV	*χǎn		

We see that non-labialized laryngeals are reflected as *ʔ or *ɣ (in fact the distinction between *ʔ- and *ɣ- in PST is not quite secure); labialized *ʔw, *hw and *ɣw predominantly yield *ʔ^w-, while *fhw- is reflected either as *w or *j (although in two cases we have a confusion of the reflexes of *hw- and *fhw-: *hwēri > *war anbd *fhwērxqwē > *ʔ^wik). There are no examples for *h, and the only parallel for *ʔ appears to be *χ- (in *ʔwónGV > *χǎn). There are also three cases when labialized laryngeals *ʔw and *ɣw (*fhw ?) are reflected as PST *q-:

PSC *ʔw[é]l̥V̄ 'to roll, wheel' > PST *q^wār

PSC *iʔwVl- 'eat' > PST *q(h)^wiǎr

PSC *ʔwāmV (~ *fhw-) 'needle, awl' > PST *qīm / *qip.

In all these cases we can actually deal with laryngeals preceded by a velar prefix in some ST languages — which, because of this prefixation, have become undistinguishable from original uvulars.

2. Labials

A. *p

PSC *p yields aspirated ph in Bur. and PST, and p in PY and PNC. Note that the PNC *p, just as all voiceless consonants, must have also been aspirated. In ST *ph may — due to lost prefixes — alternate with *bh; in syllable-final position it is reflected as -p, because of a complete neutralization of laryngeal features. A similar non-initial neutralisation (ph > p) occurs also in Burushaski.

Cf.: *ʔānpV̄ 'lip', *HṼpV̄ 'to burn; hot', *phǎtV̄ 'a k. of tree', *ʔǎpí 'leaf', *pṼjV̄ 'bend, incline', *pórV 'boil, bladder', *pṁstwǎ 'glue, resin', *pṼṇwV 'swell', *pörV̄ (~-l-) 'a k. of small bird or insect', *pVwV̄ 'intestines', *pṼHV 'son, daughter', *pṼHV 'to weave', *[st]VpV̄ 'ring, circle', *dṼmpé 'bank, edge', *rVpV 'fireplace', *qHápE 'cover, top', *pṁV 'fly', *pHǎχV 'dust', *lapV 'glitter, flash', *pṁχwV 'manure', *páHV 'a k. of bird', *pHVrtwV 'lung, gizzard', *pVnçV 'brow, hair', *pUṇV 'shoulder, neck', *pṼnV 'dirt', *pénŁwV 'a k. of plant', *pérqwǎ 'a k. of fruit', *pHám[ç]V 'twig, stick', *pVčV 'fart', *pṁpi 'a k. of tree'.

B. *b

PSC *b remains voiced in PNC and Burushaski, while changing to *p in Yenisseeian. In ST the reflexes are ambiguous: the most frequent one is

unaspirated *p (with a frequent alternating voiced variant *b), but in several cases we also have aspirated *ph, thus apparently reflecting an old process of devoicing *b > *p, the ultimate reasons of which are unclear yet.

For *p / *b in PST cf. *bVnV 'play, joke' (PST *p(r)in (~b-)), *bVHV 'thin' (PST *pā), *bVrV 'bifurcation' (PST *prā), *bāñHV 'female' (PST *pijH), *bVnV 'dust, sand, flour' (PST *būn), *bHVĹi 'child, servant' (PST *pōk), *bōlcE 'fence' (PST *pāl]), *bōnV 'a vessel' (PST *pān (~b-))

For *ph in PST cf. *bērčV 'big, important' (PST *phVr), *bōqV 'dirt, dung' (PST *phāk), *bīmV 'foot' (PST *phāl), *hwēbē (~ -i-) 'mound, swelling' (PST *phūH), *bāñh 'edge' (PST *phāH (~bh-)), *bōlcwī 'millet, rice' (PST *phrē(s)), *bVrkwV 'wooden frame' (PST *phVk).

Other examples of *b: *HōbV 'orphan', *λHībV 'wind, steam', *čirbV 'dog', *xqwbV 'beak, jaw', *bVštV 'stick', *bVrV 'tasty, sweet; pungent', *bilV 'hair', *bñVrV 'intestines', *būhu 'owl', *būrV 'gray', *bHaxkV 'arm, hand', *bāgā 'morning', *xGēbV 'leg', *[t]wəbī 'finger', *Gē(GV)bV 'a k. of bird', *bhāwī 'cattle', *rVbV 'to sew', *GwHbV 'top, heap', *bēkwā 'throat, mouth', *bhēkwV 'pine-tree, resin', *bVIV (~ -l-) 'burn, kindle', *bV[ç]V 'kid, goat', *bV 'negative particle'.

C. *ṗ

The glottalized *ṗ is a rare phoneme in PNC and (just as other glottalized consonants) does not exist elsewhere. The few matches for NC words with *ṗ, however, reveal a pattern quite different from the one attested for *p or *b, namely: ST has only *p / *b, Yenisseian — *b (not attested as a reflex of *p or *b), and Burushaski — p (also not attested as a reflex of *p or *b):

PSC	PNC	PST	PY	Bur
*χwāmpV 'swallow'	*χwim(V)ṗV	*χāp	*ʔob-	*hūp
*ṗVsV 'widow, orphan'	*ṗVsV		*bəs-	
*HVṗi[t]V 'mushroom'	*HVṗitV		*bi(ʔ)t-	
*λṗV 'flat, slab'	*λṗV	*λēp		*tāpi
*HaṗV 'paw, extremity'	*HaṗV	*bējH		
*HārṗV 'a k. of food'	*HārṗV			*ltópo, *tultópo

Because of a frequently attested variation ṗ / b and usual development *ṗ > b there are significant reasons to believe that *ṗ was much more widespread in PSC and in many cases had changed to *b already in PNC — which allows us to add here quite a number of roots with *b in PNC and

same correspondences as above in other languages:

PSC	PNC	PST	PY	Bur
*ʔǝpV́ 'father'	*ʔǝbV́(jV)	*paH	*ʔob	*'pe
*pV́HV 'much, big'	*bV́HV	*bā(H)	*bə(ʔj)-	
*pHām[tj]V́ 'a k. of bird'	*bHāmɤV		*bəntan	
*pV́sV́ 'night, evening'	*bV́sV		*bis	
*pV́tV́ 'firm, tough'	*bV́tV́		*bid-	
*pV́nʒě 'fly, wasp'	*bɪnʒě		*bis-	
*pǝn(x)qǝ 'back, side'	*bǝnqǝ	*pǎŋ		*pa[n]
*pV́dV 'side'	*bV́dV			*p(h)at
*HVpV́ 'carry on back, shoulder'		*p(u)əH		*hápa
*pHaćwé 'skin, leather'	*bHaćwe			*pisV́k

D. *m

Nasal *m is a relatively stable phoneme: it is worth noting that it is the only resonant that does not disappear in West Caucasian (in the structure CVRV / RVCV) and in *mH/*Hm-clusters in Sino-Tibetan (see above).

PSC *m is preserved as m in most positions in PNC, PST and Buru-shaski (on the development in -mC-clusters see below). PY, however, has no initial *m-: in this position we observe *w-, *p- or *b- with the following distribution:

a) in monosyllabic auxiliary morphemes *m- > *w-:

PSC	PNC	PST	PY	Bur
*ma (~ -ə) 'not'	*ma (~ -ə)	*mǎ(H)	*wə-	
*mV 'interrogative stem'	*mV		*wi- / *we-	*me-
*mi(nV) 'self'		*miH	*win	
*mV 'he, demonstrative'	*mV		*wV	

b) plain *m- > *p-:

PSC	PNC	PST	PY	Bur
*manV 'to sit, be'	*ʔima(n)-		*pan	*man-
*mǝwχé 'long hair, rod'	*mǝwχē	*māw(H)		
*mVhV́ 'berry'	*mVhV	*mīj	*pi	
*mV́nxV́ 'man'	*mV́nxV	*nV́m	*pixe	

PSC	PNC	PST	PY	Bur
*mās _w V 'dirt, mould'	*mās _w V		*puʔs	*mos
*mē _ɛ Ũ 'tail'	*mē _ɛ Ũ	*mǝjH	*puGVʒ(˜ -ū-)	
*mŨxkwA 'a relative'	*mVχwA	*māk	*p[u](?)χV	
*mārλwÁ 'cloud'	*mārλwǺ	*mūk	*pV(?)r	
*mŨŋV 'net'		OC *mhaŋʔ	*pəʔŋ	

In one case (obviously onomatopoeic and reduplicative) PY preserves *m-:

PSC	PNC	PST	PY	Bur
*mēmV 'breast, teat'	*mēmV		*maʔm	*mamu

c) clusters *mH-, *Hm- > *b-:

PSC	PNC	PST	PY	Bur
*HmēfwŨ 'wind, smell'	*HmīfwV		*bej	*méjaŋ
*mh[ě]lxq _w Ũ 'root, stump'	*mhēlq _w V	*mrēk	*bāk-	
*mfhw[ĩ]lči 'face, cheek'	*mfhwǻlči		*binč-	*melç

After labials or clusters with -w- PY frequently has *ŋ, as a result of dissimilative delabialisation:

PSC	PNC	PST	PY	Bur
*pŨmŨ 'earth, grave'		*bīm	*baʔŋ	
*çfwǻmé 'hair'	*çfwēme	*chām	*cəŋe	
*śwímHV 'three'	*świmHV	*sūm	*doʔŋa	*śum-sōi

There are several cases when PNC has *f corresponding to *m in PST (reflexes in other languages are unfortunately not attested in these cases):

	PNC	PST
'horse'	*farnē	*mrā(ŋ)H
'road, walk'	*Hrinfi	*riəm
'change'	*=HirfVr	*mrē(H)

It is also worth noting the reflexive pronoun *mi(nV) 'self' mentioned above: the NC form is reconstructed as *HinV- in NCED, but in fact it is only attested in languages where *f can yield a laryngeal reflex, so the

actual PNC form could have been *finV. This would provide another case of this peculiar sound correspondence.

If this correspondence is correct, we could reconstruct a cluster like *xm here; the reconstructed forms would therefore look like *xmarnē, *HrenxmV, *=HirxmVr and *xmi(nV) respectively.

In PNC *-m-, like other resonants, is very frequently reconstructed in clusters of the type *-mC-. In other languages, it usually disappears in this position, cf.:

PSC	PNC	PST	PY	Bur
*ʔǎmdV / *ʔǎmtV 'bone'	*ʔǎmdV		*ʔaʔd (~x-)	
*=ēmcŪ 'say, tell'	*=[ī]mcŪ	*cho	*ʔas- / *ʔes-	*'-s-
*ʔǎmsī	*ʔǎmsa	*siā	*ʔes	*'-s
'breathe, breath'				
*Hīmco 'bull, beef'	*jāmcō	*chu	*ʔise	
*HīmχwV (~-xk-)	*HēmχwV		*ʔu(?)K-	*d-ayó-
'grind, flour'			(~x-)	
*χwǎmpǎ 'swallow'	*χwim(V)pV	*χǎp	*ʔVbV (~x-)	*hūp
*=ǎmstǎ 'know, see'	*=ǎmčǎ	*siǎ(H)	*ʔV(?)t-	*-jéc-
*=HǎmqV 'divide'	*=HīmqV	*Khǎ-	*d-ɔ(?)q	
*pHVmpǎ	PL *pǎlmp	*[b]ǎp	*pǎp-	
'part of leg'				
*Hrēmχkwǎ 'dirt'	*Hrēmχkwǎ	? OC *ruk	*rǎʔq-	
*hāmčǎ 'half'	*hāmčǎ	*su-		
*=ǎmǎǎ	*=ǎmǎǎ	*[ʒhǎ]j	*sūj	
'swim, bathe'				
*dǎmpé	*dǎmpe	*di(ə)p	*tǎp-	
'bank, edge'		~ *dep		
*fǎmxGVwV	*fǎmGwǎ	*khuā(H)	*χo(?)we	
'mouth'				
*=ǎmǎǎ 'roast'	*=ǎmǎǎ	*ciar	*ǎa(?)	
*xqǎm(x)q(w)ǎ	*qǎmq(w)ǎ	*kǎk		
'joint; bend'				
*nēmǎǎ 'a k. of insect'	*nēmǎǎ	*nǎt		
*HēmχGǎ 'bite'	*HēmχGǎ	*k(h)ejH		*káu-/*qáu-
*fhwVmǎǎ 'red'	*fhwVmǎǎ	*t(i)ǎ(H)		
	[?fhwVnǎǎ; see below]	(/ *taj(H))		

PSC	PNC	PST	PY	Bur
*bǝmǝV̆ 'foot'	*bǝmǝV̆	*phǝl	*bul	*búmbal-
*=VmǝV̆ 'come, go'	*=VmǝV̆	*λǝ(H)		*-ltá-
*=ámǝdǝ	*=ámǝǝ	*[ʒh]aw		*çáo
'milk, to milk'				
*χwǝmǝti	*χwǝmǝti	*q(h) ^w it		
'sharp stick'		(~ʔ ^w -)		
*HémqV	*HimqV	*liǝk		
'shame, fright'				
*HǝVmgV	*jǝmǝe		*kuʔw-	*gu
'coal, ashes'				
*çámǝá 'crow'	*çámǝā			*çayé(n)
*ʔǝmǝwV 'stop up'	*ʔǝmǝwV			-sá-

In a significant number of cases, ST has either -ŋ or a variation -ŋ / -k reflecting the original combination *-m-+velar / uvular / lateral:

PSC	PNC	PST	PY	Bur
*Hrém(x)q̄i 'road'	*Hrēmǝi	*riǝŋ / *riǝk		
*kwimkV 'light'	*kwimkV	*kheŋ (~ *gh-)		
*lhǝmǝLwi	*lhǝmǝLwi	*liŋ		
'earth, field'				
*qǝmkV	*qǝmkV	*koŋ (~q-)		
'fang, tusk'				
*t̄HamqV 'arc, bow'	*t̄Ham[q]V	*tǝŋ		*t̄(h)ŋ
*gw[ǝ]mgV̆	*gwim(V)gV	*kh ^w ǝŋ	*kaʔŋ (~g-)	*gik
'hole, chute'				

In a number of cases PST, instead of the simple change *CVmCV > *CVC demonstrates an insertion of a vowel after -m-:

PSC	PNC	PST	PY	Bur
*ʔǝmkV̆	*ʔǝmkV	*mǝŋ / *mǝk	*ʔǝke (~x-)	
'louse, small insect'				
*św[á]mxq̄i	*śwǝnq̄i	*s-mǝŋ / *s-mǝk	*su(?)K	*śukór /
'paint, ink, gum'				*śuqór
*femǝǝ 'dream'	*femǝǝ	*mǝŋ (/ *mǝk)		*-wélʒl
*wǝmqV	*wǝmqV	*mjǝk		
'eyewitness, eye'				

The second and the last case may provide a tentative explanation of this peculiar development. It may well be that in all four cases we are dealing with original structures like *CwVmCV (with the first element being either a laryngeal or a fricative), with the first component assimilated to the medial -m- in ST. The Burushaski form -welʒi in the third case also supports a reconstruction like *fw-. In PNC, therefore, we have to admit a dissimilative loss of labialisation (*ʔwəmkV > ʔəmkV, *fwemχA > fəemχA, *śwāmqī > śwānqī). Thus we have to reconstruct *ʔwəmkV̄, *śwāmqī̄, *fwemχĀ respectively. In the case of *fwVm̄tV 'red' that does not demonstrate such a development in ST, we should probably amend the reconstruction to *fwVn̄tV, with secondary assimilation in PNC.

PST shows, therefore, that there are in fact two kinds of *-m-: disappearing and non-disappearing. Whereas the "non-disappearing" *-m- before back consonants is reflected in ST as -ŋ, similar cases are attested before other consonants, but there the reflex is rather -m:

PSC	PNC	PST	PY
*qém[t]V 'trap'	*q̄wimtV	*k(h)ăm (~ G(h)-, -əm)	*qa(?)tVn
*qāmst̪V̄ 'ant, grasshopper'	*qāmVçV	*K̄Vm̄ (~ Q-)	*qənte (~χ-)
*ȳimt̪V̄ 'seat, couch'	*ȳimtV	*gūm	*qoʔTVs- (~χ-)
*čāmpV (~ *št-) 'sand, dirt'	*čāmpV	*Ćim (~ -em)	
*kwēm̄t̪i 'lip, mouth'	*kwēm̄t̪i	*khām	
*HwāmpV 'glowing coals'	*HāmpV	*ʔwVm̄	
*Ghām̄čǎ (~ *xG-) 'tongs'	*Ghām̄čǎ	*khām (~ qh-)	
*n̄VmswV 'a k. of cloth'	*n̄imswV	*nēm	

Note that Yenisseian and Burushaski occasionally also preserve nasalisation, but basically in the cases of "non-disappearing" *-m- (cf. PY *kaʔŋ, *qənte, Bur. *t̪(h)on̄, *hiŋ above). There are, however, some contradicting cases, so this rule cannot be regarded as definitive; namely:

PSC	PNC	PST	PY	Bur
*p̄Hām[t̪]V̄ 'a k. of bird'	*bHām̄t̪V	*P̄V̄t	*bəntan	
*Hím̄x̄k̄V̄ 'sharp, whet'	*=ēm̄k̄V	*Kiā-ŋ ¹	*ʔiGV (~ ʔ-, -χ-)	*iŋ

¹ Here PST *Kiā-ŋ can only be explained as containing a suffixed -ŋ — unless, of course, it reflects a reduplicated form like *x̄k̄im̄x̄k̄V̄.

PSC	PNC	PST	PY	Bur
*ŋämćó 'a k. of fruit'	*ŋämćō	*čhiǎH		*mićíl (obviously < *imćíl)

The nature of these two kinds of *-m- is so far not quite clear. It is not excluded that we are dealing with two originally distinct sorts of clusters: *-mC- and *-Cm-. The latter type of clusters is not attested in any of the SC subbranches, but may well have existed in PSC (especially because both *-mH- and *-Hm- clusters are definitely reconstructible). But further evidence is needed for a final decision.

E. *w

Unlike *m, PSC *w is a highly unstable consonant. It is best preserved in NC, but tends to disappear elsewhere, especially in clusters with other consonants and intervocalically.

a) In ST *w- behaves like a labialized laryngeal, i. e. regularly disappears in unaccented syllables:

- *wěñǎV 'head' > *lǎH
- *wīcV 'grass' > *čuāH
- *wĥǎ[ś]wé 'deer' > *ś(u)a
- *wHōrǎwV 'snake' > *rǎl

but yields *w- or *ʔ(w)- in accented syllables:

- *wǎñǎwē 'luck, joy' > *ʔiǎł
- *wHārǎwə 'pig' > *wǎk
- *wěmćǎ 'moon' > *ʔwǎt

*w- is also preserved in rare structures of the type *wVHV > *wV, cf.:

- *wēχU 'grass, reed' > *wā
- *wĥwV 'cattle' > *wa

If followed by a cluster -mK- or -ŋK-, *w- may become nasalized and be preserved, independently of accent:

- *wVĥǎŋkV 'a k. of plant, plantain' > *ŋak
- *wěmqV 'eye, eyewitness' > *mjṼk
- *wHénχe 'udder, nipple' > *nǎH

Word-medially cf.:

*xGVwV́ 'cover' > PST *gō
 *pVwV́ 'intestines' > PST *phǎw
 *ʔǎqVwV 'hill' > OC *kh^wə
 *sVwV́rV 'odorous grass' > PST *sōr
 *HǎǎwVǎV 'root; village' > PST *T-riał
 *čVwV (~ št-) 'wet' > PST *ćəw
 *=ǎrkǎw 'to drive' > *khjǒ (~ gh-, -ǎw)
 *=ǎkǎw 'to put; take' > *Khu (~ -ua, -əw)
 *ǎVwV (~ ǎ-, ǎ-) 'to lick' > *l(j)aw (~ -əw, -iw)
 *hǎmxGVwV 'mouth' > *khuā(H)

b) In PY *w- gives 0- initially, but is preserved as -w- (or -j-/0-) medially:

*wHǎrǎwVǎV 'snake' > PY *ʔurol (~ x-)
 *wǎǎǎǎ 'moon' > PY *(ʔVʔ)su-j
 *wǎǎ[ś]wé 'deer' > PY *ʔas- (~ x-)
 *xkVwV́ (~ *xK-) 'large predator' > PY *qVwi (~ χ-)
 *hǎmxGVwV 'mouth' > *χo(ʔ)we
 *ʔǎqVwV 'mountain, hill' > *qǎʔj

c) In Burushaski initial *w- is sometimes lost in long structures:

*wHǎrǎwVǎV 'snake' > *tul (< *ltul)

More frequently, however, it is preserved as *b-:

*wHenǎ (~ -a) 'udder' > *boǎ 'lower part of a hose; lower bound opening of a hose'

*wǎcV́ 'grass' > *bus
 *wǎsté 'mountain, terrace' > *bac
 *wiršwí 'place, land' > *buşái
 *wǎnsǎ 'knife, sickle' > *bisár-
 *wHǎrV 'a k. of weed' > *búru
 *wǎǎwV 'cattle' > *biwá

]

Word-medially *-w- is reflected as -0- or -w-:

*ʔáqVwV > *qhū
 *HǎiVwV > *jult
 *čVwV > *śáo
 *ʕVwV > *-ltáu-
 *ʒǝwǐ > *sa

A special case is the PSC 2d person pronoun: PNC *uō, PY *ʔaw (/ʔu), Bur. *u-n. PNC has here a specific glide *u (very rare and, beside the 2d person, present only as the 1st (male) class marker *u). Burushaski has initial 0- (not the expected *b-). We can either reconstruct here, as in NC, a glide *u-, but more probable is the reconstruction of something like *wu, with a special behaviour of *w before the following labialized vowel.

3. Dentals

A. *t

PSC *t behaves quite similarly to *p, i. e. it yields *t in PNC (cf. *p > p), *th (with occasional variation *th/dh, and neutralization > *-t in Auslaut) in PST (cf. *p > *ph) and th in Burushaski, with non-initial neutralization -th- > -t- (cf. *p > ph-, p). The regular Yenisseian reflex, however, is not *t (like *p > p), but a voiced *d. The reason for this voicing is not quite clear, but it seems significant that both dental and velar stops had undergone this process. A possible explanation will be given below.

Cf. the following examples:

PSC	PNC	PST	PY	Bur
*ʔántV (~ -m-)	*ʔantV	OC *thā?	*ʔeʔd-	
'dirt, soil'	(~ -m-)		(~x-, -ʒ-, -ʒ-)	
*pVtV̄ 'firm, tough'	*bVtV̄		*bid-	
*tV̄HV 'sweet'		*[dh]ä	*daʔŋ (~ʒ-)	
*tV̄rV̄ (~ -l-)	*türV (~ -l-)		*dəʔər₁-	*ther
'dust, powder'				
*tVpV̄ (~ -b-)		*thV̄p	*do(?)p	
'taste, eat'				
*tUKV 'spittle'		*thok	*du(?)K	
*xqHwintV̄ 'elbow'	*qHwəntV	*kūt	*g[i](?)d	
*gwV̄ntV 'hole, anus'	*gwV̄ntV		*koʔd (~g-, -ʒ-)	
*fVrtV̄ 'a k. of grass'	*fōrtV		*ʔēd- (~x-, -ʒ-)	
*=ätwV 'to beat, dig'	*=ätwV	*thuH (~-iwH)		

PSC	PNC	PST	PY	Bur
*=ätV 'to put, leave'	*=ätV-r	*dhăH (/ *thăH)	*di(j)	*-t-
*twəjV 'spit, spittle'	*twəjV	*thōj		*thu
*q̣wətV 'top (of plant)'	*q̣wətV			*qhótal
*šHwātā	*šHwātā			*śatá
'part of leg, legging' (~ -ə)				

B. *d

Reflexes of *d are also quite similar to those of *b: voiced *d in PNC (cf. *b > b), voiceless *t in Yenisseian (cf. *b > p), and a variation between *t (/d) and *th (/dh) in PST (cf. a similar variation for *b). Burushaski frequently has ɖ here (cf. *p > b), but can also have ʈ and occasionally t (the reflexes are the same as for *ʈ, see below). It is interesting to notice that Bur. dental ɖ never occurs as a reflex of dental stops. Cf.:

PSC	PNC	PST	PY	Bur
*λ(w)ĩr-dV 'woman'	*λ(w)ĩr-dV		*ʔalit (~-r-)	
*dV 'prohib. particle'	*dV	*tă (~ d-)	*ʔat / *ta-	
*HṼdV 'tooth'	OC *thəʔ		*ʔiti	
*xgw[ē]rdV 'a predator'	*gwērdV		*qite (~χ-)	
*ʔă-dV 'naked'	*ʔădV	*thjā-nH (~dh-)	*ta- / *tɔ(t)-	
*darq̣wV 'otter, weasel'	*darq̣wV		*täχVr	
*dwĩχí 'snow'	*dwĩχi		*tiχ	
*dṼHV 'to grow, big'	PWC *dV	*tajH	*tiʔj-	
*dṼmpé 'bank, edge'	*dōmpe		*tip-	
*dṼG(w)V 'cock'	*dṼG(w)V	*dhōŋ	*tɔq	
*dV 'demonstr. stem'	*dV	*tă- (*tă-)	*tu-	*te
*dHāqwĀ 'nape, back'	*dHāqwĀ	*tūk	*tuGV (~ -ū-)	
*ʔădV 'interrog. stem'	*ʔădV	*tū-		
*dwān?V 'mus. instrument'	*dwān?V	*tūm		
*dwi(r)χE 'son, child'	*dwirχE	*t(h)u		
*daro 'tree, stump'	*daro	*t(r)ö		*tóro
*fwōmdV 'head, brain'	*fwōmdV	*thō (~dh-, -əw)		*-játe

PSC	PNC	PST	PY	Bur
*dVrǫwǾ 'male animal'	*dVrǫwV	OC *dhāk		*dǎgar
*dwǝnǫǾ 'hole'	*dwǝnǫǾ	*thuan (~ dh-)		
*dwǝǫǫ(w)Ǿ 'stump, trunk'	*dwǝǫǫ(w)V	*tūn (~ d-)		*dǎko
*xǫǫǫdV 'dust, soil'	*ǫǫdV (~ -ǎ-)	*Ket	*qǝʔt	*yit
*ǫHVdǾ 'relative'	*ǫHVdV		*cVt-	*-st-
*dwǎǫ 'stick'	*dwǎǫ	*tǔl		*tul
*xgwǝrdwV 'a k. of cloth'	*gwǝrdwV (~ -ǎ-)	*k[ǎ]t (~ q-)	*χǝʔtir	*gaʔú
*qVdǾ 'breast'	*qVdV (~ χ:-)		*qot- (~ χ-)	*-qat
*pVdV 'side'	*bVdV			*p(h)at
*ǫHǎdwǾ 'earth, clay'	*ǫHǎdwV			*ǫǫǫ
*dhwǝdwǝ 'pipe'	*dhwǝdwǝ			*dǫdǫ
*HpǎdǾ 'clothes, skin'	*HpǎdǾ	*Pǝt		*baʔ
*xqwVdǾ 'dirt'	*qudV			*kaʔ

C. *t

The glottalized PSC *t gives the following reflexes: PNC *t (cf. *p > p̥); PST *t (with occasional voicing to *d; cf. *p > p/b); PY *d (cf. *p > b); Bur. *t/*t̥ (cf. *p > p). The reflexes of *t are thus essentially similar to those of the glottalized *p̥. Cf.:

PSC	PNC	PST	PY	Bur
*tǎHV 'headgear'	*tǎtV	OC *tō	*dǎʔ	
*tǎwǎnV 'knife, cut'	*=VtǎwVn	*tǎnH	*dǎʔn	
*tǎmhǾ 'bird'	*tǎmhV	*tǎwH	*duma	
*kwǎltV 'intestine; fat'	*kwǎltV		*giʔd	*git
*=itVr 'quick'	*=itVr	*t(h)ǎr		
*[b]ǎtǎ 'vulva'	*pǎtǎ / *bǎtǎ	*PVt		*bot
*tǎwǎhǾ 'foot'	*tǎwǎhǾ	*tǎH (~ d-)		*-hút-
*=VtǎwV(ǎ) 'sit'	WC *tǎwV	*tǎw-ǎ / -k		
*tǎmhV 'kernel, seed'	*tǎmhV	*[t]ǎmh		*tumǎ-
*tǎwǎnʔe 'k. of vessel'	*tǎwǎnʔe	*tiǎm		*tǎni
*tǎnsǎwV 'carpet'	*tǎnsǎwV	*tǎnH (~ d-)		
*=irtǎ(w)V 'bore, distress'	*=irtǎ(w)V	*tǎw		

PSC	PNC	PST	PY	Bur
*[š]HīwṭV 'whistle'	*s[ī]t			*šaíto / *šuíto
*ṭHam[q]V 'arc, bow'	*ṭHam[q]V	*tōṇ		*ṭon
*xq́wárṭV 'tie, belt'	*q́HwarṭV	*k ^w āt (~ g ^w -)	*guʔda	
*pHVṛṭwV	*pHVṛṭwV			*-phát
'lung, gizzard'				
*qwēṭí	*qwīṭí			*-qhát
'palate, mouth'				
*ṭHǎlq́wV 'hoof'	*ṭHǎlq́wV	*dēk		
*ṭhwērV 'rope, girth'	*ṭhwērV			*tVrán

D. *n

PSC *n, like other resonants, is a relatively unstable phoneme. It disappears in some clusters with laryngeals in ST (see above), tends to disappear in clusters with following consonants and is easily assimilated (basically to *m in the vicinity of labials and -w-), especially in Yenisseyan and Burushaski. Otherwise it tends to preserve its quality — except for Yenisseyan where initial nasals disappeared completely. Here the regular reflex of *n- is PY *d-.

Cf. the following reliable cases of PSC *n:

PSC	PNC	PST	PY	Bur
*nV 'interrogative stem'	*hī-nV	*niāṇ (/ -āiṇ)	*ʔan-	*án-
*hVnV 'now'	*h[ā]nV	*n[ə]	*ʔen	
*HānV	*nānV	*na	*ʔ[ē]ní	*nVnV
'elder fem. relative'				
*χónV 'trap, net'	*χōnV	*χānH	*ʔuʔun (~x-, -G-, -χ-)	
*ṭwVnV 'knife, cut'	*=VṭwVn	*tōnH	*doʔn	
*něwxq́wV 'pus'	*něwq́ṭ	*nuāk / *nuāṇ	*dɔ(ʔ)kṇ	*nagéi / *magéi
*níqwē 'chaff; rush'	*něqwē	*něk ^w (/*měk ^w)	*dVʔqVn (/-χ-)	*naγéci
*xGHwVnĀ	*GHwñĀ	OC *kēn	*ke(ʔ)n-	
'joint, shoulderblade'				
*manV 'to sit, stay, be'	*ʔima(n)-		*pan	*man-
*swānē 'berry'	*swñē		*sōn-	
*=HārṭVn 'to see'	*=HārṭV(n)	*qēn		*-γán
*nāwši 'two'	*nāwši	*K-nij	*xi-na	

PSC	PNC	PST	PY	Bur
*swěŋV	*swěŋV	OC *srān		*dan
'mountain; stone'				
*ćVnV 'cut, sickle'	*ćVnV	*ćēnH		
*sōnǒ 'long bone, claw'	*sīnǒ (~-ǒ)	*sen		*-sV́sVn
*fnǝr(x)kw̄V	*fnǝrkw̄V	*nēk ^w		
'urine, dirt'				
*fnǝrxGwī 'hearth'	*fnǝrGwī	*naŋ / *nak		? *mákući
*nV́mswV 'a k. of cloth'	*nīmswV	*nǝm		
*nHǝǎwV̄ 'dark, blue'	*nHǝǎwV̄	*nək		
*nūsĀ	*nūsA	*nǝwH		*-muśi
'daughter-in-law'	(~ -ǝ-)			
*ʔānV(jV)	*ʔānV(jV)	*nējH		
'mother, aunt'				
*hwnǝrǝqǝ 'meat (soup)'	*hwnǝrǝqǝ	*nǝk		
*nV	*nV			*-ne
'demonstr. pronoun'				
*HǝwěŋV̄	*HǝwīŋV̄			*téne
'year, last year'				
*nǎnV	*nǎnV			*nV́nV
'child, pupil of the eye'				
*nĒstV 'aunt, uncle'	*nĒcV			*-ncu
*gwanV̄	*gwanV	*gen		
'supply, provisions'				
*ʔēnǝrǝqǝ 'cave'	*ʔēnǝrǝqǝ			*naǝár
*q̣wV́nV	*q̣winV̄			*qhun
'crop, neck'	(~-i-, -ē-, -ǝ-)			
*qwǎnV̄ 'woman'	*qwǎnV		*qVm- (~χ-)	*yēn-
*h[ć]wínV	*hnićwV̄	*chēn	*sV(?)m-	
'night, dream'				
*HŁwVnV̄ 'hem'	*HŁünV			*lámat

In consonant clusters *-n- tends to disappear, just like *-m- (see above):

PSC	PNC	PST	PY	Bur
*ʔV́nstwē 'door'	*ʔōŋcwē		*ʔa(?)t-	
*ǎānpV̄	*ǎānpV	*ǎep	*ʔalVp	
'tongue, lip'				
*ʔrV́nǎV̄ 'six'	*ʔrānǎE	*rǝk	*ʔa(?)χV	

PSC	PNC	PST	PY	Bur
*=öñ(x)qV 'old'	*=öñqV(lV)	*kāH (~ g-, q-, G-)	*ʔəqaj (~x-)	
*HēñqwV̆ 'meadow'	*HēñqwV		*ʔoGV (~x-, -ō-)	
*=VñĀV 'all'	*=VñĀV (~ -Ā-)	*Āā-ŋ	*b-iʔl-	
*xq̇HwintV̆ 'elbow'	*q̇HwəntV	*kūt	*g[i](ʔ)d	
*xq̇ōñĀV̆ 'fork'	*q̇HōñĀV	*k(h)āk		
*kHwV̆ñšV 'paw'	*kHwāñšV		*kiʔs (~g-)	
*gwV̆ntV 'hole'	*gwV̆ntV		*koʔd (~g-, -ɔ-)	
*fénšwī 'earth'	*fēn(V)šwī		*su(ʔ) (< *HVsu(ʔ))	
*[t]Hänkó 'drop'	*t̥Hänkō	*tēk (~ d-)	*te(ʔ)K-	
*wēñĀV̆ 'head'	*wēñĀV	*lūH		*-múltur ?
*wāñλwē 'luck, joy'	*wēñλwē	*ʔiāl		?*míl-
*sHwintV̆ 'sniff'	*s̥HwintV̆	*chūt		
*k̥antV 'knife, cut'	*k̥antV ~ *k̥antV̆	*kēt		
*k̥wənĀV̆ 'rake, fork'	*k̥wənĀV̆	*khuk (~ *g(h)-)	*gu(ʔ)le-p (~ū-, -r₁-)	
*c̥inλV 'fat'	*c̥ēnλV	*Cil		
*k̥antV̆ 'run, jump'	*k̥antV̆	*kāt		
*c̥āñq̇V̆ 'panther'	*c̥āñq̇V̆	*chi(ə)k		
*ʔāñ(x)qV̆ 'thigh'	*ʔāñq̇V̆		*ʔaʔK- (~x-)	
*χH[o]ntV̆ 'belly'	*χHontV̆	*Qʷ(r)īt		
*wīnsĒ 'knife, sickle'	*wēnsĒ		*bisár-	
*pénŁwV̆ 'a plant'	*pinŁwV̆			*p(h)altāšu
*śwénkV̆ 'mouth, face'	*świnkV̆		*saʔgVl- (~k-)	*-skil

In Burushaski medial *-n-, unlike *-m-, is regularly preserved as a resonant (*-n- or denasalized -r-) before original affricates, cf.:

PSC	PNC	PST	PY	Bur
*m̥h̥āñčī 'nettle, thorn'	*m̥h̥āñčī	*mat	*ʔəʔmas	*munāy

PSC	PNC	PST	PY	Bur
*pĩnstwǎ 'glue, resin'	*pĩnçwǎ		*piʔt	*phunc
*hrǎnsdũ 'whet, thresh'	*hrǎnǝũ	*rǎt		*darc
*(x)qǎn[ç]wV 'dirt'	*qǎnVçwV		*qeʔs	*qhurc
*pVnçV 'brow, hair'	*pinç			*phénVs

Just as in the case with *-m-, PST demonstrates two types of reflexes here: disappearance of *-n- (see the examples above) and its preservation. If preserved, *-n- gives *-ŋ before original velars, laterals and uvulars (note that in this position it cannot in fact be distinguished from PSC *-ŋ-), and -n before original dentals:

PSC	PNC	PST	PY	Bur
*bhǎnqǎV 'log, pole'	*bhǎnqǎV	*p(h)ǎŋ		*-pháyo
*[G]wǎVnGwV 'neck'	*GwVnGwV	*qiǎŋ	*kə(ʔ)qənt-	*qoqó
*pan(x)GǎV 'weed, leaf'	*panGǎVlhV	*Pōŋ		
*χĩnkĩ 'meat dish'	*χĩnkĩ	*χǎŋ		
*rǎnǎwǎV 'cloud, rain'	*rǎnǎwǎV	*rǎŋ		*harált
*[t]Vnǎǎ 'spot'	*tVnǎǎ	*then		
*ǎǎǎwV 'a k. of stone'	*ǎǎǎwV	*t-liǎŋ / *t-liǎk		
*dwǎnǎV 'hole'	*dwǎnǎV	*thuan (~ dh-)		
*ǎwǎǎV 'pus'	*ǎwǎ[n]ǎV	*lin		
*rǎnǎwǎ 'food, butter'	*rǎnǎwǎ	*r[ǎ]ŋ		
*xGwǎntV 'hill'	*GwintV	*k(h)ōn	*kə(ʔ)t-	
*tǎnswV 'mat, carpet'	*tǎmsV	*tǎnH (~ d-)		
*bǎnǎV 'a vessel'	*bǎnǎ(w)V	*pǎn (~ b-)		
*qǎwǎǎ 'garden, fence'	*qǎwǎǎ	*Ghǎǎ		

In some cases of this "non-disappearing" *-n- Burushaski also preserves a nasal (cf. a similar behaviour of "non-disappearing" *-m- above):

PSC	PNC	PST	Bur
*xG(w)anǎV 'body'	*GanǎV	*k(h)ōŋ	*khanór
*pǎnqǎwV 'bee'	*pǎnqǎwV	*[ph]ǎŋ	*phen
*pǎnqǎ 'back, side'	*bǎnqǎ	*pǎŋ	*pa[n] ?

E. *r

The trill *r is preserved in PNC and PST, and, in non-initial position, in Yenisseian and Burushaski (on the loss of -r- in some clusters with laryngeals in ST see above). The latter two languages, however, lack initial r-, which is in Yenisseian substituted by t- or 0-, and in Burushaski — by d-:

PSC	PNC	PST	PY	Bur
*(H)rěgwǎ 'a k. of rodent'	*(H)rǐGwǎ (~ -ǐ-)	*ruak	*ʔa(ʔ)K (~x-)	
*(H)rǎ(x)qǎ 'cut, flay'	*=örqV	*rek	*ʔaq-	
*ʔrǎnǎǎ 'six'	*ʔrǎnǎE	*rǔk	*ʔa(ʔ)χV	
*(H)rāgwǎ 'stay, leave'	*=argwV-n	*rak	*ʔākV-	
*réǎwV 'a k. of metal' ²	*riǎ(w)e		*ʔe(ʔ)χV (~h-)	
*(H)rVpǎ (~ -b-) 'stand'		*rǎp	*ʔipin (~x-)	
*fréǎwě 'bone, rib'	*fréǎwě (~-ǐ)	*rǎŋ / *rāk	*ʔu(ʔ)ǎǎ	
*Hrēm(x)ǎǎ 'road'	*Hrēmǎǎ	*(k)riǎŋ/*riāk		
*rǎGwV(r) 'cold'	*=irGwǎr	*rǎŋ / *rāk (k-)		
*rǎhV 'time; noon'	*rǎhV	*T-rǎw		
*rēǎwǎ 'cloud, rain'	*rēǎwǎ (~ -ǎ-)	*rēŋ		*harǎlt
*rē(x)GwV 'hill, rock'	*rēGwV	*P-rak		
*HrinmV 'road'	*Hrinfi	*riǎm		
*rVbV 'sew'	*=irbǎ	*rup		
*rǎlǎi 'pus'	*rǎlǎi (~-ǎ-, -ǎ-)	*ri (~-e, -ej)		
*rēxwǎ 'wood, pine'	*rēxwǎ	*rǎw		
*hrǎnsdū 'thresh, grind'	*hrǎnzū	*rǎt		*darc
*rǎV(x)GwV 'break'	*HarG(w)V	*riāk ^w		
*Hrāqwǎ 'bridle, string'	*(H)rǎχwV (~ -q-)	OC *rāk	*ʔaq- (~ x-)	
*rēǎwǎ 'food, butter'	*rēǎwǎ	*r[ǎ]ŋ		

² It is also possible, or even more probable in this case, to reconstruct *jérǎwV or *HérǎwV.

PSC	PNC	PST	PY	Bur
*HrēķwV̄ 'dig, cavity'	*HrīķwV	*ruak	*ʔuK- (~x-)	
*rVĻV̄ 'thresh'	*=VrĻV			*daltán-
*rHăčV 'stomach, kidney'	*rHăčV			*-rić
*rěķwī 'heart, breast' ³	*jērķwī	*ʔrəŋ // *ʔrək	*tə(ʔ)ga	*dak
*rV[ɣ]wV̄ 'raw'		*rīw (~ēw)	*tu (? *tuG)	*dayó-
*rVmV̄ 'black, dark'		*r[ia]m	*tum-	
*hréxgwē 'comb, scrape'	*hrěGwē	*rōk	*tuʔxVń	
*rVpV 'fireplace'	PWC *rəpa	*răp	*tVp	
*rVxwV 'cattle'	*rVxwV (~-x-)	*riə	*tV(ʔ)χa(~-G-)	
*rVHV 'rope'	Akhv. raʔa	*rě	*tiʔ	

The distribution between the reflexes *t- and *ʔ- in PY appears similar to the distribution of the reflexes *p- and *b- < *m-: namely, in most secure cases plain *r- seems to have given voiceless *t- (cf. *rěķwī, *rVxwV) while the combination *Hr- > ʔ- (cf. *ʔrVnĻV̄, *hréχwě, *HrēķwV̄). The contradicting example *hrěGwē > *tuʔxV-ń, however, has to be explained.

Non-initial position:

PSC	PNC	PST	PY	Bur
*ʔVswV̄rV 'a vessel'	*ʔVrswV̄		*ʔasVr (~x-, -r₁, -r')	
*tVrV̄ 'dust, powder'	*tūrV (~-l-)		*dəʔər₁-	*ther
*tÚrV̄ 'clothing'		*tūr (~ d-)	*dōr-	
*kHwērV̄ 'hole'	*kHwērV		*g[a](ʔ)r	
*xq̄ōrēxq̄wV 'crane'	*q̄ōrēq̄wV	? OC *g(h)āk ^w	*gu(ʔ)riraK	*qarújo (/*γ-)
*ʔārV 'plain, field'	*ʔārV	*rāj	*ʔ[ā]r₁V (~h-)	*har
*=ígswVr 'bend'	*=ig(w)Vr	*kuar		*kəʔr- (~g-)
*ķwVrV̄ 'throat'	*ķwVrV	*Khrēw	*kərVd (~g-, -ʒ)	
*pórV 'boil, bladder'		*purV-χV / *purV-IV	*PrōH	*pəʔr (~-r₁)

³ The PNC and PST forms in this case must be explained by a fusion with a class marker: *i-rěķwī.

PSC	PNC	PST	PY	Bur
*bŭrV 'tasty, pungent'		*Par	*piʔr₁-	*babár-
*pörŭ	*pörV (~-l-)	*Pra		*phirán
'small bird, insect'				
*būrŭ 'gray'	*būrV (~ -ō-)	*Prəw (~ -iw)	*puʔr	*bur-úm
*q̇ŭr[H]ŭ	*q̇ar[H]V	*Kʷrij (~ *Kruj)	*qār(ɪ)- (~χ-)	*-rék ?
'a relative'				
*xķārŭ	*ķārV		*qorVn- (~χ-, ɔ-, -l-)	
'black; coal'				
*=ixGǎr 'dry'	*=iGwǎr	*Qār	*qo(ʔ)r₁- (~-l-)	*qhar-
*sVwŭrV	*siwirV	*sōr		
'odorous grass'				
*štĥārV 'crust'	*čĥārV		*təʔlap- (~-r-)	
*dŭrŭ 'shake'		*t[ĥ]r (~ d-)	*-tV(ʔ)r	
*xq̇wŭrV(q̇V)	*q̇wVrVq̇ŭ	OC *kʷrāk	Ar. kere	*yórku-
'frog'				
*HVq̇Vr-	*HVq̇Vr		*G(h)ör (~ χ-, ʏ-)	
'wet, soak'				
*HurV			*ʔuraj (~-í-, -r₁-)	*-úrV
'callus, fingernail'				
*záwrV 'ice, frost'	*záwrV		*ʒV(ʔ)r₁- (~-l-)	
*ķwŭrV 'leg'	*ķwŭrV	*k(h)rej (~ -əj)	*kur-	
*ɛwŭrV 'turn'	*=irɛwV	*qʷiör		*-úr-
*xkŭrV 'far'	*=ārχV	*Kjar		
*kīrV (~-ē-) 'inside'	*kīrV (~ k-, -ē-)	*kēr		
*pīrV 'fly'	*pīrV	*phjŭr		*pVrík
*ķīwrV 'hair'	*ķīwrV	*Kră		
*GwērV 'stone'	*GwērV			*qhor-/ *qoqor-
*fĭgVrV 'near'	*fĭgVrV	*k(r)ǎj (~ g-, q-, G-)		
*čHārŭ	*čHārV	*žhŭr	*ćur-	
'wet; rainy'				
*=itŭrV 'quick'	*=itŭrV	*t(h)ŭr		
*šārī (~ -ū)	*šārī (~ -ū)	*šar		*širi
'nit, louse'				
*šwĕrŭ 'evening'	*šwĕrV			*dur

PSC	PNC	PST	PY	Bur
*kVrV 'walk, go'	*=arkV (~ -ə-, -ǝ-)	*kriā(H) (~g-)		
*gōrV 'a k. of vessel'	*gōrV	OC *kraʔ		*girán
*daro 'tree, stump'	*daro	*t(r)ǝ		*t́oro
*qǎrē (~ xq-) 'earth, dirt'	*qǎrē	*K-rij		
*kǎrā 'mosquito'	*kǎrā	*k(h)r[ā]-ŋ		*kharú
*sarasV 'nit'	*sarasV	*s-rūH		
*xq(w)VrV 'a k. of weed'	*q[ǝ]rV	*khriǝH		*gur
*kwōrV 'a k. of vessel'	*kwōrV	*ghōr		*khor
*ǎśdur- 'strain, sift'	*ǎśur-	*[ś]ūr (~-ō-)		*char ~ ćur
*hwiri 'water, lake'	*hwiri	*ri(a)j	*xur ₁	*hurV-
*xq(w)VrV 'old, ripe'	*=irqwǎ	*grī		
*qwVrV 'fallow, cultivate'	*qwVrē	*Q ^w ir		
*k ^w ārV 'a k. of vessel'	*k ^w ārV	*k ^w rǝH (~ g ^w -)		*kur
*cwōrV 'dried fruit, grass'	*cwirV		*saʔr ₁	
*kirV 'knife'	*kirV	*Krij		
*λwǎrV 'horn'	*λwǎrV			*-ltúr
*wHōrV 'a k. of weed'	*wHōrV (~ b-)			*búru
*HmérV 'a k. of berry'	*(H)mer(?)V	*mor	*baʔr ₁ in (~ *banir ₁ ;-r-)	*mar
*Hi(r)xmVrV 'change, exchange'	*=HirfVr	*mrē(H)		
*čwřā 'sharp'	*čǝwrē (~ -a)		*cōr / *chōr	*-sir-
*čwVrV 'melt'	*=ičwǎr			*-śor-
*t̥hwērV 'rope, girth'	*t̥hwērV			*tVrāŋ

In one case Burushaski seems to have -l- instead of the expected -r-:

PSC	PNC	PST	PY	Bur
*ʔwǝhri (~ -e) 'army; enemy'	*ʔwǝhri (~ -e)	*rāH	*ha(ʔ)r-	*hol

So far I have been unable to establish any distribution between the reflexes *-r- and *-r₁- in Yenisseian. Yenisseian has one more peculiarity: it does not allow medial *-r- to follow initial uvular *χ- (there is not a single case of a PY root like *χVr- or *χVr₁-). In this position -r- was probably assimilated to *-ʁ- and later disappeared, which can explain the following cases:

PSC	PNC	PST	PY	Bur
*xqwērĥV 'horn'	*qwīrhV	*K-rua	*χɔʔ	
*xkĥi(w)ri 'bark'	*kĥəri	*k(h)ur (~ -o-)	*χiʔw-	*qharán
*qHūrV 'empty'	*qHörV	*krǝj	*χūj	
*χwōrhV 'house, village'	*χwōrhV	*qh ^w ǝ	*χuʔ	

In medial clusters *-r- is unstable like other resonants:

PSC	PNC	PST	PY	Bur
*λ(w)ǝr-dV 'woman'	*λ(w)ǝr-dV		*ʔalit	
*ʔwǝrxqÚ 'sack, basket'	*ʔwirqV	*g(h)aw	*ʔāχ-	
*ʔwǝrcwǝ 'skin'	*ʔwǝrcwǝ		*ʔese (~x-, -ē-)	
*ʔārśwǝ 'strap'	*ʔārśwǝ	* (r-)sǝ ?	*ʔēs- (~x-)	
*HǝrxqwV 'dig'	*=HarqV	*kǝw (~ g-)		
*čirbV 'dog'	*čǝrbV		*čip	
*kwirštǝ	*kwirčǝ		*gitej	
'young, child'				
*xqHwǝrdV 'winter'	PL *qIort:(a)		*gǝte	
*xqHwirdV	*qHwirdV		*kǝd-	
'a small animal'			(~ *kid-, *g-)	
*bĥǝrǝV 'intestines'	*bĥǝrǝV	*bik	*piʔil	*bal
*xqǝrčwǝ 'stick, pole'	*qǝwǝrčV		*qǝʔ- (~ χ-)	*gačhé
*xgw[ǝ]rdV	*gwǝrdV		*qite (~χ-)	
'a predator'				
*xkwǝrkV 'forest'	*χwǝrkV	*kuk	*qoʔK(V)ŋ (~χ-)	*húkar

PSC	PNC	PST	PY	Bur
*starstwŲ 'fang'	PL *sars		*tat (~c, č)	
*darq ^w Ų	*darq ^w V		*täχVr	
'otter, weasel'				
*Hēr[ç]Ų 'warm, heat'	*=ērçŲ	*cu (~-o)	*xus-	
*χHVrçŲ 'a carnivore'	*χHVr[ç]V		*χa(?)s (~k-)	
*čHwŲrtŲ	*čHwŲ-		*žida	
'a k. of bird'	r(V)tŲ			
*fnVrtŲ 'a k. of grass'	*fnōrtV		*?ēd- (~x-, -z)	
*=HārçVn 'see'	*=HārçV(n)	*qēn		*-yán
*=ārķĒw 'drive'	*=ārķĒw	*khjō (~ gh-, -əw)		
*bHərxcŲ 'shoulder'	*bHərχV	*ph(r)āk		*-phóyo- nas
*wHārχwə 'pig'	*wHārχwə	*wāk		
*xqwirqV 'knot, bind'	*qwerqV	*gīk		
*čwīr(x)GwV 'hole'	*čwīrGwV	*čik ^w (~ žh-, -ia-)		
*fnōr(x)kwŲ	*fnōrkwŲ	*nēk ^w		
'urine, dirt'				
*λwirdi 'manure'	*λwirdi	*lŲt		
*dVrxqŲwŲ	*dVrxqŲV	OC *dhāk		*dāgar
'male animal'				
*HwVrdV	*HwVrdV	[*wāt]		
'a k. of grass'				
*fnārxcGwī 'hearth'	*fnārxcGwī	*nak/ *nan		*mákućí ?
*lerṭwe 'pit, ravine'	*lerṭwe	*rōt (~-Ų-)		
*=irχwVŲ 'wind, spin'	*=irχwVn	*γ ^w ēŲ		
*HVrçŲ 'time, season'	*H[ō]rçŲ	*Kă		
*?irλwV 'male'	*?irλwV	*laH (~ λ-) *u(?)l-		
*HirGwĒ 'steal'	*HirGwĒ	*(r-)qhō		*yé-
*=irtwV	*=irt(w)V	*tāw		
'bore, distress'				
*=ērλV 'plough'	*=ērλV	*liəH		
*=arkU 'smear'	*=arkV	*Kū		
*HərčwVŲ	*HərčwVn	*[žā]Ų		
'cloudy, rain'				
*xqwártŲ 'tie, belt'	*qHwartŲ	*k ^w āt (~g ^w -)	*gu?da	

PSC	PNC	PST	PY	Bur
*=ěrstǺ 'heat, singe'	*=ěrcǺ	*cha		*'-ci-
*hwněrqǔ	*hwněrqǔ	*nūk		
'meat, soup'				
*bVrķwǺ	*bVrķwV	*phV̄k		*bákur
'wooden frame'				
*xgwěrdwV 'a cloth'	*gwěrdwV	*k[ā]t (~ q-)	*χɔʔtir₁	*gaťú
*ķV̄rkV̄ 'walnut'	*ķV̄rkV̄ (-nV)			*khakhájo
*pHVrtwV	*pHVrtwV			*-phát
'lung, gizzard'				
*ǻV̄rǰV 'wind'	*ǻ[a]rǰV (~ǰ-)			*tiş
*GHĩrǻwV 'sack'	*GHĩrǻwV			*qhVltá
(~ *xG-)				
*[p]V̄rcǺ 'plough'	*pVrVcǺ			*bas
*wiršwí 'place, land'	*wiršwi			*buşái
*wǻrǰV	*wǻrǰV			*baç
'enclosure, shed'	(~ b-)			
*štV̄rdV	*čHV̄rdV		*toʔd- (~c-)	*čhađ-úm
'narrow, shallow'				
*ʔěnr̄qwĩ 'cave'	*ʔěnr̄qwĩ			*nayár
*pérqwǺ 'a fruit'	*pĩrqwǺ			*phaqís
*pĩrpi 'a k. of tree'	*pĩrpi			*phVp-
*ǻwārχ(k)V̄	*ǻwārχV			*haγóc
'mountain pass'				
*kǻrtwV̄ 'enclosure'	*kĩrt(w)V̄	*kh ^w ăt		

Cases of "non-disappearing" -r- in ST are rather rare here, cf. perhaps:

PSC	PNC	PST	PY	Bur
*bērcV̄	*bīrcV	*phV̄r	*pasa	*barć
'big, important'				
*qārQ̄V̄ 'star'		*q(h)ār	*qōqa	
*GörGV̄ 'stone'	*GörGV	*Kər (~ Q-)		*qorqor-
*mHārčwV̄	*mHārčwV	*muar		*-mús
'pus, mould'				

Much more common, however, are cases of the development *CVRCV
> *CRVC:

PSC	PNC	PST	PY	Bur
*Hír _x kV̄	*wHír _x V	*rjōk	*ʔiʔχ(V)	*har
'male deer, goat'				
*bhērčǐ	*bhērčǐ	OC *prāts	*pe(?)stap	
'a large predator'				
*[c]ár _x gwV̄ 'squirrel'	*cārGwV	*sreŋ(H)	*saʔqa	*čargé
*čīrqā 'cover, carpet'	*čīrqā	OC *črēk	*siʔ(G)	
*mír(x)qwā 'root'	*mírqwā	*mLok (~r-)		
*ȳwārtV̄ 'group'	*ȳwār(V)tV̄	*krot (~q-)		
*qārṗV 'coat, shell'	*qārṗV	*qrāp		
*bHVrgĀ 'a predator'	*bHVrgĀ	OC *prāk		
*cVrqV 'shame, guilt'		*srāk	*saq-	*šiqár
*HérĀwV 'girdle'	*jērĀwV	*rāk		

Note that in several cases Burushaski also preserves -r- here — cf. above on a similar development of "non-disappearing" *-m- and *-n-.

4. Velars

A. *k

PSC *k yields quite clear reflexes in PNC (*k) and PY (*g- in Anlaut, *k elsewhere). The reflexes here are thus quite similar to those of *p and *t. In ST, however, the most frequent reflex is not the expected aspirated *kh- (/ʔgh-), but rather unaspirated *k- (/ʔg-). In Burushaski there are some cases with *kh-, but unaspirated *k- is also attested; in intervocalic position the standard reflex is -k-. Below we list all evidence with irregular cases in brackets [].

PSC	PNC	PST	PY	Bur
*kHwērV̄ 'hole'	*kHwērV		*g[a](?)r	
*kwāńhV 'light'	*kwāńhV	OC *k ^w āŋ	*gəʔn-	
*kwiršǔĚ 'child'	*kwirčĚ		*gitej	
*kwiltV	*kwiltV		*giʔd	[*git]
'intestine; fat'				
*kHwVńšV 'paw'	*kHwāńšV		*giʔs	
*kwġcV̄ 'demon'	*kwġcV	*K ^w it	*k[uʔu]s (~g-) *kūs	

PSC	PNC	PST	PY	Bur
*kīrV (~-ē-) 'inside'	*kīrV (~-ē-)	*kēr		
*ʔikwVn 'eat'	*ʔikwVn	*kēm(H) (~g-)		
*kVrV 'walk, go'	*=arkV (~ -ə-, -ō-)	*kriā(H) (~g-; -ŋ)		
*kāk(w)Ũ 'call, pray'	*kākŨ	*kūk		
*k(w)VŋV	*kunV (~ *kwVnV)	*k(r)ēŋ (~g-)		
*kōnmo 'skin'	*kōnmo / *mōnko	*kuam		
*kiŭ 'village'	*kiŭ	*g(h)ual		
*kwērV 'vessel'	*kwērV	[*ghōr]		*khor
*=ikĀr 'take, carry'	*=ikĀr	*gūr		
*kāuV 'fence'	*kāuV	*kēwH (~ g-)		
*k[ə]čwī 'hook'	*kičwī		*kēc (~ g-, -ǰ)	*khay
*kwāśV 'leg'	*kwāśV	*k ^w ā(H)		
*kŭrŭ 'break, split'	*=irkŭr	*krēH (~g-)		*karat-
*ʔəmKŨ	*ʔəmKŨ	*mōŋ / *mōk (~-ū-)	*ʔōke (~x-)	
'small insect'				
*HōkŨ	*H[o]kV	*ku (~ g-)	*b[ə]k- (~w-)	
'search, find'				
*xkwērKŨ 'forest'	*χwērKŨ	*kuk	*qoʔK(V)ŋ (~χ-)	*húkar
*[ʃt]ákWV 'white'	*čákWV-		*tāʔk-	*šikárk
*čákWǎ 'louse'	*čákWǎ			*žeké

B. *g

Reflexes of *g in PST are basically the same as those of *k, i.e. mostly *k- (/g-), but with occasional aspiration also *kh-. The correspondences in Yenisseian and Burushaski are, however, different: uniform *k in PY (cf. *b > *p, *d > *t) and *g in Burushaski (cf. *b > b, *d > d).

PSC	PNC	PST	PY	Bur
*HrāgwŨ 'stay, leave'	*=argwV-n	*rak	*ʔākV-	
*gāŭV 'pole, stick'	*gāŭV	*kāŭ (~ g-, G-)	*kəʔl- (~ g-, -o-)	*gal
*gV 'that'	*gV	*k(j)ǎ-	*ka- / *kə-	

PSC	PNC	PST	PY	Bur
*gwēɜV 'sole, foot'	*gwīɜV̄		*ka(?)ssad (~ ā)	
*=igwVr 'bend'	*=ig(w)Vr	*kuar	*kəʔr- (~g-)	
*gwāɜē 'mare'	*gwāɜē	Tib. r-god	*kuʔs	*gus
*bəgə (~o) 'morning'	*bəgə (~o)		*pV(?)k-	
*fīgVrV 'near'	*fīgVrV	*k(r)əj (~g-, q-, G-)	*ʔikVr	
*HgVnV 'leg, shin'	*HnəgV̄	*g(h)əŋ (?)		*kīn- (~ *kiʔn-, g-)
*gōrV 'a k. of vessel'	*gōrV	OC *kraʔ		*gīrān
*gwəpV 'group'	*gwəpV	*kVp		
*=igwVl̄ 'lose, hide'	*=igwVl̄	*koj (~l)		
*HṼmgV 'coal, ashes'	*jəmGe (~ -i)		*kuʔw-	*gu
*gw[ə]mgV̄ 'hole, chute'	*gwim(V)gV	*kh̄wāŋ	*kaʔŋ (~g-)	*gik
*ʔwəlgi 'lamb, kid'		*ʔwilgi (~ -i, -u)		*hālgit
*gwanṼ 'supply'	*gwanṼ (~ -ō-)			*gen

C. *k

PSC *k is preserved in PNC and regularly yields *k in Burushaski (cf. *p > p, *t > t, ʈ). In Yenisseian it gives a voiced reflex (cf. *p > b, *t > d), but is devoiced in Auslaut (where PY *-g is neutralized and not attested). In ST, however, unlike *p > p- and *t > t- the most frequent reflex appears to be aspirated *kh- (with a voiced variant *gh-). Cf.:

PSC	PNC	PST	PY	Bur
*čwəkwV 'knife, axe'	*čwīkwV	*ʒhVkw̄ ^w	*čok	*čak
*kēmḥV̄ 'crooked'	*kēmḥV	*k(h)ūm	*ga(?)mur-	
*kwīŋhV 'smell, smoke'	*kwīŋhV	*ghiw	*gi(?)ŋ	
*kwVrV̄ 'throat'	*kwVrV	*khrəw (~gh-,qh-,Gh-)	*kərVd (~g-, -ʒ)	
*rəkwi 'breast, heart'	*jərkwī	*ʔrəŋ // *ʔrək	*tə(?)ga	*dak

PSC	PNC	PST	PY	Bur
*šdĩkwǎ 'short'	*šĩkwǎ		*tu(?)K-	*ćiki
*kwĩrV 'leg'	*kwĩrV	*k(h)rej		*kur-
*=ārķĒw 'drive'	*=ārķĒw	*khjō (~ gh-, -əw)		
*=āķǎw 'put, take'	*=āķǎw	*Khu (~ -ua, -əw)		
*kwənǎV 'rake, fork'	*kwənǎV	*khuk (~ *g(h)-)	*gu(?)l-je?p (~ -ū-, -r₁-)	
*bVrķwǎ 'wooden frame'	*bVrķwV	*phVķ		*bákur
*běkwǎ 'throat, mouth'	*běkwǎ			*buk
*šĩķV 'barberry'	*šĩķV			*iskín
*šwénķV 'mouth, face'	*šwinkV		*sa?gVl- (~ -k-)	*'skil
*IVķwǎ 'recite'	*=ilķwV-n	*lōk		*-híliki-n-

The Sino-Tibetan reflexes of velars thus turn out to be drastically different from those of labials and dentals. This probably means that a shift within the system of velars occurred early during the prehistory of ST: most probably *k- was voiced and merged with *g-, after which the glottalized *k- lost its glottalization and changed to *k-. These newly formed *k- and *g- then developed similarly to the pairs *p- — *b- and *t- — *d- respectively, i. e. the voiceless member of the opposition developed aspiration. The reason for the voicing of PSC *k- is not quite clear, but is probably due to the fact that velar *k- was less aspirated than the labial *p^(h) and dental *t^(h); in such a case voicing of the voiced unaspirated consonant can occur easily.

D. *ŋ

PSC *ŋ was completely lost in PNC; it is a very abundant phoneme in PST (although, as we shall see below, it also has other sources besides PSC *ŋ), and is present, but only in non-initial position, both in Yenisseyan and Burushaski. The basic correspondence for PSC *ŋ is: PNC *n, PST *ŋ, PY *b-, ŋ (word-initially *ŋ- changed to *m- and finally to *b-), Burushaski h- or 0- initially, ŋ otherwise.

Cf. the following:

PSC	PNC	PST	PY	Bur
*=ǎlčwEn 'count, think'	=ǎlčwĒn	*ǵh[a]ŋ	*ʔi(?)ǵVŋ (~x-)	*ǵon
*pVŋV 'healthy, strong'		*Pāŋ	*ʔopVŋ	
*=āčǎŋ- 'pull, lead'	*=āčǎŋ	*čāŋ	*čāŋ-	
*q̣wǎŋʔū 'surface, face'	*q̣wǎŋʔū	*Kwāŋ	*KV(?)N	*khin
*xḳwVŋV̄	*ḳwVnV	*kūŋ	*qoʔn- ⁴	*qin
'fir-tree branch'				
*mVŋV 'net'		OC *mhaŋʔ	*pəʔŋ	
*tUŋV 'short'		*tōŋH		*dūŋ
*q(w)VŋV̄ 'hole'		*qhōŋ		*qon
*stVŋV 'wrap'		*cēŋ (~ ǵh-)	*tiʔŋ	
*dVŋV 'see'		*th(r)iāŋ	*t-uŋ	
*HmoŋV 'dead'	*mōŋ		*boŋ	
*śVŋV̄ 'blue, green'	*śinV	*chēŋ	*so(?)[ŋ]-	*din
*=VŋV 'speak'	*ŋǎH		*b- / *-ŋ-	
*ŋV 'I'	*nǎ	*ŋā-	*b- (*ʔab-), -ŋ	*a-
*ŋV̄nV̄ 'goose'		*ŋān	*bəʔn	
*ŋiHV 'child'		*ŋe(j)		*-i
*ŋěkwǎ 'abuse, swear'	*někwǎ	*ŋiǎk ^w		
*=irχwVŋ 'wind, spin'	*=irχwVn	*Y ^w ěŋ		
*HǎrcwVŋ	*HǎrcwVn	*[ǵā]ŋ		
'cloudy, rain'				
*k(w)VŋV 'thread'	*kwVnV	*k(r)ēŋ		

In a few cases PY and PNC can have m, probably as a result of late labial assimilation:

PSC	PNC	PST	PY	Bur
*pUjŋV		*Puŋ	*p[u]jm-	*phúin
'shoulder, neck'				
*χwVŋV 'arrow, bow'	*ḳŋnʔV	*k ^w ǎŋ	*qām	
*twVŋV 'weapon'		*dhǎŋ	*dV(?)m	
*Hčwǎjŋǎ 'limb, bone'	*Hčwējmǎ (~n-)			*-śāŋ
*ŋVxwV 'give, borrow'	*mV̄xwV̄	*ŋaH		*-ú-

Cf. also *hwēŋhV̄ 'rope, sinew' > PNC *hwimhV (~ŋ-), PY *ʔāŋ (~x-), but PST *ñH — probably with a secondary palatalisation < *ŋjH.

⁴ Actually *qoʔn-en, dissim. < *qoʔŋ-en.

A cluster *xŋ (> PNC *x, PST *ŋ) can be tentatively reconstructed, so far only in one case:

PSC	PNC	PST
*=ixŋA 'reap'	*=ixA	*ŋǎ

Besides NC n : ST ŋ : PY b-, ŋ : Bur 0-, ŋ there is also another quite systematic correspondence:

PNC *m : PST *ŋ : PY *b-, ŋ : Bur. m-, n/m.

It seems plausible to reconstruct a cluster *ŋw here:

PSC	PNC	PST	PY	Bur
*ŋwálšV̄ 'face'	*malšwV	*ŋār	*bV(?)sVÍ	
*ŋwǒ(x)GV 'rump'	*mǒGwV	*ŋok		
*ŋwǎhV̄ 'tooth, peg'	*hmǎhwV̄	*ŋ(r)iā		*me
*ŋwVQV 'pain, disease'		*ŋǎk ^w		*maq
*gāŋwV̄ 'path'		*kēŋ	*kāŋ- (~g-)	*gan
*pVŋwV 'swell'		*ph(r)ōŋ	*piŋ	*phán-
*cwǎjŋwē 'gall'	*cwǎjmē	*sīn (? *sīŋ)	*seŋ	*-sán
*[d]VŋwV 'top'		*tēŋH		*-thán
*ŋwVcV 'hunger'	*mV[c]V	*ŋet		
*Hǎžŋw- 'clean'	*HǎžĚm-	*chiǎŋ		*sesin-
*ciŋwV 'star'		*sēŋ		*así[m]
*bVrLVŋwē 'frame'	*bVrLVmē	*lǎŋH		
*stUŋwV 'trace, follow'		*chǒŋ		*chu[m]
*Hǎwǎŋwā 'wind'	*Hǎwǎmā	*luan		
*ǎŋwV̄ 'roof, top'	*ǎmV̄	*ǎŋ		

We should note, however, that the reconstruction of *ŋw violates one of the principles known at least in the PNC system: incompatibility of resonants with the following -w- (in PNC there are no clusters like *nw, *rw, *lw, *jw). Thus — at least in some cases above — *ŋw may in fact be a result of assimilatory labialisation of plain *ŋ, and we should in fact reconstruct *ŋálšwV̄, *ŋǒ(x)GwV, *ŋǎhwV̄ etc., with secondary developments in PNC and Burushaski (ST and Yenisseian, as we see, do not distinguish between the reflexes of *ŋ and *ŋw).

This cluster can also be combined with *-x- (*xŋw). The development of *xŋw differs from *ŋw in that NC has *f (cf. *xm > *f above), while Burushaski in two known cases has h-. It is worth noting that in most of these cases we cannot regard labialisation as assimilatory — but the cluster itself may be analysed rather as *xwŋ, with rounded *xw but unrounded *ŋ. Cf.:

PSC	PNC	PST	PY	Bur
*=ixŋwV 'graze'	*fɪfV	*ŋ[u]a		
*xŋwǎńV 'mountain'	*fǎnV	*ŋǎm		*hun
*xŋwǎŋhV 'fish'	*fanhV	*ŋ(j)ǎ	*bo(?)ŋ-	
*xŋwǎpV 'relative'		*ŋuap	*b[e]ʔb	*hápkuin
*xŋwǎHV 'five'	*fɦǎ	*ŋǎH		

On the loss of *-ŋ- in some clusters with laryngeals in ST see above. As for other clusters: clusters with velars and uvulars (like *-ŋk-, *-ŋq- etc.) can hardly be distinguished from clusters with *-n-. Some clusters of *-ŋ- + dentals, however, can be reconstructed:

PSC	PNC	PST	PY
*çŋdV 'stump, stick'	*çindV	*sŋ	*sV(?)ŋ-gVl-
*λwəŋdV 'a k. of tree'	*λwindV	*lǎŋ	

E. *x

The velar row in SC also has two fricative consonants: *x and *ɣ, and thus behaves as if it were an affricate row (stop rows — labial and dental — lack fricatives). The velar *x is preserved in PNC, partially preserved in PY (with a variation of *x and *χ reflexes), preserved initially in PST as *χ- or *qh- (in Auslaut, however, it was dropped like all other fricatives), and yields *h in Burushaski. Cf.:

PSC	PNC	PST	PY	Bur
*mVnxV̄ 'man'	*mVnxV	*nVm	*pixe	
*rVxwV 'cattle'	*rVxwV	*riə	*tV(?)χa	
*xǎnfɦ 'water'	*xǎnfɦ	*χɪw(s)	*ʔǎ(?)ń (~x-)	*hán-chil
*xV̄(HV) 'what'	*xV	*qhā-	*ʔaj (~x-)	
*xwǐrV 'vein'	*xwǐrV	*Kiw		*hur
*rēxwV̄ 'wood, pine'	*rēxwV̄	*rəw		
*=ixwV 'float, roam'	*=ixwV	*jua		
*ŋVxwV 'give'	*mVxwV̄	*ŋaH		['-ú-]

F. *ɣ

Voiced *ɣ is a very rare phoneme. Judging from existing examples, it yields *ɣ- in Burushaski, *χ or *q in PY, and a variety of reflexes in ST [most probably some larungeal like *ʔ or *x; the velar reflex in PST *gŭm can be in fact explained as *K-ʔum; for a prefixless form cf. Burm. um 'pillow'). Cf.:

PSC	PNC	PST	PY	Bur
*ɣĩmtǂ 'seat'	*ɣĩmtV	*gŭm	*qoʔTVs- (~χ-)	
*ɣwǎʔi 'help'	*ɣwǎʔi	OC *wəʔ		
*ɣwǎrtǂ 'group'	*ɣwǎr(V)tǂ	*krot (~ q-)		
*ɣũnʔV 'fruit'	*ɣũnʔV	*ʔun (~ x-)		*ɣaɪŋ ?

Nasalisation of final velars in Sino-Tibetan.

Sino-Tibetan (just like Sino-Caucasian) originally possessed a set of nasal suffixes (attributive and collective in *-ŋ, collective in *-n, etc.). These suffixes are still sufficiently well recognizable when added after a vowel (cases like *mi 'man' — OC *mi-n 'people', etc.). However, when added to structures like *CVp or *CVt such suffixes were apparently lost, which accounts for virtual absence of alternations like *-t / *-n or *-p / *-m in Sino-Tibetan. The alternation *-k / *-ŋ, on the other hand, is quite frequent and may explain quite a large number of cases, cf.

- PSC *fréʔwě 'bone, rib' > PST *rāk / *rǎŋ
 PSC *něwxqǂwǂ 'pus' > PST *nuāk / *nuǎŋ
 PSC *Héqǂwǂ 'k. of bird' > PST *lǎk / *lǎŋ
 PSC *GHǎlǂ 'dirt, dung' > PST *qjāk / *qjǎŋ
 PSC *rěǂwǂ 'breast, heart' > PST *ʔrǎk / *ʔrǎŋ
 PSC *rǂǂǂǂwǂ 'cold' > PST *rǎk / *rǎŋ
 PSC *kǎ[l]ǂ 'joint; leg' > PST *kǎk / *kǎŋ
 PSC *čǂ[l]ǂwǂ 'foot' > PST *ćok / *ćoŋ
 PSC *mHǎlǂwǂ 'maggot; worm' > PST *lǎk / *lǎŋ
 PSC *femǎǂ 'dream' > PST *mǎk / *mǎŋ
 PSC *fnǎrxǂwǂ 'hearth, interior' > PST *nak / *naŋ

Let us note that all these cases represent nouns or adjectives, and the most probable origin of *-ŋ here is plural (cf. the regular *-ŋ-plural in Yenisseian).

In a few cases the original variant variant with *-k has not survived and all we see is final PST *-ŋ, cf.:

PSC *[c]árxgwǃ 'squirrel, weasel' > PST *sren
 PSC *dǃG(w)ǃ 'cock, pheasant' > PST *dhǃŋ
 PSC *xǃíxǃǎ 'road' > PST *kǃŋ
 PSC *dwǎxǃ(w)ǃ 'stump, trunk' > PST *tǃŋ

5. Front affricates and sibilants

A. *c

A regular correspondence is: PNC *c : PY *s : Bur. s.

Burushaski more or less regularly has h- instead of s when there is a cluster of the type *cH in NC (cf. the examples for "one" and "fox" below, as well as similar cases with other affricates/fricatives).

Sino-Tibetan here (as well as for other affricates, see below) reveals a variation of *s and *ch. This variation is so frequent (even within ST itself) that one can suppose some early morphonological process in ST (e. g. a *t-prefixation: *s > s, *t-s- > *ch- or something similar). In final position ST has here the only front consonant possible, i.e. *-t. Cf.:

PSC	PNC	PST	PY	Bur
*=ēmcǃ 'say, tell'	*=[ǃ]mcǃ	*cho	*ʔas- / *ʔēs-	*'-s-, *sen-
*Himcǃ 'bull, beef'	*jǎmcǃ	*chu	*ʔise	
*kwǃjǃ 'spirit'	*kwǃjǃ	*Kʷǃt	*k[uʔu]s (~g-)	*kūs
*ʔrǃjǃ 'behind'	*ʔrǃjǃ	*rǃǐet(s)	*ʔǃs	
*cwǃjǃ 'liver, gall'	*cwǃjǃ	*sǃn (? *sǃŋ)	*serǃ	*-sǃn
*HVcǃ 'one'	*cHǃ	*ʔǃt	*-sa	*he-
*wǃcǃ 'grass'	*wǃcǃ	*chuāH		*bus
*=ōcV 'mow, reap'	*=ōcV	*chǃH		
*=ǎlcwVn 'measure'	*=ǎlcǃm	*ch[ǃ]n		
*cwǃrV 'dried plant'	*cwǃrV		*saʔrǃ	
*[p]ǃrcǃ 'plough'	*pǃrVcǃ			*bas
*chwǃlǃ 'fox'	*chwǃlǃ	*Criǃ		*hal

B. *ʒ

Burushaski has here the same reflexes as for *c. Yenisseeian has *ʒ or *s, with distribution yet unclear. Cf.:

PSC	PNC	PST	PY	Bur
*ʔǎʒV 'sick, ill'	*ʔǎʒǃ	*ʒhaj		
*pǃnʒǃ 'fly, wasp'	*bǃnʒǃ		*bis-	

PSC	PNC	PST	PY	Bur
*gwēɜV 'sole, foot'	*gwīɜV̄		*kas-ʔaʔd	
*=āmɜĚ 'swim, bathe'	*=āmɜĚ	*[ɜhə]j	*sūj	
*ɜōɩV 'save, assist'	*ɜōɩV	*cāj (~ ɜh-, -l)		
*ɜōŋʔũ 'navel'	*ɜōŋʔũ			*-sú[m]
*ɜōwĩ 'sky, sun'	*ɜōwĩ			*sa
*ɜHwĩré 'urine, leak'	*ɜ(H)wěre	*ɜh[ĩ]r		*hará-
*ɜwVlHṼ 'child'	[*rīlɕwī]	*ɜhăH	*ɜVl	*salé-n
*ɜ[ú]mV 'point, edge'	*ɕūmV (~ *ɜ-)	*ɜhem		*sum

We see from the above examples that the normal reflex in PST appears to be *ɜh. In some cases, however, *ch also reflects PSC *ɜ:

PSC	PNC	PST	Bur
*Hăɜĩŋw- 'clean'	*HăɜĚm-	*chiăŋ	*sesin-
*=ĩɜwVl 'slide, stumble'	*=ĩɜwVl	*chVr	

C. *ɕ

PSC *ɕ is a rather frequent affricate. It is preserved in PNC, and in Burushaski and Yenisseian its reflexes are more or less clear. Burushaski has *ś* or *ʃ* word-initially (palatal and retroflex affricates in Bur. are in constant variation, and the distinction is most probably of rather recent and secondary origin), and *s* in other positions. Yenisseian has either *c or *s, with distribution so far unclear (cf. a similar situation for *ɜ / *s < PSC *ɜ).

The most complicated situation is found in Sino-Tibetan. In final position *ɕ, like other front affricates, yields *-t:

PSC	PNC	PST	PY	Bur
*wăɕmɔ 'moon'	*wăɕmɔ	*ʔwət	*(ʔVʔ)suj	? *-nc (< *-ns?) in hala-nc 'moon', gu-nc 'day'
*bhěɕĩ 'a predator'	*bhěɕĩ	OC *prāts	*pe(ʔ)stap	
*mēɕĩ 'tongue'	*mēɕĩ	*m-lăt		*-jú-mus

[Note a specific ST reflex of *ɕ in the word for "tongue" in ST: here we have in fact a variation of *m-lăt and *m-lăj; on similar behaviour of other clusters *-l- + affricate see below.]

In other cases the situation is not so clear. We must note that most known cases of PST *c and PST *ɜ can be traced back to PSC *ɕ, cf.:

PSC	PNC	PST	PY	Bur
*HērçŮ 'warm, heat'	*=ērçŮ	*cu	*xus-	
*čājĭ 'fire, brilliance'	*čājĭ	*ʒāj(H)		*śi
*HŮčV 'soon, early'		*cēwH (~ʒ-)	*ʔăʔc	
*čĭr(x)qā 'cover, carpet'	*čĭrqā	OC *črēk (< *c-)	*siʔ(G)	
*čVŋHV 'sharp, pierce'	*čānHV	*cōn (/ *cōŋ)		
*čVHV 'thorny plant'		*cūH		*şaú

However, there is also a number of *ʒh- cases:

PSC	PNC	PST	PY	Bur
*=ŮčV 'eat, drink'	*=VčV	*ʒhaH	*sĭ-	*śi / *ši / *şu
*čwēnHē 'cane, reed'	*čwēnHē	*ʒhu		

And a significant number of *ch- / *s- cases:

PSC	PNC	PST	PY	Bur
*čfwǎmé 'hair'	*čfwěme	*chām	*cəŋe	*śe[m] ?
*čǎ(x)qŮ 'strong'	*čǎqŮ	*chǎk	*sa(ʔ)kar- (~g-, -G-)	
*čānχŮ 'search, ask'	*čEnχV(n)	*chēŋH	*saŋ-	
*čǎxkwV 'sour, bitter'	*čǎkwV	*sǎk		*şuqúr
*čĭŋdV 'stump, stick'	*čĭndV	*sĭŋ	*sV(ʔ)ŋ-gVl-	

Except for the fact that all the reflexes are front sibilants, the distribution is far from being clear. It is most probable that PSC *č was subject to early deglottalisation in PST, after which it either merged with *ʒ (hence *ʒh-reflexes) or with *c (hence *ch- / *s- reflexes), but further details are obscure.

Other examples of PSC *č include:

PSC	PNC	PST	PY	Bur
*=ēčǎ 'put'	*=içǎ		*ʔes-	
*pŮčV 'penis'	PL *p:iç-		*biʔs	
*hāmçĔ 'half'	*hāmçĔ		*su-	
*čǎqŵǎ 'tail, long hair'	*čǎqŵǎ		*su(ʔ)K-	
*čǎtV 'tree, wood'	*čǎtV	*Cal		*śulú
*čHVdV 'a relative'	*čHVdV		*cVt-	*-st-

PSC	PNC	PST	PY	Bur
*Hčwǎjñǝ 'limb, bone'	*Hčwējnǝ	*[ǰ]en		*-śǎñ
*pVnçV 'brow, hair'	PL *pinc			*phénVs
*čǞwnV 'dark'	*čǞwnV			*śon
*čwǞrǞ 'melt'	*=ičwǞr			*-śor-
*čǰčV 'tip, spout'	*čǰčV			*śúsun

D. *s

Here ST has *s in most cases (with a few cases of *ch-, probably from prefixation: < *t-s-, see above; never any other sibilants). Yenisseeian and Burushaski both have s, and both can also reveal d- word-initially. However, whereas Burushaski has always d- in this position (cf. *dan, *dan, *du[m], *dasén below), Yenisseeian shows it only in words having "tense" phonation (PY glottal stop, PSC accented syllables), cf. *dǝʔq-, *duʔ(χ) below). Examples of this development are not numerous, but it seems quite exceptionless and is paralleled by similar development of other fricatives (*ś, *š, see below) and therefore reliable enough. This development could actually indicate a closer genetic connection of Yenisseeian and Burushaski — since at least in accented initial syllables it may have started before the two branches became separated — but this problem needs further investigation.

Phonetically what happened was probably an interdentalization *s- > *ʔ-, with further development into *d- (cf., e.g., the development of *ʔ in German).

PSC	PNC	PST	PY	Bur
*sǞ(jV) 'interrogative stem'	*śǎj	*su	*ʔa(ʔ)s-/*sV(ʔ)-	*-sa- / *-se
*ʔVswǞrV 'vessel'	*ʔVrswǞ		*ʔasVr	
*ʔǎmsǎ 'soul, breath'	*ʔǎmsǎ	*siǎ	*ʔes	*-s
*=ásA 'throw, sow'	*=asǎA-r		*ʔV(ʔ)s-	
*hǎlsV 'feather, wool'	*hǎlsV		*ʔǞsi	
*pǞVsV 'widow, orphan'	*pǞVsV		*bǎs-	
*sǞQǞ 'live, breathe'		*sǎk	*dǝʔq-	
*=ǎsǎ 'be, stay'	*=ǎsǎ		*hVs-	*bas-, *ōs-
*mǎswV 'dirt, mould'	*mǎswV	*puʔs		*mos
*sVwǞrV 'grass'	*siwirV	*sōr		
*swǎnē 'berry'	*swǎnē		*sōn-	
*sVrǞ 'yellow, grey'	*sǞrV		*su(ʔ)ǎ-	
*HǞwsVn 'sleep'	*=VwsVn	*chǐmH	*xuʔs-	*dan

PSC	PNC	PST	PY	Bur
*h _w [ǎ]lsǎ 'stick, fork'	*h _w ǎlsǎ		*ʔiʔs (~x-)	
*lās _w Ē 'long hair, rope'	*lās _w Ē	*rǔj		
*sw _w re 'earth, sand'	*swüre		[*srāj]	
*swĕnV 'mountain'	*s _w ĕnV	OC srān		*dan
*sĕhmV 'intestine'	*sĕhmV	*siām		*-so[m]
*sak _w V 'morning'	*sak _w V	*sūk		
*=i _s Vŋ 'melt, boil'	*=i _s Vn	*siaŋ		
*sĭH _w V 'breath, vapour'	*sĭH _w V	*sĭj(H)	*duʔ(χ)-	
*sǎnǒ 'long bone'	*sǎnǒ	*sen		*-s _v sVn
*sHwĩntV 'sniff'	*s _w HwĩntV	*chūt		
*sarasV 'nit'	*sarasV	*s-rūH		
*māsV	*māsA	*maw		
'tinder, mushroom'				
*mūši 'sky, fog'	*mūši	*mo		
*nūsÁ 'daughter-in-law'	*nūsA	*nǎwH		*-muši
*=as _w Vń- 'glue, grease'	*=as _w Vn	*sĕŋ	*siń-	
*Hĭl(V)sV 'husband'	*jǎlsV		*ʔil(V)s	*hilés
*swǎnʔV 'lamb, kid'	*s _w ǎnʔV			*du[m]
*wĩnsĒ 'knife'	*wēnsĒ			*bisár-
*swĕsǎ 'bride'	*s _w ĕsǎ			*dasén

E. *z

Voiced *z is extremely rare in NC, and completely absent in all other branches. In fact, the only root where we could reconstruct *z, is the first person pronoun: PNC *zō (erg. stem *ʔez(V); gen. stem *ʔiz(V); general oblique stem *zā-); PY *ʔaʒ; Bur. *ʒa.

It could be possible to reconstruct *ʒV here and suggest that *ʒ behaved irregularly in this morpheme in PNC and Burushaski; however, a unique phoneme in the 1st p. singular is also not excluded — cf. the situation in PNC and in many modern NC languages.

6. Palatal affricates, sibilants and resonants

As a preliminary remark we should notice that in ST the phoneme *čh is relatively rare and no external parallels for secure PST roots with *čh have been found so far. It is possible therefore that original *čh lost its aspiration and merged with *ć rather early in the history of Sino-Tibetan.

A. *ć

In ST *ć corresponds to *ć- (originally < *ćh-?) or *ǰh- initially and to the usual *-t finally. Yenisseian has a variation between *ǰ (initially) and *s (in other cases). Burushaski has various reflexes — s, ś, ć/ç, in final position also the peculiar Bur. fricative -y; it would be premature to establish any precise rules of distribution because of the scarcity of material.

PSC	PNC	PST	PY	Bur
*ǰwǎrcwǎ 'skin'	*ǰwǎrcwǎ		*ǰese (~x-, -ē-)	
*=ǰǰ 'brother'	*=ǰǰ	*ćǰH	*b[i](?)s	*-ću
*=ǰǰǰ(rV) 'thick'	*=ǰǰǰ(rV)		*bV(?)sVr	*bes
*ćwǰjo 'man'	*ćwǰjo		*ǰeǰ-ŋ	*ses
*mǰlcwV 'blow, wind'	*mǰlcwV	*mǰt		
*ćVnV 'cut, sickle'	*ćVnV	*ćǰnH		
*bǰlcwǰ 'millet, rice'	*bǰlcwǰ	*phrē(s)		*bay
*ǰǰmćó 'a fruit'	*ǰǰmćó	*ćhiǰH (~ ǰh-)		*micǰl
*ǰǰǰV 'leech, snake'	*ǰǰǰV	*lit		
*ǰHwǰlcV 'stick, pole'	*ǰHwǰlcV	(?) *kǰlH	*xus(V)	
*merć(w)ǰ 'sickle, axe'	*mirć(w)ǰ			*manç
*=ǰǰǰwǰ 'pour, weep'	*=ǰǰǰwǰ		*ǰe-n	
*ǰǰǰwǰ 'skin, leather'	*bǰǰwǰ			*pisV'k
*ćVǰV 'shallow, short'	*=VǰV	*ǰhǰnH (~ǰH, -rH)		*śal
*=Hǰǰwǰ 'untie'	*=Hǰǰwǰ			*-śú-n-
*xkǰmćV 'change'	*ǰǰmćV	*kham (~ ǰg(h)-)	*qǰs- (~ ǰχ-)	*may-

[Note a specific -ǰ reflex in the word for "millet, rice" in ST; cf. a similar development of affricates in other *-ǰC-clusters, see below].

B. *ǰ

In the few reliable examples for PSC *ǰ PNC has *ǰ; PST and Yenisseian display the same reflexes as for *ć; Burushaski can also have s/ś (just as *ć), but has a voiced word-initial reflex *ǰ / *ǰ:

PSC	PNC	PST	PY	Bur
*ǰwǰǰē 'horse, mare'	*ǰwǰǰē	Tib. r-god	*kuǰs	*gus
*bilǰV 'hair, whiskers'	*bilǰV		*pis	*biś-ké
*=ǰmǰǰ 'roast'	*=ǰmǰǰ	*ćer	*ǰa(?) -qan-	

PSC	PNC	PST	PY	Bur
*ʒi 'self'	*ʒi	*ci (~ cí(h)-)		
*mēlʒV 'place, earth'	*mēlʒV	*m-laj		
*ʒālhī 'mane, long hare'	*ʒālhī			*ʒal- / *ʒal-
*ʒāmV / *māʒV 'relative'	*ʒāmV / *māʒV	*mōt		*ʒām

[Note a specific ST reflex of the cluster *-lʒ- in PST *m-laj 'earth': cf. other similar cases above].

C. *ć

Examples for *ć are not very numerous, but seem quite trustworthy.

PSC	PNC	PST	PY	Bur
*mħāñćī 'nettle, thorn'	*mħāñćī	*mat	*ʔəʔmas	*munāy
*ćāxqwā 'scoop'	*ćāxqwā	*[Će]k ^w	*siʔk (~g,-χ)	
*ćēcĚ 'internal organ'	*ćēcĚ	*cat	*si(ʔ)sa(l)-	
*ćāLwV 'blood, red'	*ćāLwV	*cāk (~ć-)	*sur	
*=ić(w)Ě 'go, come'	*=ićwĚ	*Ćā		*ʒó-
*ćVŋV 'break'	*=āñćĚ	*čhāŋ (~ ʒh-)		
*mVćV 'beard'	*mēćuri	*mut		*muʒóq
*ħćwVjmV 'sour, salty'	*ħćwVjmV	*[ʒh]iam		*chémil
*ćākwo 'nit, louse'	*ćākwo			*ʒeké
*ʔilćwi 'nine'	*ʔilćwi			*hunćó
*ćVqV 'head'	WC *SqIa		*c[i]ʔG-	*-ćáyanes

Burushaski has here *ć or *čh initially and -y finally, thus basically the same reflexes as for PSC *ć; but in several cases the original *ć was secondarily voiced and merged with *ʒ (cf. the examples 'come', 'beard', 'louse'). Yenissonian, judging from the few examples we have, had merged PSC *ć and PSC *č. Finally, Sino-Tibetan seems to have the same reflexes as for *ć and *ʒ (i.e. *ć- or *ʒh- word-initially, -t word-finally); but in a few cases it can also have a peculiar fricative reflex *ś:

PSC	PNC	PST	PY
*ćVʔV 'bow, arrow'	*ćāʔV	*śVj	*cu(ʔ)
*ćwħēli 'a k. of tree'	*ćwħēli (~ ć-)	*śəl	

D. *ś

In PST and PY the reflexes of *ś are identical with the reflexes of *s, see above (PST *s-, -0; PY *s, but d- before the following glottal stop). In two cases, however, Yenisseian still has *s-: *su(?)k 'paint' and *saʔgVl 'gills'. In both cases we have an original following cluster with a resonant that may have impeded the development. The Burushaski reflexes are, however, different from those of *s: the reflex d- here appears only in an unaccented syllable (i.e. exactly in the opposite position compared with Yenisseian: cf. the examples "three", "year". "green", "tube" below).

PSC	PNC	PST	PY	Bur
*ǵārśwē 'strap'	*ǵārśwī	*r-sǝ	*ǵēs- (~x-)	
*śwímHV 'three'	*świmHV	*sūm	*doʔŋa	*śum-sōi
*śwVnǝ 'year; old'	*śwānǝ	*s(n)ī-ŋ	*sīn	*den
*śVŋV 'blue, green'	*śīnV	*chēŋ	*so(?)n-	*dīŋ
*śām xqī 'paint, gum'	*śwānqī	*s(m)āŋ / (s)māk	*su(?)K	*śukór / *śuqór
*śwǝrV 'evening'	*śwǝrV			*dur
*śwVǝHV 'tube, vein'	*śwōl(H)V		*daʔr₁	*śūli
*śēǝ 'dung'	*śīǝ	*slijH > t/k-lijH		*delk
*śwǝǝ 'a cereal'	*śwǝǝ	*sej		*śō
*śwénkV 'mouth, face'	*świnkV		*saʔgVl- (~k-)	*ś-skil
*kwǝśV 'paw, leg'	*kwǝśV	*k ^w ā(H)		
*śHVǝV 'moon, light'	*śVǝV (~ -ǝ-, -ǝ-)	*s-lǝH		*halánc

In the last example the h-reflex in Burushaski should be probably explained by the initial cluster *śH- (cf. a similar development of *cH-, *ʒH- etc.).

E. *ž

Like other voiced fricatives, *ž is extremely rare in PNC, and only one potential example of PSC *ž can be listed:

PSC	PNC	PY
*žāwrV 'ice, frost'	*žāwrV	*žV(?)r₁- (~l)

PNC lacks palatal resonants except *j. However, there is evidence that such resonants were present in PSC.

F. *r̥

PSC *r̥ is preserved only in Yenisseian; in other languages it has the same reflex as normal *r. However, Sino-Tibetan in three cases has a peculiar *rj̥ cluster here (which yields a ʒ-reflex in Tibetan and a *l- > *j-reflex in Old Chinese); it may well be a trace of the old palatalized articulation of *r̥.

PSC	PNC	PST	PY	Bur
*r̥VTV (~ -C-) 'a carnivore'		*rj̥āt	*raʔt (~-c,-č)	
*Hr̥ém[xk]w̥i 'dirt'	*Hr̥émkw̥i	OC *ruk	*r̥əʔq-	
*r̥h̥āλw̥ 'liquid; milk'	*r̥h̥āλw̥	*rj̥iak	*r̥oq-	*diltar
*ʔr̥Vjcw̥ 'behind'	*ʔr̥əjcw̥	*rj̥iet(s)	*r̥ɔs	
*sVr̥V 'yellow, grey'	*sV̥rV		*su(?)r̥-	
*xq̥ar̥V / *xq̥axq̥ar̥V 'throat'	*q̥āq̥ari	Tib. m-gur		*gəʔ(n)kəʔ
*r̥i(x)q̥w̥ 'ravine'	*r̥i̇q̥w̥		*r̥i(?)K-	
*ʔw̥er̥V 'door'	*ʔw̥er̥V		*ʔeʔr̥- (~ h-)	
*r̥VηHV 'hand, bone'		*r̥āH	*r̥ɔη	*-reη

G. *ń

Palatalized ń is present only in Yenisseian (on PST *ń see below). It should be noted that in the position before (or after) a front vowel *n is frequently secondarily palatalized in Yenisseian and is hard to distinguish from *n. Such are the cases Yen. *ʔ[ē]ńi < *HānV̥, *xīń- < *xq̥winV̥, *siń < *śwVńi (see under *n). In a number of cases, however, PY *ń clearly participates in a special row of correspondences: PNC *n — PST -ŋ — PY *ń — Bur. n, where we reconstruct PSC *ń. Cf.:

PSC	PNC	PST	PY	Bur
*ʔVńV̥ 'fir-tree'		*təŋ	*dińe	
*=aGwVń- 'lose'	*=aGwV(n)	*kjuŋ	*qoń-	
*pVńV 'dirt'		*Paŋ	*pVńi	*p(h)Vn
*láńā 'bottom'	*ānā	*[lj]əŋ		*tāno

There are also several cases where PY superficially has *n in the same row, but this is most probably a result of secondary neutralisation either after a front vowel, or in the end of disyllabic verbal stems:

PSC	PNC	PST	PY	Bur
*bVńV 'play, laugh'		*p(r)əŋ	*ʔapVn-	
*=HṼwxkVń 'cook, bake'	*=HēwχV(n)	*kǎŋ	*ʔəqan	
*kwǎńhV 'light'	*kwǎnhV	OC *k ^w āŋ	*gəʔn-	[*gon]
*pVńV 'ladle'		*Piəŋ	*piʔn	
*(ʔwī)[c]VńV 'spring'	*ʔwīncV	*ciəŋH	*siʔn-	
*HgVńV 'leg'	*HnĕgV	*g(h)əŋ	*kīn-	
			(~ *kiʔn-, g-)	
*dVńV 'vessel'		*tiəŋH	*tiʔn	

Finally, there is a number of cases where Yenisseeian or ST have *ń, but other languages demonstrate *m — obviously as a result of secondary assimilatory labialisation (there is hardly any reason to reconstruct palatalized *ń or something similar):

PSC	PNC	PST	PY
*=HäGwVń 'tremble, fear'	*=HäGwVn	*[kh]ömh	*qiń- (~χ-)
*χűńhV (~ *xk-) 'beads'	*χömhV		*qoń (~χ-)

It should be noted that initial *ń- has so far not been reconstructed for PSC. There are no known matches for PST words with initial *ń (which are in general very few and dubious; PST *ńĥH 'sinew' is probably a secondary palatalisation < *ŋĥH or *ŋiəH, see above, and *ńūk 'sediment, dirt' — corresponding to PNC *ńǎqwi and Bur. *nayé — can be as well reconstructed as *ńūk, thus going back to PSC *ńǎqwi).

H. *j

Unlike *w, PSC *j is a relatively rare phoneme. It is well preserved in NC and ST, but yields a variation of j and 0 in Yenisseeian and Burushaski, cf.:

PSC	PNC	PST	PY	Bur
*jVpV (~ -b-) 'fan'		*jāp	*ʔapVj (~x-)	
*jVstwĕ 'mouse'	*jVcwĕ	*jű(s)	*jūta	

PSC	PNC	PST	PY	Bur
*qwějṼ 'swear'	*qwějṼ	[*Gīw]	*χV(?)j-	*qhái
*ćwějo 'man'	*ćwījo		*žeʔ-ŋ	*se-s
*čājī 'fire'	*čājī	*žāj(H)		*sí
*xkHwěje 'dog'	*χHwěje	*qh ^w ij		*hu-k
*twəjV 'spittle'	*twəjV	*thōj		*thu
*jālλwV 'shovel'	*jāl[λ]λwV	*jok		
*jonHV 'many, all'		*jəw	*ʔōn- (~x-, j-)	*jón

In a couple of cases PNC has a *j-reflex, but external evidence (primarily Sino-Tibetan) shows that we are rather dealing with an original laryngeal:

PSC	PNC	PST	PY
*Himcó 'bull, beef'	*jəmcō	*chu	*ʔise
*HérλwV 'girdle'	*jərλwV	*rāk	

7. Back affricates and fricatives

Besides front affricates and palatal affricates PNC has also a well reconstructable third, back row of affricates and fricatives (*č, *č̣, *ž, *š and a very rare *ẓ̌). Those are well distinguished from palatals at least in Nakh and Dargwa, but traces of this distinction are also recoverable in other subgroups.

Outside NC the palatal and back affricates also tend to merge. Reflexes of the pairs *č — *č̣, *ž — *ẓ̌ are virtually undistinguishable. However, Yenisseeian seems to have somewhat different reflexes of *č̣ and *č̣̣, while Sino-Tibetan and Burushaski distinguish the behaviour of *ṣ̌ and *ṣ̣̌. Therefore, although a secondary split of one original row in North Caucasian is not excluded, the decision to distinguish the back and palatal affricates in PSC still seems preferable.

A. *č̣

Reflexes of *č̣ are in general very similar to those of *č̣̣ (see above), except for the prevalence of *č̣- over *ẓ̌- in Yenisseeian, cf.:

PSC	PNC	PST	PY	Bur
*=áčwṼ 'take, hold'	*=áčwṼ	*ČōH	*ʔus-	*sú-
*=áčĀŋ- 'pull, lead'	*=áčĀn	*čāŋ		*čāŋ- (~c-)

*čáHV 'salt'	WC *žə (/ *čə) * (m) cí	*čəʔ	*šáo
*čirbV 'dog'	*čərbV	*čip	
*bērčV 'big, important'	*bīrčV (*phVr)	*pasa	*barć
*=ičV(w) 'wound'	*=ičV(w)	*s[e](?)ji	
*hVčwī 'blue'	*hVčwīlV	*wV(?)s	
*čāšV 'urine'	PN *čiš *či	*žəs	*ćús
*HōrčwVη 'cloudy, rain'	*HōrčwVη * [žā]η		
*mfhw[ī]lči 'face, jaw'	*mfhwīlči	*binč-	*melč
*rHāčV 'stomach'	*rHāčV		*-rić
*(HV)mVčwV 'legging'	*mVčwV OC mhat		*humác
*xqHwēcwV 'a vessel'	*qHečwV		*kháci
*xqəlčwí 'forelock'	*qəlčwi		*yuy

B. *ž

Examples of *ž are not very numerous, and the reflexes in ST, Yenisseeian and Burushaski also seem basically to coincide with those of *ž (see above).

PSC	PNC	PST	PY	Bur
*=HVžV 'clear (weather)'	*=HužV-n	*Čāj	*žēž-	*čāη, *čān, *žāη
*žāqV 'small bird'	*žāqV	*ček ^w		
*wāržV (~ b-) 'enclosure'	*wāržV (~ b-)			*baç
*HVrVžV 'stack'	*HrVžV			*hurç
*wēnžV 'joint, knee'	*wēnžV			*mužó

C. *č

Here PST and Burushaski again have reflexes quite similar to those of *č. Yenisseeian, however, in the majority of cases has *č or *ž, as opposed to the *s/*c reflexes of PSC *č. Cf.:

PSC	PNC	PST	PY	Bur
*HVčwĚ 'guest'	*HVčwĚ		*ʔə(?)ča (~ -ə-)	*aúsi-
*=ilčwEη 'count, think'	=ilčwĒn	*žh[a]η	*ʔi(?)žVη (~x-)	*žoη
*HičĀη 'press, rub'	*HičĀn (~ -č-)		*žāη	
*čHīxqWĀ 'dirt, resin'	*čHīqWĀ		*žik (~g,-χ)	*ćiki
*čHəqWV 'thick, big'	*čHəqWV	*čök (~ ž-)	*[su(?)K-?]	*śóq-

*čHārV 'wet, rainy'	*čHārV (~ *č-)	*žhVr		*čur-
*čV[l]xkwV 'foot'	*čV[l]kwV	OC *čok	(*čiG)	*-śóyun
*qHwVčī 'hole, dig'	*qHwačī		*qīč- (~χ-)	*quś
*čú(x)qā 'neighbour'	*čūqā	*čhāk (~ žh-)		*śuqúr
*mǝčú 'hair'	*mǝču			*mVś-ki
*čHādwV 'earth, clay'	*čHādwV			*čidīŋ
*čāmḱā 'crow'	*čāmḱā			*čhayé(n)
*k[ə]čwī 'hook'	*kīčwī		*kēč (~ g-, -ž)	*khay
*mučŮ 'branch, stick'	*mučŮ			*muš-
*=i[l]čwĚ 'to dry'	*=i[l]čwĚ			*huy-

D. *š

PSC *š is clearly distinguished from *ś in PNC, PST (where it also disappears syllable-finally, but yields *ś- rather than *s- initially). In Burushaski it always gives a fricative reflex s/ś/š (no examples of *š- > *d- are attested). In Yenisseyan the reflexes of *s, *ś and *š appear identical: they are always *s, with a development *s- > *d- in a tense (accented syllable). The only exception — sa(?)G-Vž — seems to follow the same rule as formulated above for *ś: lack of the development *š- > *d- if followed by an original cluster with a resonant. Cf.:

PSC	PNC	PST	PY	Bur
*kHwVnšV 'foot, paw'	*kHwānšV		*kiʔs (~g-)	
*šVlxkwV 'heel, hoof'	*šālkwV		*sa(?)G-Vž	*šoq
*čāšV 'urine'	PN *čiš	*či (~e(j))	*žəs	*čus
*nāwši 'two'	*nāwši	*nīj(s)		
*šārī 'nit, louse'	*šārī	*šar		*širi
*Hlōšwē 'hundred'	*Hlōšwē	*rjā	*ʔalVs	
*=išwĚ 'son, child'	*=išwĚ	*šū		*-s
*=[i]šwVn 'take'	*=[i]šwV(n)	*šūm		
*šāŋʔwV 'milk, nipple'	*šāmʔV		*de(?)n	*šin
*qHwōšwV 'ankle, cubit'	*qHwōšwV			*qaš
*wiršwī 'place, land'	*wiršwi			*bušái
*šwēmV 'goat, sheep'	*šwēmV		*sum	
*šVšV 'skin, sack'	*šišaV		*sās	*-śúsur
*šHwātā 'legging'	*šHwātā			*śatá

E. *ʒ

Like other voiced fricatives, *ʒ is an extremely rare phoneme in PNC. In fact, it is only reconstructed in one morpheme: PNC *ʒi 'we (excl.)', for which no parallels have been found so far. The very fact of the existence of *ʒ in PSC is therefore dubious.

8. *Lateral affricates, fricatives and resonants*

The lateral consonants are quite common in NC languages and are well reconstructable for PNC, with the following inventory: *ʎ, *ɭ, *ʎ̥, *ɭ̥, *ɭ̥̥ (plus two resonants: *l and *ɭ). This system, however, has disintegrated in all other branches of SC. We have in fact reconstructed laterals *ʎ, *ʎh, *ɭ, *ɭh in Old Chinese and a *ʎ-affricate in PST (Starostin 1989). However, it seems now that the variation between *l-reflexes and *ʎ-reflexes (i. e. reflexes like *tl- in Kuki-Chin, affricates in OC, clusters like lt/ld/lc/lz in Tibetan) is so frequent that PST *ʎ should be rather treated as a cluster *T-l, where *T- in many cases can be analyzed as a morphological prefix. For ST we shall therefore be dealing with only one lateral consonant — *l-.

This does not mean, however, that laterals are not reconstructable for PSC. On the contrary, PNC lateral consonants have quite unique and distinct correspondences in other languages and are easily projectable onto Proto-Sino-Caucasian.

A. Affricates

In Sino-Tibetan and Burushaski all lateral affricates behave similarly. The standard development in ST is *l- (or *T-l-) in initial position and *-k in final position (sometimes with secondary nasalisation -k > -ŋ, see below). In Burushaski the normal reflex is *lt- word-initially (with *lt- changing to t- in modern dialects, but in most cases preserved after prefixes), and a variation of *lt and *l word-medially.

In Yenisseian all three affricates changed to *j- in initial position (different developments were proposed in Starostin 1982 and 1984, but they seem now erroneous), but give quite distinct reflexes word-medially. The glottalized *ʎ̥ yields *l (or *l̥); the voiced *ɭ yields *r (or *r̥); the voiceless *ʎ was delateralized and yields a fricative *χ.

A specific feature of PST is the regular dissimilation of the structure *ʎVl (*ɭVl, *ʎ̥Vl) > *lVl > *rVl.

Cf. the following examples:

PSC	PNC	PST	PY	Bur
*=iλwVl 'break, tear'	*=ēλwV(l)	*rūt (~-uał)	*ʔil (~j-,x-,l-,r)	*-ltúr-
*HiλiwVĩ	*HiλiwV	*trial		*jult
'root; kin; village'	(-ĩV)			
*=iλǎV 'thin'	*=iλĩV	*rial		*tharé- ?
*ŁwěV 'fence'	*ŁwěV	*rāl		
*ŁVIV 'neighbour'	*ŁōV	*rħ		
*ŁěV 'war'	*ŁěV	*rāl		
*λwVłV	*λwěłě	*T-rħ	*ʔułl (~x-, j-)	
'mould, dust'				

A similar example is

PSC	PNC	PST	Bur
*λwōri 'wheel, roll'	*λwīri	*r[ua]ł	*-ltál-

Here the Bur. and PST form go back to *λwōli — apparently a result of early assimilation < *λwōri.

For individual PSC lateral affricates cf.:

*λ

PSC	PNC	PST	PY	Bur
*ʔrVnλV 'six'	*ʔrānλE	*rūk	*ʔa(?)χV	
*HérλwV 'metal'	*riλ(w)e		*ʔe(?)χV (~h-)	
*λHībV 'wind'	*λHībV		*ʔipV (~x-, j-)	
*mfāā 'foot, hoof'	*mfāā	Tib. r-mig		
*Hλi[l]V 'jaw, gills'	*HλəlV		*jíl- (~x-, ʔ-)	
*rħāλwV 'liquid'	*rħāλwV	*rjıak	*róq- (~-χ-)	*diltar
*λwĩnʔi 'belly'	*λwĩnʔi	*lūm		
*Hλwəŋwā 'wind'	*Hλwĩmā	*luan		
*ʔlēā 'night'	*ʔlēā	*rjāk		
*=āλwVn 'match'	*=āλwVn	*T-lōm		
*λājV 'time, season'	*λājV	*lǎH		*jult
*jālλwV 'shovel'	*jāl[l]λwV	*jok		
*=ōλĚ 'laugh'	*=ōλĚ	*T-lāw		
*λHwémV 'liquid'	*λHwemV	*liəm		*tam
*λwĩrV 'horn'	*λwĩrV			*-ltúr
*=eλú 'hear'	*=eλu			*-jal-
*=VλV 'pierce'	*=VλV	*(T)le-n,-ŋ		*-l-

The medial combination *-rλ- apparently yields *-r- in PY, cf.:

PSC	PNC	PST	PY	Bur
*wHōrλwV́V 'snake'	*wHōrλwV́V	*Prūl (~ł)	*?urol (~x-)	*tul
*mārλwÁ 'cloud'	*mārλwǺ	*mūk	*pV(?)r	

*Ł

PSC	PNC	PST	PY	Bur
*xqōnŁV́	*qHōnŁV	*k(h)āk		
'spade, fork'				
*ŁańV́ 'soot, coal'	*ŁańV	*T-lā		
*HiŁV́ 'say'	*HiŁV	*lō	*?V(?)l- (~-r₁)	*lte-
*bHV́Łi 'child'	*bHǺŁi	*pōk	*pV(?)l- (~-ŕ-, -r₁-)	
*ćāŁwV́ 'blood, red'	*ćāŁwV	*cāk (~ć-)	*sur	
*liwŁĚ 'male, penis'	*liwŁĚ	*lik		*lei, *lal
*ŁVmV	*=ōmŁV	*lomH		*-ltá-
'put on (shoes)'				
*=V́nŁe '2/4/8'	*b-ūnŁe	*p-līj		*alto
*bV́rŁVnē 'frame'	*bV́rŁVmē	*T-lǽŋH		
*ŁēmV 'bridge, road'	*ŁēmV	*lōm		
*?iŁV 'look'	*?iŁV	*T-lō(H)	*?V(?)l- (~-r₁)	*'ltV-r-
*=írŁV	*=iraŁV	*T-lōw		*-úl
'stomach, belly'				
*rVŁV́ 'thresh'	*=V́rŁV			*daltán-
*HŁwVnV́ 'hem'	*HŁünV			*lámát
*HárŁāpV	*HārŁāpV			*ltópo,
'a k. of food'				*tultópo
*=e(r)ŁwV́r-	*=i(r)ŁwVr	*T-lól	*?a(?)r(u) (~x-)	
'deceive'				

*λ

PSC	PNC	PST	PY	Bur
*=ěλĚ 'middle, half'	*=ěλĚ	*T-lāj	*?a?l	
*λānpV́	*λānpV	*T-lep	*?alVp	
'tongue, lick'			(~-ĺ-, -r₁-, -b)	
*=VλV́(ŋ)	*=VλV	*IVŋ	*?alVŋ (~x-)	*w-él- /
'wear, clothing'				*b-él-

PSC	PNC	PST	PY	Bur
=ǫǻV̄	*bǔǻV̄		*ʔul̄- (~x-)	*bal-
'upper part, handle'	(~ w-)			
*fréǻwě 'bone, rib'	*fréǻwě	*rāŋ / *rāk	*ʔu(ʔ)laʒ	
*=VǻV 'copulate'	*=üǻV	*(T)le		*beʔl (~w-, -r)
*=VnǻV 'all'	*=VnǻV	*T-lǻ-ŋ	*biʔl̄-	
*ǻ[ǰ]V̄ 'flat, slab'	*ǻǧp̄V̄	*T-lēp	*j[e]ʔp	*tápi
*ǻǧpí 'leaf'	*ǻǧpi	*lǧp	*jōpe	*ltap
*[g]alǻwV	*kǧl̄wV̄		*kūle(P)	
'chin, beard'	(~ǻw-)			
*bhV̄rǻV 'intestines'	*bh̄rǻV	*Pik	*piʔil̄	*bal
*HérǻwV	*j̄erǻwV	*rāk		
'bind, girdle'				
*rV̄ǻǧ 'flesh, intestines'	*rǧǻǧ	*rək	*rēli (~ -r-)	*'-dal ?
*=iwǻǧ 'die'	*=iwǻǧ	OC *ǻij		*'-l-
*wěǻV̄ 'head'	*wěǻV	*lǻH		*-múltur ?
*ǻwǧrHV̄ 'leaf'	*ǻw̄rHV	*T-lā(k)		
*ǻa 'up, above'	*ǻa	*lǧ		*d-al
*rēǻwV̄ 'cloud, rain'	*rēǻwV̄	*rēŋ		*harált
*femǻǧ 'dream'	*femǻǧ	*mǧŋ (/ *mǧk)		*-wél-ǧi
*wHārǻwǧ 'pig'	*wHārǻwǧ	*wǧk		
*ǻúlHV 'arm'	*ǻulHV	*T-lǻH		*-ltáltar (< *ltalar)
*=VmǻV 'come, go'	*=VmǻV	*T-lǧ(H)		*-ltá-
*bhǧǻwí 'cattle'	*bhǧǻwí	*Pǧk		*bélis
*ǻV̄xkV̄ 'shed'	*ǻV̄xV̄	*T-lǧk	ʔiʔ(G) (~ x-, j-)	
*=ǧǻwV̄ 'sing'	*=ǧǻwV̄	*lō		
*ʔíǻV 'run'	*ʔiǻV	*T-lǧj(H)		(hulǧá-?)
*bǧlǻV 'house'	*bǧlǻV			*baltí
*ǻeǻ(w)é 'a bird'	*ǻeǻē	*T-lēk ^w		*tal
*ʔwēǻV̄ 'grass, weed'	*ʔwēǻV̄	*l[ǧ]wH		
*ǻǧǻxwV 'stone'	*ǻǧǻxwV	*T-liāŋ / *T-liāk		
*nHǧǻwV̄ 'dark, blue'	*nHǧǻwV̄	*nək		
*=érǻV 'plough'	*=ērǻV	*liəH		
*ǻícV 'leech, snake'	*ǻećV	*lit		
*ǻwěǻxV 'pus'	*ǻwě[n]xV	*liŋ (~-aiŋ)		

PSC	PNC	PST	PY	Bur
* $\lambda_{\text{əŋ}}\text{?w}\check{V}$ 'roof, top'	* $\lambda_{\text{əm}}\text{?}\check{V}$	*T-lăŋ		
* $\lambda_{\text{hwáxk}}V$ 'stick'	* $\lambda_{\text{hwā}}\chi V$	*T-lăk		*tay
* $\lambda_{\text{wíē}}$ 'saddle'	* $\lambda_{\text{wíē}}$			*ltVl-
* $\lambda_{\text{wVn}}\text{?}V$ 'ankle, shin'	* $\lambda_{\text{wVn}}\text{?}V$	*ləŋ		*-ltén
* $H\lambda_{\text{äl}}\check{V}$ 'liver, belly'	* $H\lambda_{\text{äl}}V$			*tal
*[m] $\check{h}\lambda_{\text{V}}$	* $\check{h}\lambda_{\text{V}}$			*maltás
'milk, butter'				
* $H\check{V}\lambda_{\text{w}}V$	* $H\check{a}\lambda_{\text{w}}V$			*-híl
'edge, forehead'				
* $H\lambda_{\text{wēn}}\check{V}$ '(last) year'	* $H\lambda_{\text{wīn}}\bar{V}$			*téne
*(x) $G\check{H}\lambda_{\text{w}}V$ 'sack'	* $G\check{H}\lambda_{\text{w}}V$			*qhVltá
*= $\check{V}\lambda_{\text{V}}\eta$ 'wash'	*= $V\lambda_{\text{Vn}}$	*T-lēŋ		*-hált-
* $\text{?}V\lambda_{\text{w}}\check{V}$ 'last year'	* $\text{?}V\lambda_{\text{w}}V$			*él-den
* $\lambda_{\text{ă}}\text{tú}$ 'rock'	* $\lambda_{\text{ă}}\text{tú}$			*talí

B. Fricatives

* λ

PSC * λ in PY and Burushaski behaves very similarly to *- λ - (in a couple of cases Burushaski has here a reflex -ld-, unattested elsewhere). The ST reflexes are also similar, but in syllable-final position it has not *-k, but *-l (the examples, however, are very few). Cf.:

PSC	PNC	PST	PY	Bur
*= $\check{V}\lambda_{\text{w}}\check{V}$ 'rest, quiet'	*= $u\lambda_{\text{w}}V$	*l[ij]		* $\lambda_{\text{a}}\text{?l-bət}$
* $\lambda(w)\check{r}\text{-d}V$ 'woman'	* $\lambda(w)\check{r}\text{-d}V$		* $\lambda_{\text{alit}}(\sim\text{-}\acute{r}\text{-})$	
*= $\check{a}[r]\lambda_{\text{w}}\check{A}$	*= $\check{a}[r]\lambda_{\text{w}}\check{A}$	*jəl; *ljw	* $\lambda_{\text{u}}\text{?ul}$	*ltú-r-
'smooth, even'				
*= $\check{V}\lambda_{\text{w}}V\eta$ 'semen, roe'	*= $V\lambda_{\text{w}}Vn$		* $\lambda_{\text{e}}\text{?}\eta$ / * $\lambda_{\text{o}}\text{?}\eta$	* $\lambda_{\text{t}}\eta\acute{\text{a}}n$
* $\lambda_{\text{w}}\check{r}\text{?}\check{V}$ 'wind, blow'	* $\lambda_{\text{w}}\check{r}\text{?}V$	*lij	* $\lambda_{\text{ul}}\text{-}(\sim\text{?-,x-})$	
* $\lambda_{\text{ě}}\text{h}V$ 'foot'	* $\lambda_{\text{ě}}\text{h}V$	*la		
* $\lambda_{\text{w}}\check{r}\text{?}wV$ 'millet, rice'	* $\lambda_{\text{w}}\check{r}\text{?}wV$	*līwH		
* $w_{\text{ēn}}\lambda_{\text{w}}\check{e}$ 'luck, joy'	* $w_{\text{ēn}}\lambda_{\text{w}}\check{e}$	* $\lambda_{\text{i}}\acute{\text{a}}\check{t}$		*míl- ?
* $\lambda_{\text{w}}\text{irdi}$ 'manure'	* $\lambda_{\text{w}}\text{irdi}$	*lĩt		
* $\lambda_{\text{á}}\eta\acute{\text{a}}$ 'bottom'	* $\lambda_{\text{anā}}$	*lăŋ		*táno
* $\lambda_{\text{w}}\eta\text{d}V$ 'a tree'	* $\lambda_{\text{wind}}V$	*lăŋ		
* $\lambda_{\text{ir}}\lambda_{\text{w}}V$ 'male'	* $\lambda_{\text{ir}}\lambda_{\text{w}}V$	*laH	* $u(\text{?})\text{l-}$	
*= $\check{a}\lambda V$ 'liquid, wet'	*= $\check{a}\lambda V\text{-r}$	*lāj		*-híl-

*čīnλV 'fat'	*čēnλV	*Cil	
*=ēwλV̇	*=ēwλ(w)V	*T-lāj	*dáldal-
'open wide, extend'			
*dílλwV 'dust, cloud'	*dilλwV		*duldúm
*-āλwE 'whet'	*?āλwE	*bál-dan	
*λwVnV 'plait, wind'	*=VλwE(n)	*lām	

C. Resonants

For PNC we reconstruct two lateral resonants: *l and *ɭ; the latter was presumably more velar and thus yields a uniform reflex l in all NC languages. The former was probably more fronted and is preserved as l in some languages, but yields r in others. The two resonants are neutralized in clusters with following consonants (only *-lC- is reconstructed) and in the Auslaut of verbal stems (only *-l is reconstructed).

In Yenisseian and Burushaski the distinction between *ɭ and *l was apparently lost. Burushaski has l in all cases. Yenisseian reflects both *ɭ and *l as *d- in initial position (*de-s, *de?G, *do?q), but as *l elsewhere. As shown in CCE..., clusters of the type *lH / *ɭH yield *r or *r₁ in PY. In PST the PNC *l rather uniformly (in cases other than *-lH > -0, see above) corresponds to *r, as opposed to *ɭ corresponding to *l/*ɭ. The PST and PNC data thus allow to reconstruct the distinction between *l and *ɭ for PST as well. However, the origin of the PY distinction *r — *r₁ and the PST distinction *-l — *-ɭ stays so far unclear and must be attributed to some (yet unknown) internal reasons.

*l

PSC	PNC	PST	PY	Bur
*=í?wVl 'eat'	*=i?wVɭ	*q(h) ^w iǎr	*?ir- (~ x-) ⁵	
*=Hóžǎl 'press'	*=Hožǎɭ	*'cer		*žal
*?wíl?i 'eye'	*?wíl?i		*de-s	*'l-čí, *il-
*kwíl?i	*kwíl?i	*Kru		
'hand, elbow'				
*cōjwílĥV	*cōjwílĥV		*sir ₁ -	
'rainy season'				
*xqwVl?i	*qıl?i	*kh ^w ēr		*galgí
'elbow, hand'				

⁵ Probably reflecting a contracted *=il?wV.

PSC	PNC	PST	PY	Bur
*mǝfwVIŨ	*mǝfwVIŨ	*mūr		
'tip, mouth'				
*tǝwēlʔe (~ -ʔ-)	*tǝwēlʔe	*Tur		
'stick'				
*lāsweĚ 'long, hair'	*lāsweĚ	*rǝj		
*ʔlēĤă 'night'	*ʔlēĤă	*rǝĵăk		
*Hlōšwē 'hundred'	*Hlōšwē	*rǝĵă	*ʔalVs-	
*xqǝlŨ 'house'	*qǝlŨ	*krā (~ g-)		
*lerǝwe 'pit, ravine'	*lerǝwe	*rōt		
*hǎlVhV 'weak'	*hǎlVhV	*rōj	*ʔēl (~x-, -r)	
*ʔwǝlV	*ʔwǝlV	*rǝw	*ʔol (~x-)	*-úl-kiş
'hole, grave'				
*HǎĤ[Ĥ]V 'jaw, gills'	*HǎĤǝlV (~-ǝ-)		*jiĤ- (~x-, ʔ-)	
*xkōlʔV 'male'	*ĤōlʔV (~ -ʔ-)		*qǝĤiŋ (~Ĥ-, -r-)	*wal

*Ĥ

PSC	PNC	PST	PY	Bur
*hVIʔV	*h[ǎ]Ĥa	*lǎ	*ʔirǝ- (~x-)	
'breath, spirit'	(~ -ʔ-, -e)			
*phǝĤŨ 'a k. of tree'	*phǝlV	*bhǝl (~-ī-)	*ʔipVl	*phel-c
	(~-ŋ-, -Ĥ-, -ī-)			
*jǝŨŨV 'branch'	*ĵǝĤŨV	*jǝl	*ʔuʔlan	
			(~ x-, j-)	
*wHōrǎwŨŨV	*wHōrǎwŨŨV	*P-rǝl (~-Ĥ)	*ʔurol	*tul
'snake'				
*ĤĤéqwǎ	*ĤĤiqwǎ (~ Ĥ-)	*lǎk / *lǎŋ	*dVʔG-	
'a big bird'				
*lŨqV (~ -G-)	'pool' PL *laq:Ũʷ	*lǎk	*deʔG	*láquc
*xqǝĤŨŨ	*qǝĤŨV (~ -ŋ-)		*gV(ʔ)re	
'a k. of weed'				
*xGHwŨŨŨ 'crow'	*GHwŨŨŨ		*kǝla	
*GwǎĤhó	*GwǎĤho	*GǝwH	*qǝ(ʔ)r- (Ĥ-)	*yul
'angry, quarrel'		(*Gh-)		
*xgǎĤŨ 'tickle'	*gǎĤV (~ -Ĥ-)	*kV-liH	*qol- / *qǝĤ-	
*GwŨlǝ 'side; half'	*Gw[Ũ]lǝ (~-ǝ)		*Ĥolab	
*ĤwLĚ	*ĤwLĚ	*lǝk		*lei, *lal
'male (organ)'				

PSC	PNC	PST	PY	Bur
*HloL̄V̄ 'arm, wing'	*HhuL̄V̄	*lǎk		
*HiX̄IwV-ĪV̄	*HiX̄IwV-ĪV̄	*t-riał		
'root; village'				
*lěʔwni 'skin'	*lěʔwni (~ʔ-)	*lU		
*ŁwěIV̄ 'fence'	*ŁwěIV̄	*rāl		
*lǎw(x)qV̄ 'many'	*lǎwqV̄	*lǒk		
*b̄imĪV̄ 'foot'	*b̄imĪV̄	*phǎl	*bul	*búmbal-
*b̄āh̄h̄ō (~ə) 'edge'	*b̄āh̄h̄ō (~ə)	*phǎH (~bh-)		*bal
*čǎIV̄ 'tree, wood'	*čǎIV̄	*Cal (~ə-)		*sulú
*kīfū 'village'	*kīfū (~k-)	*g(h)ual		
*lamV̄ 'tongue, lick'	*lamV̄	*lem		
*ŁěĪV̄ 'war'	*ŁěĪV̄	*rāl		
*HémqV̄	*HimqV̄	*liǎk		
'shame, fright'				
*św̄V̄HV̄	*śwōł(H)V̄		*daʔr₁	*şuli
'tube, vein'				
*xķwěĪV̄	*hķwěĪV̄	*Kal	*χol	
'palate, cheek'				
*xGwǎłǎ 'wild goat'	*Gwǎłǎ	*k(h)il		*kil
*χV̄IHé	*χěIHe		*xire	
'hand, sleeve'				
*Xwīlē 'saddle'	*Xwīlē			*ItVl-
*p̄VhV̄IV̄ 'feather'	*p̄VhV̄IV̄			*phol-
*ǰǎłhī	*ǰǎłhī			*ǰal- / *ǰal-
'mane, long hair'				
*šełǎ 'dung'	*siłǎ	*C-lijH (?)		*del-k
*q̄wǎłV̄ 'bark, skin'	*q̄wǎłV̄			*YVl
*ĪV̄xGwV̄	*HVĪGwV̄(l)	*lǎk		*doʔq
'to swallow'				(~ -χ) *lik

All languages may display occasional dissimilations or assimilations when -l- (-ł-) is following or preceding a lateral consonant, cf.

PSC	PNC	PST	PY	Bur
*Xw̄V̄ĪV̄ 'mould, dust'	*XwěĪV̄	*T-rǎł	*ʔuʔl (~x-, j-)	
*λw̄ĪV̄ 'wind, blow'	*λwěĪV̄	*lūj	*juł- (~ʔ-, x-)	
*=iX̄ǎĪV̄ 'thin'	*=iX̄ǎĪV̄	*ral		*tharé-
*l̄h̄imL̄w̄i 'earth, field'	*l̄h̄emL̄w̄i	*līŋ		

We should also note that this context is the only one where PSC *l quite regularly yields PST *l (*ř) and not *r: beside *=iǰǎlV̄ > *ral cf. also *Lǔli > *roǎH, *LǔVIV > *rǎ: this is hardly surprising because the otherwise expected sequence *rVr is not allowed in Proto-Sino-Tibetan.

Behaviour of *-l- in medial clusters.

Just as in the case with *-r-, medial *-l- is normally lost everywhere except PNC:

PSC	PNC	PST	PY	Bur
*HVLqV̄ 'rot'	*HVLqV		*ʔaqV	
*hǎlsV 'feather, wool'	*hǎlsV		*ʔV̄si	
*kwǎltV 'intestine, fat'	*kwǎltV		*giʔd	*giṭ
*GHǎlGī 'dirt, dung'	*GHǎlGī	*qjāk	*qoʔq (~χ)	
	(~ -e)	/ *qjān		
*[g]alǰwV 'chin; beard'	*kalǰwV̄		*kulé(P)	
	(~ -ǰw-)			
*bilǰV̄ 'hair'	*bilǰV		*pis	*biś-ké
*šV̄lxkwV 'heel, hoof'	*šǎlkwV		*sa(ʔ)G-Vʒ	*šoq
*xqǎlqī 'wood'	*qǎleqī		*xaʔq	*qháqhar
*hw[ǎ]lsǎ 'stick, fork'	*hwǎlsǎ		*ʔiʔs (~x-)	
*kǎ[l]kV 'joint; leg'	*kǎ[l]kV	*kǎn / *kǎk	*gVg-	
*mǎlcwV 'blow, wind'	*mǎlcwV	*mūt		
*čV̄[l]xkwV 'foot'	*čV̄[l]kwV	OC *ćok	*-čiG	*-sóyūn
*ʔw[ǎ]lxqwě	*ʔwǎlqwě	*yōk	*ʔiʔ(G) (~x-)	*ha[k]
'roof, house'	(~ h-, -ǎ)			/ *jak
*jalxkV 'scrape, grind'	*jalχa(-nV)	*jak (-e-)		
*jǎlwV 'shovel, ladle'	*jǎ[l]lwV	*jok		
*GHwǎlcV̄ 'stick, pole'	*GHwǎlcV		*xus(V)	
*čalq̄wV̄ 'chew'	*čalk̄wV-/	Tib. čag čag		*čaq
	*čalq̄wV-			
*čHǎlx(k)V (~ č-)	*čHa[l]χV			*šiqá-
'an insect'	(~ č-)			
*=i[l]čwǎ 'to dry'	*=i[l]čwǎ			*huy-
*ṭHǎlq̄wV 'hoof'	*ṭHǎlq̄wV	*dēk		

In ST there are also several cases of "non-disappearing" *-l- (regular in clusters with fricatives):

PSC	PNC	PST	PY
*ŋwálšV̄ 'face'	*malšwV	*ŋār	*bV(?)sVÍ (~č-)
*bōlcĒ 'fence'	*bōlcĒ	*pāl	
*pílχwV 'manure'	*pilχwV	*bhŷr	

Again, as in the case with *-r-, there are several cases of *CVICV > *CIVC (*CrVC) development in PST:

PSC	PNC	PST	PY	Bur
*mēlčī 'tongue'	*mēlčī	*m-lāt/ *m-lāj		*-jú-mus
*mh[ě]lxq̄wV̄ 'root, stump'	*mhēlq̄wV	*mrēk	*bāk-	
*bōlcwī 'millet, rice'	*bōlcwī	*phrē(s)		*bay
*mēlžV 'place, earth'	*mēlžV	*m-laj		
*xkəlčwī 'forelock, hair'	*kəlčwi	(? *khaj >) *khāj		*yuy

Note a peculiar development of affricates in these cases in ST: instead of yielding the regular *-t-, they tend to yield *-j- or disappear.

Finally, in Yenisseian and Burushaski there are some scattered cases of preserving *-l- or substituting it by *-r- or *-n-, cf.:

PSC	PNC	PY	Bur
*xkħəlčV̄ 'genitalia'	*kħəlčV (~č)	*gV(?)ns- (~G-)	*qhaś-
*gwə[lk]wə 'round object, scull'	*gwi[l]gwə	*k[ə]fga (~g-)	
*ʔwəlgī 'lamb, kid'	*ʔwilgi		*hālgit
*ʔilčwī 'nine'	*ʔilčwi		*hunćó
*mfhw[ī]lči 'face, cheek'	*mfhwīlči	*binč-	*melč

9. Uvular affricates and fricatives

Uvular consonants are well attested in NC, Yenisseian and Burushaski, and can be reconstructed for PST on indirect evidence (correspondences between velar consonants and h-/0-). The following uvular consonants can be reconstructed for PSC:

Uvular affricates.

Three uvular affricates (stops) — *q, *q̄ and *G — are well established for PNC. In a large number of cases they correspond well to uvulars in other languages. Burushaski reflects them as q(h) or γ, with a distribution

so far unclear (note that q and qh are even synchronically often in variation in Burushaski). PY usually has q- initially and q or G medially, with two exceptions: initial G- and labialized q̣w seem to be fairly regularly reflected as a fricative χ or x.

In ST the reconstruction of particular uvulars is not quite certain (because, as said above, they are absent in modern languages), and additionally obscured by voice alternations. In initial position we see that *q- is reflected as PST *qh- or *G-; *G- — as *q- or *qh-; *q̣- — as *q- or *Gh-. This would suggest that within ST the reconstruction of *qh- should be changed to *q-, and vice versa: in this case the reflexes of uvulars would be quite symmetrical to the reflexes of velars (*k- > *k-, *g- > *k-, *ḳ- > *kh-, gh-). This question still requires additional investigation, so by now we keep the old reconstructions intact. Word-finally all uvulars are rendered as *-k.

A. *q

PSC	PNC	PY	PST	Bur
*Hēnq̣wV̄ 'meadow'	*Hēnq̣wV	*ʔoGV		
*čV̄q̣V̄ 'head'	WC *Sq̣la	*c[i]ʔG-		*-čáyanes
*IHēq̣wĀ	*IHiq̣wĀ	*dVʔG-	*lǎk / *lǎŋ	
'a k. of bird'				
*níq̣wē 'chaff; rush'	*nēq̣wē	*dVʔq̣Vn (/-χ-)	*nēk ^w	*nayéci
*bŋóq̣wV	*bŋōq̣wV	*poʔq̣	*phāk	*bayéiŋ
'dirt, dung'				
*ʔǎq̣wV	*ʔǎwq̣V	*qǎʔi	*[qh ^w]i	*qhū
'mountain'				
*qwāpā 'vessel'	*q̣wāpā	*qǎʔp (~-b)	OC *khāp	
*q̣V̄ŋhē 'a k. of bird'	*q̣ŋhē / *q̣ŋmhē	*qāŋa	*q(h) ^w a (~ʔ ^w -)	*yám-
*=ilq̣wV 'die'	*=ilq̣wV-	*q̣-	*k ^w ŋ (~ g ^w -, q ^w -, G ^w -)	*ya-n-
*qwǎnV̄ 'woman'	*qwǎnV	*qVm- (~χ-)		*yen-
*dHáq̣wĀ	*dHāq̣wĀ	*tuGV (~ -ū-)	*tūk	
'nape; back'				
*čHēq̣wV̄ 'thick, big'	*čHēq̣wV		*čök (~ ǰ-)	*sóq-
*=éq̣wĀ 'yellow'	*=éq̣wĀ		*qh ^w ā (-ŋ)	
*qwǎrV̄	*qwǎrV̄		*Qa	*-yári-kiş
'field, earth'				

PSC	PNC	PY	PST	Bur
*qārṗV 'coat, shell'	*qārṗV		*qrāp	*yupa- ?
*qwétV 'dirt'	*q̣wītV		*y ^w āt	
*HārqaÁ 'smear, rub'	*Hārqa	*ʔo(ʔ)q- (~x-, -ɔ-)		
*qwVrē 'fallow'	*qwVrē		*Q ^w ir	
*HīrqwVr 'wound'	*HīrqwVr	*qōr- (~x-, -rɪ-)		
*qwēṭi 'palate, mouth'	*qwēṭi			*-qhát
*ʔēnīrqwī 'cave'	*ʔēnīrqwī		*nīk	*nayár
*pérqwÁ 'a fruit'	*pīrqwÁ			*phaqís

B. G

PSC	PNC	PY	PST	Bur
*=ṼGwV 'thick, dense'	*=ǎGwV	*ha(ʔ)GVí	OC *gōʔ	*d-aýán-
*GHǎlGī 'dirt, dung'	*GHǎlGī	*qoʔq (~χ)	*qjāk / *qjāṇ	
*[G]wṼnGwṼ 'neck'	*GwVnGwV	*kə(ʔ)qənt-	*qiāṇ	*qoqó
*Gwǎlḥó 'anger, quarrel'	*Gwǎlḥo	*qə(ʔ)r- (χ-)	*GēwH (*Gh-)	*yul
*=HäGwṼn 'tremble, fear'	*=HäGwVn	*qin- (~χ-)	*[kh]ömh	
*=HīGÁ 'ice, freeze'	*=HīGĀ	*qo (~χ-)	*Kja(j)H	
*Gwǎ[t]Ṽ 'way, road'	*GwǎtV	*qoʔt (~χ-)		
*GwVmṼ 'small'	*=HimGwV	*qomat- (~χ-, -ɔ-)		
*=aGwṼṇ 'lose'	*=aGwV(n)	*qon- (~χ-)	*kjun (~ g-, q-, G-, -o-)	
*dṼG(w)V 'cock'	*dṼG(w)V	*tōq	*dhön ?	
*=ǔGwṼ 'rain'	*=ǔGwV	*xur	*qh ^w ǎH	*qhuró-
*GwVḥó 'side, half'	*Gw[ǔ]ḥo	*χɔlab		
*Gě(GV)bṼ 'a k. of bird'	*GěGVbV	*χupi		
*GwērV 'stone'	*GwērV	*Kar		*qhor-
*ʔinGwV 'shin, thigh'	*ʔinGwṼ			*-ýán
*GwímṼ 'house'	*GwinṼ		*qīm (~ *q ^w īm)	
*Gwřṛí 'stalk'	*Gwřṛi		*q ^w rā	*qherí

PSC	PNC	PY	PST	Bur
*Gwǎnmē 'heap'	*Gwǎnmē		*q(h) ^w V̄ŋ (~Y ^w -)	
*HirGwǎ 'to steal'	*HirGwǎ		*qhō	*yé-
*GHwǎlcV̄ 'stick, pole'	*GHwǎlcV̄	*xus(V)		
*Gwōrʔe 'badger, hare'	*Gwōrʔe		*qh ^w ār (~*G ^w -)	
*GwHṼbV̄ 'top, heap'	*GwHṼbV̄	*χ[o]p		
*[st]VGṼrV̄ 'shed'	*cVGṼrV̄			*cháɣur
*mēwGV 'a berry'	*niwGV	*pVKV		*mayar-

C. *q̇

PSC	PNC	PY	PST	Bur
*HṼlq̇V̄ 'rot, pus'	*HṼlq̇V̄	*ʔaqV̄		
*bhǎnq̇V̄ 'log, pole'	*bhǎnq̇V̄	*pēq-	*p(h)ǎŋ	*-pháɣo
*múq̇V̄ 'handful, mitten'	*mǒq̇V̄	*bɔq-	*muk	
*=HṼmq̇V̄ 'to divide'	*=Hīm̄q̇V̄	*d-ɔ(ʔ)q (~ -ɔ-)	*khě- (~ gh-, qh-, Gh-)	
*q̇fhwǎt̪i 'pass'	*q̇fhwǎt̪i		*q ^w ǎt	
*qém[t̪]V̄ 'trap'	*q̇wimt̪V̄	*qa(ʔ)tVn	*k(h)ǎm (~G(h)-, -ǎm)	
*HVq̇wV̄ 'foreign'	*HVq̇wV̄	*qoʔoj (~χ-, -G-, -χ-)	*waj (~ Q ^w -)	
*qār̄q̇V̄ 'star'		*q̄q̄a	*q(h)ār (s-)	
*st̪iq̇V̄ 'sharp, scrape'	*çəq̇V̄	*t[i](ʔ)qəʒ-	*ch̄ik ^w	
*HVq̇Vr- 'wet, soak'	*HVq̇Vr		*G(h)ör (~ χ-, ɣ-)	
*h̄Vr̄q̇wǎ 'wide'	*h̄ǎr̄q̇(w)ǎ	*χiGV̄ (~ *χiχV̄)	*q ^w ǎŋH	
*q̇HápE 'cover, top'	*q̇HápE	*qepVn-(~χ-)	*Gāp	
*ʒǎq̇wV̄ 'small bird'	*ʒǎq̇wV̄		*čěk ^w	
*q̇ǎçV̄ 'piece, slice'	*q̇ǎç̄i		*qāt (?)	*qes- / *qhes-
*=Hār̄q̇Vn 'to see'	*=Hār̄q̇V(n)		*qēn	*-ɣán
*=aq̇V̄l̄ 'shake'	*=aq̇V̄l̄		*G(h)ōl	
*q̇Hwǎç̄i 'hole, dig'	*q̇Hwǎç̄i		*q̄iʒ- (~χ-)	*quś

*qəmŋō 'box, vessel'	*qəmŋō	*kam(a) (~ q-, h-)	*q(h)əm
*=əq̣wVn 'be sufficient'	*=əq̣wVn		*Qōm (~ -ū-)
*q̣wīndə 'garden, fence'	*q̣wīndə		*Gh ^w ān
*q̣HwōšwV 'ankle, cubit'	*q̣HwōšwV		*qaš
*q̣wāŋV 'bark, skin'	*q̣wāŋV		*γVl
*q̣wŋrV 'to break'	*=irq̣wĒ(r)		*qhar-
*q̣wŋnV 'crop, neck'	*q̣winV		*qhun
*q̣wətV 'top (of plant)'	*q̣wətV		*qhótal
*q̣ŋr[H]V 'a relative'	*q̣ar[H]V	*qār(ı)- (~χ-)	*K ^w rij (~ *Kruj)
*q̣HwŋVIV (~-l-) 'hoof; ankle'	*q̣HwVIV (~-l-)	*χɔ(?)IV- -[č]iG	*-rék ? (with unclear -k)
*darq̣ ^w V 'otter; weasel'	*darq̣ ^w V	*täχVr	

Uvular fricatives.

A. *χ

Uvular *χ is reflected in ST as χ- or γ- initially, and 0 (-H) finally; PY has χ or x, and Burushaski — h.

PSC	PNC	PST	PY	Bur
*χónV 'trap, net'	*χōnV	*χānH	*ʔuʔun (~x-, -G-, -χ-)	
*χwəmpV 'swallow'	*χwim(V)pV	*χāp	*ʔop- (~ x-, -b)	*hūp
*dwīχí 'snow'	*dwīχi		*tiχ	
*hāχÉ 'big'	*hāχE		*χ[e]-	
*χŋ[n]HV 'dark'	PL *χI:an:	*γVm(H)	*χoʔn-	
*wHénχe 'udder, nipple'	*wHenχe	*nōH		*boŋ
*χənkī 'a meat dish'	*χīnkī	*χāŋ		
*dwī(r)χE 'son, child'	*dwirχE	*t(h)u		
*ʔilχU 'sheep, lamb'	*ʔilχU	*lō		
*pHāχV 'dust'	*pHāχV	*pōwH		
*wēχU 'grass, reed'	*wēχU	*wā		
*=irχwVŋ 'wind, spin'	*=irχwVn	*γ ^w ēŋ		

PSC	PNC	PST	PY	Bur
*=irχwVr 'rejoice'	*=irχwVr	*[χ ^w]ār(H)		
*χwVrV 'saw, to saw'	*ʔirχwV			*haríçi
*HarχÚ 'speak, shout'	*HarχU	*χ ^w V	*huxV-	*ha-n-
*mōwχē 'long hair'	*mōwχē	*māw(H)		

We should note that labialized *χ^w- is rare in PST and rather frequently we see *q(h)^w- in the same row of correspondences. This is either a result of *k-prefixation (*k-χ- > *q(h)^w-), or, perhaps a shortcoming of the PST reconstruction (the distinction between *χ^w- and *qh^w- may be not well enough performed). Cf.

PSC	PNC	PST	PY	Bur
*χHwǵje 'dog'	*χHwěje	*qh ^w ij	*ʔiʔi-n (~x-, -G-, -χ-)	*hu-k
*χwǵmṭi 'sharp stick'	*χwǵmṭi	*q(h) ^w it (~ʔ ^w -)		
*χwōrhV 'village'	*χwōrhV	*qh ^w ǵ	*χuʔ	
*χHontV 'belly'	*χHontV	*Q ^w (r)it		

B. *ɣ

Uvular *ɣ, like other voiced fricatives, is a rather rare phoneme. In ST it is reflected as G- or q- initially, and as -0 (-w, -j) finally; in PY as χ or G. Burushaski has unsecure reflexes: 0 or ɣ (but in gun-c also g-?).

PSC	PNC	PST	PY	Bur
*=ǵwV 'smear, dirty'	*=ǵwV	*G ^w ā		
*=aɣV 'send'	*=aɣV		*ʔeχV-ǵ-	
*mēɣV 'tail'	*mēɣV	*m(r)ǵjH	*puGVǵ	
*ɣwenV 'day'	*ɣwēmdV		*χōŋ	*gunc ?
*ɣwVrV 'turn'	*=irɣwV	*q ^w iǵr		*-úr-
*kHōɣV 'hedgehog'	*kHūɣV	*k(h)āw		
*čāmɣá 'crow'	*čāmɣā			*čhayé(n)

Special clusters.

Besides the correspondences dealt with above, Sino-Caucasian languages reveal also three special sets of correspondences for which we tentatively reconstruct clusters of the type "fricative + stop". Among North Caucasian languages such clusters (like sṭ, χk) are typical for Nakh languages. The similarity, however, appears only typological — since, as shown in

NCED, Nakh clusters are secondary developments of NC affricates in specific positions. It cannot be excluded that the development of this type of clusters in Nakh (as well as analogous "homorganic" clusters in Hurro-Urartian and Kartvelian) may be due to some archaic Sino-Caucasian substratum in the region of South-Eastern Caucasus.

1. *Clusters of the "st"-type.*

All clusters of this type are reflected as front affricates in PNC and ST, but as *t in Yenisseian. Burushaski normally reflects them as c(h), with a usual occasional retroflexization (ç(h)). Note that the reflex *c occurs in Burushaski only as a reflex of the *st-clusters; normal front affricates always yield Burushaski fricatives (s ~ ş), see above.

A. *st

PSC	PNC	PST	PY	Bur
*bVstV 'knee'	*b[ə]çV	*püt(-s)	*ba(?)t-	*bácín
*jVstwĚ 'mouse'	*jVcwĚ	*jű(s) ?	*jűta	
*=ėrstĀ 'heat, singe'	*=ėrcĀ	*cha		*'-ci-
*stVGVRV 'shed'	*cVGVRV			*cháyur
*HistwV 'place'	*jicwə	*chāj	*ʔut-	
*wōsté 'mound'	*wīce			*bac
*nĚstV 'aunt, uncle'	*nĚçV			*'-ncu
*ʔVrstV 'stick'	*ʔircV			*hurç
*stwākV 'a shoe'	*çwākV	OC *siak	*tāk-	

B. *st̥

PSC	PNC	PST	PY	Bur
*ʔVnstwā 'door'	*ʔōnçwā		*ʔa(?)t-	
*=hōstV 'full'	*=hōçV	*ch[ā]-ŋ	*ʔute	*çi-k
*=āmstĚ 'know, see'	*=āmçĚ	*siə(H)	*ʔV(?)t-	*-jéc-
*pīnstwĀ 'glue'	*pīnçwĀ		*piʔt	*phunc
* (x)qāmstV 'insect'	*qāmVçV	*KVm	*qənte	
*HērstV 'get up'	*HērcV-		*ta(?)-	*ca-
*=ósstör 'freeze'	*=əçör-	*sēr (~ ch-)	*təʔər	
*stiqV 'sharp'	*çəqV	*chīk ^w	*t[i](?)qəʒ-	
*stHwekĚ 'chaff'	*çHwekĚ	*sök	*TVKV	
*=HīstĀl 'naked, bare'	*=HīçĀl	*cheł	*tu(?)l-	

C. *sd

PSC	PNC	PST	PY	Bur
*=únsdĚ 'steal'	*=unǝĚ	*chī-t (?)	*ʔu(?)t-	
*=ísdwV(n) 'suck'	*=iǝwVn	*cīm(H)	*ʔu(?)t-	
*sdānkwV̄ 'skin'	*ǝānkwV̄	*CVk	*tuŋ	
*hrōnsdū 'thresh'	*hrōnǝū	*rāt	*darc	
*sdí[k]V̄ 'goat'	*ǝíkV̄			*chigír

A number of other cases may reveal the cluster types *št (with palatal affricates in ST; otherwise the correspondences are identical to those for the type *st):

PSC	PNC	PST	PY	Bur
*štāhV̄ 'tooth, fang'	*čāhV̄	*ČVj		
*štāpV̄ 'ring, circle'	*čāpV̄	*cuāp (~ č-)	*tap-	
*ʔēnsťĚ 'ten'	*ʔēncĚ	*[ǝh]Vj	*tu-ŋ	
*=āmsdŮ 'milk'	*=āmǝŮ	*[ǝh]aw		*čáo
*ʔísdur- 'strain, sift'	*ʔíǝur-	*[s]ūr		*char
*śdwV̄IV 'water, pour'	*=ōǝwV(IV)	*śiālH		*chel
*fāsđárV 'enclosure'	*fāǝārV	*ǝerH		

and *št (with reflexes similar to those of back affricates, but with *t in PY):

PSC	PNC	PST	PY	Bur
*bVštV 'stick'	PWC *bačV		*pa(j)t-	
*štHapIV ^L ? 'left'	*čHapV(-IV)		*tul (~-l̄, -r ₁)	
*štVλV 'navel'	*čiwǝV̄ ~ -ǝw-	*ǝāl	*tīr (~-l)	
*hVšdwĀ 'sharp'	*hüǝwĀ		*ʔete	
*šđíkVĀ 'short'	*ǝíkVĀ		*tu(?)K-	*cíki
*šdābV̄	*ǝāwV (~ -b-)	*cuap (~ č-)	*tV(?)pVÍ- (~-b-)	*čap
'internal organ'				

The examples are not as numerous as those for plain affricates, but nevertheless form a consequent system and appear semantically reliable.

2. Clusters of the "xk" type.

These clusters are reconstructed for the cases when NC and ST have predominantly velar reflexes, but Yenisseeian and Burushaski — uvular or

velar fricatives. Only in the case of *xk the NC reflex is not the expected *k, but rather a fricative uvular *χ.

A. *xk

PSC	PNC	PST	PY	Bur
*=HṼwxkṼṇ 'cook, bake'	*=HēwχV(n)	*kǎṇ	*ʔəqan	
*HĩrxkṼ 'male deer, goat'	*wHĩrχV	*rjök	*ʔiʔχ(V)	*har (< *hary)
*=ṼxkṼ 'quick'	*=ǎχV	*kǎk (~ g-)	*də(ʔ)q-, *qaq-, *ʔə(ʔ)q-	*haqhái
*HṼxkṼ 'to fly'	*=HiχV	*dōq-		
*mṼxkwA 'a relative'	*mVχwA	*māk	*p[u](ʔ)χV	
*xkwǎrkṼ 'forest'	*χwĩrkṼ	*kuk	*qoʔK(V)ṇ	*húkar
*Hrēm̃xkwĩ 'dirt'	*Hrēm̃kwĩ		*fəʔq- (~-χ-)	
*xkĩwχV 'onion'	*χəwχV (~χ)	*kĩwH		
*bHərxkṼ 'shoulder'	*bHərχV	*ph(r)āk		*-phóyonas
*=ĩxkwÁ 'call, ask'	*=ĩχwA	*khāw		
*xkólʔV 'male'	*χōlʔV		*qílin	*wal
*ʔwǎxkwV 'bottom'	*ʔwǎχwV	*ʔok		
*jalxkV 'scrape, grind'	*jalχa(-nV)	*jak		
*=HěxkwṼ 'pour, scatter'	*=HěχwV		*ʔat-aq-	
*ǎfwǎxkV 'stick'	*ǎfwāχV	*ǎk		*tay

B. *xk̥

PSC	PNC	PST	PY	Bur
*HǎxkwṼ 'bush, branch'	*hǎkwV		*ʔəqe	
*Hím̃xk̥Ṽ 'sharp, whet'	*=ēm̃k̥V	*Kē-ṇ	*ʔiGV (~ʔ-, -χ-)	*in
*xk̥əwłV 'gorge, ravine'	*k̥ĩwłV	*khāl (~ gh-)	*qoʔl (~ χ-)	
*xk̥wǎṇhV 'fog, mist'	*k̥wǎmhV		*qo(ʔ)ṇ (~ χ-)	
*xk̥wṼṇV 'fir-tree branch'	*k̥wVnV	*kūṇ	*qoʔn- (~ χ-)	*qin

PSC	PNC	PST	PY	Bur
*xķārV̆ 'black, coal'	*ķārV		*qorVn- (~ χ-)	
*xķwen̆V̆ 'bone, cartilage'	*ķ(w)inV		*qōn- (~ χ-)	
*šVlxķwV 'heel, hoof'	*šālķwV		*sa(?)G-V3	*šoq
*čV[l]xķwV 'foot'	*čV[l]ķwV	OC *ćok	*-či(?)G	*-śóyun
*xķwēļV̆ 'palate, cheek'	*hķwēļV̆	*Kal (?)	*χol	
*čāxķwV 'sour, bitter'	*čāķwV	*sāk		*šuqúr
*xķəlčwí 'forelock'	*ķəlčwí	*khāj		*yuy

C. *xg (?)

This cluster is less frequent than others and not quite reliable. Burushaski (in two available examples) has a velar g (not a uvular as expected), and Yenisseeian has a variation of q, χ and x, so far unexplained. Cf.:

PSC	PNC	PST	PY	Bur
*xgālV̆	*gālV (~ -l-)	*kV-liH	*qol-	
'armpit, tickle'			/ *qāl- (~ χ-)	
*xguxgú 'cuckoo'	*gugu		*qo(?)q(up)-	
*hrēxgwē	*hrēGwē	*P-rōk	*tu?xVń	
'comb, scrape'				
*=īwxgUn 'pull'	*=īwGUn		*wV?χ-	
*xgwērdwV̆ 'a cloth'	*gwīrdwV	*k[ā]t	*χotirı	*gaťú
*[c]árxgwV̆ 'squirrel'	*cārGwV	*sren(H)	*sa?qa	*čargé
*=axgwV 'to see'	*=agwV	*k ^w ēn (~ *g ^w -)	*qo (~ χ-)	

3. Clusters of the "xq" type.

We reconstruct these clusters for the correspondences where PNC has uniformly uvulars and PST — uniformly velars. Yenisseeian and Burushaski reveal here an interesting development that may indicate some special closeness between these two branches: namely they both reflect plain "xq" clusters as uvulars (in Yenisseeian — with a variation between q, χ and x), but labialized "xqw" clusters — as velars. Cf. the following examples:

A. *xq

PSC	PNC	PST	PY	Bur
*?āxqV 'hole, open'	*=aqV	*k(h)āH	*?a?K-	*waq
*xqēlqı 'wood'	*qēleqı		*xa?q	*qháqhar
*xqālV̆ 'house'	*qālV̆	*krā (~ g-)		

PSC	PNC	PST	PY	Bur
*=ilxqVŋ 'labour'	*=ilqVn	*gĭōŋ		
*xqōnʔV 'yard, building'	*qōnʔV	*k ^w ān		
*xqōrʔā 'a cereal'	*qōrʔā	*krā (~g-)		*yarás
*ʔwērxqŪ 'sack, basket'	*ʔwirqV	*g(h)aw	*ʔāχ-	
*HárxqwV 'dig'	*=HarqwV	*kīw (~g-)		
*HūxqwV̇ 'long, big'	*=HūqV-n	*k(r)āw	*ʔux-	
*čāxqwă 'scoop'	*čāqwă	*[Če]k ^w	*siʔk (~g-, -χ)	
*xqwĩntV̇ 'smear, scrape'	*qwantV	*k(r)ūt (~g-)	*git (*giʔit)	
*=HixqwV̇ 'bear, be born'	*=HiqwĀ(n)	*Ki(j)	*kej-	*'k
*xqwībV 'beak, jaw'	*qwēbV	*kēp	*kup (~g-)	
*xqwV̇lʔi 'elbow, hand'	*q̃lʔi	*kh ^w ēr (~gh ^w -)		*galgí
*fhwērxqwē 'boundary'	*fhwērqē	*ʔ ^w īk	*ʔa(ʔ)k- (~x-, -x-)	*hurgó
*HūxqwĀ 'guard'	*HūqwĀ	*kü		

B. *xq̃

PSC	PNC	PST	PY	Bur
*xqōnŁV̇ 'spade, fork'	*q̃HōnŁV	*k(h)āk		
*=V̇xq̃V 'word, say'	WC *q̃Ia-	*k(h)a	*qāʔG	
*xq̃ēflV̇ 'bitter'	*q̃ēflV	*ghāH	*qVqVr	*yaqá-
*Hwīxq̃V 'day'	*Hwīq̃V		*xiʔ-G, *xi-Ga	*d-uyói
*xq̃íxq̃ē 'road'	*q̃əq̃ə	*kīŋ	*χ[i](ʔ)χ	
*xq̃ām(x)q̃(w)ă 'joint, bend'	*q̃āmq̃(w)ă	*kü		
*xq̃ádV 'dust, soil'	*q̃idV	*Ket	*qəʔt	*yit
*xq̃(w)VrV 'old, ripe'	*=ir̃qwĀ	*grī		
*xq̃wémV 'nut, kernel'	*q̃wəmV	*kuam	*ʔeʔm- (~x-)	
*xq̃winV̇ 'nail, peg'	*f̃q̃wĩnV̇		*ʔĩn- (~x-)	
*nēwxq̃wV̇ 'pus'	*nēwq̃ū	*nuāk/-ŋ	*dɔ(ʔ)kŋ	*nagéi / *magéi
*xq̃HwV̇rdV̇ 'winter'	PL *q̃Iort:		*gəte	
*xq̃HwintV̇ 'elbow'	*q̃HwəntV	*kūt	*g[i](ʔ)d	
*xq̃Hwir[d]V̇ 'small animal'	*q̃HwirdV		*kəd- (~ *kid-, *g-)	
*(t)xq̃wV̇ 'two'	*(t)q̃Hwā		*xi-na	*'ku-m
*=ixq̃wV̇ 'sit, dwell'	*=iq̃wV	*Kă	*xu-	

PSC	PNC	PST	PY	Bur
*čHǫqWǞ 'dirt, resin'	*čHǫqWǞ		*žik (~g,-χ)	*číki
*xqwirqV 'knot, bind'	*qwerqV	*gīk		
*mh[ě]lxqWǞ	*mhělxqWV	*mrēk	*bāk-	
'root, stump'				
*dVrxqWǞ 'male animal'	*dVrǫqWV	OC *dhāk		*ḍágar
*dwǝxq(w)Ǟ	*dwǝq(w)V		*tūŋ (~d-)	*ḍáko
'stump, trunk'				
*xqWǝtwV 'chop, cut'	*qǝtwV	*k ^w āt (~g ^w -)		*gaṭ- ?
*xqWártV 'tie, belt'	*qHwartV	*k ^w āt (~g ^w -)	*guṭda	
*xqHwécwV 'a vessel'	*qHečwV		*ṭiṣ- (~x-)	*kháci
*=HVxqWǞ 'to press'	*=HVqWǞ		*ṭu(ṭ)k- (~x-)	

In a few cases labialization may have been lost in PNC:

PSC	PNC	PST	PY	Bur
*xq[w]ǝṭV 'weed'	*qǝṭV		*gV(?)re	
*=ixq[w]Ǟ 'know, learn'	*=iqǞ			*-ki-n-
*xq[w]VrV 'a weed or cereal'	*q[ǝ]rV	*khriǝH		*gur

In another few cases correspondences may be somewhat obscured due to partial reduplications and assimilations:

PSC	PNC	PST	PY	Bur
*xqā(w)qá 'dirt'	*qā(w)qā		*kəq-	*qhéqhi
*xqWVrV(qV) 'frog'	*qWVrVqV	OC *k ^w rāk	*xəṭr-	*yórku-
*xqǝrǝxqWV 'crane'	*qǝrǝqWV	OC *g(h)āk ^w	*gu(?)riraK	*qarújo (/ʔy-)
*(xqā)xqarǞ 'throat'	*qāqari	*Kur, *Krōŋ	*gə(?)n)kəṭ	

C. *xG

PSC	PNC	PST	PY	Bur
*=ǎxGǞr 'hold'	*=ǎGǞ-r	*g(h)ěr	*ṭaṭq	*ṭar-k-
*xGVwǞ 'cover'	*GawV	*gō	*ṭəq-	
*xGěbV 'leg'	*GěbV	[*k(h)ap]	*qoṭp (~χ-, -ɔ-)	
*=ixGǞr 'dry'	*=iGwǞr	*kār	*qo(?)rī- (~l-)	*qhar-
*xGéxGV 'dry'	*GwiGwǞr	*g(h)jāk	*qV[ṭG]i-	*qaq-
*fōmxGVwV	*fōmGwǞ	*khuā(H)	*χo(?)we	
'mouth'				

PSC	PNC	PST	PY	Bur
*xGěrkwe 'skin'	*Gěrkwe	*gh ^w āk		*qhork
*HěmxGǎ 'bite'	*HěmGǎ	*k(h)ejH		*káu- / *qáu-
*=VxGǎl 'cut, knife'	*=VGǎl	*giər		
*HVxG[w]V 'twenty'	*Gǎ		*ʔeʔk	
*rěxGwV (~ l-)	*rěGwV (~ l-)		*ʔu(?)lVk	
'bladder'			(~r ₁ -, -l-)	
*xGHwVnĀ	*GHwñĀ	OC *kēn	*ke(?)n-	
'shoulderblade'				
*xGwəntV	*GwintV	*k(h)ōn	*kə(?)t- (~g-,	
'hill, mound'			-c-, -č-, -d-)	
*xGHwVĭV 'crow'	*GHwVĭV		*kila	
*xGwV 'thou'	*ɰwV	*K ^w a-	*kV- / *ʔVk-	*gu- / *go-
			(~g-, -g-)	
*mHilaxGwV 'worm'	*mHilaGwV	*lōŋH /		*mulagéi
		*lōk ?		
*xGwǎlá 'goat'	*Gwǎlá	*k(h)īl (?)		*kil
*xGwǐlzi 'hole, pit'	*Gwǐlzi	*ghuar(H)	*kiʔl (~g-, -r)	
*xG[w]anχV 'body'	*GanχV	*k(h)ōŋ	*qaχal	*khaŋór
			(~g-, -χ-)	
			[reflecting	
			loss of	
			labialization]	
*VxGwV	*HVIGwV(l)	*lik	*doʔq (~ -χ)*lik	
'to swallow'			[reflecting	
			loss of	
			labialization?]	

Sino-Caucasian basic vocabulary⁶ (*unfinished*)

Here we shall evaluate the degree of proximity between Sino-Caucasian languages. On the basis of phonetic correspondences formulated above we can identify cognates within Swadesh's 100 wordlist and build a probabilistic taxonomy of the family. However, we shall not restrict ourselves to the four subgroups which we were dealing with above. An important question is the position of Basque, long argued (primarily by J. Bengtson) to belong to Sino-Caucasian, and the Na-Dene languages, presumably related to Sino-Caucasian in a wider Dene-Caucasian family. The system of phonetic correspondences between Basque and North Caucasian had been explored by J. Bengtson. A preliminary system of phonetic correspondences between Na-Dene and North Caucasian was put forward by S. Nikolayev. I have not investigated these correspondences personally, so I shall generally adhere to the judgments proposed by these scholars.

Finally, recently an alternative theory was put forward by L. Sagart, who proposes a Sino-Austronesian family including Sino-Tibetan and Austronesian. Therefore, the position of Austronesian against the other members of Sino- (or Dene-) Caucasian also has to be tested and evaluated.

Below I shall list matches between reconstructed forms in Proto-North-Caucasian, Proto-Sino-Tibetan, Proto-Yenisseian, Basque, Burushaski, Proto-Na-Dene (in fact — Proto-Eyak-Athapaskan with Tlingit parallels, since Proto-Na-Dene as such has not yet been reconstructed) and Proto-Austronesian, within Swadesh's 100-wordlist enriched by S. Yakhontov's additional 10 words.

1. "all"

A highly unstable meaning, so it is difficult to find cognates.

PNC. The only root that has this meaning in at least two branches is *cHǝ (basically meaning 'one'): cf. Rut. si-jenǎ, Abkh. ze-ǵə, Abaz. zə-mʲʷa, Ad. za-čǎ, Ub. zō-žǎ 'all'; to this we can probably add Hurr. šui 'all'.

One should also pay attention to PAvAnd. *hiǰu- /*-ǰ:- 'all' (Av. ʔol-go, And. hilu-b, Akhv. aǰo, Tind. hiǰ:u-b), see below.

PST. A huge variety of roots (originally meaning 'many', 'group', 'big' etc.) occur with this meaning in different subbranches of Sino-Tibetan, so

⁶ This section of the monograph was, unfortunately, left unfinished. Additional information on Sino-Caucasian lexicostatistics can, however, be found in S. A. Starostin's earlier article "Old Chinese basic vocabulary" - *George Starostin*.

establishing the "main" PST root for 'all' is nearly impossible (reflexes of roots *phŭŋ, *lāk, *ńă, *kuł, *tă, *lōH, *loŋ, *p(h)im, *Q^wăH, *raŋ, *rĭj, *jom / *joŋ etc. are found in various subgroups with the meaning 'all'). We should, however, pay attention to three roots:

a) *che (~ *ś-), attested in OC 斯 *ses completely, 悉 *sit all, completely, Burm. si 'every', Lush. se 'fully, completely', Kanauri tseī, Konyak ə-sey, Sema Naga kun-tsi, Nung tciæ.35 'all', perhaps also in Tib. thams-ća-d 'all' — which may be a good etymological match for PNC *cHă.

b) *lōH 'surpass, increase': this root is attested with the meaning 'all the more' in OC 愈 *lo?, with the meaning 'too, very, excessively' in Lush. lu, and with the meaning 'all' in Sunwar nel-le, Ao Mongtsen te-lu, lu-tsi, Kaike so-lo, Yimchungli a-la-la, Nusu li, Pumi *IV; perhaps also with a nasal suffix *lo-ŋ in Tib. loŋ-s 'plenty, abundance', Burm. hləuŋ 'be numerous, abundant', Sulung mə-ləŋ, Tani *mə-ləŋ, Kachin n-ləŋ, Lush. hlaŋ 'all'.

c) *jəw 'all, everything', attested in Tib. jo-ba 'everything, altogether', Kach. ju 'all' ('many' or 'big' in other subgroups); a suffixed form is most probably *jo-ŋ / *jo-m (reflecting *jəw-ŋ), attested in Tib. joŋ-s, Kach. joŋ 'all, whole', Lush. zom 'join, unite', Thakali jom 'all'.

PY. The only root reconstructable with this meaning is *biŋl- (Ket. bīdă⁵, Yug. biŋlă⁵). Here *b- may well be a historical prefix, thus the root may well be comparable with PAVAnd *hiŋu- / *-ŋ:- and PST *lōH / *loŋ.

Burushaski. The basic root for 'all' here is Hunza -jón, Nagar -jón, very well matching PST *jəw, *jəw-ŋ and also having a Yenisseian parallel: cf. PY *ŋōn- (~ *j-, *x-) 'many' (Ket. ɔ:ne⁴, Yug. ɔ:hⁿ) < PSC *jonHV 'many, all'.

Basque. The Basque word is guzi / guzti (< *gus-), so far without any external matches.

Na-Dene. The word for 'all' is not given in Hoiyer's Athapaskan wordlist. The Eyak root is ɬi(?), with a postvelar suffix ɬiʔ-ɬ, with a match in Tlingit ɬa-x 'very, really'; the root is quite probably the same as PEyAth *ɬa(?) 'one' (Eyak ɬihG). The root may be related to the above mentioned PAVAnd *hiŋu- / *-ŋ:-, PST *lōH and PY *b-iŋl-.

The possible matches between different subgroups are thus:

PNC	PST	PY	Bur.	Basque	Na-Dene
*cHă	*che				
*HV(n)ŋV	*lōH	*-iŋl-			*ɬa(?)
	*jəw		*-jón		

2. "ashes"

PNC *jəmGe (~ -i); *laqū (~ -ě-) — although both of these roots have external parallels, neither of them means 'ashes' in other SC branches.

PST. The roots most frequently used with this meaning are *[ph]əw and *t-lō (often in the compound *[ph]əw-tlō). Since the former root also means 'bake, set on fire', we may conclude that the basic ST root for 'ashes' had been *t-lō which does not display any additional meanings.

PY. The Kottish root for 'ashes' is fenəŋ — which, however, goes back to PY *pəʔnVŋ with the basic meaning 'sand'; the most plausible candidate for PY 'ashes' is therefore Ket. qóʔən⁶ (presupposing PY *qorVn- (~χ-, -ɔ-, -l-)).

Burushaski. The common root for 'ashes' here is *phétin (thus in all Burushaski dialects).

Basque. The Basque root is auts (Proto-Basque *hauć).

Na-Dene. Athapaskan languages have two roots — *ləš (also meaning 'sand') and *č'ihš (also meaning 'dust' or 'sand'). Eyak has č'íʔ, and Tlingit — gán (cf. -gánt 'burn') eetí, both with obscure etymology.

Thus, although most roots listed here have external parallels, none of them means 'ashes' at least in two branches, so no matches with this meaning are attested in SC.

3. "bark"

PNC. A common NC root for 'bark' is hard to find. Several roots mean 'bark' in one subgroup and 'skin, hide' in others: thus PEC *ʔwājčā (~ -ə) (PN *kābst 'bark' and PDarg *kabc: 'skin'); PEC *k̥həri (~ -ɬ-) (Lak. k:iri 'bark' and Khin. k̥ir 'skin, hide'; PEC *l̥öli (PL *ʔ:al 'bark' and PDarg *k:uli 'skin'); PNC *ʔwārcwə (PWC *c^wa 'bark; skin' and PL *ʔ^wä(r)č^w 'skin', Hurr. aš̥chi 'skin').

PST. Here the situation is similar: there are several roots combining the meanings 'bark' and 'skin'. Cf. PST *Pik 'skin, bark', *Pāk id., *gh^wāk id., *khrēw (~ gh-, qh-, Gh-) id. (also with an archaic variant *KVr in Bodo-Garo, Konyak and Naga languages), *CVk id., *rVj id., *q(h)^w(r)in (~ʔ^w-) id. Of these roots, *KVr (/khrēw) is a probable cognate for PNC *k̥həri.

PY. The only reconstructable root for 'bark' here is *ʔiGin. quite probably comparable with PST *q(h)^w(r)in.

Burushaski. The root for 'bark' here is *čum- (Hunza čúmuš, Nagar čúmur), with obscure etymology.

The Basque root for 'bark' is azal (Proto-Basque *asal), comparable (if

one assumes that *-l is a historical suffix) with PNC *ʔwārćwǎ.

Several roots are attested in Eyak-Athapaskan (-*tāŋ-əʔ, *séc'), none of them with any evident external parallels; the Tlingit word is at looni (lit. 'tree bark'), with looni possibly comparable with PNC *łěʔwni 'skin (of an animal)', PY *dǎn- 'bast, willow bark', PST *IU (Tib. lwa-ba 'skin of wild animal', Chepang hlyu 'to skin').

Summary:

PNC	PST	PY	Bur.	Basque	Na-Dene
*k̥həri	*KVr (/k̥hrēw)				
	*q(h) ^w (r)in	*ʔiGin			
*ʔwārćwǎ			*asal		

4. "belly"

PNC. Several roots, of which perhaps the common one is *bVnķwǎ (Kar., Bagv. baķ^wa-l, Abkh. á-mg^wa, Ub. nəķ^wǎ). Other roots, having the meaning 'belly' at least in two branches, are *čiwǎV̄ ~ -ǎw- (Av. čex, Khin. šax 'belly' ('crop, craw, intestine' in other languages); *kīrV (~ k-, -ē-) (Chech. kīra, Akhv., Botl. reka 'belly' ('chest' or 'stomach' in other languages); here possibly also a suffixed form — Hurr. karši 'belly'; *λwǎnʔi (-e) (PDarg. *k^wani, PLezg. *uo-λwin / *ro-λwin 'belly').

PST. Again many roots: *pūk (widely spread with the meaning 'belly' and = PNC *bVnķwǎ; a nasalised variant *phuŋ / -m is probably attested in Tani, Naga etc.); *Q^wi (~ *Qju) ('belly' in Karen, Nung, Pumi, Dimasa), *phǎw ('belly' in Bodo-Garo and Kachin), *t-lǎw ('belly' in Sulung, Bugun and Tibetan); *phu(a)ŋ ('belly' in Tani, Naga, Idu — but perhaps just a nasalised variant of *pūk), *yūk ('belly' in Konyak and Garo), *kāl ('belly' in Kachin, Tani and some Kuki-Chin languages, but basically 'liver, kidney'); *dhj[ǔ]l (~-ł) ('belly' in Naga and some Kuki-Chin languages). Most of these roots also have other meanings (like 'stomach', 'intestine', 'fat' etc.).

PY. The basic reconstructable root for 'belly' is *p[u]j (Ket. hīj, Yug. fij 'belly', Kott. fui 'inside, intestines'), obviously related to *pu ~ *pa 'heart' and further — to PST *phǎw (see above). One can also note *tūl — 'intestine' in Ket and Yug, but 'belly' in Kott. thalōx, tulók (and = PST *dhj[ǔ]l), and *piʔil — 'intestine(s)' in Ket. hāl, Yug. fi:íl, but with suffixation also meaning 'belly' in Ket. hálá and Arin. phorga.

Burushaski. The common Burushaski root is *-úl (-ul in all dialects),

probably related to PST *t-lǝw (< PSC *=^íirLV).

Basque. The basic Basque root is *sabel* (Proto-Basque **śabel*), comparable with PSC **šdǎbV* 'name of an internal organ'.

Na-Dene. The common Athapaskan root is *-wəʔt'; Eyak, however, has *kumah* (derived from the root *kũ-* / *kā-* = PEyAth *-*ćān* ~ *-*ćān* 'stomach'). Tlingit has an obscure root *yoowú* 'belly'.

Summary:

PNC	PST	PY	Bur.	Basque	Na-Dene
*bVnḵwǎ	*pūk				
	*phǝw	*p[u]-			
	*dhj[ǔ]l	*tūl			
	*t-lǝw		*-úl		

5. "big"

PNC. Several roots: *=HǔqV(n) ('big' in Nakh and Lak, but originally probably 'high' or 'long'), *Hnǎq̄wV̄ ('big' in Av.-And. and Tsezian), *čHǝ-qwV ('big' in Andian, Lezghian and WC), *hǎχE ('big' in all Lezghian, 'more' in WC). One should also note PWC *dA 'big, many': although the root had been lost in East Caucasian, it seems to have good external cognates.

PST. Several roots: *tajH (in various subbranches; probably matches PWC *dA); *bā(H) / *phā(H) ('big' in Sulung, Tani, Kachin); *jǝw ('big' in Kham, Tani, Naga, Kaike; same root as *jǝw 'all', see above); *phǞr ('big' in Bodo-Garo, Mikir, Dhimal); *grǐ ('big' in Lolo-Burmese, Nung); *k(r)ǎw ('big' in Lolo-Burmese and Sichuan — etymologically matching PNC *=HǔqV(n), but in most languages 'high' or 'tall').

PY. *χ[e]? ('big' in Ket, Yug and Pumpokol — a good match for PNC *hǎχE); *pasa ('big' in Kottish and Assan — probably < PSC *bērčV̄, cf. PNC *bīrčV (~ -ē-, -ī-) 'rich, honorable' and thus matching PST *phǞr).

Burushaski. The common Burushaski root is *-uju[n] (Yasin -njú, Hunza, Nagar ujúm) — quite probably related to *-jōn 'all' and thus to PST *jǝw.

Basque. The Basque root is *aundi* ~ *andi* (Proto-Basque **haundi*) — compared by J. Bengtson with Ad. *kʷandə*, Kab. *kʷad* 'many' (rather dubious because of the isolatedness of the Adyghe root).

Na-Dene. The common Athapaskan root is *ćōH 'big', possibly comparable with PNC *čHǝqwV. Eyak has -ʔluw and Tlingit — -gei, both of uncertain origin.

Summary:

PNC	PST	PY	Bur.	Basque	Na-Dene
WC *dA	*tajH				
*ħǎχE		*χ[e]ʔ			
	*phǞr	*pasa			
	*jǿw		*-uju[n]		
*čHəqwV					*ćǿH