Aspects of the grammar of Tundra Yukaghir
Schmalz, M.

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2. Phonology

2.1 Segments

The phonemes of TY are identified according to the standard procedure of establishing minimal pairs.

**minimal pairs**

<table>
<thead>
<tr>
<th>vowel</th>
<th>phonemes distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>köde ‘man’</td>
<td>/ø/ ≠ /ũ/</td>
</tr>
<tr>
<td>law-43 ‘to drink’</td>
<td>/a/ ≠ /e/</td>
</tr>
<tr>
<td>mömdo ‘to flare’</td>
<td>/ö/ ≠ /a/</td>
</tr>
<tr>
<td>iire ‘kind of willow’</td>
<td>/ũ/ ≠ /a/</td>
</tr>
<tr>
<td>para ‘basis’</td>
<td>/aa/ ≠ /ã/</td>
</tr>
</tbody>
</table>

vowels:

<table>
<thead>
<tr>
<th>Word</th>
<th>phonemes distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>kūde ‘man’</td>
<td>/k/ ≠ /k’/</td>
</tr>
<tr>
<td>mūde ‘to eat’</td>
<td>/m/ ≠ /m’/</td>
</tr>
<tr>
<td>mūde ‘to mumble’</td>
<td>/m/ ≠ /m’/</td>
</tr>
<tr>
<td>iire ‘kind of willow’</td>
<td>/m/ ≠ /m’/</td>
</tr>
<tr>
<td>para ‘basis’</td>
<td>/m/ ≠ /m’/</td>
</tr>
</tbody>
</table>

for a pair of reindeer’

<table>
<thead>
<tr>
<th>Word</th>
<th>phonemes distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>ool ‘ladling (out)’</td>
<td>/ool/ ≠ /o/</td>
</tr>
<tr>
<td>uu ‘law’</td>
<td>/uu/ ≠ /u/</td>
</tr>
<tr>
<td>ieruuče ‘hunter’</td>
<td>/uu/ ≠ /i/</td>
</tr>
</tbody>
</table>

consonants:

<table>
<thead>
<tr>
<th>Word</th>
<th>phonemes distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>bibaya- ‘to flutter’</td>
<td>/b/ ≠ /c/</td>
</tr>
<tr>
<td>waajl ‘keeping’</td>
<td>/w/ ≠ /n/</td>
</tr>
<tr>
<td>waajl ‘son in law’</td>
<td>/w/ ≠ /n/</td>
</tr>
<tr>
<td>puge- ‘to be hot’</td>
<td>/g/ ≠ /d/</td>
</tr>
<tr>
<td>toyore- ‘to chase’</td>
<td>/y/ ≠ /l/</td>
</tr>
<tr>
<td>titin’ 2PL.DAT</td>
<td>/t/ ≠ /t’/</td>
</tr>
<tr>
<td>met ‘1SG’</td>
<td>/m/ ≠ /t/</td>
</tr>
<tr>
<td>köde ‘man’</td>
<td>/d/ ≠ /d’/</td>
</tr>
<tr>
<td>kedie- ‘to be stubborn’</td>
<td>/d/ ≠ /l/</td>
</tr>
<tr>
<td>mirje ‘wife’</td>
<td>/m/ ≠ /l/</td>
</tr>
<tr>
<td>saal ‘wood’</td>
<td>/s/ ≠ /m/</td>
</tr>
<tr>
<td>omo ‘tribe’</td>
<td>/m/ ≠ /n/</td>
</tr>
<tr>
<td>janil ‘crossbow’</td>
<td>/n/ ≠ /n’/</td>
</tr>
<tr>
<td>anil ‘gift’</td>
<td>/n/ ≠ /n’/</td>
</tr>
<tr>
<td>tugul ‘covering’</td>
<td>/l/ ≠ /l’/</td>
</tr>
<tr>
<td>luge- ‘to be older’</td>
<td>/l/ ≠ /l’/</td>
</tr>
<tr>
<td>qanil ‘shade’</td>
<td>/q/ ≠ /l/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word</th>
<th>phonemes distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>tut ‘the sledge load just manageable’</td>
<td>/t/ ≠ /t’/</td>
</tr>
<tr>
<td>paraa ‘the sledge load just manageable’</td>
<td>/a/ ≠ /e/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word</th>
<th>phonemes distinguished</th>
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<td>/uu/ ≠ /u/</td>
</tr>
<tr>
<td>ieruuče ‘hunter’</td>
<td>/uu/ ≠ /i/</td>
</tr>
</tbody>
</table>

43 The hyphenised forms are stems. However, they can occur in the uninflected form in the context of a negation or, as intransitive verbs, in questions about peripheral constituents, e.g. el=law ‘[s/he] did not eat’; quodiiir mumde ‘why did [s/he] mumble?’. 
Phonemes distinguished on the basis of these minimal pairs are:

vowels: /i/, /e/, /õ/, /a/, /o/, /u/, /ii/, /aa/, /oo/, /uu/
consonants: /p/, /t/, /k/, /b/, /d/, /g/, /s/, /č/, /m/, /n/, /ŋ/, /l/, /r/, /γ/, /w/, /j/, /q/
palatalized consonants: /d'/, /l'/, /n'/
geminate consonants: (/tt/)

It is noteworthy that TY does not follow the generalization that SOV languages have greater consonant/vowel ratios (Gil 1986:165). The average ratios for SOV and SVO languages are 4.09 and 3.52 respectively (Gil 1986:210). However, the TY ratio of 3.33 is not only lower than the average value for SOV languages but is even below the average ratio calculated for SVO languages (Gil 1986:206). Being an SOV language syntactically TY patterns phonologically as an SVO language.

These phonemes are represented according to their phonetic features in Table 2.1.1 (vowels) and Table 2.1.2 (consonants) below.

### Table 2.1.1

<table>
<thead>
<tr>
<th>front</th>
<th>central</th>
<th>back</th>
</tr>
</thead>
<tbody>
<tr>
<td>rounded</td>
<td>unrounded</td>
<td>rounded</td>
</tr>
<tr>
<td>high</td>
<td>/i/, /ii/</td>
<td>/u/, /uu/</td>
</tr>
<tr>
<td>mid</td>
<td>/e/</td>
<td>/õ/</td>
</tr>
<tr>
<td>low</td>
<td>/a/</td>
<td>/aa/</td>
</tr>
</tbody>
</table>

While the phonemic status of most of the vowels as well as their phonetic descriptions are quite uncontroversial, this cannot be said with respect to /õ/. The present thesis, in accordance with the author’s own subjective auditory perception, adopts the view expressed in Odé (2012:42) and supported by her experimental study that /õ/ is a ‘mid central rounded vowel with variable realizations’.

Apart from these monophthongs, there are also four rising opening diphthongs: /uo/, /ie/, /ia/ and, supposedly, the centering diphthong /uõ/. The diphthongal nature of the first two of them is confirmed by the fact that they select the allomorph mer= of the verbal focus proclitic, which is employed when the verbal stem begins with a vowel:

(4a) \[\text{mer=aawej ‘[s/he] sleeps’}\]
\[\text{mer=ierem ‘[s/he] guards’}\]
\[\text{mer=uorpen’i ‘[s/he] has children’}\].

Verbs with a consonantal onset select the allomorph me= of that proclitic:

(4b) \[\text{me=lem ‘[s/he] ate’}\]

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44 The minimal pair provided in this description is probably the only one existing in TY for this pair of consonants. The existence of this phoneme was not reflected in previous studies of TY.

45 Diphthongs are defined here as long vowels having two different targets, whereas long vowels have two identical targets (see e.g. Ladefoged and Maddieson 1996:321).
This is how the clear distinction between the vowel glides /uo/ and /ie/ on the one hand and the combinations of approximant + vowel /wo/ and /je/ on the other hand is made when these sequences appear word-initially. In other positions other tests, e.g. vowel elision as in (8a), may apply. For the diphthong /uö/ no such evidence distinguishing it from the hypothetical sound sequence /#wö/ can be provided because it is not found in the absolute onset. Another phonotactic rule confirms the diphthongal status of /uö/. Since it occurs only in the sequence <juö> and TY does not allow consonant clusters in the onset, the segment following the approximant /j/ can be interpreted only as a vowel. The diphthong /ia/ was not detected by previous scholars for its exceptional rarity. It is used literally in just a couple of lexemes, e.g. miara- ‘to whet’, niar ‘a bare spot on a skin’, tianu-
⁴⁶to jump pulling hind legs rather high’ (about a reindeer). Despite its rarity minimal pairs can be found: miaral ‘whetting’ ~ miral ‘walking’ and miaraanul ‘to whet.DUR.GER’ ~ maraanul ‘to dress.DUR.GER’.  

Nikolaeva (2006:30) notes that no minimal pairs can be found that would discern the diphthongs /uo/, /ie/ and /uö/ from the corresponding long mid vowels, of which they are, according to her, ‘non-phonological variants’. However, for diphthong /uö/ a minimal pair involving the corresponding long mid vowel does exist, e.g. uo ‘child’ ~ oo ‘pants’, and variants like oorine- ‘to cry’ (e.g. Kurilov 1990:206), as opposed to uorine- (filed notes), should therefore be interpreted as instances of smoothing⁴⁷. No such pairs can be found for the remaining diphthongs /ie/ and /uo/ for reasons not directly related to their assumed phonemic status. The diphthong /ie/ is left without one due to the assumption (Nikolaeva 2006:30) that it occurs in variation with /ee/, and there are no minimal pairs for the opposition /ie/ ~ /ee/. I argue against this reasoning by pointing out that in modern TY presented in this thesis neither does the diphthong [ie] show variance with [e:] being realized as a diphthong phonetically⁴⁸, nor is there the phoneme /ee/. Krejnovič (1958:9 and 1968:436) states that vowels can be long but does not offer a singel example of [e:]. Krejnovič (1982:10) remarks that [e:] occurred in his material only once, without giving the actual example. Interestingly, he refrains from explicitly assigning phonemic value to long vowels generally. Veenker (1987:83) treats only /ii/, /uu/, /oo/ and /aa/ as phonemes. Kurilov (2006) does not mention the phoneme /ee/ either. Maslova (2003c:3) and Nikolaeva (2006:29) do place /ee/ into their vowel inventories of TY.

Judging by the relative frequency of [e:] and [ie] the latter should be a far more probable and eligible candidate for obtaining phonemic status than the former. Indeed, as soon as one stops demanding that the crucial opposition be [ie] and [e:] a number of minimal pairs with the pattern lewde- ‘to eat’ ~ lewdie- ‘to begin to eat’ are, indeed, easily found, supporting decisively phonemic status of the vowel glide /ie/. On the other

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⁴⁶ It is quite possible, however, that the noun niar derives from the Even nilber ‘a bare skin’ and the verb tianu- is the altered Even loan tibaadaj ‘to gallop’.  
⁴⁷ The term ‘smoothing’ is used here after Ashby (2011:112) to designate the simplification of complex vowels.  
⁴⁸ This has been confirmed by a phonetic analysis (Odé, personal communication).
hand, there are only a handful of lexemes with [e:]\(^{49}\). The only pair of words with an opposition between [e:] and [e] or [V:] that comes close to a minimal pair is *eenil* ‘one year old female reindeer’ ~ *enilee* ‘MP’. Apart from this pair’s being segmentally inadequate for a true minimal pair, its first member is a loan from Even and the second member is an interjection-like item, which makes the pair even less suitable to establish a language specific semantic contrast. Generally, the few instances of long [e:], apart from those mentioned in footnote 49, are limited to Even loans (another rare example is *neenukee* ‘riddle’ (Nikolaeva 2006:30)) and interjections. In interjections this kind of lengthening conveys attitudes and can produce pseudo-minimal pairs. For instance, lengthening of the vowel in the first syllable of the interjection *keged’eej* [keːged̂eːj] signals a negative attitude of the speaker toward an event while lengthening of the second syllable [kɐɡeːd̂eːj] indicates the speaker’s positive attitude (Kurilova 2012:32). It is clear that one deals here with different realizations of one and the same word expressing different emotional states of the speaker, which, arguably, cannot be identified with meanings. Interjections as such have only quasi-lexical status as they do not name concepts but only evaluate them. Nor do they distinguish grammatical meanings. It is differentiation of meanings, conceptual or grammatical, that ascribes phonemic value to a sound. All these facts and considerations justify denying the vowel [e:] the status of a phoneme.

The diphthong /uʊə/ does not have a minimal pair of the sort /uʊə/ ~ /ʊʊə/ because the long vowel /ʊʊə/ does not seem to exist\(^{50}\). The lack of /ʊʊə/ is essential, because the

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49 In passive/resultative forms of verbal lexemes whose derivational bases end in <CVj> the vowel in this sequence, which is mostly [e], undergoes lengthening: *joneejuol-* < *jonej* ‘to open’ *ajayarejuol-* < *ajayare* ‘to skin’, *waareejuol-* < *waarej* ‘to pull along’. *jarayaajuol-* < *jarayej* ‘to turn white’, *kweeejuol-* < *kewej* ‘to leave’, *kweerejuol-* < *kweerej* ‘to carry away’, *juoyarejuol-* < *juoyarej* ‘to finish’ *sisayarejuol-* < *sisayarej* ‘to tear’, *pulgerejuol-* < *pulgerej* ‘to pull out’, *köögeejuol-* < *köögeej* ‘to rush’, *jedejuol-* < *jedej* ‘to become visible’, *januyejuol-* < *januyej* ‘to clean up’ etc. This is a regular vowel alternation with only a few exceptions. It is self-evident that these forms are not suitable to act as members of potential minimal pairs.

50 If the criterion of the existence of minimal pairs is to be applied rigidly, [a:] cannot be considered a TY phoneme, since none are found. Even as a phone it is an extremely rare variant on the short [a]. Odé (2012:37) states that in her materials this vowel is attested very sparsely. In fact, in the source Odé (2012) refers to, it occurs only in forms of the word *köje* ‘piece’ and represents an idiolectal lengthening of the short [a]. The speaker does it also with other vowels. Examples of [e] in words belonging to various parts of speech and in different grammatical contexts follow: *leewejl* (Kurilov and Odé 2012:24), *kweej’en* ‘[he left]NVIS’ (ibid. 28), *pulgeejelek* (ibid. 60) ‘having rushed out’, *janaspeejrellek* ‘having forgotten’ (ibid. 64), *jedejl* ‘[it] appeared SF’ (ibid. 32) etc. There are at least some inconsistent uses of [e] in that source, e.g. *me=pulgeejmund eli* ‘we go out’ (ibid. 22) vs. *pulgejmuni* ‘[it] appears’ (ibid. 264).

This kind of lengthening is not an isolated phenomenon. In the recordings of another speaker there are forms like *paapje(n)* ‘women’(s)’, *keepeya* ‘in young men’ and *qomon’ejrukun* ‘something blue’. These lexemes are listed in Kurilov (2001) as *paipje, keip* and *qomon’ejrukun*. The speaker herself utters the two latter words in the same recording also with the short vowel. This indicates that one deals here for the most part with a non-phonemic realization, possibly emotionally colored, of short vowels. At least as many speakers avoid this practice. This kind of lengthening may have originated from the vowel alternation mentioned in footnote 49. The rule was apparently generalized to different degrees by some speakers of TY, which resulted in non-phonemic variants described above.
very similar diphthong /uö/ is definitely the alternate realization of /ool/, the respective long mid vowel (Nikolaeva 2002:4, Nikolaeva 2006:30), which, in addition, is regular only in stressed syllables (Maslova 2003c:3). Moreover, for Nikolaeva (2006:30) the diphthongs are only tendentially preferred under stress or in monosyllabic words. So, the existence of the corresponding long mid vowels is thought of as being primary, almost the prerequisite for the existence of the diphthongs. If the long vowel /öö/ is not there in TY, it is reasonable, on these grounds, not to expect the existence of diphthong /uö/.

The existence of diphthong /uö/ is suggested by the entry juö- ‘to see’ in Kurilov (2001:132) and assumed by Maslova (2003c:3). However, Kurilov (1990:80) spells the word as joo- and Krejnovič (1958, 1968, 1982) does not recognize this diphthong even phonetically. Neither does Kurilov (2006:36-37) in his overview of the vowel phonemes. Sentence examples in Kurilov (2001) demonstrating the use of the verb ‘to see’ are spelt with <ö> only in the nest of this verb itself. In other examples, scattered over the pages of the dictionary, the verb is written with <o>. Obvious cases of confusion of /o/ and /ö/ are present in Kurilov (2001) too. For instance, the word juondewče ‘sinciput’ deriving from joo ‘head’ and ewče ‘top’ is erroneously spelt as juöndewče (Kurilov 2001:133). There are more cases of confusion of these two vowels. Thus, one of the informants insisted that the word for ‘middle’ should be spelt as(ord’e) while in (Kurilov 2001:348) it is listed as ord’a. The spelling örd’e stands for ‘garbage’ according to Kurilov (2001:357). The adverb ‘far’ is spelt jöke in Kurilov (2001:127) and joko in Kurilov and Odé (2012). Easy confusion of /o/ and /ö/ may have been the reason why Krejnovič in all his works recognizes only two diphthongs: /ie/ and /uo/. Words that have the diphthong [uo] he presents as having the diphthong /uö/. Notably, apart from the obscure word juöldöjče ‘spear’, <uö> appears only in the nest of the verb juö- ‘to see’ in Kurilov’s (2001) dictionary. Somewhat simplified, this means that there is only one, at most two, words in TY with the sequence <uö>. The root juö- ‘to see’ serves together with joo ‘head’ as a member of the sole minimal pair distinguishing the diphthongs /uö/ and /uö/. Extreme scarcity of minimal pairs does not in itself preclude establishing the phoneme /uö/. However, in view of the additional evidence, that is, apparent confusion of the sounds [ɔ] and [ö] in writing and the absence of long vowel /öö/, with which /uö/ could alternate in the same way the diphthong /uö/ alternates with /ool/, it is not unwarranted to question the validity of the minimal pair joo ‘head’ ~ juö- ‘to see’.

Nikolaeva (2006:30) notes that in transcripts of KY the verb ‘to see’ is recorded now as joo-, now as juö-. This possibly indicates that what is described in more recent works on TY as the diphthong /uö/ in fact is the diphthong /uö/ realized sometimes as the long vowel [ɔɔ]. This would make the members of the assumed minimal pair joo ‘head’ ~
juö- ‘to see’ homonyms, and the issue of the missing long vowel /öö/ would become irrelevant. Such interpretation of the present situation is also readily compatible with the above mentioned confusion of /ö/ and /o/. Systematic phonetic experiments would be necessary to unambiguously answer the question whether or not the assumed diphthong [uø] and, consequently, /uö/ exists.

Table 2.1.2

<table>
<thead>
<tr>
<th></th>
<th>bilabial</th>
<th>coronal</th>
<th>palatal</th>
<th>velar</th>
<th>uvular</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>voiceless</td>
<td>voiced</td>
<td>voiceless</td>
<td>voiced</td>
<td>voiceless</td>
</tr>
<tr>
<td>plosive</td>
<td>/p/</td>
<td>/b/</td>
<td>/t/</td>
<td>/d/</td>
<td>/d’/</td>
</tr>
<tr>
<td>nasal</td>
<td>/m/</td>
<td>/n/</td>
<td>/n’/</td>
<td>/ŋ/</td>
<td></td>
</tr>
<tr>
<td>trill</td>
<td>/l/</td>
<td>/r/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fricative</td>
<td>/s/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>affricate</td>
<td>/č/</td>
<td>/γ/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>approximant</td>
<td>/w/</td>
<td>/j/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lateral</td>
<td>/l/</td>
<td>/ɭ/</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A few remarks are appropriate here concerning pronunciation of certain consonants.

/d/, /l/ and /n/ in front of /i/ are hard to discern from their palatalized counterparts. /l/ can, but need not, also be difficult to distinguish from /l’/ in front of /el/.

/d’/ can surface almost as the affricate [dʒ], which may have been the default pronunciation at earlier stages of TY since /d’/ is regularly found when /č/ gets voiced: čuöl’e d’ii < čuöl’e čii ‘ancient people’.

/l/ in the coda of cliticizing words can be pronounced as an affricate in quick speech when followed by /j/: met juo [mɛč(j)uɔ].

/č/ may be perceived as /h/ in front of the dental nasal 54: lejričnaal’elum [lejritna:ɭelum] ‘he recalled.NVIS’.

/q/ has two realizations, which seem to vary freely, namely the voiceless uvular plosive [q] and voiceless uvular fricative [χ].

/w/ can be more of a labiodental consonant, with the lips hardly protruded, possibly due to interference with Russian.

/γ/ has a positional variant, the voiced uvular plosive [ɡ], after /ŋ/: tidayya [tidan’ga] ‘last year’, idaranyya [idarar’ga] ‘next year’.

/ŋ/ can be realized as a retroflex after /ŋ/: jayre [jan’re] ‘goose’.

/n’/ in word final position is regarded by some speakers of TY as /n/: nonol’iñ’ [nonol’iɛn] ‘snare’, sajaal’en’ [saxa:ɭen] ‘s/he disappeared’.

2.2 Phonotactics

2.2.1 Positional restrictions

The least restricted are word-internal positions, since this is the least specific environment within a word. All phonemes can occupy it. It is the only environment in

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54 In amutnye ‘well’ < amuc ‘[it] is good’ + -nen ‘ADV’ it has even become the default pronunciation.
which voiced obstruents occur primarily. Word-finally voiced obstruents are absolutely prohibited. Word-initially the phonemes /g/, /d/ and /d'/ can occur only as the result of voicing of the underlying voiceless counterparts, e.g. čuol’e d’ii ‘ancient people’ < čuol’e či (Kurilov 1991:30). Distribution of voiced obstruents is restricted also on the syllable level: they are limited to syllabic onsets after vowels, approximants, sonorants and /č/55.

Other consonants can be encountered both in onsets and codas, but additional word-level restrictions apply. Thus from word-initial onsets the consonants /tt/, /ŋ/56 and /r/ are banned. Word-finally, some consonants are possible only in very restricted grammatical context, e.g. /s/ can be found exclusively in 3SG of causative verbs under negation.

Among vowels the phoneme /uo/ is found very seldom word-initially57. Word-finally vowel phoneme /õ/ occurs extremely seldom and /oo/ probably never58. Other vowels are not restricted in either of these positions.

As far as word roots are concerned, irrespective of the part of speech their coda shows a high degree of sonority ending either in a vowel or a sonorant consonant, and only very seldom in /č/59. Voiceless stops are disallowed in root final position. A possible exception are adverbs ending in /q/, e.g. jaqlaaq ‘beyond’60.

2.2.2 Adjacency restrictions

Tautosyllabic consonant clusters are disallowed in the onset under all circumstances. Word-Internally heterosyllabic consonant clusters of more than two consonants are prohibited. Consonant clusters, generally disallowed in the coda, do occur in the absolute coda, but may not exceed three segments. Below are the lists of the permissible consonant combinations ordered according to the decreasing sonority distance61:

1. Glide or /l/, or /rl/, or /ml/, or /sl/, or /č/ and /k/

(5) pulgejk ‘come out!’
    lewk ‘eat!’
    quduolk ‘lie!’
    n’il’iwuolk ‘keep smiling!’
    òll’elk ‘neither/nor’

55 For instance, in the expression möčgurčii- ‘to go mad’ or in könn’ičbuol- ‘to be inclined to show family feelings’. This is a previously not noted position for voiced plosives.
56 There is an emphatic linguistic device joll’elk, but since it behaves like a clitic, almost like a suffix actually, it can hardly be said to have an initial position. The same cannot be said as categorically about the copular verb jol- since a pause can be inserted in front of it.
57 For the diphthong /uo/ quite a few entries in Kurilov (2001) can be found, where it occurs in inlaut, but all of those words derive from the noun uo ‘child’, the only exception being its homonym, the verb uo- ‘to roast’.
58 I am aware only of the following instances of these two phonemes word-finally: ðrkobō ‘lynx’ and ōγō ‘a small hill on a plain’, oo ‘pants’ and the homophonous verbal stem oo- ‘ladle (out)’.
59 /sl/, being the causative suffix, is stem final.
60 It is quite possible that it is historically derived as the final –q seems to be some adverb deriving formative. Cf. jataq ‘straight’ ~ jatayaj- ‘to become straight’ ~ jatarqa ‘straight part of smth.’.
61 Sonority distance values are calculated on the basis of the sonority scale proposed in Gussenhoven and Jakob (2011:165): obstruents → nasals → liquids → glides → vowels.
From this list it follows that when the second consonant of the cluster is a plosive\(^{62}\), the sonority distance is not a restrictive factor, all possible values of the sonority distance are attested.

2. Glide and /l/, or /l'/, or /ŋ/, or /m/, /č/ or /h/

\(\text{(6) }\)

- *qoql* ‘God’
- *n’aajl* ‘son-in-law’
- *qajl* ‘stone’
- *kwejł* ‘leaving’
- *čajqatterej* ‘[I] twisted’
- *lawŋ* ‘[I] drank’
- *joojm* ‘[s/he] is ill’
- *qoolewm* ‘[s/he] did smb. in’
- *jarawć/jarajć* ‘[it] lasts annoyingly long’
- *qodejć* ‘[it] is unpleasant’
- *čulajt* ‘[I] will stab’
- *el=ćajlerejt* ‘[s/he] will not become sober’

When the first member of the two-consonant cluster is a glide, the sonority distance does not seem to play a role either, except that sonority distances <1 are not allowed. The conspicuous absence of the cluster */js/, hypothetically possible in 3SG of causatives under negation, e.g. *el=sal’γarejs* ‘[s/he] did no make [smb.] break [smth.]’, is an indication of disregard for the foot structure in TY (see 2.2.3 and 2.2.5 for discussion). The grammatically correct negative form is *el=sal’γarejse* ‘[s/he] did not make [smb.] break [smth.]’, with a degenerate foot in word-final position in addition to the loose word-internal light syllable <ya>. The hypothetical form would have only the latter. The reason for this foot-wise ‘inadequate’ form is probably a much stronger constraint on three-consonantal clusters, preventing the potential illicit cluster */jsk/:

*Sal’γarejjsk/Sal’γarejsek! ‘Make [smb.] break [smth.]!’ or *Pomogerejjsk/Pomogerejsek! ‘Let [smb.] circumambulate!’\(^{63}\).

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\(^{62}\) The designation ‘plosive’ here is by no means all-encompassing. Moreover, /k/ is only the plosive that enters such a broad variety of clusters. /k/ only instantiates plosives as a class in consonant clusters and individual restrictions on cluster formation apply for individual plosives.

\(^{63}\) TY has the so called ‘alternating suffixes’, or morphemes exhibiting the morphology Ce/C (Nikolaeva 1998:203). The Ce form is presumed to be the underlying one (Nikolaeva 1998:208). If the vowel of the causative suffix –se got deleted in the negated form of these verbs yielding the cluster */js/, the imperative of the resulting causatives would contain the illicit */jsk/ cluster. Theoretically this cluster could be resolved by the epenthetic vowel /u/ as */jsuk/. Practically, the imperative ending vehemently –k resists epenthesis, allowing it optionally, to my knowledge, only after the velar nasal, e.g. Čuv(uk) ‘Read!’.
As is clear from the examples the majority of the instances of consonant clustering are limited to a narrow grammatical context of several finite verb forms (singular imperative and 1SG, 3SG as well as 2PL indicative of the basic conjugation) as well as gerunds.

Clusters of three consonants are extremely rare and obtain only in 2PL indicative when the verb base ends with an approximant:

(7) \( \text{sal'\text{\`arejm}} \) \(^{64} \) ‘[you.PL] broke’

\( \text{moojm} \) ‘[you.PL] held’

Notable is the absence of clusters liquid + nasal while clusters liquid + obstruent or nasal + obstruent exist. Their lack is probably explained by the insufficient sonority distance between liquids and nasals, which are next to each other on the sonority scale. If one takes into consideration the preceding remarks, the conclusion may be drawn that cluster relevant sonority distance depends on the sonority class of consonants participating in a potential cluster and the direction of the sonority value. For glides or obstruents it can be as low as 1. For liquids it can be 1 up the sonority scale and must be > 1 down the sonority scale. For nasals the minimal sonority distance is 1 down the sonority scale and 2 up the sonority scale.

An immediate co-occurrence of two vowels not belonging to the same syllable, a hiatus, is forbidden in TY and is resolved either by vowel deletion or an insertion of an epenthetic consonant, \( \text{\`y}, \text{\`r}, \text{\`n} \) or /\( \text{\`nj} \). Sometimes these strategies alternate:

(8a) \( \text{k\`ojle} \) ‘to break’ vs. \( \text{k\`ojluol} \) ‘to be broken’

\( \text{"ogete} \) ‘to install’ vs. \( \text{"ogetuol} \) ‘to be installed’

\( \text{sewre} \) ‘to bring in’ vs. \( \text{sewruljol} \) ‘to be brought in’

(8b) \( \text{tadim} \) ‘s/he gave’ vs. \( \text{tadi\text{juon}} \) ‘it is given’

\( \text{k\`ojle} \) ‘to break’ vs. \( \text{k\`ojlejuol} \) ‘to be broken’

\( \text{"ogete} \) ‘to install’ vs. \( \text{"ogetejuol} \) ‘to be installed’

\( \text{to\`yulte} \) ‘to smear with old brew’ vs. \( \text{to\`yultejuol} \) ‘to be smeared with old brew’

(8c) \( \text{me=tadim} \) ‘s/he gave’ vs. \( \text{mer=\text{\`awej} s/he sleeps}’

(8d) \( \text{n\`i=nuu} \) ‘to meet’ < \( \text{nuu} \) ‘find’ vs. \( \text{n\`i\`y=il\`ite} \) ‘to quarrel’ < \( \text{il\`ite} \) ‘to reprimand’

(8e) \( \text{maraaan\`a} \) ‘to dress.INCH’ < \( \text{maraa-} \) ‘to dress’ + -\( \text{\`a} \) ‘INCH’

Heterosyllabic adjacency restrictions on consonants are summarized following Nikolaeva (2002:7)\(^{65} \). Generally, they are less numerous across morpheme boundaries. Prohibited are all clusters with a voiced obstruent as the first member, which automatically follows

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\(^{64}\) According to Krejnović (1958:139) the form \( \text{sal'\text{\`arejm}} \) would have to be expected since for another verb whose base ends with /\( Vj/ \) he gives the form \( \text{susemj} \) ‘[you.pl] threw’.

\(^{65}\) Except that clusters voiceless obstruent + voiced obstruent are recognized across morpheme boundary (see footnote 55 for examples).
from the positional restriction limiting voiced obstruents to onsets, as well as clusters /Cj/ (except for /wj/, e.g. lawje ‘water’) and /ww/.

Inside a morpheme the following additional clusters are impossible: sonorant + /wl/, /lr/ + voiced obstruent and sonorant (except r) + voiceless obstruent.

2.2.3 Syllable structure

Nikolaeva (2006) attributes an important role to the concept of ‘prosodic foot’ for explaining some of the phonotactic properties of TY. However, it is doubtful whether this language at all conforms with the Prosodic Hierarchy and the principle of Foot Binarity (McCarthy and Prince 1995:321), the two postulates that demand that the minimal prosodic word in a language be no shorter than a bimoraic foot, i.e. have at the very least the structure VC, V: or V1V2. Syllables with the structure CV are degenerate feet and cannot be complete words. From Nikolaeva’s (2006:74-75) analysis it follows that the minimality requirement in Yukaghir is imposed on the level of Lexical Word in terms of McCarthy and Prince (1995:323). Now the monosyllabic bare root of one of the copular verbs in TY with the structure CV can, apparently, occur as an independent prosodic word in negative context as long as its subject is 3SG:

(9) Tuustaaq-qa-t el=jöke l’ė

66 Here and in the following, V = vowel, C = consonant, V: = long vowel, V1V2 = diphthong
67 I do not have a phonetic proof that l’ė in this expression constitutes an independent stress assignment domain, just as I do not have phonetic evidence that it does not, cliticizing with el=joke. I based my claim solely on the fact that the copular verb l’ė- per se does not belong to cliticizing elements in TY, unlike the negative clitic el=, which always needs to lean on something. Therefore I reason that if el= satisfies its need for leaning by some other host as in (9), there is no reason to expect the following l’ė- to clitize. It is only the theoretical approach of McCarthy and Prince (1995) that demands it. However, even they admit that there could be languages without a foot. There are indeed languages in which more convincing examples than that in (9) can be found to illustrate a prosodic word consisting of a degenerate foot, e.g. su ‘water’ in Turkish. So, there is not need a priori to squeeze TY, or any language for that matter, into the formal framework developed by McCarthy and Prince (1995) and adopted by Nikolaeva (2006).

A problem with the analysis in (9) is that one cannot be sure that l’ė- does not belong to the cliticizing units of TY. Normally, it occurs with at least one more segment, e.g l’ej ‘[it] is’, and meets the minimality requirement, at least as long as one agrees that also a word-final consonant provides a mora and regards TY glides as consonants in all positions, and I do. In the few grammatical contexts in which l’ė- ‘to be’ occurs as a bare root, it cliticizes. This fact is not as unequivocal as it may seem at first, though. When l’ė- clitisizes with el= in the negative copula ewl’ė ‘there isn’t’, it can be analyzed as triggered by el=. It is more difficult to explain away in a similar way the form qoll’ė ‘where is’ which probably derives from qadaa ‘where’ + l’ė- ‘to be’. A way to do it would be to say that, since l’ė- is specialized in expressing locations, the combination of these two words is extremely frequent. In Bybee (2011:11) one can read about how the usage frequency accelerates sound changes. In other words, the existence of the synthetic interrogative location copula qoll’ė ‘where’ instead of the synonymous analytic expression qadaa l’ė may be the result of frequent use and not l’ė- having to cliticize. Such an analysis is corroborated by the existence of lexicalized items like quodeban- ‘to be what kind’ < quode ‘how’ + pan- ‘to be’. In this word the copular verb pan- has also undergone a mutation which tells us that it forms one phonological word with quode. However, this compound, which certainly evolved due to the high frequency of use of these two words together, is not demanded by the word minimality requirement. This means that one cannot be entirely sure whether the word qoll’ė ‘where is’ is. In this way, neither evl’ė ‘there isn’t’ nor qoll’ė are convincing proofs that l’ė has to cliticize. In the absence of such a proof I interpret the written corpus data to accommodate my claims. Until the alternative point of view has been supported by solid phonetic evidence, it cannot, I believe, be objectively preferred over mine.
This violates the principle of Foot Binarity and makes the existence of foot in TY questionable or, more dramatically, renders invalid the part of the Prosodic Hierarchy which postulates that a prosodic word must contain at least one foot. On the other hand, in absence of an adverbial with a spatial meaning the copular verb l’e- ‘to be’ fuses with the negative clitic el= to form the negative existential copula ewl’e ‘not to be there’. In questions focalizing a peripheral constituent, another context where intransitive verbs occur as bare roots in 3SG, the copular verb l’e- in my material is either omitted, e.g. qadaa taj ‘where [is] it?’, or appears in an interrogative location copula qoll’e ‘where is’. These facts do support the idea that a language strives to produce words not shorter than a bimoraic foot. It may also be objected that one cannot regard copular verbs as Lexical Words since copulas are semantically empty structural devices necessary to form nominal predicates. However, there are three copular verbs in TY, which show a strong tendency to a semantically conditioned complementary distribution. As for l’e- ‘to be’, it has existential and locative meaning. Therefore, it is not quite unwarranted to see them as lexical words with the meanings ‘to be X’ or ‘to be equal to X’, ‘to exist’ or ‘to be at/be situated in’ and, finally, ‘to be such’. More importantly, since the term Lexical Word is presented together with Root and Stem as one of MCats at which the minimality requirement is imposed (McCarthy and Prince 1995:323), it can be taken as a label for a morphological unit. Copular devices are, certainly, morphological units too. If TY copular verbs are accepted as Lexical Words, the following, and unfortunately rather rhetoric, question to pose would be whether the isolated example of a monosyllabic word with the structure CV in (9) is sufficient to make far-reaching typological conclusions about TY phonotactics.

There is one more ‘suspicious’ item, though, namely the word me, which is an invitation to take an object:

(10)  Eкъя me jolle-лежа keči-men!

older.sister take moss-FOC.ABS bring-TR.3SG.OF

‘Sister, take, I’ve brought moss.’ (Kurilov and Odé 2012:132)

There is more controversial evidence in TY as regards the existence and significance of foot in it (see 2.2.4 and 2.2.5), so at least it can be stated that the concept ‘foot’ is to be used with caution when trying to account for phonological phenomena in TY.

Connected with the concept of ‘prosodic foot’ is the distinction of light vs. heavy syllables. If one accepts the validity of the Prosodic Hierarchy and the principle of Foot Binarity (McCarthy and Prince 1995:321) in TY, then one is compelled to conclude that

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68 Another similar indication in favor of the assumption of a bimoraic foot in TY is the behavior of demonstrative pronouns. Krejnovič (1982) attests monosyllabic variants of the attributive, presumably cliticizing, forms of the demonstrative pronouns without the velar nasal in coda position, e.g. tu ‘this’ and ta ‘that’ instead of tug and tan. Normally, these truncated CV-forms cannot be used as independent demonstrative pronouns, i.e. when they are to be prosodically self-sufficient, they must assume extended shapes, namely tuguntuguntun’e(ŋ) ‘this one’ and tanuntanuntan’e(ŋ) ‘that one’ respectively.

69 This is not a very strong point because this monosyllabic word could be interpreted as a lexically and modally specified particle. There is a parallel in Russian, the particle na with the same meaning.
the coda consonant, also word-finally, provides a mora in TY since this language has monosyllabic words of the structure (C)VC, e.g. al ‘under’, aq ‘constantly’, wal’ ‘beside’, ‘instead of’ and a number of intransitive verbs, such as mon- ‘to say’, jaw- ‘to ache’, n’ir- ‘to vomit’, peč- ‘to trot’, en’- ‘to be alive’. These monosyllabic verbal roots will occur as prosodic words in 3SG in questions focusing on an adjunct. Several transitive verbs could be added to this list, which occur as roots under AF, e.g. löl- ‘to raise/to educate’, mör- ‘to sense’, men’- ‘to take’, čaw- ‘to cut off’, čuŋ- ‘to read’ and a few more. A few examples illustrate their use:

(11a)  Qadaa jaw?
     ‘Where does it ache?’

(11b)  Tudel quodii n’ir?
     ‘Why did s/he vomit?’

(11c)  Tudel quodeŋ en’?
     ‘How does s/he live?’

(11d)  Kin par?
     ‘Who has put [it] to cook?’

On the other hand – and this is an interesting typological fact about TY syllable weight – monosyllabic nouns under no circumstances can have the structure CVC in TY (Nikolaeva 2006:41). They have to have two moras in the nucleus or be disyllabic, with the structure CV.CV. According to the existing views languages are divided in two groups depending on how they distinguish light syllables from heavy ones. The difference between the two groups lies in the treatment of the coda. A coda consonant either counts as a mora and, consequently, contributes to the syllable weight making a closed syllable with a short (or lax) vowel heavy or it does not, which leaves a closed syllable with a monomoraic nucleus light (Hyman 1984:5-6). Accepting the concept of word minimality conditioned by the principle of Foot Binarity, one has to draw the conclusion that TY shows a word class dependent pertinence to one of these typological groups of languages, treating the syllable CVC differently in (most) nouns on the one hand and other parts of speech on the other hand.

The list of monosyllabic words with the structure (C)VC given above is close to exhaustive. Monosyllabic prosodic words are generally rare in TY. Some instances of such words having the structure (C)V:(C) and (C)V₁V₂(C) are the following: oo ‘pants’, jaa ‘birch’, čuul ‘meat’, waaj ‘again’. uo ‘child’, čuo ‘iron’, wiem ‘[s/he] did’, čuor ‘whirlwind’ etc.

Far more common are oligosyllabic and polysyllabic (more than 3 syllables) words. In compounds the number of syllables can reach 6, e.g. opienuberukun ‘daily clothes’, uguřend’erukun ‘legged entity’. Complicated, and admittedly somewhat artificial but possible, verb forms can count up to 8 syllables, e.g. kudičiisienunulbull’en’ ‘it appears that [s/he] always wanted to begin to make [smb.] put [smth.] repeatedly’.

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70 Except for the lexemes al ‘under’ and wal’ ‘besides’ treated in this grammar owing to their function as postpositions, which for formal reasons would have to be recognized as nouns (see 3.8).
The following is an overview of the possible syllable types in TY:

- open syllables

1. V → aŋa ‘mouth’
2. V: → ii.die ‘aunt (elder brother’s wife)’
3. V₁V₂ → uo ‘child’
4. CV → wa.ya ‘face’
5. CV: → jaa.die ‘aunt (mother’s younger sister)’
6. CV₁V₂ → wie.d’ie ‘MP’

- closed syllables

7. VC → an.min ‘MP’
8. V:C → oon.d’ej ‘s/he informed’
9. V₁V₂C → ien.d’e ‘excrements’
10. CVC → go.mo.n’ej ‘to be blue/green’
11. CV:C → waaj ‘again’
12. C V₁V₂C → ěuor ‘whirlwind’

- closed syllable with consonant clusters

13. CVCC → ke.wejk ‘leave!’
14. CV:CC → moojk ‘hold!’
15. C V₁V₂CC → n’iemk ‘you called’
16. CVCCC → pul.gejmk ‘you came out’
17. CV:CCC → paajmk ‘you hit’

All in all, TY has a fairly complex system of syllables for an OV language\(^{71}\) and a number of superheavy syllable types defined as comprising more than two moras (Hyman 1984:10). It is conspicuous that the system is almost symmetric in the sense that all possibilities of combining vowels and diphthongs with consonants and licit consonant clusters, except CV₁V₂CCC, are attested, that is, in whichever syllable type a short vowel is found, a long vowel or diphthong is found too.

Syllable structure of TY is typologically remarkable in a few respects. Firstly, it is not possible to assess uncontroversially the syllable complexity in TY according to the classification criteria proposed in Maddieson (2005:54, 2006:109) because strictly speaking TY does not fall into any of the suggested classes. Thus, languages regarded as having ‘moderately complex syllable structure’ are such that allow qualitatively restricted onset clusters of no more than two consonants and disallow any in the coda. Languages with a ‘complex syllable structure’ have less restricted prevocalic consonant clusters and/or postvocalic consonant clusters. It appears that this typology expects a higher

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\(^{71}\) There has been an opinion that the syllable structure tends to be simple in OV languages (Lehmann 1973:61, Gil 1986).

\(^{72}\) Abstract consonants are meant here as there are positional and adjacency restrictions on occurrences of certain classes of consonant sounds (see 2.2.1 and 2.2.2).
complexity of consonant clusters rather in the onset than in the coda. In TY the situation
is the opposite: no consonant clusters are allowed in the onset but up to three consonants
can occur in the coda. According to an alternative complexity scale (Maddieson 2010
cited by Tokizaki and Kuwana 2012:74), which takes into account the complexity of the
nucleus and indexes precisely the coda complexity, TY would unambiguously occupy
step 5 on a scale between 1 and 8.

Maddieson (2005:56) places TY among languages with a complex syllable
structure despite the fact that the proposed criteria seem to be leading to controversial
conclusions. Maddieson (2005:55) also notes a direct correlation between the size of the
consonant inventory and the degree of syllable complexity. The average number of
consonant phonemes correlating with simple, moderately complex and complex syllable
structure is reported to be 19.1, 20.0 and 25.8. The number of consonant phonemes in TY
equals 21, which means that the correlation is not strictly valid for TY.

TY has a rather complex syllable structure with up to 6 segments in it and shows a
rich inventory of consonants that can occur in the coda (see 2.2.1), which undermines
the absolute value of Hashimoto’s (1978 cited by Tokizaki and Kuwana 2012:78)
observation that codas are simpler in northern Asia than in southern Asia. At the same
time TY displays a nearly maximal degree of complement-head order along the scale
devised by Tokizaki and Kuwana (2012:79). This, in turn, frustrates the inverse
correlation between complement-head order and high syllable complexity and coda
variety expected by Tokizaki and Kuwana (2012:80-81).

Resuming, a remarkably high degree of syllable complexity and coda variety for a
predominantly head-final language, marked clustering position within the syllable and
lack of a clear direct correlation between the size of the consonant inventory and syllable
complexity make TY syllable structure typologically interesting.

2.2.4 Vowel harmony

There has been no unanimous opinion among scholars whether or not TY has vowel
harmony. Veenker (1987:104) does not see a tendency for vowel harmony. Krejnovič
(1982:20) avoids categorical statements in this respect and supposes on the basis of the
available data, where /e/ co-occurs with /ö/ and /o/ with /a/, that backness harmony had
existed in TY at some point for non-high vowels. Nikolaeva (2006:36), who attempts to
describe vowel harmony in the Yukaghir languages in terms of foot structure, asserts
vowel harmony along this parameter. She adds that within the first bimoraic foot there is
also a limited roundness harmony, disallowing co-occurrence of /a/ and /ö/.

Both types of harmony just mentioned are better described without resorting to
the concept of ‘foot’ because, as is apparent from the relevant examples in Nikolaeva
(2006:36-37), they are supposed to operate also beyond the foot boundary. A more

73 This is an interesting phonotactic parallel between TY and the extant Samoyedic languages, which also
pronounce consonant clusters in the onset but permit (in Tundra Nenets) up to two consonants in the coda
(Várnai 2012:132). The variety of nucleus types is also a common characteristic of TY and Samoyedic
languages.

74 For comparison, in Manchu, a Tungusic language, only [n] and [ŋ] can be found in that position
(Hashimoto 1978 cited by Tokizaki and Kuwana 2012:78).

75 This discrepancy arises from the fact that Nikolaeva (2006:41) regards word-final consonants as not
contributing to syllable weight in Yukaghir, with which I disagree with respect to TY (see discussion in
accurate formulation would be to say that vowel harmony is effective within the first two syllables of a stem as long as this portion of a word has the syllabic structure (C)V.CV and (C)V.CVC(CC).

backness harmony  
backness and roundness harmony

(12)  
| e.be.kie  | ‘dampness’  | a.ya.rii-  | ‘to conceal’ |
| e.lem.de- | ‘to say trifles’ | a.yajm  | ‘[s/he] touched’ |
| ö.ge.te-  | ‘to install’  | o.do  | ‘gift’ |
| ö.gejm  | ‘[s/he] peeped in’ | o.ηaj  | ‘sack’ |
| me.ge.če  | ‘mischievous person’ | wa.γa.tej-  | ‘to direct’ (reindeer) |
| je.deč  | ‘[it] appeared’  |  |  |
| kö.če.ge-  | ‘to gallop’  |  |  |
| mö.γer  | ‘thunder’  |  |  |

The remaining two short vowels, /i/ and /u/ are harmonically neutral and can occur with front and back vowels alike, either following them or preceding:

combinations with front vowels  
combinations with back vowel

(13)  
| ö.či.đie  | ‘uncle’  | a.n’i.be  | ‘covered sledge’ |
| ö.đ’il  | ‘nail’  | a.dil  | ‘lad’ |
| e.nu  | ‘river’  |  |  |
| e.gur  | ‘withers’  |  |  |
| lő.ɡi.te-  | ‘to feed’  |  |  |
| mő.rim  | ‘[s/he] heard’  |  |  |
| ke.lu.jet  | ‘we came’  |  |  |
| le.ɡul  | ‘food’  |  |  |
| pi.me  | ‘louse’  |  |  |
| či.re.βe  | ‘plummet’  |  |  |
| li.γem  | ‘[s/he] amused’  |  |  |
| pu.de  | ‘outside’  |  |  |
| pu.geč  | ‘[it] is hot’  |  |  |

In stems with the first two syllables displaying a different structure vowel harmony can be violated:

(C)VC.CV  
(C)VC.CVC

(14)  
| an.me.l’e-  | ‘to be idle’  | an’.mej  | ‘to seat upon smth.’ |
| lany.le  | ‘side’, ‘one half of smth.’  |  |  |

2.2.3). But even if one accepted that the word-final consonant in TY does not project a mora, one would still have to conclude that even verb stems with the structure (C)VC.CV like tono- ‘to drive’ display vowel harmony that goes beyond the foot boundary. In the 2PL of such verbs, as long as they are transitive, there is the consonant cluster /mk/, e.g. tonomk ‘[you] have driven’. In these forms /m/, being non-final, does provide a mora also under Nikolaeva’s (2006:35) analysis. Therefore, the resulting word is parsed in the degenerate foot /to/ and a bimoraic foot /nomk/. The vowels of these syllables harmonize, thus, across the foot boundary.
Thus, backness and roundness harmony is observed for the above mentioned sets of vowels within the first two syllables of a stem when the first syllable is open. Actually, neither backness, nor roundness vowel harmony has absolute validity in TY. There is a strong tendency for them and exceptions are utterly infrequent but quite real, e.g. eγabe ‘small of the back’, od’e ‘dew’, mojejm ‘[s/he] wiped’, pod’aγa ‘to glitter’, mojaγa- ‘to walk athletically’, qalel ‘drifting of the ice’, sarej ‘[it] molten’, čalejm ‘[s/he] added a little’.

Apart from this stem internal vowel harmony TY has optional pre-radical vowel harmony. It involves only verbal proclitics mer= ‘PF’, at ‘POT’ and el ‘NEG’. They are listed here in their relative position in the preverbal slot, mer= and el= being mutually exclusive. Pre-radical vowel harmony is basically vowel assimilation, which yields mar= and al=. The assimilatory effect can come either from the potential clitic at or from the first vowel of the verb root, e.g. me=jamd’ij [majamdijj] ‘[s/he] is ill’76. An assimilation of mer= by the particle anne ‘just’ is lexicalized as maranne.

Some limited vowel harmony can be observed in the post-radical domain too. The suffix deriving nouns from qualitative verbs has two allomorphs (-rke/-rka) which harmonize with the stem along the parameter of backness.

(15) jöjerke ‘smth. ringing’ vs. jatarga ‘straight part of smth.’

The allomorphs of the inchoative suffix are said to show some harmonic distribution. The allomorph –(n)aa tends to follow bases containing /a(a)/ or /o(o)/ while in all other cases it is –ie (Krejnovič 1982:121, Kurilov 2001:165):

(16) sayanaa- ‘to sit down’ < sayane- ‘to sit’
    tonaa- ‘to begin to drive’ < tono- ‘to drive’
    moojnaa- ‘to begin to hold’ < mooj- ‘to hold’

(17) iečie- ‘to begin to pierce’ < ieči- ‘to pierce’
    pörindie- ‘to begin to kick’ < pörinde- ‘to kick’
    mugie- ‘to begin to undress’ < muge- ‘to undress’

However, counterexamples, where the vowel harmony appears to be violated, are rather frequent. A regularity may be observed here that the violation is more often in favor of –naa, the allomorph normally employed for hiatus resolution after harmonically back bases ending in a long vowel or a diphthong.

(18) kuderienaa- ‘to begin to put’ < kudere- ‘to put’

---
76 Krejnovič (1958:147) provides an example of the harmonizing preconsonantal allomorph me= assimilated by a back vowel: momod’eŋ < me= + mod’eŋ ‘I said’. No instances of that are known to me from modern TY. Krejnovič (1982:21) also reports an instance of regressive harmony involving the negative clitic el=, which is triggered by the first vowel of the root: alaruud’a ‘dumb person’ < el= ‘NEG’ + aruu ‘speech’ + d’aa ‘NMLZ’.
wienaa- ‘to begin to do’ < wie- ‘to do’

More seldom is the use of the allomorph –ie when –aa is expected. It is found e.g. after the desiderative mood suffix –bun’:

(19) ayal’webun’ie- ‘to begin to want to laugh’ < ayal’we- + -bun’ ‘DES’ + -ie ‘INCH’

For some verbs alternative forms of the inchoative are attested. It appears that here too rather verbs with the expected suffix –ie can have the alternative allomorph, not the other way around. This can be seen as a tendency toward regularization of the inchoative suffix as –naa and the resulting loss of vowel harmony in this domain:

(20) uusaa- < uuse- ‘to carry away’ > uusie-

A seemingly exceptionless rule pertaining to vowel harmony in TY is that /ö/, unless it is the second half of a compound, can be preceded by no other vowel than /ö/, e.g. ögöjre ‘to peep in having suspended one’s body from above’.

A reflection of vowel harmony is the phenomenon of synharmonism observed in TY stems. Uvular consonants /q/ and /γ/ do not occur in stems with harmonically front vowels /el/ and /ö/ whereas velar plosives /k/ and /g/ are not found in stems with harmonically back vowels /a/ and /o/ (Nikolaeva 2006:40):

(21) pugelwe- ‘to warm oneself’ vs. ayal’we- ‘to laugh’
    seruge- ‘to rattle’ vs. paduya- ‘to flutter’
    mörkie- ‘to resound.INCH’ vs. juoqaa- ‘to ache.INCH’

The validity of this rule appears unbroken only under Nikolaeva’s (2006:29) assumption that beyond the first bimoraic foot all short non-high vowels are neutral with respect to backness, being realized as a central vowel, which optionally partly harmonizes to a full vowel. If one does not assume that, exceptions are rather frequent as there are plenty of derivational suffixes involving vowel /el/, which are attached to harmonically back verbal roots rendering them disharmonic. In such disharmonic stems /g/, /q/ and /γ/ can occur:

(22) pomoge- ‘to turn around’
    qandej- ‘to see off’
    qalimd’e ‘coolness’
    sal γarejse- ‘to break.CAUS’

Such combinations can be encountered even in words where /el/ is not outside the first bimoraic foot, e.g. qalel ‘drifting of the ice’.

Compound stems, naturally, also need not adhere to the rule of synaharmonism, e.g. möčgurčii- ‘to go mad’.

77 ‘Derivational’ implies here non-paradigmatic.
2.2.5 Some remarks on the significance of ‘foot’ in TY

It was already shown (see 2.2.3 and 2.2.4) that the presumed importance of ‘foot’ may be overestimated when applied to phonotactics of TY. The concept of word-minimality based on Prosodic Hierarchy and Foot Binarity is valid not without reservations. Exceptionless vowel harmony obtains in the first bimoraic foot of non-derived nouns only. There are further indications of the foot structure being disregarded.

Certain aspectual forms are computed without consideration of the foot structure. For instance, the choice of allomorph –naa of the inchoative suffix in (20) could produce well formed words of the structure CVC|CV:C, a perfectly bimoraic structure in both feet. Instead, the allomorph –aa is selected and the result is the ‘imperfect’ foot structure CV|CVC of the non-derived verb.

(23)  

\[ \text{joŋjm} \ [\text{s/he}] \text{ took offence} > \text{joŋjaam} \ [\text{s/he}] \text{ began to take offence}, \]
\[ \text{čoŋum} \ [\text{s/he}] \text{ defended} > \text{čoŋaam} \ [\text{s/he}] \text{ began to defend}, \]

It follows from (23) that if the foot structure is not completely irrelevant in suffixation, it is subject to higher constraints, e.g. prohibition of the use of the epenthetic /n/ unless it is necessary for hiatus resolution (see (28) in 2.3.1).

Another phonological process, vowel lengthening, also appears to contribute to the retention of the suboptimal foot structure. In the following example lengthening of the final vowel of the verb base makes the amelioration of the foot structure impossible, which would obtain in the hypothetical form without vowel lengthening.\(^{78}\)

(24)  

\[ \text{keluunj} \ [\text{s/he}] \text{ is coming} \ (\text{CV|CV:|CVC}) < \text{keluj} \ [\text{s/he}] \text{ came} \ (\text{CV|CVC}) \]
\[ \text{*kelunj} \ (\text{CV.CV|CVC}) \]

The choice of the ‘wrong’ allomorph, coupled with other processes, e.g. vowel shortening can even lead to distortion of the bimoraic foot structure of the original verb form. In (25) the transition is from CV:CC to CV|CV:C instead of the hypothetical CV:C|CV:C.

(25)  

\[ \text{joojm} \ [\text{s/he}] \text{ is ill’} > \text{jojaaj} \ [\text{s/he}] \text{ fell ill’}, \]
\[ *\text{joojnaaj} \ [\text{s/he}] \text{ fell ill’}. \]

It is important to stress that there is no adjacency restriction on the combinations [ŋn] or [jn], cf. ěŋnaa- ‘to read.dur.’ < ěųy- ‘to read’, joŋotejnaa- ‘to open.INCH’ < joŋotej- ‘to open’. From this it can be concluded that TY tolerates degenerate feet in word-initial position. A quick look into the dictionary tells one that feet with the structure CV are also allowed in word final position. This is in compliance with the assumption of McCarthy and Prince (1995:321) that unfootable light syllables will tend to be found at edges. Less expected are word internal degenerate feet. For KY Nikolaeva (2006:44) establishes a strong preference for CVC and CV: syllables facilitating a continuous parsing of words in bimoraic feet. In TY word-internal light syllables disrupting the optimal feet structure are not uncommon, especially in verbal forms, e.g. sal’|γa|rejm  ‘[s/he] broke’,

\(^{78}\) This reasoning is, of course, only correct if one accepts that the word-final consonant projects a mora and regards glides in this position as approximants, i.e. consonants, which I do.
ker|dis|nu|num ‘[s/he] praised’, mon|te|jek ‘you will say’, pul|ge|čen ‘[I] came out’ qadu|jul|deŋ ‘where’, law|re|lek ‘having drunk’ etc.

Maintenance of the optimal foot structure is supposed to be the functional reason behind the existence of alternating suffixes (see footnote 63) in TY. The alternative shapes of these suffixes allow creation of words, which are well-formed from the point of view of foot structure (Nikolaeva 2006:44). Indeed, very convincing examples of this can be found. Compare, for instance, the use of the alternating allomorphs of the acquisitional suffix –r/-re in uo|rej ‘[s/he] got a child’ vs. uor|pe.rei ‘[s/he got children]’. Mutual replacement of the allomorphs would produce words with suboptimal foot structure: *uo|ri and *uor|pe|rej. However, examples of ‘wrong’ allomorphs can be found, e.g. öl|kie|null|l’e|lut ‘(how) [s/he] must have run’. Note the insertion of the epenthetic vowel /u/ to prevent an illicit consonant cluster. The epenthesis would not be necessary if the vocalized allomorph of the future tense suffix –t/-te were used: *öl|kie|null|l’el|te. More importantly, the degenerate foot would find itself at a word edge, where theoretically there should be more tolerance toward light syllables (McCarthy and Prince 1995:321) and not word-internally as in the actual, grammatically correct form. Conversely, many causative stems have the vocalized allomorph of the causative suffix –s/se, e.g. po|no|sej/se- ‘to separate.CAUS’. In 3SG under negation or in questions with the focus on the subject, bare stems of transitive verbs are used. It means that in causatives one ends up with a loose word-final degenerate foot, which would be well formed if the non-vocalized allomorph of the causative suffix was employed: *po|no|sejs. Apart from that, the choice of the causative allomorph in other grammatical contexts is irrelevant for the foot structure because in both cases the structure of the syllable where the /s/ of the causative suffix is the onset has the same structure. The nucleus of that syllable is represented either by the vowel /e/ of the causative suffix itself or by the epenthetic vowel /u/, e.g. čawsem ‘[s/he] made/let cut’ vs. čewnusum ‘[s/he] made sneeze’.

All this is to say that apart form the concerns of foot structure, which certainly play an important role in determining the shape of alternating suffixes, there are constraints in TY, which must be seen as ranking higher than the constraint aligning foot boundaries with syllable boundaries.

The first bimoraic foot is the only environment where short non-high vowels are fully articulated without being assimilated by another full vowel (Nikolaeva 2006:29). This is in contradiction with the fact that in verbal forms the first foot is represented by proclitics me(r)= and at=, which are subject to optional assimilation (see 2.2.4). Apart form that, variation can be observed in the realization of short non-high vowels in the first bimoraic foot of stems, e.g. čama ‘big’ ~ čamedenu Alasej ‘big river Alazeya’ ~ čamuney ‘to a great extent’ or luge- ‘to be older’ ~ luguje ‘to be older.PTCP’, ögete- ~ ögote- ‘to install’, qata ~ gate ‘MP (Yak)’. There is thus no principled way to distinguish variation in the realization of short non-high vowels within the first bimoraic foot and beyond, which undermines the significance of ‘foot’ as a concept facilitating the location of this variation. The term ‘(extra)-radical domain’ seems to capture the regularities pertaining to varying vowel realization better.

These observations coupled with the ones made in the preceding subsections of chapter 2 (violation of word-minimality requirement and vowel harmony operating beyond the foot
boundary) should make one cautious when trying to account for phonotactic phenomena in TY invoking the concept of ‘prosodic foot’.

2.3 Phonological alternations

A good criterion to distinguish phonological alternations from morphophonemic ones is the non-appliance of an alternation rule in a grammatical or lexical context different from the one in which the rule was first observed, while the phonological conditions for the rule to operate are met. In other words, if instances of a rule are encountered e.g. only in verbal forms, this per se does not make it morphophonemic. The reason for the confinement of a rule to one part of speech may lie in the circumstance that in other parts of speech the necessary phonological environment simply does not obtain, making it impossible to test the consistency of the rule. Therefore, the default interpretation of all detected alternations should be to regard them phonological, until and unless it is demonstrated that the attested rule does not operate in the same phonological and different morpho-syntactic or lexical environment. This also entails that idiolectally conditioned instances of non-appliance of a rule in an identical grammatical or lexical context do not lead to the reassessment of a rule as morphophonemic; instead such a phonological rule would get the label ‘variable’, which could be applied to morphophonemic rules too. This would be an ideal approach, which might be not feasible in certain academic undertakings, though, since it presupposes a lot of checking of the primary data and, possibly some extensive eliciting. Writing of a grammar in a limited period of time is such an undertaking. Therefore, in order to be practical, a compromise was made in this work: whenever a rule shows a rather restricted distribution in the part of speech system or otherwise, it is taken to be morpho-phonemic.

Hence, ‘phonological’ implies here sound alternations independent of parts of speech or morphemic context. Some phonological alternations follow from phonotactic restrictions. These are resolution of hiatus and illicit consonant clusters as well as sonorization of voiced obstruents. Other processes are assimilatory.

2.3.1 Hiatus resolution

Hiatus resolution is achieved either by vowel elision or consonantal epenthesis. For illustration see (8a-8e).

1. hiatus resolution rule: \( V \rightarrow \emptyset / _-V \)

It is always the vowel of the first syllable that gets elided.

2. hiatus resolution rule: \( \emptyset \rightarrow C / V._-V \)

The epenthetic consonant becomes the onset of the second syllable.

The universal nature of the hiatus resolution rules is relative in two ways: the choice of the rule and epenthetic consonant are conditioned by the morpho-syntactic context. Thus
the first rule is applicable when the passive/resultative suffix –uol\(^79\) (see (8a)) or the inchoative suffixes –aa or –ie are attached:

\[(26)\]  
\[\text{čoŋaa- ‘to defend.INCH’ < čoŋu- ‘to defend’}\]  
\[\text{lewdie- ‘to eat.INCH’ < lewde- ‘to eat’}\]  
\[\text{lewdiennaa- ‘to eat.DUR.INCH’ < lewdienu- ‘to eat.DUR’}\]

The epenthetic consonants /j/ and /r/ are used word internally in verbs. The former is inserted in front of the passive/resultative suffix –uol. The latter is employed in the verbal proclitic me(r)-. The epenthetic /l/ occurs in different parts of speech but only in the reciprocal context:

\[(27)\]  
\[\text{n’iŋ=akaajil’ ‘brothers’ < n’i- ‘RECP’ + akaajil’ ‘brothers’}\]  
\[\text{n’iŋ=amud’iinaa- ‘to fall in love mutually’ < n’i- ‘RECP’ + amud’iinaa- ‘to fall in love’}\]  
\[\text{n’iŋ=id’ie ‘equally’, ‘together’ < n’i- ‘RECP’ + id’ie ‘self’}\]

The consonant /hl/ is used only in front of the inchoative suffix –aa when the verb base ends with a segment specified by the feature combination [-consonantal\(^80\), + long]:

\[(28)\]  
\[\text{maliinaa- ‘to observe curiously.INCH’ < maalii- ‘to surprise’}\]  
\[\text{kerienaa- ‘to fall down.INCH’ < kerie- ‘to fall down’}\]  
\[\text{sisayajnaa- ‘to tear.INCH’ < sisayaj- ‘to tear’}\]

The epenthetic consonant /d/ is reserved for hiatus resolution at word boundaries, in compounds. The rule is thus slightly modified.

\[/d/-epenthesis rule: Ø → d / V#_#V\]

\[(29a)\]  
\[\text{čama-d-od’e}\]  
\[\text{big-0-meat.juce}\]  
\[‘meat of the tendon along the spinal chord’}\]  
\[(Kurilov 2001:542, čamad’e)\]

\[(29b)\]  
\[\text{al’ya-d-eluoji-nube}\]  
\[\text{fish-0-carry-OP}\]  
\[‘a sack for carrying fish’}\]  
\[(Kurilov 1994:9)\]

\[(29c)\]  
\[\text{čajledenmun ‘every day’ < čajle ‘day’ + enmun ‘every’}\]

The epenthesis of /l/ has an extension not serving for hiatus resolution. Nevertheless it seems practical to present it here since it takes place in a very similar context. Insertion of /d/ between two members of a nominal compound takes place whenever the second

\[^{79}\] During passivization both rules can be applied: ögetuol-/ögetejuol- ‘to be installed’ < ögete- ‘to install’

\[^{80}\] The feature [-consonantal] implies that there is no major restriction in the oral cavity (Odden 2005:139) and groups together, as far as it is relevant for TY, vowels and glides, or approximants in phonetic terms.
member of the resulting compound begins with a vowel, so the rule must be reformulated as follows: $\emptyset \rightarrow d \#_{-}V$

(30a) $N\acute{i}d\acute{e}rpe-j-d-enu$
be.new-PTCP-0-river
‘River Malaya Kuropatychya’ (literally “New River”)

(30b) $sukud ay\il$
sukun-n- $d$ ay\il
dress-GEN-0 edge
‘the edge of a/the dress’

The epenthetic /d/ very often occurs in the context of possessive constructions as in (30b) and ousts the genitive case ending, which is additionally exemplified in (33a-d). As was observed already by Krejnovi\vc (1958:63), the genitive case ending itself ousts the word-final sonorant:

(31) $saan nime$
saal-n nime
wood-GEN house
‘wooden house’

For this reason Krejnovi\vc (1958:64) assumed two allomorphs of the genitive case ending: -n in preconsonantal and –d in prevocalic context. However, /d/ must be epenthetic in all circumstances since it can co-occur with /n/ in genitival expressions:

(32) $\acute{\c}awundawur$ ‘quiver’ $< \acute{\c}awur$ ‘arrow’ + -n ‘GEN’ + -d ‘0’ + awur ‘container’
juondew\\cke ‘crown’ $< juo$ ‘head’ + -n ‘GEN’ + -d ‘0’ + ew\\cke ‘top’

Ousting of the genitive case ending by the epenthetic /d/ creates surface structures which suggest a resolved hiatus (see (33a-d)) and cannot be discerned from genuine hiatuses as in (29a and 29b) but are secondary, resulting from the morphophonemic rule applicable in certain grammatical contexts: [+sonorant, +consonantal] $\rightarrow \emptyset / _d$

(33a) $wadul / erpejed / waawe\\check{\text{e}}\\check{c}ed$
aruu-lek
wadul-n-d / erpeje-n-d / waawe\\check{\text{e}}\\check{c}e-n-d aruu-lek
Yukaghir-GEN-0 / Even-GEN-0 / Russian-GEN-0 language-INS
‘in Tundra Yukaghir / Even / Russian language’

(33b) $jal\acute{y}da\acute{y}il$ ‘shore of a lake’ $< jalgil$ ‘lake’ + -n ‘GEN’ + -d ‘0’ + ay\il ‘shore’

(33c) $\acute{\c}umud\\check{\text{ö}}rd\acute{e}$ ‘the middle part of a hill’ $< \acute{\c}umur$ ‘hill’ + -n ‘GEN’ + -d ‘0’ + örd‘e
‘middle’

(33d) $joqodile$ ‘horse $< joqol$ ‘Yakut’ + -n ‘GEN’ + -d ‘0’ + ile ‘reindeer’

This extension of the /d/-epenthesys rule is optional because some speakers find the following expressions equally felicitous:
(34) wadun / joqon aruu ‘Tundra Yukaghir / Yakut language’

Similar examples can be found in the secondary literature on TY:

(35a) qangajipun ed’ilek
    qangaji-pul-n ed’il-ek
    Khangay-PL-GEN life-COP
    [it is] the life of Khangays’ (Kreinovič 1958: 64)

(35b) Tuyŋ ilem emmur me čamunon’.
    tuyŋ ile-n emmur me=čama-ngol-j
    ADL_DEM reindeer-GEN antlers PF=big-be-INTR.3SG
    ‘This reindeer’s antlers are big.’ (Kurilov 2006:124)

In Kurilov (2006) the following triplet involving the word čumur ‘hill’ functioning as the dependent member of the compound is encountered:

(36a) čumud örd’e ‘the middle part of a hill’
(36b) čumun ussuu ‘abrupt lowering of a long hill’
(36c) čumundewče ‘the crest of a hill’

It is not clear what determines these idiosyncratic patterns while the functional and phonological context are very similar, if not identical.

2.3.2. Prevention of illicit consonant clusters

Prevention of illicit consonant clusters is always realized by vocalic epenthesis. The main locus for the epenthesis is the right edge area of a word, between the stem and the inflectional suffixes. The three epenthetic vowels are listed here in the order of decreasing frequency: /u/, /i/ and /e/. Nikolaeva (2002:9) observes that /i/ is used mainly after palatals while /e/ shows very specific distribution, e.g. in front of the focus marker –k or after verb bases ending in /l/ (except those ending with the non-visual suffix –l’el):

(37a) med’im ‘[s/he] took’ < men ‘to take’ + -m ‘TR.3SG’
    ed’il ‘life’ < en ‘to exist’ + -l ‘GER’
    pun’imk ‘[you] killed’ < pun ‘to kill’ + -mk ‘TR.2PL’
    kuril’ičiŋ ‘[I] asked’ < kuril’ič ‘to ask’ + -ŋ ‘1SG.TR’
    mōruolel ‘being recognized’ < mōruol ‘to be recognized’ + -l ‘GER’
    pojuoler ‘being numerous’ < pojuol ‘to be numerous’ + -l ‘GER’
    jalaklalel ‘being four’ < jalaklal ‘to be four’ + -el ‘GER’
    ikl’alel ‘being hard’ < ikl’al ‘to be hard’ + -l ‘GER’
    pojuoler ‘in great number’ < pojuol ‘to be numerous’ + -r ‘CIRC’
    mitin ‘1PL.DAT’ < mit ‘1PL’ + -n ‘DAT’
    mitek ‘who’ < mit ‘1PL’ + -k ‘SF’

The epenthetic /u/ is employed in other contexts:
(37b) aawesum [s/he] let sleep’ < aawes- ‘to sleep.CAUS’ + -m ‘TR.3SG’
kerdisnumunk ‘you always praised’ < kerdisnum- ‘to praise.HAB’ + -mk ‘2PL’
pugulerul ‘warming up’ < puguler- ‘to warm up’ + -l ‘GER’
moluy ‘[I] stayed overnight’ < mol- ‘to stay overnight’ + -η ‘1SG.TR’

With the exception of the permitted consonant clusters (see 2.2.2) the rule for preventing
them can be formulated as follows: Ø → V / _ CC#

2.3.3 Onset-coda alternation of voiced obstruents

Maslova (2003c:4) and Nikolaeva\(^{81}\) (2006:47) describe an important alternation, which
takes root in the positional restriction on voiced obstruents disallowing these in the coda.
There are several series of consonants alternating in the onset (also across word
boundaries) vs. coda position.

<table>
<thead>
<tr>
<th>Onset</th>
<th>Coda</th>
</tr>
</thead>
<tbody>
<tr>
<td>/b/</td>
<td>/m/</td>
</tr>
<tr>
<td>mobil’e- ‘to crumple’</td>
<td>momdil’e- ‘to crumple’</td>
</tr>
<tr>
<td>/d/</td>
<td>/n/</td>
</tr>
<tr>
<td>qadilwe- ‘to cool down’</td>
<td>qand’e ‘cold’</td>
</tr>
<tr>
<td>köde ‘person’</td>
<td>könpe ‘persons’</td>
</tr>
<tr>
<td>/d’/</td>
<td>/n’/</td>
</tr>
<tr>
<td>sukid’ewrej ‘roaming’</td>
<td>sukin’ ‘wilderness’</td>
</tr>
<tr>
<td>pandid’i- ‘to cook’</td>
<td>pandintejli(^{82}) ‘[we] will cook’</td>
</tr>
<tr>
<td>/g/</td>
<td>/w/</td>
</tr>
<tr>
<td>legul ‘food’</td>
<td>lewde- ‘to eat’</td>
</tr>
<tr>
<td>/γ/</td>
<td>/ŋ/</td>
</tr>
</tbody>
</table>
| qoγi- ‘to dig’ | qoŋne- ‘to be hollow’, ‘to have a
dent’ |
| /γ/         | /w/        |
| čayum/čoγum ‘[s/he] cut off’ | el=čaw ‘[s/he] did not cut off’ |

\(^{81}\) Nikolaeva (2006:47) lists also the alternation /r/ ~ /n/ as the TY correspondence of the KY alternation /ž/ ~ /n/, e.g. möri ‘to hear’ ~ mōnd’e- ‘to be capable of hearing’ It is clear that the TY pair is not a comparable alternation. Since /r/ is allowed in the coda, ‘exceptions’ exist, e.g. mōrd’e ‘news’.

\(^{82}\) The underlying /n’/ is realized as /n/ here because the rule of assimilative depalatalization (see below) applies after the alternation.
2.3.4 Voicing

Word-initial voiceless obstruents usually undergo voicing when they follow words or clitics ending in a vowel or sonorant.

(39) köde dite ‘like a man’ < köde tite
       el= bun męg [I / you] did not kill.of < el= pun męg (Krejnovič 1958: 140)
       keluje d’ii ‘people that have come’ < keluje čii (Kurilov 2005:126)
       el=d’aŋut < el= čaŋut ‘not quite well’ (Kurilov 2001:586, edie-)
       čuondoliigi ‘[his] iron staff’ < čuon + toliigi
       tuŋ gölle ‘this man’ < tuŋ + kölle
       taŋ d’iin’ ‘to those people’ < taŋ čiin’ (Kurilov 2001:264, mòrdie-)

However, this voicing, except in compounds, is optional:

(40) n’oril’ tite ‘like a pool’
       el= čuŋd’e ‘not reading’
       mer= ičuom punnuydayane ‘[he] saw how the were killing’ (Kurilov 2005:126)

2.3.5 Devoicing

The attachment of a suffix to a base ending with a segment with the feature [-voiced] is accompanied by devoicing of the onset consonant of the suffix.

Devoicing rule: voiced obstruent → voiceless obstruent / voiceless obstruent + _

(41a) jaljil-γa ‘lake-LOC’, enu-γa ‘river-LOC’ vs. met-qa ‘1SG-LOC’, tet-qa ‘2SG-LOC’

(41b) aduo-gi ‘son-PERT’ vs. čajnik-ki ‘tea.pot(Russ)-PERT’

(41c) nime-die ‘house-DIM’ vs. al’γap-tie ‘fish.pl-DIM’

(41d) mon-relek ‘say-ANT’ vs. keries-telek ‘take.off-ANT’
       aŋuol-reŋ ‘stand-SIM’ VS. siiges-teŋ ‘drip.CAUS-SIM’

Devoicing in (41d) requires some explanation. /t/ would normally be considered the devoiced counterpart of /d/, and not of /l/. There are allomorphs of the converb suffixes with initial /d/: -delek ‘ANT’ and –deŋ ‘SIM’. However, these allomorphs probably cannot be the underlying forms, to which the rule of devoicing could be applied. The reason for this conclusion is the fact that the allomorph triads –rX ~ -dX ~ -tX exist only in converbs where there is some material X after the first segment of a converb suffix. If the suffix is just –r, which is the case in the circumstantial converb, the ending is invariant. The potential illicit consonant cluster is resolved in circumstantial converbs by means of an epenthetic vowel, e.g. mon-ur ‘say-CIRC’. To my mind, the converbal suffixes -reŋ ‘SIM’, -relek ‘ANT’, -r ‘CIRC’ are ontologically related. It would be illogical, therefore, to
posit the allomorph with /d/ as underlying if it does not occur in circumstantial converbs: -deŋ ‘SIM’, -delek ‘ANT’, -url*/(u)d ‘CIRC’.

Since /d/-allomorphs of converbs cannot be the targets for the devoicing rule, it has to be concluded that the alternation is /r/ > /t/. The result of devoicing in converb suffixes is not random; /t/ shares with /d/ the place of articulation, so the most natural devoicing of /t/ would result in /t/, in which the devoicing of /d/ would too. This rather unusual devoicing could be triggered by the phonological constraint prohibiting the sequence /sr/. Of course, one could object against this reasoning by asking why TY speakers don’t resort to vocalic epenthesis and say something like n’aačesurelek ‘having sharpened’ instead? Or yet better, why don’t they simply use the vocalized allomorph of the causative suffix: -se? In an attempt to counter this objection one may postulate a hierarchy of constraints whereby vowel epenthesis or vocalized allomorphs of alternating suffixes would be employed only to resolve potential illicit consonant clusters (see 2.2.2) as in monur/*monr ‘say.CIRC’. The handling of adjacency restrictions such as */sr/ would be dependent on this higher constraint. Since in n’aačestelek ‘having sharpened’ no illicit consonant clusters arise, epenthesis or vocalized causative allomorph, which would prevent /s/ and /t/ from coming together, cannot be employed. Another strategy has to be found to prevent /sr/. It is not possible to delete either of the segments since they are the crucial elements of the morphemes involved, so one of them undergoes a mutation which appears least arbitrary.

2.4 Morphophonemic alternations

The following overview makes no claim to be exhaustive. Morphophonemic alternations are held apart from the phonological ones because their application in an environment phonologically definable in terms of natural classes based on (sets) of phonological features is restricted by parts of speech, by the morpho-syntactic context or lexically. Alternations non-definable phonologically are morphophonemic per definition.

2.4.1 Vowels

Diphthongization:

During suffixation the base-final /e/ can be diphthongized to /ie/ if the base is harmonically non-back:

(42) nimen’ ‘house.DAT’ < nime + -n’
    lewdienu- ‘eat.DUR’ < lewde- + -nu
    edienun- ‘to burn.HAB’ < edu- + -nun
    čugirienu- ‘to whistle.DUR’ < čugire- + -nu

Some examples of non-appliance of this rule is the attachment of the verbalizing comitative suffix –n’(e) and the causative suffix –s(e):

(43) nimen’e- ‘to have a house’ < nime + -n’e
    aawes- ‘sleep.CAUS’ < aawe- + -s
The vowel of the copular verb *ŋol- serving as the passive suffix is diphthongized to /uo/:

(44)  *qajr- ‘to be’

qajruol- ‘to be bent’ < *qajr- + *ŋol- ‘to be’

De-diphthongization:

In rare, probably, lexically determined cases, the root diphthong can undergo a simplification during suffixation. In the following example de-diphthongization is triggered by the attachment of the inchoative suffix.

(45)  eguri- ‘to walk.INCH’ < eguore- ‘to tread (upon) smth.’

Vowel lengthening:

In the event of the attachment of a number of aspectual suffixes the base-final vowel /u/ is lengthened if the base is harmonically front whereas the vowels /o/ and /e/ are lengthened to /oo/ and /aa/ respectively if the base is harmonically back:

(46)  keluunj ‘to come.DUR,INTR.3SG’ < keluj- + -nu
    sayanamu- ‘to sit.DUR’ < sayane- + -nu
    toonaunu- ‘to drive.DUR’ < tono- + -nu
    jaqtanun- ‘to sing.HAB’ < jaqte- + -nu

The vowel /i/ generally remains unaffected during this kind of suffixation:

(47)  čuginu- ‘to make a sound to prompt a child to urinate’ < čugi- + -nu
    tadinu- ‘to give.DUR’ < tadi- + -nu
    wanjčinu- ‘to search.HAB’ < wanjči- + -nun
    mörinu- ‘to hear.HAB’ < möri- + -nun
    keči[l’el- ‘to bring.NVIS’ < keči- + -l’el
    kečinun- ‘to bring.HAB’ < keči- + -nun

Diphthongization and lengthening of the base-final vowel in verbs is triggered by the same set of suffixes. Apart from the durative aspect suffix and the related habitual aspect suffix –nun, the suffixes expressing the following grammemes cause these alternations: the itive –če, the diminutive –čii, the non-visual –l’el, the commiserative –ködi:

(48)  jaqtaače- ‘to sing.ITV’ < jaqte- + -če
    kuderieče- ‘to put.ITV’ < kudere- + -če
    sayanaačii ‘to sit down.DIM’ < sayane- + -čii
    qoỳoraal’el- ‘to howl.NVIS’ < qoỳore- + -l’el
    aawaaködi- ‘to sleep.CMSR’ < aawe- ‘to sleep’

Apart from the above mentioned verbalizer –n’e and the causative –s(e), the attachment of the following suffixes does not lead to either diphthongization of lengthening of base-
final vowels in verbs: passive suffix –(j)uol, the inclinative suffix –buol, desiderative suffix –bun’, the augmentative suffix –tke, the transitivizer –ri, the future tense suffix -te:

(49) ayal’wejuol- ‘to be laughed at’ < ayal’we- + -juol
ayal’webuol- ‘to be risible’
ayal’webun’- ‘to want to laugh’
ayal’wekibke- ‘to laugh vigorously’
ayal’weri- ‘to deride’
kuderete- ‘to put.

Vowel shortening:

Affixing can lead in verbs with the root structure CV:C to the shortening of the root vowel:

(50) paaj- ‘to hit’ vs. pajdu- ‘to beat’ or turpaj- ‘to hit oneself’
jooj- ‘to be ill’ vs. jojaa- ‘to fall ill’
jaan ‘three’ vs. jaloulo- ‘to be three’

An instance of vowel shortening accompanied by a quality change is the /uu/ ~ /i/ alternation. In qualitative verbs the stem-final /uu/ turns into /i/ when the inflectional ending is attached (see (63) for more examples):

(51) mörič ‘[it] is audible’ < möruu- + -j
qaalič ‘[it] is frightful’ < qaluü- + -j
amalič ‘[it] is embarrassing/indecent’ < amaluu- + j

Vowel deletion:

Suffixation can in rare cases cause a deletion of the root-final vowel instead of its lengthening:

(52) ċoŋnu- ‘to defend.DUR’ < ċoŋnu- + -nu

Long vowels and diphthongs can be deleted too:

(53) qan’qaa- ‘to get cold’ < qad’uu- ‘to be cold’ + -qaa ‘INCH’
maaluod’eŋ ‘[I] was surprised’ < maalii- ‘to surprise’ + yol- ‘to be’
maruojii- ‘to dress.İTR’ < maraa- + -uojii
weludu- ‘to hang.İTR’ < welie- + -udu

Assimilation:

In verbal stems and nominalized oblique participles the /u/ of a suffix can exercise regressive assimilation upon the vowel of the preceding syllable, whereby the latter acquires a more back and, if applicable, high quality, accompanied by rounding:
The assimilation coming from –mu seems to be lexically determined since it does not occur always:

(55) \[ \text{werwemu- ‘to become strong’ < werwe- + -mu} \]
\[ \text{pugočamu- ‘to become light’ < pugočal- ‘to be light’} \]

The iterative suffix –ji assimilates the base-final /el/:

(56) \[ \text{aawiji- ‘to sleep.ITR’ < aawe-} \]
\[ \text{köjlji- ‘to break.ITR’ < köjle-} \]

Dissimilation:

The semelfactive suffix –j causes dissimilation of word-final /i/:

(57) \[ \text{nerej- ‘to bite.SEM’ < neri- ‘to bite’} \]
\[ \text{anyej- ‘to scrub off.SEM’ < anyi- ‘to scrub off’} \]

2.4.2 Consonants

2.4.2.1 /j/-related alternations

Some of the most frequent consonant alternations concern the approximant /j/. This is natural as it is the first segment of most of the personal endings of intransitive verbs as well as 1PL.TR and at the same time the consonant which is subject to the most number of adjacency restrictions. Therefore, when it attaches to verb bases ending in a sonorant or /j/, it must alternate in order that an illicit cluster is prevented. The most widespread strategy for this is coalescence of /j/ and the base-final consonant. The concrete rules differ:

\[ [+\text{sonorant, +consonantal}] + /j/ \rightarrow /d’/ \]

(58) \[ \text{quduod’ey ‘[I] lie’ < quduol- ‘to lie’ + -jey ‘INTR.1SG’} \]
\[ \text{mod’ek ‘you said’ < mon- ‘to say’ + -jek ‘INTR.2SG’} \]
\[ \text{-bud’eli ‘we want’ < -bun ‘DES’ + -jeli ‘INTR.1PL’} \]

There are numerous exceptions from this rule, but they are in themselves quite regular and can be stated as a rule:

\[ j \rightarrow d’ / [+\text{sonorant, +consonantal}] \]
(59)  \[\textit{el=bun’de} ’[I] did not kill’ < \textit{el=pun’} ‘\text{NEG=to kill}’ + \textit{-je} ‘\text{INTR.1SG}’\]
\[\textit{köld’emut} ‘you(PL) came’ < \textit{köl-} ‘to come’ + \textit{-jemut} ‘\text{INTR.2PL}’\]
\[\textit{n’id’aγajl’eld’e} ‘to complete.\text{PTCP}’ < \textit{n’id’aγajl’el-} ‘to finish.\text{NVIS}’ + \textit{-je} ‘\text{PTCP}’\]
\[\textit{eguonund’eli} ‘[we] get up’ < \textit{eguonun-} ‘to get up.\text{HAB}’ + \textit{-jeli} ‘\text{INTR.1PL}’\]
\[\textit{n’amučend’e} ‘to be red.\text{PTCP}’ < \textit{n’amučen’} ‘to be red’ + \textit{-je} ‘\text{PTCP}’\]

An exception from this rule is the combination of the non-visual mood suffix and the personal ending of \text{1PL.TR}:

(60)  \[\textit{paajl’eluj} ‘[we] hit’ < \textit{paajl’el-} ‘to hit.\text{NVIS}’ + \textit{-j} ‘\text{1PL.TR}’\]

It has to be noted that in \text{3SG} ending of intransitive verbs \text{/j/} is in complementary distribution with \text{/l/}, which is attached to verb bases ending with \text{/n/}, \text{/n’/}, \text{/d’/}, \text{/l/}, \text{/l/} or \text{/č/}:

(61)  \[\textit{moni} ‘[s/he] said’\]
\[\textit{muoqan’i} ‘[it] has broad white fish’\]
\[\textit{ed’i} ‘[it] exists’\]
\[\textit{činičeri} ‘[it] gets dark’\]
\[\textit{čaapiči} ‘[s/he] freezes constantly’\]

This \text{/l/} is realized as \text{/n’/} coalescing with the base-final \text{/l/}:

(62)  \[\textit{čuguon’} ‘[s/he] is quick’ < \textit{čuguol-} + \textit{-i}\]
\[\textit{čuguoll’en’} ‘[s/he] is quick.\text{NVIS}’ < \textit{čuguoll’el-} + \textit{-i}\]

One may inquire into the motivation for this unusual alternation. A potential explanation can be formulated as follows. It can be observed that the realization of verb final \text{/l/} as \text{/n’/} in \text{3SG} of intransitive verbs produces a pattern reminiscent of the onset-coda alternation of voiced obstruents (2.3.3). Compare the following pairs:

(63)  \[\textit{sukid’ewrej} ‘roaming’ ~ \textit{sukin’} ‘wilderness’\]
\[\textit{pujuod’e} ‘to rejoice.\text{PTCP}’ ~ \textit{pujuon’} ‘[s/he] rejoiced’ < \textit{puuguol-} ‘to rejoice’\]

In the first pair, which is an instance of the onset-coda alternation of voiced obstruents, two segments alternate: \text{/d’/} and \text{/n’/}. In the second pair the same two segments alternate\textsuperscript{83}. The apparent surface similarity with the onset-coda alternation of voiced obstruents could be taken to explain the alternation \text{/l/} + \text{/l/} \rightarrow \text{/n’/}, but it is not clear why this alternation should be restricted to this sequence of segments, disallowing pairs like \textit{mod’en’} ‘[I] said’ ~ *\textit{mon’} ‘[s/he] said’ etc.

Coalescence often leads to affrication: \text{/jl/} or \text{/iul/}, or \text{/uul/} + \text{/jl/} \rightarrow \text{/čl/}

(64)  \[\textit{čaaqarečen’} ‘[I] froze’ < \textit{čaaqarej-} + \textit{-je}\

\textsuperscript{83} This alternation is, of course, only on the surface. Underlyingly, the alternation is \text{/jl/} \sim \text{/iul/}.
The stems ending in vowels as in (64) do not pose an adjacency restriction on the following /j/ as such constellations are attested, e.g. aawej ‘[s/he] slept’, ayal’wejčiij ‘[s/he] smiled slightly’.

Coalescence of a suffix-initial /j/ with the root final palatal approximant of a monosyllabic verb with a heavy nucleus results in a simplification of the sequence:

\[ j \rightarrow \emptyset / j^+ \]  

(65)  
\begin{align*}
\text{jooje göde} & \text{ ‘sick person’ < jooj- ‘to be ill’ + -je ‘PTCP’} \\
\text{paaj} & \text{ ‘[we] hit’ < paaj- ‘to hit’ + -j ‘1PL.TR’} \\
\text{but:} & \text{ pajič ‘[we] hit’ (Krejnovič 1958:75)}
\end{align*}

Sometimes there is no coalescence of two adjoining approximants; instead only the rule of affrication applies: \( j \rightarrow č / [+\text{sonorant, -consonantal}]+_ \)

(66a)  
\begin{align*}
\text{jarajč ‘it lasts annoyingly long’ < jaraj- ‘to last for a very long time’ + -j}
\end{align*}

(66b)  
\begin{align*}
\text{jarawč ‘it lasts annoyingly long’ < jaraw- ‘to last for a very long time’ + -j}
\end{align*}

Alternatively, /w/ alternates additionally with /j/:

(66c)  
\begin{align*}
\text{l’arajč ‘it lasts annoyingly long’ < l’araw- + -j} \\
\text{qodejč ‘[it] is unpleasant’ < qodew- + -j}
\end{align*}

In individual verbs the affrication is not motivated by anything synchronically:

(67)  
\begin{align*}
\text{pugeč ‘[it] is hot’ < puge- + -j}
\end{align*}

2.4.2.2 Other alternations

Deletion:

\[ [+\text{sonorant, +consonantal}] \rightarrow \emptyset / [+\text{sonorant, +consonantal}] +_ \]

This alternation is typical for the /l/-initial nominal suffixes and the aspectual suffixes beginning with /n/.

(68)  
\begin{align*}
\text{sukune ‘thing.ACC’ < sukun + -le} \\
\text{amuney ‘bone.FOC’ < amun + -ley}
\end{align*}
čawurek ‘arrow.INS’ < čawur + -lek
ančejełŋ ‘bustle.FOC’ < ančeļ + -ŋ
jaľyileŋ ‘lake.COP’ < jaľyil + -ŋ
qajl’ek ‘stone.INS’ < qajl’ + -lek
puŋuolu- ‘to rejoice.DUR’ < puŋuol- + -nu
l’iteguolu- ‘to be beaten.DUR’ < liteguol- + -nu
ayuolu- ‘to stand.DUR’ < aŋuol- + -nu

There are lexically determined exceptions such as leguolnu- < leguol- ‘to be killed’, ed’uolnu- < ed’uol- ‘to be fearful’. Sometimes the /n/ of an aspectual marker is reinstated in a derive form of a verb, e.g. puŋuolnučii- ‘to rejoice.DUR.DIM’.

The direction of this process is reverse when the attached morpheme is the genitive case ending as in (31) and (33b-d). The rule is therefore as follows:

[+sonorant, +consonantal] → Ø / _# [+sonorant, +consonantal]

(69) lewejmegy ‘in summer’ < lewejl + -meŋ ‘ADV’
but not in: čiŋičelmeŋ ‘at night’ < čiŋičel ‘night’ + -meŋ ‘ADV’
jaluomu- ‘to become three’ < jaluol- ‘to be three’ + -mu ‘INCH’
čiŋičer- ‘to get dark’ < čiŋičel ‘darkness’ + -r ‘VBLZ’
jərii- ‘to make’ < jol- ‘to be’ + -rii ‘CAUS’
ančejeŋy ‘anxiuosly’ < ančeļ ‘anxiety’ + -ŋy ‘ADV’

This latter rule is also active at word boundaries, thus:

[+sonorant, +consonantal] → Ø / _# [+sonorant, +consonantal]

(70) saa laŋudeŋ ‘to(ward) a/the forest’ < saal ‘wood’ + laŋudeŋ ‘toward’

Neither of these rules applies when the non-visual mood suffix is attached:

(71) l’ukuoll’en ‘as it seems, [s/he] was small’ < l’ukuol- + -l’el

Stem final /l/ is also ousted by certain verbal suffixes:

(72) puŋuoseŋ ‘[I] gladdened’ < puŋuol- ‘to rejoice’ + -se ‘CAUS’
n’umuos- ‘to torture’ < n’umuol- ‘to suffer’ + -s ‘CAUS’
el=ŋuot ‘[s/he] won’t survive’ < aŋuol- ‘to stand’ + -t ‘FUT’
jalućii- ‘to be only three’ < jaluol- ‘to be three’ + ‘čii ‘DIM’

The velar nasal of the copular verb jol- is deleted when the verb serves as the passive voice marker:

(73) tadijuol- ‘to be given’ < tadi- ‘to give’ + jol- ‘to be’
Assimilation:

\[ n \rightarrow l _{ [+\text{lateral}]} \]

(74) \text{taqullek ‘thereby’} < \text{taqun ‘INVS.DEM’} + \text{-lek ‘INS’}
\text{onjiennull’el- ‘to wear.HAB.NVIS’} < \text{onjenun-} + \text{-l’el}
\text{moll’el- ‘to say.NVIS’} < \text{mon-} < \text{-l’el}
\text{ilel’ebul ‘reindeer pasture’} < \text{ilen ‘reindeer.GEN’} + \text{l’e- ‘to be’}

Some speakers in whom the assimilation of /n/ in this context is observed, allow the form \text{mon’ten’ ‘[s/he] said.NVIS’}, therefore this is a morpho-phonemic rule.

\[ n’ \rightarrow n _{ [+\text{non-palatal (depalatalization)}]} \]

(75) \text{ennuj ‘[s/he] lives.DUR’} < \text{en’-} + \text{-nu}
\text{pandinmur ‘to cook.DUR.CIRC’} < \text{pandin’-} + \text{-nu}
\text{nimeleunu-} < (*nimele’nu-) ‘to write.DUR’ ~ \text{nimeled’i- ‘to write’}
\text{menteyanek ‘hold!’} < \text{men’-} ‘to hold’ + \text{-teyanek ‘FUT.IMP’}
\text{pundelek ‘to kill.ANT’} < \text{pun’-} ‘to kill’ + \text{-delek < -relek ‘ANT’}
\text{pandink ‘to cook.IMP.SG’} < \text{pandin’-} ‘to cook’ + \text{-k ‘IMP.SG’}

Exceptions from this rule in the same phonological context are so frequent that it should be considered a partly (the rule seems to be consistent for /n/ as a trigger) variable one:

(76) \text{pun’temek ‘[you] will kill’} < \text{pun’-} ‘to kill’ + \text{-te ‘FUT’} (Kurilov 2001:398, \text{pun’-})
\text{pun’delek ‘to kill.ANT’} < \text{pun’-} + \text{-delek < -relek ‘ANT’}
\text{men’delek ‘to take.ANT’} < \text{men’-} ‘to take’ + \text{-delek < -relek ‘ANT’}
\text{men’tej ‘[we] will take’} < \text{men’-} + \text{-te ‘FUT’} (Kurilov 2001:275, \text{men’-})
\text{men’k ‘to take.IMP.SG’} < \text{men’-} + \text{-k ‘IMP.SG’}

There are also non-palatal sounds which regularly fail to trigger this alternation, e.g. \text{en’yi ‘they live’} < \text{en’- ‘to be alive’} + \text{-yi ‘3PL.INTR’}.

Finally, a very common process is a sonorization of the initial /s/ of the second member of a nominal compound is observed when the first member of the compound ends in a vowel or a sonorant: \text{s} → \text{r / [+sonorant]}# #_

(77) \text{end’erukun ‘a living entity’} < \text{end’e ‘living’} + \text{sukun ‘thing’}
\text{ann’eijrukun ‘a speaking entity’} < \text{ann’ej ‘speaking’} + \text{sukun ‘thing’}
\text{n’oronruske ‘pool’} < \text{n’oron ‘hill.GEN’} + \text{suske ‘cup’}

Dissimilation:

\[ r \rightarrow d _{ [+\text{sonorant, -syllabic}]} _{ [+\text{sonorant]}# #} \]

(78) \text{mondelek ‘say.ANT’} < \text{mon-} + \text{-relek}
The velar nasal does not trigger this alternation, e.g. čuŋrelek ‘to read.ANT’.
Approximants are ambivalent triggers:

(79) tolejdeŋ ‘support.SML.SIM’ vs. moojreŋ ‘hold.SIM’

This rule does not apply for –r, the suffix of the circumstantial converb, which is separated from the verb root by an epenthetic consonant, e.g. monur ‘say.CIRC’.

\[ n’ \rightarrow n / _ \text{palatal (depalatalization)} \] \(^{84}\):

(80) pandinl’en’ [s/he] cooked.NVIS’ < pandin’- + -l’el (Kurilov 2001:366, pandin’-)
menl’elga [they] took.NVIS.’ < men’- + -l’el (Kurilov 2005:126)
punl’elga [they] killed.NVIS’ < pun’- + -l’el (Kurilov 2005:126)
ilenbud’e ‘reindeer slaughter’ < ile + -n ‘GEN’ + pun’- ‘to kill’ + -d’e ‘NMLZ’
l’erkejend’e ‘shamanic praying’ < l’erkejen’- ‘to engage in shamanic praying’ + -d’e ‘NMLZ’

menče- ‘to fetch’ < men’- ‘to take’ + -če ‘ITV’

1 → j / _ l (in emphatic forms of personal pronouns)

(81) tudejlede ‘s/he.EMPH’ < tudel + -lde
tittejlek ‘they.EMPH’ < tittel + -lek

n’ → j / _ n (characteristic of manner adverbs)

(82) maaruojneŋ ‘happily’ < maaruon’ ‘[s/he] is happy’ + -ney ‘ADV’
pøjuojnen ‘much’ < pojouon’ + -ney
čuŋuojnej ‘quickly’ < čuŋuon’ + -ŋey

2.5 Rule ordering

Some alternations are in a sequential relation with some other alternations. The passive suffix –(j)uol derives from the copular verb yol-. This entails that before the epenthesis rule for hiatus resolution during passivization applies, a deletion of the velar nasal and diphthongization of /o/ take place.

For the obvious reason of the linear order of the segments, ousting of the genitive case in the event of /d/-epenthesis as in (33a-d) takes place after the genitive case ending ousts the word-final sonorant if there is one.

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\(^{84}\) The forms resulting from the contact with the following /l/ are in contrast with what Maslova (2003c:4) reports. According to her, the resulting stems should be mell’el- and pull’el-, which reflects a completely different rule. In my corpus there is only one isolated instance of an elicited verb form displaying the kind of assimilation Maslova (2003c:4) describes.
Depalatalization, assimilative and dissimilative alike, follows other processes, such as the dissimilative desonorization (83a), a /j/ alternation (83b) or the onset-coda alternation of voiced obstruents (83c):

\[(83a)\]  
Pun' dele < pun' dele < pun' - 'to kill' + -rele < 'ANT'

\[(83b)\]  
N'amučen'de < *n'amučen'de < n'amučen - 'to be red' + -je

\[(83c)\]  
Nimeled'i- 'to write' vs. *nimelen'nu- > nimelennu- 'to write'
Pandid'i- 'to cook' vs. *pandin'tejli > pandintejli '[we] will cook'

The onset-coda alternation follows vowel deletion:

\[(84)\]  
Qan'qaa- 'to get cold' vs. qad'uu- 'to be cold'

2.6 Suprasegmentals

2.6.1 Stress

TY has non-phonemic free stress, that is, stress is not fixed on one syllable for each word, and there are no minimal word pairs on the basis of stress position. In languages with lexical word stress, stressed syllables are perceived as more prominent than their surrounding syllables and can be described in terms of phonetic correlates such as pitch, vowel quality, length and intensity. However, for TY no such regularities have been experimentally verified yet, which is reflected in the diverging conclusions scholars have drawn while studying this issue, as is presented below.

Krejnović (1968:437) is very brief, stating that stress is free in TY and can lie on the first or second syllable. Krejnović (1982:19) modifies his view by saying that any syllable can be stressed and adds that inflectional suffixes attract stress.

Kurilov (2006:38) reports what the previous scholars had said and expresses preference for Jochelson’s (1905) views. Nikolaeva (2002:11) provides a concise description of stress assignment rules for TY. She establishes the following stress attracting hierarchy: rightmost V₁V₂V: > rightmost CVC > rightmost CEC > rightmost open syllable. An important stipulation is that syllable with the structure CE cannot bear stress.

Odé (personal communication) reports that speakers of TY have different opinions regarding the existence of lexical stress and its assignment rules. A detailed experimental-phonetic study of stress (Odé, in preparation) is necessary to ascertain the regularities in its application.

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85 It needs to be said that Jochelson’s (1905: 374:375) observations pertain to the stress pattern in KY, the closest relative of TY. They need not coincide with those of TY and therefore are not reported here.

86 Nikolaeva (2002:4) postulates a reduction of short non-high vowels in the syllables following the first bimoraic foot in non-compounding words, which leads to the loss of opposition between such vowels. ‘E’ is the label for this reduced vowel whereas ‘V’ stands for any vowel but ‘E’.
2.6.2 Intonation

Two basic intonation patterns are presented here: interrogative polarity questions and declaratives under verb and argument focus.

The intonation of a polarity question, whether positive or negative, is realized with a salient pitch rise in the penultimate syllable of the predicate, followed by a half fall in the last syllable:

(85) \textit{Me mörič?}

\begin{verbatim}
me=möruu-j
PF=be.audible-INTR.3SG
\end{verbatim}

‘Is [it] audible?’

![Oscillogram and Fundamental Frequency contour of the question Me mörič pronounced by a native male speaker. The typical TY polarity intonation can be observed: a rise in mö- followed by a half fall.](image)

(86) \textit{Lasu el=čayad’e?}

\begin{verbatim}
Lasu NEG=work.[3SG.ITRG]
\end{verbatim}

‘Didn’t Lasu work?’
Figure 2. Oscillogram and Fundamental Frequency contour of the question *Lasu el čayad’e* pronounced by a native female speaker. The typical TY polarity intonation can be observed: a rise in čaya- followed by a half fall in -d’e.

The intonation of a declarative sentence with focus on the predicate is realized with low pitch in the penultimate syllable of the verb. The pitch movement is not as significant as in polarity questions:

(87) *Lasu el=čayad’e.*

Lasu NEG=work.[3SG]

‘Lasu didn’t work’

Figure 3. Oscillogram and Fundamental Frequency contour of the declarative *Lasu el čayad’e* pronounced by a native female speaker. The falling intonation of the declarative can be observed in čayad’e.
Polarity questions and declarative clauses under verb focus differ formally only in their intonation pattern.

Intonation patterns in TY clauses with focalized arguments and focalized peripheral constituents have been elucidated in Odé (2011) as well as in Matić and Odé (forthcoming). The main finding is that the focalized constituent is marked morphologically as well as by a prominent falling pitch followed by low level pitch.

2.7 Orthography

The orthography for TY was developed by native speaker and linguist Kurilov (1987) on the basis of the Russian Cyrillic alphabet, with the addition of some letters from the official Yakut alphabet for those sounds that are missing in Russian. The relatively late arrival of an orthography for TY is partly responsible for its inconsistent use by different speakers, who are nevertheless rather proficient in writing. One of the major inconsistencies concerns phoneme /a/, which is realized in certain environments as a more central vowel. Some speakers prefer then to use grapheme <a> while some other favor <e>. Sometimes one and the same speaker makes alternative choices. Another divergence, probably reflecting individual pronunciation, is e.g. the non-phonological lengthening of vowels as mentioned in 2.1.

On several occasions, Kurilov noted at least one of the potential inadequacies of the orthography devised by him. In his view, rendering voiced bilabial approximant /w/ by Cyrillic <в> promotes the wrong pronunciation of this phoneme as the voiced labiodental fricative since this is the way this grapheme is pronounced in Russian, the language of the Yukaghir youth. The identical grapheme for /ö/ in TY in Yakut, namely <о>, may have influenced the acquisition of this sound as a more closed and fronted vowel, characteristic for Yakut, in the speech of some TY speakers, especially those who communicate primarily in Yakut (Odé 2012:35, 37).

Despite potential shortcomings of the existing orthography, it was decided to apply it systematically in the present thesis, which meant editing of the original spelling of the primary data in many cases. This was done for several reasons. First of all, it makes examples with diverging original orthography comparable for the reader. It was important to standardize the orthography of the primary data also for theoretical reasons. For instance, in one of the primary sources the scribe applied a spelling system that led to the blurring of the boundaries between phonemes /n/ and /n’/. Standardization of the spelling is essential if compiling a normative learner’s grammar for TY in the future, to which this thesis may contribute. Another important consideration for standardization is the existence of the largest to date Yukaghir-Russian dictionary (Kurilov 1990, 2001) written in the officially acknowledged orthography of Kurilov. It goes without saying that that dictionary will form the lexical basis for TY speakers and acquirers for decades to come. How the Cyrillic orthography of TY is transliterated in this thesis is explained in 1.8.