On the Word-Final Nasals in Nivkh

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Abbreviations

A	vowel[1]
AN	Amur Nivkh dialect
B	voiced plosive
CM	consonant mutation
ESN	East Sakhalin Nivkh dialect
F	voiceless fricative
G	glide
N	sonorant
N_s	strong sonorant
N_w	weak sonorant
NSN	North Sakhalin Nivkh dialect
P	voiceless plosive
P^h	voiceless aspirated plosive
pPN	pre-Proto-Nivkh
PN	Proto-Nivkh
SSN	South Sakhalin Nivkh dialect
V	voiced fricative
WSN	West Sakhalin Nivkh dialect

1. Introduction

Nivkh is a language isolate that is spoken in the far eastern region of Siberia alongside the lower course of the Amur river (this dialect is often referred to as Amur Nivkh) and on the nearby Sakhalin Island located in the Sea of Ohotsk (this dialect is often labeled as Sakhalin Nivkh). Classified as a severely endangered language by the UNESCO, the Nivkh language has less than 200 speakers as per the 2010 census of the Russian Federation.[2]

Nivkh has two main dialects based on its geographical diversity, i.e. Amur and Sakhalin Nivkh, the latter branching into several sub-dialects, namely North (NSN), East (ESN), South (SSN) and West Sakhalin Nivkh (WSN). As Comrie suggests, the difference between the AN, SSN and ESN dialects is large enough to regard these three as separate but closely related

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[1] In order to be able to describe some phonetic attributes of the language in a more transparent way, the cover symbol for vowels had to be changed from the traditional symbol 'V', as in this article it is used for voiced fricatives instead.

[2] Gruzdeva – Janhunen: The Revitalization of Nivkh on Sakhalin, 465.

languages from the structural point of view, while NSN occupies an intermediate position between the Amur and the Sakhalin variants.[3] SSN stands even further away from AN in terms of mutual intelligibility, while WSN is said to be a variant of Amur Nivkh brought to the island by mainland speakers.[4] This study focuses on the difference between the Amur and the Sakhalin dialects with regard to the word-final nasals.

2. Nasal consonants in Nivkh

The Nivkh language has a phoneme inventory comprising six vowels and a maximum of thirty-three consonants (depending on the dialect), of which there are four nasals: the labial /m/, the alveolar /n/, the palatal /ɲ/, and the velar /ŋ/. Although there are no synchronic restrictions on the occurrence of nasals in the language in general,[5] a sound change has occurred during the history of Nivkh, which affected nasal consonants mainly in the Amur dialect, but also in the West and North Sakhalin dialects. This process caused the elision of nasal phonemes in word-medial and word-final positions in some words and affixes, while in the Sakhalin dialects not affected by this change, they are still present.[6] These nasals can be reconstructed by comparing the corresponding cognates of the different Nivkh dialects. For instance:

(1) AN *oʁla*   WSN *eɣlŋ*[7]   'child'   (Shiraishi 2006: 33)
     AN *joʁo*   ESN *joʁoŋ* or SSN *joxan*   'cotton'   (Fortescue 2016: 83)
     AN *ɲivx-gu*   ESN *ɲiɣvŋ-gun*   'man-PL'   (Taksami 1983: 69)
     NSN *mur*   ESN *murŋ*   'horse'   (Halm – Slater 2020: 15)

Of all the nasal consonants, it is the velar /ŋ/ that seems to be most commonly elided in word-final position. On the other hand, at least in the available dictionaries, I have found only few examples of the loss of alveolar /n/ (e.g. the plural marker AN *-ku/-ɣu/-gu/-xu* : ESN *-kun/-ɣun/-gun/-xun*). Although some authors like Gruzdeva or Nedjalkov – Otaina mention the absence of final /ɲ/ and /m/ too in the Amur dialect,[8] I have not yet found any examples of this particular phenomenon. As Halm – Slater also mention, the PN /*ŋ/ > AN, WSN, NSN /Ø/ is a well attested and accepted historical sound change, while the elision of /n/ is much rarer, of which the most common example is the plural marker mentioned above. Moreover, they consider these two phenomena as conditioned regular sound changes without exceptions or other irregularities.[9] They observe that there are no instances of the

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[3] Comrie: The Languages of the Soviet Union, 266.

[4] Fortescue: Comparative Nivkh Dictionary, 1.

[5] Shiraishi: Topics in Nivkh Phonology, 27.

[6] Gruzdeva: Nivkh, 11.; Shiraishi: Topics in Nivkh Phonology, 32.

[7] Spelled as *eʁlŋ* and *eχlŋ* by Fortescue.

[8] Gruzdeva: Nivkh, 11.; Nedjalkov – Otaina: A Syntax of the Nivkh Language, 16.

[9] Halm – Slater: Application of the Comparative Method…, 11.

elision of PN palatal or labial nasals in any of the Nivkh dialects,[10] therefore, in the following I will also be focusing on the behavior of velar nasals only.

3. Regular consonant alternations

If one had a look at the vocabulary of the Amur dialect in itself, the absence of earlier word-final nasals would not be perceptible at all. However, despite the earlier, prehistorical elision of the nasals, there is one feature of the language in which the dropped phonemes synchronically participate, i.e. the 'regular consonant alternation' system or, in other words (as per Shiraishi 2006) 'consonant mutation' (henceforth referred to as CM). Characterized by Nedjalkov – Otaina as the most peculiar linguistic feature of Nivkh,[11] the regular alternations affect the initial consonant of words and morphemes in specified grammatical domains (with the exception of /m/, /n/, /ɲ/, /ŋ/, /l/, /j/ and /h/) according to the final consonant of the preceding word or morpheme. A couple of examples for consonant mutation can be seen in *example (2)*:

(2) AN *tif* 'house' AN *qan **d**if* 'dog house' (Nedjalkov – Otaina 2013: 5)
    AN *piɲx* 'soup' AN *cʰo **v**iɲx* 'fish soup'
    AN *kujva* 'ring' AN *toto **ɣ**ujva* 'silver ring' (Shiraishi 2006: 86)
    AN *viɣviɣ* 'to repair' AN *tif **p**iɣviɣ* 'to repair a house'
    SSN *zosq* 'to break' SSN *ŋir **ɟ**osq* 'to break a cup'[12] (Gruzdeva 1998: 14)

In the following, I will compare the descriptions of the consonant alternation process mainly by two authors, Ekaterina Gruzdeva and Shiraishi Hidetoshi. By examining the observations made by different authors, we may be able to get a clearer picture of how the word-final nasals behave in the language. When comparing these two thorough descriptions of the same phenomenon, we note that the description given by Gruzdeva basically compares the Amur and the South Sakhalin dialects of Nivkh, while Shiraishi's study is mainly based on the West Sakhalin dialect. While Gruzdeva does not even mention WSN as one of the dialects of Nivkh, Fortescue points out that it is essentially a mixture of AN and the Sakhalin dialects.[13] It even conforms to the Amur variant in the sense that it has voiceless unaspirated plosives, which the other Sakhalin dialects are reported to lack. Halm – Slater, however, note that leaving aside a few exceptions or complexities that are present in virtually any of the dialects of Nivkh, the general outline of the CM system is uniform in the language.[14]

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[10] Ibid., 13.

[11] Nedjalkov – Otaina: A Syntax of the Nivkh Language, 3.

[12] Although Gruzdeva does not specify the dialect which this example comes from, the change of the initial consonant of the word *zosq* from a voiced fricative to a voiced plosive implies that it is from SSN, since, as will be seen later, AN does not have this type of alternation in the case of a preceding word final fricative.

[13] Fortescue: Comparative Nivkh Dictionary, 1.

[14] Halm – Slater: Application of the Comparative Method…, 4.

As described by Gruzdeva and Nedjalkov–Otaina, consonant alternations take place at morpheme junctions, for instance between a word stem and its reduplication, before postpositions and at word boundaries in specific syntactic structures.[15] In the case of syntactic structures, the alternations affect nouns and transitive verbs following their attributes and direct objects, respectively. In short, as for words, the regular consonant alternations occur only in the following two syntactic structures: *attribute + head noun* and *direct object + transitive verb*, as explained by Gruzdeva.[16] Nedjalkov – Otaina name these structures as 'bound complexes', in contrast to 'free complexes', where no alternation takes place.[17]

Shiraishi, on the other hand, approaches the phenomenon from a phonological viewpoint rather than a morphological one, and describes the characteristics of the consonant changes spirantization and fortition (the latter referred to by him as hardening), which take place in specific domains of morphemes in Nivkh. In the following, I will examine the description of both Gruzdeva and Shiraishi, and sum up the various rules that apply during the consonant alternation process in order to get a clearer picture of the behavior of the word-final nasals.

The consonant system of the language is as follows:

	labial	labiodental	alveolar	palatal	velar	uvular	glottal
nasal	m		n	ɲ	ŋ		
plosive	p pʰ b		t tʰ d	c cʰ ɟ	k kʰ g	q qʰ ɢ	
fricative		f v	s z		x ɣ	χ ʁ	h
glide				j	w		
lateral			l				
trill			r̥ r				

Table 1 Consonant system of the Nivkh language

In order to be able to summarize the possible alternations in a convenient way, I will use the following cover symbols for the sets of consonants that take part in the morphophonological process:

A:	vowels:	/a/, /e/, /i/, /ɨ/, /o/, /u/
P:	unaspirated voiceless plosives (absent from SSN):	/p/, /t/, /c/, /k/, /q/
Pʰ:	aspirated voiceless plosives:	/pʰ/, /tʰ/, /cʰ/, /kʰ/, /qʰ/
B:	voiced plosives:	/b/, /d/, /ɟ/, /g/, /ɢ/
F:	voiceless fricatives:	/f/, /r̥/, /s/, /x/, /χ/
V:	voiced fricatives:	/v/, /r/, /z/, /ɣ/, /ʁ/
N:	sonorants (in the case of AN):	/m/, /n/, /ɲ/, /ŋ/, /l/
Nₛ:	'strong' sonorants (in the case of SSN):	/m/, /n/, /ɲ/, /ŋ/, /l/

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[15] Gruzdeva: Nivkh, 14., Nedjalkov–Otaina: A Syntax of the Nivkh Language, 5.

[16] Gruzdeva: Nivkh, 13–14.

[17] Nedjalkov – Otaina: A Syntax of the Nivkh Language, 5–6.

| N$_w$: | 'weak' sonorants (in the case of SSN): | /n/, /ŋ/ |
| G: | glides: | /j/, /w/ |

SSN does not have unaspirated voiceless plosives (P), but has voiced plosives (B) instead.[18] In AN, however, voiced plosives do not occur as morpheme onsets. The trills /r/ and /r̥/ are considered as fricatives (F) by Gruzdeva when presenting the alternation rules,[19] while Nedjalkov – Otaina and Shiraishi categorize them as fricatives in the phonetic sense as well.[20]

A distinction has to be made between 'strong' and 'weak' sonorants in the case of the Sakhalin dialects, as some words ending in /n/ or /ŋ/ seem to behave differently from others, namely those, which – according to Gruzdeva – have lost their final nasals in the Amur dialect due to the previously mentioned historical sound change. As for AN, no such distinction is needed, therefore I will label them simply as 'sonorants' under the cover symbol 'N'. Regarding the regular consonant alternation system, this means that the words that end in the sonorants /m/, /n/, /ɲ/, /ŋ/ and /l/ in AN follow only one alternation rule, but the two distinctive sets of sonorants exhibit two corresponding alternation patterns in the Sakhalin dialects. According to Gruzdeva, the ESN and NSN dialects display a mixture of the morphophonological processes attested in AN and SSN,[21] therefore these dialects will be left out of consideration here.

In a much earlier work than that of Gruzdeva's, Takeshi Hattori (1962) also acknowledges the contrast between 'weak' and 'strong' sonorants, but considers only /ŋ/ as a 'weak' sonorant, which he labels as /ŋ₂/ (opposed to the 'strong' variant /ŋ₁/).[22] Halm – Slater state that although /n/ is also commonly said to have 'strong' and 'weak' variants, the number of examples and the amount of evidence is too feeble to draw conclusions on the matter.[23] Because of this, I will also restrict the focus of the study to the velar nasal /ŋ/, for which we have the greatest number of examples and thus sufficient evidence.

Gruzdeva gives a thorough description of the various alternation patterns between the different consonant sets in the case of attribute + head noun and direct object + transitive verb constructions and specifies the cases where ultimately no alternation occurs.[24] *Table 2* summarizes the alternation rules according to Gruzdeva's observations, irrespective of the different syntactic structures. The first column represents the word-final phonemes which trigger the CM process (labeled as 'triggers'), the table header contains the possible morpheme-initial consonants that take part in the alternation in the two dialects in consideration (labeled as 'targets'), while the table cells show the results of the mutation, that is the onsets of the morphemes which have undergone the alternation process. Gray letters indicate where no alternation is triggered, e.g. in the case of AN, after a final fricative

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[18] Gruzdeva: Nivkh, 11.

[19] Gruzdeva: Nivkh, 13.

[20] Nedjalkov – Otaina: A Syntax of the Nivkh Language, 3., Shiraishi: Topics in Nivkh Phonology: 24.

[21] Gruzdeva: Nivkh, 14.

[22] Hattori: Versuch einer Phonologie…, 29–30.

[23] Halm – Slater: Application of the Comparative Method…, 14.

[24] Gruzdeva: Nivkh, 14–15.

(F or V), the initial plosives (P or Pʰ) remain unchanged. On the other hand, those cells which would indicate impossible codas, onsets or their combinations are completely grayed out.

target ⟍ trigger	Amur Nivkh					South Sakhalin Nivkh				
	P	**Pʰ**	**B**	**F**	**V**	**P**	**Pʰ**	**B**	**F**	**V**
A, P, /j/ or /ʝ/	V	F		F	V		F	V	F	V
F or V	P	Pʰ		Pʰ	P		Pʰ	B	Pʰ	B
N or elided N	B	Pʰ		F	B					
Nₛ							F	V	F	V
N_w							Pʰ	B	Pʰ	B

Table 2 Consonant alternation rules of the different dialects (AN and SSN),
as per Gruzdeva[25]

The rules which are of greatest importance to the present study are those that involve nasals as the triggers of CM, since they cause alternations to the onset of a following morpheme even when being dropped in the Amur dialect. Consider the following examples taken from AN:

(3) a) *hɨ* ***z**us* (< *cus*)
    this *meat*
    'this meat'

  eʁa ***ɟ**us*
  cow *meat*
  'cow meat' (Nedjalkov – Otaina 2013: 17)

  b) *ki* ***v**ɨɣvɨɣ*
    footwear repair
    'repair a footwear'

  oʁla[26] ***b**ɨɣvɨɣ*
  child repair
  'treat a child'(Gruzdeva 1998: 14)

In the examples in *(3)*, we can see that all preceding words synchronically have vowels as codas, but they trigger different kinds of alternations to the initial consonants of the following words, though according to the rules presented above, all vowels should trigger the same kind of mutations. The reason for this anomaly is that the words *oʁla* 'child' and *eʁa* 'cow' once had a final nasal /ŋ/ (**eʁlaŋ* and **eχaŋ*[27] respectively), which, in contrast to the Sakhalin dialects, where they are still present, were omitted in AN, but retain their

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[25] Gruzdeva: Nivkh, 14–15.

[26] In the examples of Gruzdeva (1998: 14), the word for 'child' is written as *oɣla*, but Taksami (1983: 75) and Shiraishi (2006: 22) as well as Fortescue (2016: 56) in his dictionary spell it as *oʁla*.

[27] Reconstructions taken from Fortescue (2016: 56, 57).

triggering effect with regard to CM similarly to synchronically existing final nasals. The phenomenon treated above is described by Nedjalkov – Otaina in the following way: „Words and suffixes with omitted n and ŋ require respective alternation for each of these sonorants (these consonants are preserved in the East-Sakhalin dialect), i.e. they require a plosive."[28] In example *(3) a)* the alternation of the initial consonant of the noun *cus* is shown. In the first phrase, being preceded by the vowel /ɨ/, the voiceless plosive /c/ turns into the voiced fricative /z/, so the rule P > V applies. In the second phrase however, where /c/ is preceded by /a/, a different kind of alternation applies, changing it into its voiced counterpart /ɟ/. According to Gruzdeva's rules presented above, such a voicing process may theoretically be due to either an existing or an omitted word-final nasal. In this case, the latter is the correct answer, because as mentioned above, the word *eʁa* is lacking a final nasal, and thus the rule P > B is applied. Example *(3) b)* shows the alternations of the initial consonant of the transitive verb *vɨɣvɨɣ* 'to repair'. In the case of *ki vɨɣvɨɣ*, the initial voiced fricative /v/ remains unchanged, since the direct object of the verb, *ki* ends in a vowel, therefore no alternation occurs (V > V). In the case of *oʁla bɨɣvɨɣ* however, the word *oʁla* 'child' induces the unexpected alternation V > B due to its omitted word-final nasal consonant.

In contrast to Gruzdeva, who defines the alternation rules according to the syntactic categories of words and morphemes taking part in the process (i.e. transitive verbs and suffixes with initial fricatives and nouns with initial plosives), Shiraishi defines the rules from the viewpoint of a single domain in which the two phonological processes, spirantization and hardening always apply regardless of syntactic categories. This domain can be made up of either a transitive verb preceded by its object, a noun preceded by a modifier, a noun with attached suffixes or the clitizied reflexive pronoun *pʰi*.[29] He also gives explanations for the exceptions where the rules do not apply for one reason or another.[30] Anttonen et al. demonstrate how CM is applied only when the triggering and target words are in the specific domain of the CM.[31] [32] Consider the difference between the two examples in *(4)*. Here, CM occurs in the second example, where *eɣlŋ* 'child' is the object of the verb *r̥o-d* 'to bring', and not the subject, like in the first example:

(4)   *eɣlŋ r̥o-d*   *eɣlŋ **tʰo-d**[33]*
       child bring-IND   child bring-IND
       'A child brought (sth.).'   '(Someone) brought a child.'

Shiraishi does not specify the rules of CM according to the various sets of consonants that alternate in different syntactic categories, but defines only two tendencies: spirantization (i.e.

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[28] Nedjalkov – Otaina: A Syntax of the Nivkh Language, 17.

[29] Shiraishi: Topics in Nivkh Phonology, 90–93.

[30] See Shiraishi (2006: 127–129).

[31] Anttonen – Luukkonen – Sandman – Santalahti – Ylitalo – Gruzdeva: Attritional Phenomena in the Nivkh Language…, 205.

[32] Interestingly, Shiraishi (2006: 96) notes that the CM system demonstrates pause-sensitivity, which means that when a pause is inserted between the words by a speaker, the consonant mutation does not apply.

[33] Example *(4)* is taken from ESN by the authors.

a plosive turns into a fricative) and hardening (i.e. a fricative turns into a plosive). He observes that the specific phonological contexts where one of these sound changes applies are exactly the same where the other fails to apply, which thus results in an asymmetry between them.[34] The complementary distribution of the two processes is shown in *Table 3*. Similarly to *Table 2*, the triggering word-final phonemes are found in the leftmost column, the alternating word-initial consonants are listed in the upper row grouped by the manner of articulation, and the results of the alternations are shown in the table's cells.

trigger \ target	plosive	fricative
vowel	fricative	
glide	fricative	
plosive	fricative	
fricative		plosive
nasal		plosive

Table 3 The distribution of spirantization and hardening in
the different phonetic environments, as described by Shiraishi[35]

If we summarize the rules of alternations observed by Shiraishi the same way as in Gruzdeva's case, we get the following table:

trigger \ target	West Sakhalin Nivkh				
	P	**Pʰ**	**B**	**F**	**V**
A, P or G	V	F		F	V
F or V	P	Pʰ		Pʰ	P
N or elided N	B	Pʰ		Pʰ	B

Table 4 Consonant alternation rules of the different dialects of WSN,
as per Shiraishi[36]

According to the observations on WSN by Shiraishi, we can summarize the phonetic attributes of word-final nasals with regard to their behavior in the CM system in the following way: (1) they trigger the hardening of following fricatives, changing them into aspirated voiceless plosives (F > Pʰ) or voiced plosives (V > B); and (2) they induce voicing of following plosives (P > B), but leave the voiceless aspirated plosives intact. However, if we want to include other dialects as well to obtain a more coherent list of attributes, we will face several problems mainly because of the key differences between the dialects themselves.

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[34] Shiraishi: Topics in Nivkh Phonology, 84.

[35] Ibid., 86–90.

[36] Ibid., 86–89.

4. Problems regarding the rules of alternations

The only difference between Gruzdeva's and Shiraishi's account concerns the rule applying in the case of an extant or an elided word-final nasal followed by a voiceless fricative (final N or elided N and initial F in *Table 2* and *Table 4*). Gruzdeva claims that in AN voiceless fricatives following word-final sonorants tend not to alternate,[37] while Shiraishi states that a hardening of fricatives occurs when they are preceded by a nasal or another fricative, resulting in the rule F > Pʰ in the case of WSN. Two examples taken from Shiraishi can be found below in *(5)*, showing the application of the rule.

(5) ɲiŋ   **tʰxirp** (< *r̥xirp*)   (F > Pʰ / N#__)
   us   forget
   'forget us'

   aŋ   **kʰu** (< *xu*)   (F > Pʰ / N#__)
   who   kill
   'kill hom?'   (Shiraishi 2006: 88)

We can see that the voiceless fricatives /r̥/ and /x/ change into the aspirated voiceless plosives /tʰ/ and /kʰ/ respectively. According to Gruzdeva's description, however, these initial phonemes would not be affected by CM.

However, as Halm – Slater suggest, the observations made by Gruzdeva in her studies of that time were based on a limited corpus with insufficient number of examples and cognates between the different dialects of Nivkh.[38] In the following decades, however, much more work has been carried out with more data, allowing the authors to take on newer approaches as well, like the one presented by Shiraishi. Regarding this issue, Halm – Slater mention the observations of Luukkonen as well, who shows that there are numerous exceptions to Gruzdeva's rules as to the behavior of morpheme-final nasals in AN, to the extent that one may wonder if these can be considered as exceptions at all, or rather a different category of words corresponding to different alternation patterns.[39]

Another problem that arises in connection with the alternation rules presented above – which is the problem I am concerned with in this study – is the distinction between 'weak' and 'strong' sonorants in the case of SSN –, a feature[40] which is acknowledged not only by Gruzdeva but also Halm – Slater, whose work titled *Application of the Comparative Method to Morpheme-Final Nasals in Nivkh* also addresses the issue presented here.

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[37] Gruzdeva: Nivkh, 15.

[38] Halm – Slater: Application of the Comparative Method…, 5–6.

[39] Ibid., 8.

[40] The contrast between 'weak' and 'strong' sonorants in Nivkh was first reported by Takeshi Hattori in his 1962 works *Versuch einer Phonologie des Sudostgiljakischen* and *Bemerkungen zur Phonologie des Südostgiljakischen* (Halm – Slater 2020: 7)

We could observe in *Table 2* that in AN the rules for nasals and elided nasals are the same, while in SSN quite distinct rules apply to the two kinds of sonorants. Moreover, the rules sketched by Shiraishi based on WSN – with the exception of the minor difference presented above – are similar to those of AN: they agree that words with elided nasals behave the same way as those which still have nasals as final consonants. We can also observe that in the case of AN and WSN, word final (and also elided) nasals form a distinct set of alternation rules which differ from the ones induced by vowels, plosives or fricatives, but in SSN, words ending with 'strong' sonorants (i.e. words which have retained their final nasals in AN) tend to behave in exactly the same way as words ending with vowels or plosives, and words with 'weak' sonorants behave the same way as words with final fricatives, that is they cause fricatives and plosives respectively to surface in the onset of following morphemes.

In my opinion it seems plausible that these rules of alternation carry some hints of how the status of word-final nasals have changed during the history of the Nivkh language, and therefore should be studied in depth in a future research. My proposed questions regarding the issues here are:

    a) why are there different sets of rules in SSN for two distinct groups of words ending in apparently the same kind of sonorants? (note that the difference of the two kinds of sonorants, i.e. 'weak' vs. 'strong', can be detected only on the basis of these very phonological rules)

    b) why do elided and non-elided nasals behave the same way in AN if they induce different kinds of alternations in SSN?

In the following, I am going to present my thoughts on these issues, along which further research may be carried out. As stated earlier, my investigation will focus on the velar nasal. As for the issue in question a), the distinction between the rules for 'weak' and 'strong' sonorants would not exist, had it been not for a conditioning environment that disappeared from the language sometime during its history. It is obvious that the alternations should be the same for all phonemes of the same kind, i.e. similarly to plosives, fricatives and vowels, all nasals should behave identically as well. It is implied that by looking at a SSN word ending in /ŋ/ (or /n/ in some cases), a non-native speaker is unable to predict its behavior with respect to the CM process. For instance, the combination of *ɢanŋ* 'dog' and *dav*[41] 'house' could either be *ɢanŋ **d**av* (B > B / N_w#__) or *ɢanŋ **r**av* (B > V / N_s#__) 'dog house'.[42] It seems that at an earlier stage of the language there must have existed some kind of differentiating factor, which determined the alternation process.

While not acknowledging the correspondences between the SSN 'strong' and 'weak' sonorants and the AN or NSN non-elided and elided nasals respectively proposed by some authors like Gruzdeva (1997) or Fortescue (2016) (i.e. SSN /N_s/ : AN /N/ and SSN /N_w/ : AN /Ø/), Halm – Slater (2020) suggest that some contrast between the nasals must have existed already in PN (i.e. some kind of conditioning environment, which later disappeared).

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[41] Both *ɢanŋ* 'dog' and *dav* 'dog' are SSN words taken from Fortescue.

[42] Since the SSN word *ɢanŋ* has a 'weak' /ŋ/ at its end, the correct alternation is the first one. The AN variant of this example is *qan + tif > qan dif*.

Strikingly, they also point out that based on the evidence brought up by later works, the contrast of 'weak' and 'strong' sonorants most likely exists not only in SSN, but in WSN and AN as well, all inherited from PN. Since 'weak' nasals are attested in AN too, the elision of nasals has to be the result of another linguistic process, for which no firm theory yet exists.[43]

Halm – Slater ultimately propose a system for velar nasals in PN with a three-tier contrast, in which there exists a contrast not only between 'strong' and 'weak', but between long and short sounds as well, as can be seen in example *(6)*.[44] In the case of each nasal, the lower index letters 's' and 'w' denote whether it is a 'weak' or 'strong' one. I will also adopt this system for the rest of the study.

(6) PN /*$ŋ_w$/ > SSN /$ŋ_w$/, AN/$\emptyset_w$/
    PN /*$ŋ{ː}_w$/ > SSN /$ŋ_s$/, AN/$ŋ_w$/
    PN /*$ŋ{ː}_s$/ > SSN /$ŋ_s$/, AN /$ŋ_s$/

This theory assumes that there existed a short 'weak' velar nasal (/*$ŋ_w$/) in PN, which corresponds to the SSN 'weak' velar nasal (/$ŋ_w$/), and which became elided in AN (/$\emptyset_w$/). In addition, there were two variants of the long velar nasal, a 'strong' and a 'weak' one (/*$ŋ{ː}_s$/ ≠ /*$ŋ{ː}_w$/), both of which underwent shortening in AN, but the contrast between them remained (/$ŋ_s$/ ≠ /$ŋ_w$/). In SSN, however, these long PN velars lost not only their length but their contrast as well, thus resulting in what are recognized in the contemporary language as 'strong' velar nasals (/$ŋ_s$/). Examples for these correspondences can be seen in *Table 5*.

PN	SSN	AN	
*ɲir**ŋ_w**	ɲir**ŋ_w**	ɲir**∅_w**	'cup, bowl'
*ke**ŋː_w**	ge**ŋ_s**	ke**ŋ_w**	'whale'
*lo**ŋː_s**	lo**ŋ_s**	lo**ŋ_s**	'moon'

Table 5 The Proto-Nivkh final velars and their correspondences in SSN and AN, based on Halm – Slater's hypothesis[45]

Although Halm – Slater's proposal for a PN nasal inventory is definitely noteworthy and seems plausible being based on the comparative method, in my view it may not necessarily conform to the rules of the alternation system witnessed in the contemporary language. If we return to the problem outlined in question a) regarding the distinction between the alternation rules for 'weak' and 'strong' triggers of consonant alternation in SSN, in terms of Halm – Slater's theory, the hypothesized differentiating factor between the two sets of nasals, which has already disappeared from the language, is the length of the final nasal consonant. However, this would mean that some time before the contemporary state of SSN, a short nasal would cause plosives and a long nasal would cause fricatives to surface at the onset of the following morpheme in the domain of CM, provided that the rules of the system

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[43] For more on this matter, see Halm – Slater (2020: 8–10).
[44] Halm – Slater: Application of the Comparative Method..., 13.
[45] Ibid., 15–16.

were the same as in contemporary SSN. From a phonetic perspective, it seems difficult to imagine for the length of a phoneme alone to make such a difference as whether a plosive or a fricative shall surface right behind it. Therefore, Halm – Slater in fact hypothesize that the predecessors of the PN long nasals could have been clusters consisting of a nasal and either a plosive or a fricative, e.g. pPN /**ŋg/ > PN /*ŋːs/ or pPN /**ŋx/ > PN /*ŋːw/ (pPN stands for pre-Proto-Nivkh).[46] In my opinion, the assumption of the stage assigned here to PN is not entirely necessary.

In the following I present my own hypothesis regarding the issue in question, which is very similar to that of Halm – Slater's, the only difference being that my solution does not require the assumption of a contrast between long and short nasals. Since, as a rule, it is the word-final sound that determines the alternation of the initial sound of the following morpheme, it is probable that there were additional sounds after the 'strong' or the 'weak' nasals, which later disappeared, leaving behind words with identical finals, but different alternating patterns. Accepting the three-tier system of PN velar and alveolar nasals presented by Halm – Slater as well as their extensive list of example words displaying the correspondences between final nasals in the Nivkh dialects, I am presenting my suggestion for the evolution of word final alveolar and velar nasals (*Table 6*), which, in my opinion, gives an explanation for the differences between the alternation rules regarding nasals in AN and SSN as well.

PN	>	PSSN	>	SSN		PN	>	AN
*ŋw	>	*ŋw	>	ŋw		*ŋw	>	Øw
*ŋɣ	>	*ŋg	>	ŋs		*ŋɣ	>	ŋw
*ŋg						*ŋg	>	ŋs

Table 6. A proposition for the evolution of contemporary Nivkh word-final nasals in the case of SSN and AN

In addition to Proto-Nivkh, the theory also takes into account the transitional Proto-South-Sakhalin-Nivkh (PSSN) stage between SSN and PN, in which additional changes might have occurred, which ultimately lead to the contemporary state of the dialect.

While retaining the correspondences of 'strong' and 'weak' nasals between the two dialects set up by Halm – Slater, in the case of AN I reconstruct the /*ŋɣ/ cluster for the 'weak' nasal, and the /*ŋg/ cluster for the 'strong' nasal, i.e. adding to the velar nasal a homorganic fricative and plosive, respectively. I could have used the voiceless velar fricative /x/ for the former sequence as well, but its voiced pair seemed to be a better choice, since it is closer to /g/ regarding its manner of articulation, and thus better explains the merger that may have taken place in the prehistory of SSN. Furthermore, when discussing the phonological correspondences between the Nivkh dialects and his PN reconstructions, Fortescue writes that voiceless fricatives in word-final position in contemporary Nivkh

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[46] Halm – Slater: Application of the Comparative Method…, 12.

developed through devoicing,[47] and he does in fact reconstruct PN /*ɣ/ whenever a word ends with /x/ in the modern dialects, e.g. AN *tux* < PN **duɣ* 'axe' or AN *nux* < PN **nuɣ* 'needle'[48]. The AN elided nasal is of course reconstructed as the single 'weak' nasal also suggested by Halm – Slater. In the case of SSN, the PN consonant clusters /**ŋɣ/ and /**ŋg/ could merge into /**ŋg/ in the course of PSSN, which later became the SSN 'strong' nasal /ŋ$_s$/ by dropping the plosive /g/ the same way as in the case of AN. Thus the main difference between the evolution of the AN and SSN velar nasal is that while AN retained the difference between the two-phoneme clusters of PN (i.e. /*ŋɣ/ vs. /*ŋg/), yielding essentially three kinds of nasals similarly to PN (one of which ultimately became elided), the merger of PSSN reduced the number of nasals to two.

The elision of word final /g/ after the velar nasal /ŋ/ would not be an unmatched phenomenon, since the same change occurred during the history of the English language. In Old and Middle English, [ŋ] was an allophone of the phoneme /n/, surfacing only in front of the velar plosives /k/ or /g/ (e.g. ME *sing* [siŋg]). During the late 16th and the 17th centuries, however, /g/ became elided after [ŋ] in word-final position as well as word-internally in some specific morphological environments, allowing [ŋ] to become a phoneme on its own and to become phonologically contrastive (e.g. English *sin* /sin/ : *sing* /siŋ/).[49]

PN	PSSN	SSN		PN	AN	
**qanŋ$_w$	*ɢanŋ$_w$	ɢanŋ$_w$		**qanŋ$_w$	qanØ$_w$	'dog'
**kʰeŋɣ	*kʰeŋg	kʰeŋ$_s$		**kʰeŋɣ	kʰeŋ$_w$	'sun'
**haŋg	*haŋg	haŋ$_s$		**haŋg	haŋ$_s$	'hazel grouse'

Table 7. PN and PSSN reconstructions of AN and SSN words based on my theory[50]

As discussed above, we know that in AN, elided and non-elided nasals cause plosives to appear as the second component of the CM system's domain (i.e. at the onset of the second morpheme), and in SSN, 'strong' nasals cause fricatives, while 'weak' nasals cause plosives to surface in the same position. Shiraishi explains that the rules of CM tend to avoid clusters of adjacent fricatives or plosives, i.e. a triggering plosive causes a fricative to appear in the target word, and vice versa.[51] By adding to *Table 6* the corresponding sets of consonants that each nasal or nasal cluster causes to surface in the target, we get the following table:

PN	>	PSSN	>	SSN		PN	>	AN
**ŋ$_w$+plosive	>	*ŋ$_w$+plosive	>	ŋ$_w$+plosive		*ŋ$_w$+plosive	>	Ø$_w$+plosive
**ŋɣ+plosive	>	*ŋg+fricative	>	ŋ$_s$+fricative		*ŋɣ+plosive	>	ŋ$_w$+plosive
**ŋg+fricative	>					*ŋg+fricative	>	ŋ$_s$+plosive

Table 8. Reconstructed nasals for AN and SSN,
and the types of consonants they cause to surface as triggers of CM

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47 Fortescue: Comparative Nivkh Dictionary, 4.
48 Examples taken from Fortescue (2016: 45, 113).
49 See Lass: The Cambridge History of the English Language, 119–120.; Kümmel: Konsonantenwandel..., 101.
50 The AN and SSN words and their translations are taken from Halm – Slater (2020: 15–16).
51 Shiraishi: Topics in Nivkh Phonology, 108.

We can see that the rules of CM are inconsistent only in the case of SSN, where the 'strong' velar /ŋₛ/ induces spirantization to the target morpheme, although it has already lost the once morpheme-final /g/ in PSSN, instead of triggering fortition and causing plosives to surface in the process of CM. In my opinion, this may be because the language seems to be in a state of transition, in which the earlier presence of the supposed final plosive still affects the system of CM, thus causing phonological opacity, just like in the case of elided nasals in AN. As Shiraishi pointed out, younger speakers of AN tend to neglect the earlier presence of elided nasals in order to achieve a more transparent application of CM, while older speakers still tend to be aware of the earlier form of these words.[52] Given that the now critically endangered Nivkh language continues to survive long enough, it may be possible that after a certain amount of time, these elided nasals will be completely forgotten, and the words which once contained them will adopt new alternation rules depending on their current final triggering sounds. The same way, the difference between SSN 'strong' and 'weak' nasals may eventually cease to exist, leaving behind only words ending with nasals which follow a single alternation rule.

5. Conclusion

In this study we have examined the behavior of the Nivkh final nasal consonants in the domains of the consonant mutation system, based on the description of multiple authors. We have seen, that – although there can be minor differences between the rules presented by the researchers – there are peculiar cases of consonant alternations, where the rules of the alternation system would suggest otherwise.

Such is the case of AN, where words ending in identical phonemes can have different alternation patterns. This happens because of a nasal sound, which was originally present at the end of specific words, but ultimately dropped during the history of this particular dialect. Despite being elided, the former presence of the nasal still affects the alternation of the initial sound of the target word. Another case arises in SSN, where – similarly to AN – there are word final nasals that sometimes produce different alternations in different words, although there are no observable differences in their phonetic environments that would account for their irregular behavior. The reason for this phenomenon is what is often referred to as the contrast of 'weak' and 'strong' nasals, each type of nasal consonants inducing their own particular alternation patterns.

While Takeshi Hattori (1962) simply made an account of the existence of 'weak' and 'strong' nasals, Ekaterina Gruzdeva (1998) made a connection between this contrast and the elided nasals in AN, stating that SSN 'weak' nasals are exactly the ones which are elided in AN, and SSN 'strong' nasals are those which are still present in AN, thus pointing out that the earlier stage of AN words can be reconstructed by examining their equivalents in the

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[52] Shiraishi: Topics in Nivkh Phonology, 98.

Sakhalin dialects. However, in a very recent work, Halm – Slater (2020) presented their findings regarding this issue, stating that 'weak' and 'strong' nasals also exist in AN, but due to the small number of examples examined, Gruzdeva most probably considered them as exceptions to a general alternation rule. Halm – Slater presented their own system of Proto-Nivkh nasals, which tries to give an explanation for the presence of 'weak' and 'strong', as well as elided and non-elided nasals in some dialects of the language. They proposed a three-tier contrast between PN nasals, based on the length of the phonemes, suggesting the existence of one short and two long nasals in PN, which have developed differently in the Amur and the Sakhalin dialects. Although their hypothesis fits well with the distribution of word-final nasals in contemporary Nivkh, it is my opinion that it does not conform to the alternation rules of the consonant mutation system, because this way a short nasal would affect the onset of the target word differently than a long one.

In the last chapter of this study, I presented my own hypothesis along with a proposed inventory for the PN nasal consonants. Compared to the system proposed by Halm – Slater, it omits the need for long PN nasals, and assumes the prior existence of conditioning environments in the form of consonant clusters comprising a nasal and either a plosive or a fricative. Since the alternations caused by the CM system are driven by specific sets of consonants that differ in their manner of articulation, in my opinion, an additional consonant following a nasal would be a better differentiating factor for the alternation rules, than the length of the nasal phoneme. The earlier elision of these additional plosives and fricatives could explain the presence of different alternation rules for the seemingly identical nasals of the contemporary language. This would of course presume that the disappearance of the conditioning environments happened not very long ago, so that they still have an impact on the speech of at least some of the Nivkh people. As reported by multiple authors like Shiraishi, Nedjalkov – Otaina, the Nivkh language seems to be in a state of change, e.g. the younger generations are less and less conscious about the previously existing word-final nasals in AN, those which still affect the alternation of the onset of the following word in the domains of CM. This way, the rules left behind by former conditioning environments may still be present in the contemporary state of Nivkh, although they may ultimately cease to exist in the future of this already critically endangered language.

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