On the diachronic origin of Nivkh height restrictions

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Nivkh, a genetic isolate spoken in the Russian Far East, displays a pattern of stress-dependent height restrictions in a linguistic area where tongue-root harmony is prevalent. We argue that the Nivkh pattern derives from an earlier tongue-root system. This system developed into a height-based system following the loss of tongue-root contrasts in high vowels, in much the same way as has been proposed for dialects of Manchu.

Keywords: Nivkh, Manchu-Tungus, vowel harmony, vowel reduction, Element Theory, language contact, areal linguistics, diachronic linguistics, fieldwork

1. Introduction

Tongue-root (TR) harmony is a feature of many languages of northeast Asia. In a recent paper, Ko et al. (2014: 170) claim that "RTR harmony should be reconstructed for proto-Korean, proto-Mongolic, and proto-Tungusic", while in his typological overview of Siberian languages Comrie (1997: 276) observes that ATR harmony is found in both the Chukotko-Kamchatkan and the Tungusic languages, and is therefore likely to be an areal feature (see Janhunen 1981 for a similar claim).

In our contribution to this volume we consider the question of how Nivkh (formerly Gilyak), a linguistic isolate of Eastern Siberia, fits into this picture. According to Ko et al. (2014: 171), Nivkh displays "vestiges of stem-internal co-occurrence restrictions based on an [RTR]:[ATR] opposition". Synchronically, however, the co-occurrence restrictions on Nivkh vowels suggest a pattern based on vowel height (cf. Shiraishi & Botma 2015, 2016). In this chapter we explore the possibility that the synchronic restrictions on Nivkh vowels developed from an earlier pattern of TR harmony. A similar development has previously been proposed for dialects of Manchu (see Li 1996, Zhang 1996, Dresher & Zhang 2005). For Nivkh, support for

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such a development comes among other things from data from the Shmidt dialect, the only surviving Nivkh dialect which has apparently retained some instances of RTR /ʊ/.

The chapter is organized as follows. Sections 2 and 3 outline the development from TR harmony to height harmony in Sanjiazi Manchu, based on earlier analyses in Li (1996) and Zhang (1996). The crucial insight of these analyses is that the historical loss of TR contrasts in high vowels led to a re-interpretation of the TR contrast in low vowels as a height contrast. Section 4 examines the synchronic distribution of Nivkh vowels and shows that this distribution is best analyzed as being conditioned by restrictions on vowel height. Specifically, we argue that in Nivkh the [A] element, which is a property of low and mid vowels, can occur in unstressed position only if it is licensed by another [A] in stressed position. Finally, Section 5 argues that the synchronic height restrictions in Nivkh derive from an earlier pattern of TR harmony, in much the same way as has been suggested for Sanjiazi Manchu.

2. Height harmony and TR harmony in Manchu

To set the stage for our analysis of Nivkh, we first consider the height harmony system of Sanjiazi Manchu, which has been argued to have developed from an earlier TR harmony system (see Li 1996, Zhang 1996, Dresher & Zhang 2005).[1]

Sanjiazi Manchu has seven vowels. These can be divided into two sets according to their height, as in (1).[2]

(1) Sanjiazi Manchu: Vowel system

i	ɨ		u	y	high
a		æ	ɔ		non-high

The examples in (2), from Li (1996: 182), show that height harmony in Sanjiazi Manchu occurs between a stem-final vowel and a following suffix (illustrated in (2) for the past-tense suffix):

1. Sanjiazi Manchu is spoken in the village of Sanjiazi, which is located near the Nenjiang River in the western part of Heilongjiang Province, China (Heilongjiang is the Chinese name for the Amur river). Li (1996: 7, 33) notes that at the time of his fieldwork (in 1994) there were only a few fluent speakers left, all over the age of 70.

2. We use IPA /y/ where Li uses /ü/.

(2) Height harmony in Sanjiazi Manchu

		Stem-final V	Suffix V				
a.	High vowels	/ɨ, i/	[ɨ]	aɢɨ-xɨ	'rain'	dazi-xɨ	'repair'
		/u, y/	[u]	bu-xu	'give'	sy-xu	'mix'
b.	Low vowels	/a, æ/	[a]	qa-χa	'obstruct'	ɢæ-χa	'obtain'
		/ɔ/	[ɔ]	tɔ-χɔ	'scold'		

The data in (2) also show an alternation between velar and uvular fricatives: [x] co-occurs with high vowels, [χ] with low vowels. The same alternation is found between velar and uvular stops. This alternation is typical of the Manchu-Tungus family in general, where velars and uvulars are in complementary distribution.

Vowel harmony in Classical Manchu exhibits a more complicated pattern. Here the vowels cannot simply be divided into two height groups. The data in (3), from Li (1996: 161), illustrate that unlike in Sanjiazi Manchu, both /i/ and /u/ can co-occur with /a/. (Following Li, we assume that RTR is the active feature.)

(3) TR harmony in Classical Manchu

a. /i, u/ with RTR /a/		b. /i, u/ with non-RTR /ə/	
ali-ha	'endure'	əfi-hə	'play'
yabu-ha	'walk'	dulə-kə	'pass'

Li accounts for this by positing RTR counterparts of /i/ and /u/ (i.e. /ɪ/ and /ʊ/), which at a later stage merged with their non-RTR counterparts (see also Zhang 1996, Dresher & Zhang 2005). As a result of this merger, /i/ and /u/ came to behave as neutral vowels, and can therefore now co-occur with RTR /a/. Support for this analysis comes from the behaviour of stems which contain neutral vowels only. As is shown in (4), such stems can be followed by both RTR and non-RTR suffix vowels (cf. Li 1996: 157, 162):

(4) Neutral vowels in Classical Manchu

a. RTR suffix vowel		b. Non-RTR suffix vowel	
ili-ha	'stand'	ji-hə	'come'
buru-χa	'hide'	bu-xə	'give'

This pattern can be accounted for if we assume *ili* < *ɪlɪ* and *buru* < *bʊrʊ*, with subsequent merger of the RTR contrast, i.e. *i*, *ɪ* > *i* and *u*, *ʊ* > *u*.

The merger of the RTR contrast in the high-back vowels was not complete, however. Aside from some marginal minimal pairs, e.g. /butun/ 'hibernation' *vs.* /butʊn/ 'crock, large jar' (cf. Zhang 1996: 43), there is one context in which it was consistently preserved. The forms in (5), from Dresher & Zhang (2005: 49), show that /u/ and /ʊ/ contrast after a back consonant, with /u/ occurring before velars (5a) and /ʊ/ before uvulars (5b):

(5) Classical Manchu: Preservation of RTR contrast after back consonants

a. Non-RTR /u/ with a preceding velar		b. RTR /ʊ/ with a preceding uvular	
xərə-ku	'ladle'	paqtʼa-qʊ	'internal organs'
səxə-xuri	'towering high'	laqta-χʊri	'fully drooping'

The data therefore suggest that velars and uvulars are in complementary distribution, and that /ʊ/ shares its RTR-specification with a preceding back consonant. We may think of this as a case of "sharing makes us stronger" (cf. Honeybone 2005): an underlying RTR /ʊ/ can surface only if RTR is simultaneously realized in a preceding back consonant. The same phenomenon is attested in the Shmidt dialect of Nivkh; see Section 5.

The data that we have examined show that TR harmony in Classical Manchu involves two harmonic pairs, /ə/:/a/ and /u/:/ʊ/. Vowels in suffixes are either RTR or non-RTR, depending on the TR specification of the root vowel. The two harmonic pairs themselves contrast in terms of height, which leads Dresher & Zhang (2005) to propose the vowel system in (6).

(6) Classical Manchu: Vowel system

i	u	non-RTR	high
	ʊ	RTR	
ə		non-RTR	non-high
	ɔ	RTR	
a			

Classical Manchu also displays labial harmony, which is also sensitive to height. The data in (7) show that /ɔ/ participates in labial harmony but /u, ʊ/ do not (Li 1996: 161, Zhang 1996: 98).[3]

(7) Classical Manchu: Height-sensitive labial harmony

a. Labial harmony		b. No labial harmony	
ɔbɔ-hɔ	'wash'	nɔmula-ha	'preach'
tɔktɔ-hɔ	'fix'	ɔitɔ-bu-ha	'be in dire straits'

The vowel system of Classical Manchu therefore cannot be divided into two 'horizontal' levels, as in Sanjiazi Manchu. Rather, it has what Ko (2012) calls a 'height-stratified' TR harmony.

3. We use IPA /ɔ/ where Li uses /o/.

3. From TR harmony to height harmony: The case of Sanjiazi Manchu

TR harmony in Manchu-Tungus is usually assumed to have been fully symmetrical, i.e. containing no neutral vowels (see e.g. Ko 2012). Such a system is still found in present-day Evenki. However, most surviving Manchu-Tungus languages no longer have a symmetrical system due to the effect of various historical vowel mergers. The 'disintegration' of the system typically begins with the merger of /i/ and /ɪ/. This is perhaps because the articulation of RTR /ɪ/ involves two antagonistic gestures (simultaneous raising and retraction of the tongue), making the contrast between /i/ and /ɪ/ relatively unstable. The vowel system of the Xunke Orochen branch of Manchu-Tungus is a case in point. Here we find the full range of reconstructed TR contrasts except /i/:/ɪ/, where only /i/ is found (cf. Li 1996: 319).

(8) Xunke Orochen: Vowel system

i u

ʊ

e ə o

ɛ ɔ

a

Other languages have also merged the high-back vowel pair /u/:/ʊ/, although we have seen that this contrast is sometimes preserved after back consonants, as in Classical Manchu; see (5).

Comparative evidence from Manchu-Tungus shows that the vowel pair that is most resistant to merger is /ə/:/a/. This is the only vowel pair that has been retained in Sanjiazi Manchu, where, in the absence of other remaining TR distinctions, it has been re-interpreted as a height contrast. Li describes the historical development as follows:

> … in a disintegrated RTR system the feature RTR becomes phonologically redundant and this inevitably results in a situation in which there would be no phonological distinction between /a/ and /ə/ … Since /a/ and /ə/ are both phonologically low in an RTR system, it is natural for the phonetically higher /ə/ to become a high vowel in a two-height system, so that the vowel can be preserved and remain distinguishable from /a/ in a disintegrated RTR system … The nature of this change is that the opposition of /a/ vs. /ə/ based on RTR in Classical Manchu shifts to that of /a/ vs. /ɨ/ based on height in Sanjiazi Manchu. (Li 1996: 183)

Essentially the same scenario is proposed by Zhang:

> After the complete merger of /u/ and /ʊ/, WM [Written (Classical) Manchu, S&B] would have had only one pair of ATR/RTR vowels, /ə/ and /a/. It is likely that once /u/ and /ʊ/ neutralized, the saliency of the tongue root interpretation of the distinction between /ə/ and /a/ was diminished since this contrast was lost elsewhere in the inventory. It could have easily been reinterpreted as a height distinction. (Zhang 1996: 141)

The neutralization of vowel contrasts in Sanjiazi Manchu did not end here. Li (1996: 179) notes that stem-final /a/ subsequently raised to /ɨ/, as is shown by the cognates in (9).

(9) Sanjiazi Manchu Classical Manchu
taskɨ tasha 'tiger'
χaχɨ haha 'man'

The result of this raising is that /ɨ/ and /a/ can now co-occur in Sanjiazi Manchu stems. For Li (1996: 206), the existence of such stems shows that TR harmony no longer plays a role in the language, since "a structurally legalized co-occurrence of /a/ and /e/ [=/ə/, S&B] within a word … indicates the complete disintegration of an early RTR system". The raising of /a/ to /ɨ/ in Sanjiazi Manchu has led to a system in which the domain of harmony is reduced to a stem-final vowel and a following suffix. In Manchu-Tungus languages in which TR harmony is still active, the harmonic domain instead includes the whole stem and a following suffix.

4. Vowel co-occurrence restrictions in Nivkh

As was noted at the outset of this paper, most researchers working on languages of northeast Asia take TR harmony to be an areal feature, which has spread through the region through language contact (e.g. Janhunen 1981, Comrie 1997, Ko et al. 2014). In the remainder of this paper we explore the possibility that the synchronic height restrictions on Nivkh vowels derive from an earlier system of TR harmony, similar to what has been proposed for Sanjiazi Manchu. This development would bring Nivkh in line with other languages in the region, and it would add further support to the contact-based view of northeast Asian TR harmony.

Ko et al. (2014: 171) provide evidence for a formerly active pattern of TR harmony in Nivkh. As we have seen, TR harmony in Manchu-Tungus involves harmonic pairs which contrast in the 'horizontal' dimension. In Nivkh we observe some isolated occurrences of a similar pattern in the paradigm of pronominal prefixes: indefinite /i/ *vs.* /e/ (10a), and reciprocal /u/ *vs.* /o/ (10b) (data from Kreinovich 1937).

(10) Nivkh: Historical traces of TR harmony
a. i-rlɨ- 'pull' *vs.* e-rʁop- 'touch'
b. u-ndɨ- 'see each other' *vs.* o-ŋala- 'resemble each other'

While this may suggest a pattern of TR harmony in which /i/:/e/ and /u/:/o/ (and presumably /ɨ/:/a/) are harmonically paired, there is no synchronic evidence for

this. First, the existence of opaque forms like *e-zmu-* 'like' shows that the alternations in (10) are no longer transparent – an observation which led Kreinovich to consider these forms as "remnants of vowel harmony". In addition, as we will see shortly, the synchronic restrictions on Nivkh vowels do not involve RTR but height.

Nivkh has a canonical five-vowel system with an additional high central vowel, as in (11).

(11) Nivkh: Vowel system

i ɨ u

e o

a

Present-day Nivkh does not have root-controlled harmony of the type found in Manchu-Tungus. What we find instead are static co-occurrence restrictions on vowels in roots. Native Nivkh roots are maximally disyllabic, with initial stress.[4] Based on data from Pukhta (2002), Shiraishi & Botma (2015, 2016) compiled a corpus of 291 disyllabic roots. Table 1 lists the observed and expected frequencies of Nivkh vowels in initial (stressed) V1 position and final (unstressed) V2 position.

Table 1. Observed and expected frequencies of vowels in disyllabic Nivkh roots

V1/V2	**i**	**ɨ**	**u**	**e**	**a**	**o**	
i	12 (11.1)	14 (3.7)	5 (4.5)	0 (0.8)	1 (8.4)	0 (3.5)	32
ɨ	24 (17.0)	15 (5.7)	9 (6.9)	1 (1.1)	0 (12.8)	0 (5.4)	49
u	21 (14.6)	4 (4.9)	13 (5.9)	0 (1.0)	4 (11.0)	0 (4.6)	42
e	10 (10.4)	0 (3.5)	1 (4.2)	1 (0.7)	17 (7.8)	1 (3.3)	30
a	21 (28.1)	1 (9.5)	8 (11.4)	3 (1.9)	42 (21.1)	6 (8.9)	81
o	13 (19.8)	0 (6.7)	5 (8.0)	2 (1.4)	12 (14.9)	25 (6.3)	57
	101	**34**	**41**	**7**	**76**	**32**	**291**

To see how these numbers must be interpreted, consider for example the combination of /o/ in V1 and /o/ in V2. Of the 291 roots in the corpus, 25 have a combination of /o/ in V1 and /o/ in V2; this is the observed frequency. The expected frequency is calculated by multiplying the frequency of /o/ in V1 (=57) with the frequency of /o/ in V2 (=32), and by dividing this number by the total number of roots in the corpus (57×32/291). This yields an expected frequency of 6.3, which means that the observed frequency of /o…o/ roots is roughly four times as high as the expected frequency (25/6.3≈4).

4. Fixed initial stress is a property of the West Sakhalin and Amur dialects of Nivkh. The more conservative dialects of East Sakhalin have some disyllabic roots with final stress (Kreinovich 1979); these appear to be restricted to roots with final heavy syllables.

Table 2 lists the observed and expected ratios of vowel combinations in V1 and V2. A value of 1.00 indicates that the expected frequency matches the observed frequency. A value smaller than 1.00 indicates that a vowel combination is under-represented (i.e., occurs less often than expected). A value greater than 1.00 indicates that a vowel combination is over-represented (i.e., occurs more often than expected).

Table 2. Observed/expected ratios of vowels in disyllabic Nivkh roots

V1/V2	**i**	**ɨ**	**u**	**e**	**a**	**o**	
i	1.09	3.50	1.00	0.00	0.13	0.00	32
ɨ	1.41	2.50	1.29	1.00	0.00	0.00	49
u	1.40	0.80	2.17	0.00	0.36	0.00	42
e	1.00	0.00	0.25	1.00	2.13	0.33	30
a	0.75	0.11	0.73	1.50	2.00	0.67	81
o	0.65	0.00	0.63	2.00	0.80	4.17	57
	101	**34**	**41**	**7**	**76**	**32**	**291**

A number of observations can be made from these data. First, some vowels are much more frequent in V2 than others, e.g. /i/ (n = 101) *vs.* /e/ (n = 7). Second, there is a preference for lining up identical vowels (108/291 = 37.1%), especially /o…o/. Third, the low vowel /a/ is disfavoured in V2 if the preceding vowel is high (/i, ɨ, u/). And fourth, the restrictions are asymmetric. For example, while the combination /a…i/ is freely permitted, /i…a/ is almost completely absent.[5]

Based on these observations, Shiraishi & Botma (2015, 2016) argue that vowels in Nivkh roots are subject to stress-dependent restrictions on vowel height. These restrictions receive a straightforward analysis in Element Theory (Harris & Lindsey 1995), in terms of a prohibition on 'unlicensed' occurrences of the element [A] in the unstressed V2 position. Shiraishi & Botma follow the standard assumption that the elements [A], [I], [U] individually manifest themselves as the corner vowels /a, i, u/ (12a), while the mid vowels /e, o/ are compounds of [A] with [I] and [U] (12b). They further assume that the high central vowel /ɨ/ lacks melodic content (12c).

(12) Melodic representations of Nivkh vowels

a.			b.			c.		
	[A]	*a*		[A,I]	*e*		[–]	*ɨ*
	[I]	*i*		[A,U]	*o*			
	[U]	*u*						

5. The avoidance of /i…a/ is also observed in loans, e.g. Ainu *sisam* 'Japanese' > Ten'gi Nivkh *sizɨm*. See Shiraishi & Botma (2016).

There are a number of arguments for treating /ɨ/ as an 'empty' vowel. One is that Nivkh appears to lack minimal pairs of the form /$C_1VC_2C_3$ɨC_4/ *vs.* /$C_1VC_2C_3C_4$/ – that is, words in which the presence of /ɨ/ contrasts with its absence. The spelling of such words by native speakers and fieldworkers is inconsistent. Shiraishi & Botma (2015) discuss the status of /ɨ/ in more detail. For the purposes of this paper, what is important is that the class of high vowels, which includes /ɨ/, is identified by the absence of [A].

Reference to stress captures two key properties of the distribution of Nivkh vowels. First, the preference for lining up identical vowels in V1 and V2 is a typical effect of unstressed vowel reduction (on this, see Barnes 2006). Second, the reduced licensing potential of the V2 position is entirely expected if V2 occupies the weak position of a foot. Specifically, the restriction on V2 is that low and mid vowels – vowels which contain [A] – are permitted only if an [A] is also present in V1. This is shown in (13) for the forms /ʧʰolŋi/ 'reindeer' and /ʧaqo/ 'knife'. (13a) contains an [A] in V1, where it is licensed on account of being in the strong position of the foot. (13b) has an [A] in the weak position of the foot, but this [A] is licensed ('>>>') by the presence of another [A] in the strong position of the foot.[6]

(13)	a.	ʧʰ	o	l	ŋ	i		b.	ʧ	a	q			o	
			U			I								U	
			A							A	>>>>>>>			A	

Consider next the ungrammatical forms */puzle/ and */pika/, in (14).

(14)	a.	*	pʰ	u	z	l	e	b.	*	p	i	k	a	
				U			I				I			
							A						A	

The forms in (14) are impossible because both contain an unlicensed occurrence of [A].

The key idea behind this analysis is thus that the distribution of vowels in disyllabic roots is conditioned by vowel height, which is formalized in terms of a licensing asymmetry of the [A] element between stressed and unstressed positions. The role of stress is crucial, since it relates the asymmetric distribution of vowels in V1 and V2 to the general phenomenon of unstressed vowel reduction. The typological study in Barnes (2006) shows that this process often targets height contrasts, which are typically reduced in unstressed positions.

6. In (13) and (14) we assume that elements are positioned on tiers, and that the [I] and [U] tiers have been conflated.

The synchronic co-occurrence restrictions on Nivkh vowels cannot be accounted for in terms of RTR. In such an analysis, vowel combinations like /e…i/ would be problematic, since the two vowels presumably contain opposite TR specifications. A more general problem with an RTR analysis is that unstressed vowel reduction arguably never operates on TR contrasts (cf. Barnes 2006: 19).

5. From TR harmony to height restrictions: The case of Nivkh

In Section 4 we argued that the distribution of vowels in Nivkh roots is best accounted for in terms of stress-dependent height restrictions. We turn now to the question of whether these restrictions could have developed from an earlier TR system. Although the available evidence is scant, and more research is necessary, there are indeed some indications that this is the case.

As we have seen, the merger of harmonically paired high vowels in Sanjiazi Manchu led to a disintegration of the harmony system, up to the point where even the most stable contrast – that between /i̱/ and /a/ – was lost, with /a/ raising to /i̱/ in stem-final position; see (9). This is similar to what we observe in Nivkh, where the contrast between /i̱/ and /a/ is optionally neutralized in unstressed position, with /a/ raising to /i̱/.

(15) χaza ~ χazi̱ 'scissors' (Kreinovich 1979: 299)
napa ~ napi̱ 'still' (fieldwork notes, Shiraishi)

Kreinovich interprets this as a case of unstressed vowel reduction. This is consistent with our element-based analysis, in which raising of unstressed /a/ to /i̱/ involves the loss of [A] in V2, resulting in a vowel which lacks melodic content. This seems a natural enough development in view of the restrictions on [A] that are already in place, and the propensity of weak positions to permit fewer phonological contrasts.

Nivkh also displays inter-dialectal variation between /i̱/ and /a/. There are some stems which have /a/ in the Sakhalin dialects but /i̱/ in the Amur dialects, such as those in (16).

(16)	Sakhalin dialects	Amur dialects	
	pat	pi̱t	'tomorrow'
	taf	ti̱f	'house'

Following Li's interpretation of the Sanjiazi Manchu facts, we might view such 'interactions' between /i̱/ and /a/ as the last nail in the coffin for a historical TR contrast.

Until recently, we were unaware of any synchronic evidence for a historical TR contrast in Nivkh high vowels. However, data collected during a recent fieldwork trip (undertaken by the first author in September 2016) suggests that this contrast

may still be marginally present in the Shmidt dialect, a dialect of Nivkh that is spoken on the eponymous peninsula, located at the northernmost point of Sakhalin. Most dialects of Nivkh display an alternation between uvulars and velars, with uvulars occurring next to /a, o/ and velars elsewhere (Kreinovich 1937, Botma & Shiraishi 2014). The situation in the Shmidt dialect seems to be different, however. A speaker of this dialect reported the words in (17), with a uvular /ʁ/ co-occurring with what appears to be [ʊ] rather than [u]. The vowel is noticeably lower than [u] and is in fact closer to /o/ – the vowel found in cognate forms in the West Sakhalin dialect of Nivkh.

(17)

Shmidt dialect	West Sakhalin dialect	
ɻaʁʊ-	ɻaʁo-	'carry'
laʁʊ-	laʁo-	'be surprised'
taʁʊri	taʁori	'do not know'

Although more research is needed (including phonetic measurements), it is tempting to assume that /ʊ/ is the last remnant of a formerly active TR contrast. The situation in the Shmidt dialect would then be remarkably similar to that in Classical Manchu, where /ʊ/ surfaces only when adjacent to a uvular consonant, with which it shares its RTR specification; see (5).

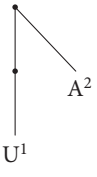
We conclude our discussion by briefly considering how this scenario can be represented in Element Theory. For this, we adopt a more recent version of this framework, from Smith (2000). Smith assumes that the elements [A], [I], [U] do not only specify 'primary place' in vowels, but also 'secondary place', as in (18).

(18) Vowel place (Smith 2000)

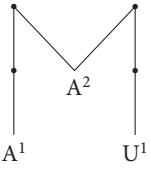
a. Primary place	b. Secondary place
$[A]^1$: low	$[A]^2$: RTR
$[I]^1$: front	$[I]^2$: ATR
$[U]^1$: back	$[U]^2$: round

Secondary place elements are represented as 'dependents' in the phonological structure. This is shown in (19a) for RTR /ʊ/, which in Smith's approach consists of a structure with $[U]^1$ ('back') as head, and $[A]^2$ ('RTR') as dependent.

(19) a. RTR /ʊ/



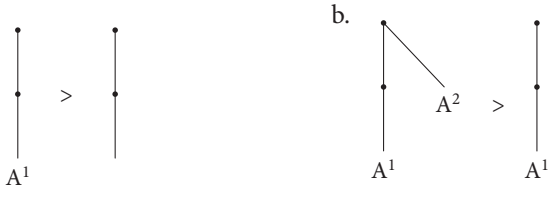
b. RTR-linking between /q/ and /ʊ/



In the Shmidt dialect, (19a) would be the underlying representation of /ʊ/. The dependent $[A]^2$ is deleted (leading to a merger with [u]), unless there is a preceding back consonant with which $[A]^2$ can be shared. This scenario is shown in (19b); this is the formalization of the "sharing makes us stronger" idea which we proposed for the distribution of /ʊ/ in Classical Manchu, and which we believe is also appropriate for the Shmidt dialect of Nivkh.[7]

As Smith (2000: 236) observes, one advantage of his approach is that featural relationships which must be explicitly stated in traditional Feature Theory fall out naturally if [A], [I], [U] have the interpretations in (18). For our purposes, the relevant relationship is that between 'low' and 'RTR', which are instantiations of the same element. We can interpret this to mean that RTR vowels are preferably low – a point consistent with the observation that /ə/:/a/ is the most stable vowel pair in a disintegrating TR system. We saw that once the other TR contrasts have been neutralized, the contrast between /ə/ and /a/ is likely to be re-interpreted as a difference in vowel height – a change which occurred in Sanjiazi Manchu, and perhaps also in Nivkh. Our analysis of this change offers additional support for treating the high central vowel /ɨ/ (< /ə/) of Nivkh as empty, since then the change from a TR to a height contrast can be represented as involving the loss of [A], as in (20).

(20) a. b.



According to this analysis, the first stage of the process involved the loss of $[A]^1$ in the low non-RTR vowel, as in (20a). The result of this is that the vowel now patterns as high, since it lacks an [A] element. (Perhaps this involved raising from /ə/ to /ɨ/, as Li (1996) suggests happened in Sanjiazi Manchu.) The second stage of the process involved the loss of $[A]^2$ in the low RTR vowel, as in (20b). The result of this is that the vowel system no longer has any TR contrasts.[8]

7. In (19b) we have omitted the manner elements of the uvular consonant, which are not germane to the discussion.

8. The fact that in (20b) $[A]^2$ is deleted, and not $[A]^1$, is presumably due to the privileged status of heads. In (20a), on the other hand, there is no dependent, so that here there is no choice but to delete the head.

6. Conclusion

In this chapter we have considered the question of whether the pattern of synchronic restrictions on Nivkh vowels, which involves a prohibition on unlicensed [A] in unstressed positions, can be plausibly derived from an earlier system of TR harmony. Although the available evidence is limited, we believe that there are good grounds to posit a similar diachronic scenario for Nivkh as has been proposed for some dialects of Manchu. Following the loss of TR contrasts in high vowels (of which RTR /ʊ/ is apparently still retained in the Shmidt dialect, in the same context as in Classical Manchu), the TR contrast in low vowels was re-interpreted as a height contrast, in much the same way as in Sanjiazi Manchu. A further similarity with Sanjiazi Manchu is that some dialects of Nivkh display a phonological interaction between /a/ and /ɨ/, something which would be unexpected in a system based on TR contrasts. We conclude, therefore, that Nivkh provides further support for the view that TR harmony is an areal feature of northern Asia, and that the diachronic loss of TR harmony in this region proceeds along similar lines in genetically diverse languages.

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