Duhumbi shares with Dirang Tshangla (Das Gupta 1986 and Zhāng 1986 in Bodt 2012: 199) and Bjoka Tshangla (Grollmann 2014:40) a limited number of occurrences of preserved syllable-final consonant clusters.

Bodt (2012: 198-201) first reported the existence of superficially homonymous minimal pairs in Bhutan Tshangla verb roots. After analysis of the choice of allomorphs characteristic of a certain conjugational class as well as comparative evidence from Dirang and Pemako Tshangla I concluded that there must have been an underlying coda consonant cluster in part of these attestations. Since then, further analysis of what was coined as the Yabrang variety of Tshangla has provided more evidence. In fact, this Yabrang variety itself has turned out to be an archaic sociolect, geographically more widespread among small, socio-economically weaker sections of certain remote Tshangla communities between the Gamri and Kholong rivers in north-eastern Trashigang and south-eastern Trashi 'Yangtse in Bhutan. These sociolects are rapidly disappearing through confirmation to the standard variety of Tshangla, increased levels of education and rural-urban migration. Although new data of both Yabrang and Dirang Tshangla have allowed to discern conclusive evidence of syllable-final clusters in Tshangla since then, this has yet to be committed to a publication.

More recently, Grollmann (2014: 40) similarly reported from Bjokapakha Tshangla that allomorphic variation in the verbal morphology not conform the morphophonological patterns evidences coda consonant clusters, but that the phonotactic rule not permitting coda consonant clusters suppresses them. Her attestations include *cam ~ camp* 'be about to, try'; *gan ~ gant* 'grow old, age'; *gir ~ girt* 'turn; cluster'; *lam ~ lamp* 'learn'; *ɲoŋ ~ ɲoŋk* 'face, find, get'; *sor ~ sort* 'change'; and *shim ~ shimp* 'put in order, tidy up'.

For the current discussion, it is sufficient to report the existence of Tshangla coda consonant clusters, all involving a nasal or trill followed by a plosive or glottal stop, the most common combinations including /mp/, /rt/ and perhaps /nt/ and /ngk/.

Similarly, the Duhumbi coda clusters all involve a syllable-final nasal or trill followed by an unreleased dental or bilabial stop. Choice of conjugational class, Da or Ta, has earlier been shown to depend on an underlying syllable-final fricative /s/. Coda consonant clusters can be no exception to that, resulting in the positioning of coda consonant clusters of three consonants, the final consonant of which necessarily has to be an /s/, i.e. /-mps, -rts, -ngks/. The Duhumbi syllable-final consonant clusters appear to be an archaic treat and might be relevant from a historical-comparative point of view, but their extremely restricted occurrence makes it hard to come to any strong conclusions. There may well be more occurrences of these coda clusters in the lexicon. However, identifying them has proved extremely difficult. Unless the speaker strongly articulates the coda cluster or all possible occurrences are checked in waveforms and spectrograms, they might not have been detected. Nonetheless, a number of rather convincing minimal pairs is presented here, of which audio recordings exist for future reference.

The hitherto attested clusters are *-mp*, *-ngk* and *-rt*. All the occurrences of these coda clusters are summarised in Table 1, with waveforms and spectrograms for several examples provided for illustration.

Table 1. The Duhumbi coda clusters

coda cluster	lexeme
-mp	*camp {ta}* [t͡ɕamp̚] 'to surrender'
	hamp {ta} [hamp̚] 'to learn, study, read'
	lamp {ta} [lamp̚] 'to parch (finger millet)'
	jamp {ta} [d͡ʑamp̚] 'to become cured'
	ramp {ta} [ramp̚] 'to wither'
	thimp {ta} [tʰimp̚] 'to sink'
	timp {ta} [timp̚] 'to become finished'
-rt	*nort {ta}* [nɔɹt̚] 'to err'
	durt {ta} [duɹt̚] 'to rot; to overcook'
	ngart {ta} [ŋaɹt̚] 'to win'
	nyirtkum [ɲirt̚ kum] 'wrinkle'
-ngk	*dingk {ta}* [diŋk̚] 'to pull along a thread'
	gink {ta} [giŋk̚] 'to soar, to fly high'
	jangk {ta} [d͡ʑaŋk̚] 'to study, to read'
	zingk {ta} [ziŋk̚] 'to lead along'
	zhangk (ta) [zaŋk̚] 'to get up, to rise (H.)'
-nt	*nant {ta}* [nan ~ nant̚] 'to add'?
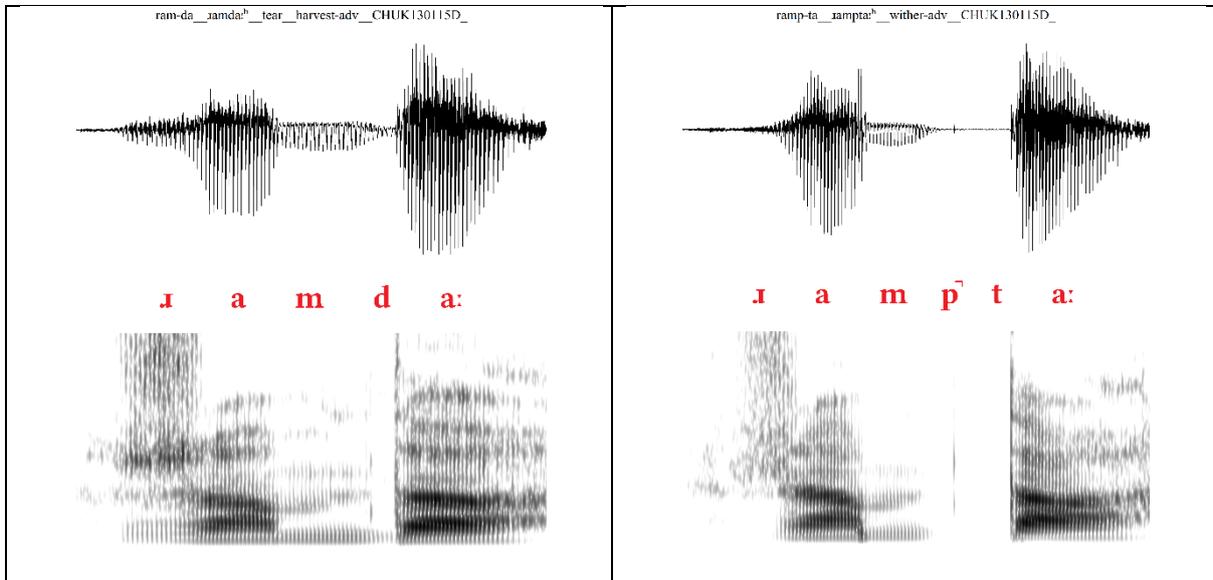
Figure 1: *ram {da}* [ɹamdaː] 'to tear; harvest' [CHUK130115D] vs. *ramp {ta}* [ɹamp̚ taː] 'to wither' [CHUK130115D]

In context, this minimal pair is provided in *waloq nishi ganggpu ram-long-bey* [walɔ̝ʔ niɕi gaŋpu ram-lɔŋ-bej] '3PL.AGT paddy all harvest-PRF-COP1.OK' 'they have harvested all the paddy' [CHUK310115B] and *nishi gangpu ramp-long* [niɕi gaŋpu ɹap̚-mlɔŋ] 'paddy all wither-PRF' 'all the paddy has withered' [CHUK310115B]. Notice the metathesis between the bilabial plosive and the

bilabial nasal in *ramp-long* [ɹap-mlɔŋ] wither-PRF, with the bilabial plosive becoming the onset of the next segment *–long*. In *ram-long-be* [ɹam-lɔŋ-beː] harvest-PRF-COP1.OK this is not observed.
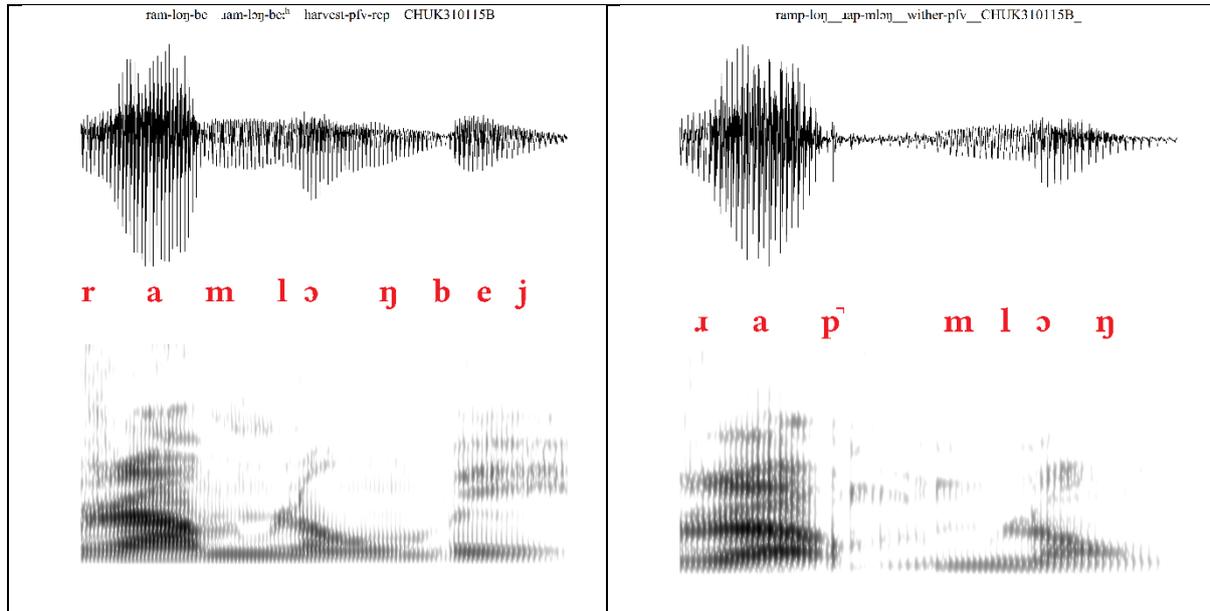
Figure 2. *ram-long-bey* [ɹam-lɔŋ-bej] 'harvest-PRF-COP1.OK' [CHUK310115B] vs. *ramp-loŋ* [ɹap-mlɔŋ] 'wither-PRF' [CHUK310115B]

There is additional evidence for the *–mp* cluster in the lexeme *ramp* {ta} 'to wither' from Tshangla, cf. TSB *ram ~ ramp* {pe} 'to be ruined', e.g. *pʰai rap-dʑɔŋ-mala* 'the house has become ruined', cf. also Duhumbi *rap chat* {da} [ɹap̚ tɕʰat] 'to become extinct'. The archaic Tibetan cognate, however, does not have a complex cluster: *red* {pa} ~ *reb* {pa} '[arch] dried out/ withered [IW]'

The following near-minimal pair shows that in the case of *ngart* {ta} [ŋaɹt̚] 'to win', here in its imperative form *ngartma* [ŋaɹt̚ maː], there is a constriction towards the end of the first syllable resulting in a clear pause or break between the two syllables. Although difficult to see in the spectrogram, speakers adjust the vocal tract by bringing forward the tongue to alveolar position, producing a co-articulated unreleased dental plosive [t̪̚]. In the case of *ngarma* [ŋaɹmaː] 'tough' there is no such constriction, and the two syllables flow into over smoothly.
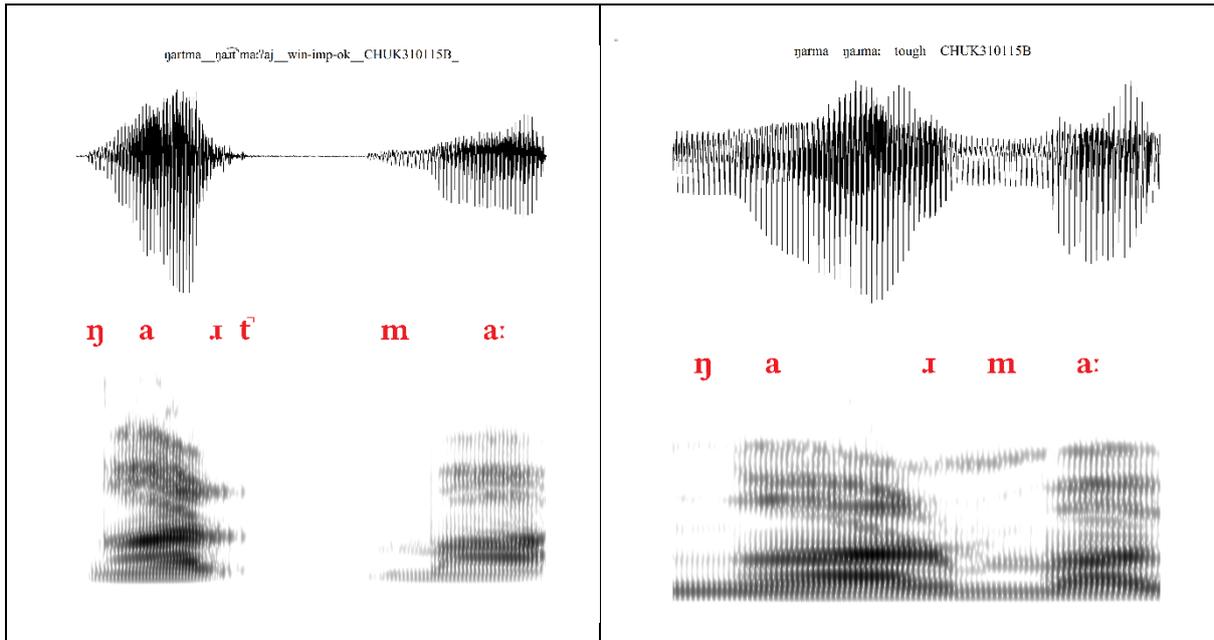
Figure 3. *ngart-ma* [ŋaɹt̚-maː] 'win-imp' [CHUK310115B] vs. *ngar-ma* [ŋaɹ-maː] 'tough' [CHUK310115B]

A similar minimal is the minimal pair between *dur* {da} 'to run' and *durt* {ta} 'to rot; to become overcooked' as explained between the two elicited minimal pair sentences in [CHUK121015A(175)es].

[CHUK121015A(175)es] *sha ama duronglong* [ɕaː ʔamaː duɹ-ʔɔŋ-lɔŋ] cattle mother run-go-PRF 'the cow has run away'.
[CHUK121015A(175)es] *shoyya sha durtonglong* [ɕɔj-jaʔ ɕaː duɹt-ʔɔŋ-lɔŋ] bull-GEN meat rot-go-PRF 'the bull's meat has become rotten'.

The following spectrogram of the words *hamp-ma* [hamp̚maː] read, study-imp 'study!' and *ham-ma* [hamːaː] smell-imp 'smell' spoken in succession shows the distinction between the two roots. In *ham-ma*, short vowel /a/ and the length of the bilabial nasal, twice as long as in *hamp-ma*, are clearly visible. In *hamp-ma* there is a clear closure at the end of the nasal, and the bilabial plosive is actually even released. Moreover, we observe a falling pitch in both syllables of *hamp-ma*, whereas the pitch is fairly level throughout in *ham-ma*.
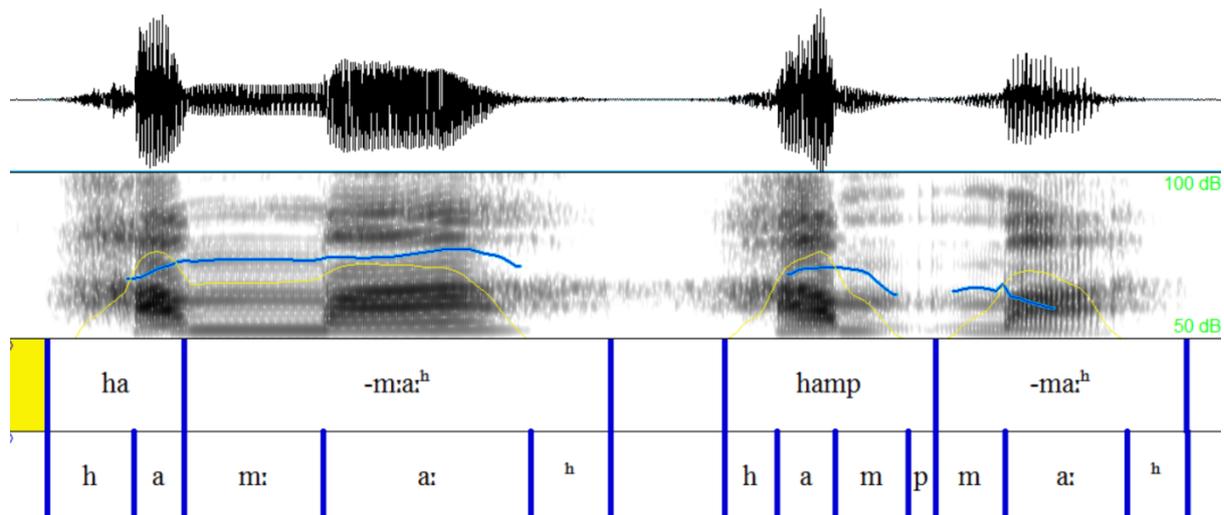
Figure 4: *ham-ma* [hamːaːʰ] smell-IMP 'smell' [CHUK310115B] vs. *hamp-ma* [hampmaːʰ] read, study-IMP 'study!' [CHUK310115B]

The audio material, in addition to the above example, also provides examples in context, such as *jige odzop le hamp-ma* [jigeː ɔdzɔp̆ leː hampmaː] letter good do study-IMP 'study {the letters} hard!' [CHUK310115B] and *ɕis ham-ma* [ɕis hamːaː] smell smell-IMP 'smell it {the smell}!' [CHUK310115B].

As for the reconstructed Proto-Khispi-Duhumbi roots, ***hamps** STUDY, READ, cf. also Proto-Tshangla ***lamp** 'read, study' (Bodt 2012: 200) and ***ham** SMELL are proposed. In light of additional evidence from the other Western-Kho-Bwa languages the latter is reconstructed as *HNAM SMELL at the Proto-Western-Kho-Bwa level, in contrast to Proto-Tshangla *NAMS SMELL (Andvik 1999: 105-106).

The next example juxtaposes the root *lamp* 'parch' to the root *lam* 'search; be cold'. Again, the spectrogram for *lamp* {ta} clearly shows a released bilabial plosive. Note that any apparent differences in length of the segments is due to the speed of pronunciation.
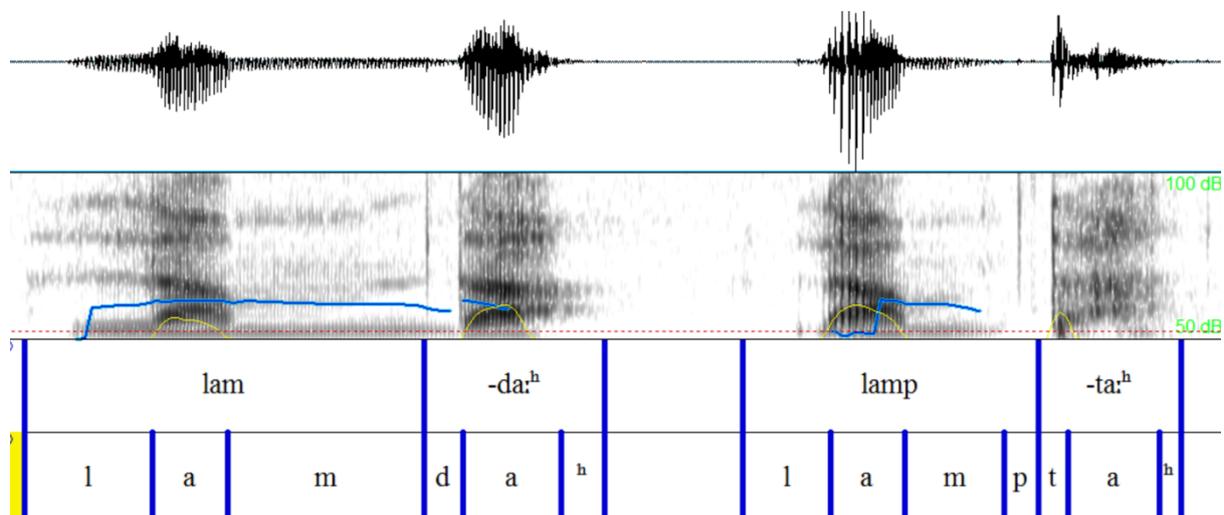
Figure 5: *lam* {da} [lam] 'search; be cold' [CHUK310115B] vs. *lamp* {ta} [lamp] 'parch' [CHUK310115B]

These tokens in context are provided in *koŋpu lamp-ta* [kɔŋpu lampta:] finger millet parch-ADV 'parching finger millet' [CHUK310115B] and *sojnam lam-da* [sɔjnam lamda:] alms beg-ADV 'begging for alms' [CHUK310115B].

The next example presents an attestation of a coda /ŋk/-cluster. It is the honorific verb *zhaŋk {ta}* 'construct; rise, get up'. This verb is a Bodish loan, cf. Tib. *bźeṅ* 'rise, get up (H)', TSD [zaŋk] 'construct; rise, get up (H)', TSB [zɛŋ] 'construct; rise, get up (H)'. The only minimal pair is with the name of the place *Zhang* [zaŋ] (modern spelling Jang) located in Tawang. Note how the onset is palatalised.

In the spectrogram of *ʑaŋk*, most obvious is the pause following the velar stop.
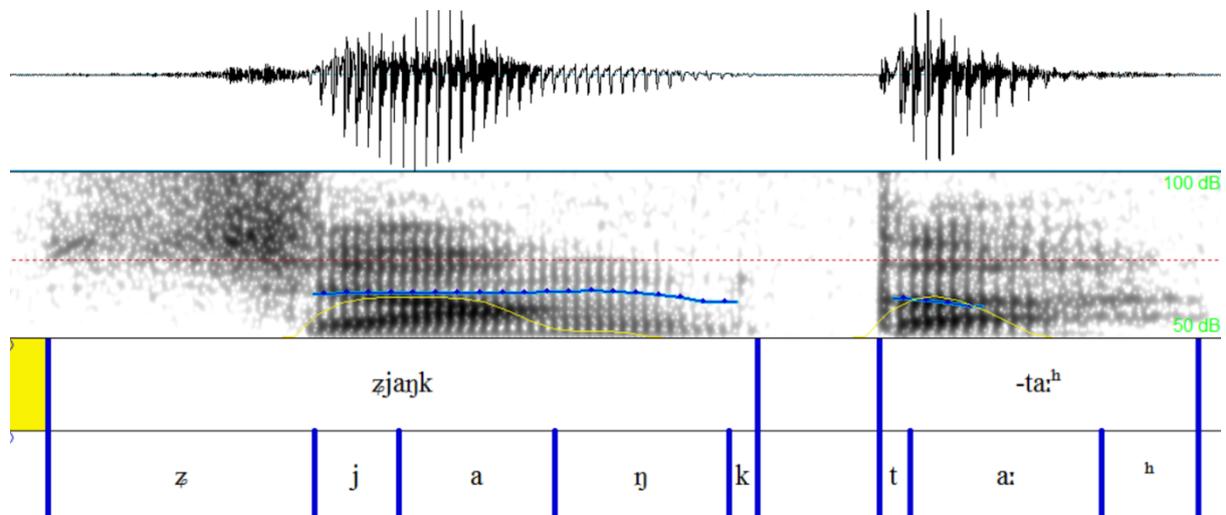
Figure 6. *ʑaŋk {ta}* [ʑʲaŋk] 'construct; rise, get up-adv (H)' [CHUK110115C]

Unlike the bilabial nasal /m/, the velar nasal does not geminate in morphological constructions that result in this phoneme in consecutive coda and onset, with the next onset characterised by the onset of regular pulses in the sound wave.
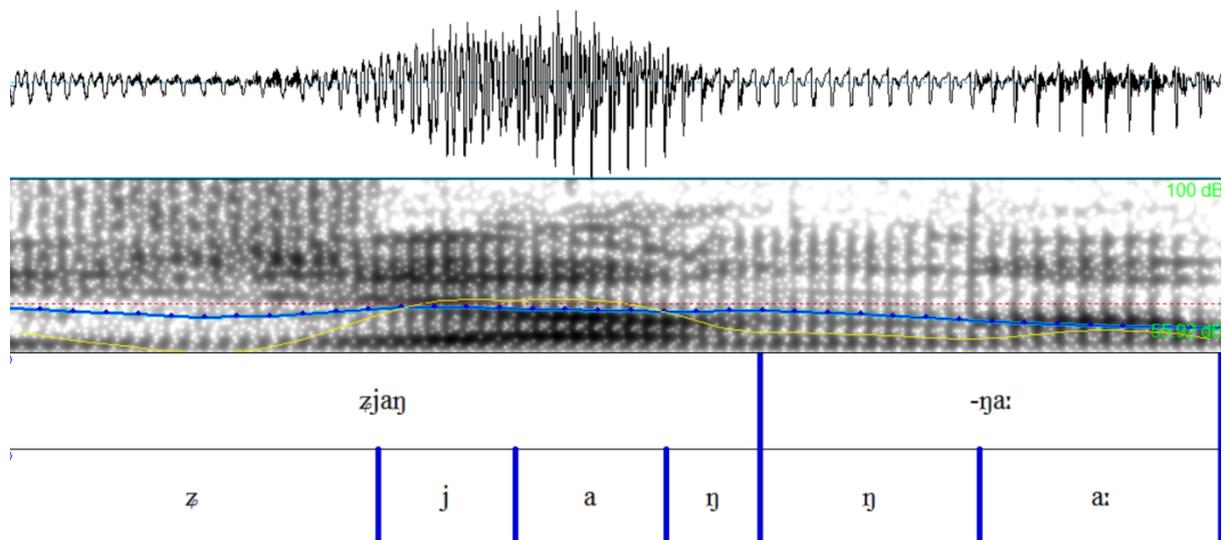
Figure 7: *ʑaŋ-ŋa* [ʑjaŋ-ŋa:] Zhang-GEN [CHUK310115B]

The verb ʐaŋk can be found in context in *woj-joʔ gonpa hin ʐaŋk-loŋ* [wɔj-jɔʔ gɔnpa hin ʐʲaŋklɔŋ] 3SG-AGT monastery one construct-PFV 'he has constructed a monastery' [CHUK310115B] and *rinpotɕʰe namsaŋ duktsu ʐaŋk-loŋ* [ɹinpɔːtɕʰeː namsaŋ duktsuː ʐʲaŋklɔŋ] Rinpoche morning early rise-PFV 'rinpoche has woken up early in the morning' [CHUK310115B]. The proper noun *ʐaŋ* can be found in *woj ʐaŋ-ŋa budun beʔ* [wɔj ʐaŋŋaː budun beʔ] 3SG Zhang-GEN person COP1 'he is a person of Zhang' [CHUK310115B].

There are several minimal pairs without recordings. The first one is for the verb *diŋk {ta}* 'pull along thread': *budun ɖiŋɖiŋ* person healthy 'the healthy person' vs., e.g. *dejju hwaŋ diŋk-ɲi* yesterday thread pull along-PRET 'yesterday the thread got pulled along' and *hwaŋ diŋk-ta jokkor tut-oŋ-loŋ* thread pull.along-ADV spindle fall-go-PRF 'pulling the thread along the spindle had fallen down'.
The second is for the verb *tɕamp {ta}* 'surrender' vs. *tɕam {da}* 'be comfortable', e.g. *ɕoj ɲis-kʰo hin tɕamp-ɲi* bull two-LOC one surrender-PRET 'from two bulls one surrendered' vs. *naŋ dejju gari naŋ-kʰo tɕam-ɲi=ɲi?* 2SG yesterday car in-LOC comfortable-PRET=Q1 'were you comfortable in the car yesterday?'. The same root *cam ~ camp*, though with an unrelated semantic content, also occurs in Bjokapakha Tshangla, cf. Grollmann (2014: 284).

Other (near-)minimal pairs include *dʑaŋk {ta}* 'study' vs. *dʑaŋ {da}* 'fall', ziŋk {ta} 'take along' vs. *ziŋ* 'internode'; *tʰimp {ta}* 'sink' vs. *tʰim {ta}* 'let go off'.

The ramifications for historical-comparative linguistics of the Bodish languages and Tshangla, in which many of the Duhumbi lexemes with complex coda clusters have cognates, is a point of future research and investigation.