Contrast In Manchu Vowel Systems

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Abstract

Contrast plays an important role in accounting for the patterning of vowel systems in the Manchu languages. The phonological representation of a vowel depends in part on what other vowels it contrasts with. We will show that although Written Manchu /i/ phonetically has advanced tongue root (ATR), it is not contrastively ATR, and hence does not trigger ATR harmony. Similarly, Written Manchu /u/ is phonetically, but not contrastively, labial. We will also argue for a particular way of determining contrastiveness, in terms of a contrastive hierarchy of features. Our analysis of the Written Manchu contrastive hierarchy is further supported by synchronic and diachronic evidence from Spoken Manchu and Xibe.

0. Introduction

There is a long-held view that in phonology what is important is not just the substance of a speech sound, but what other units it contrasts with. On this view, two sounds that are phonetically identical may have very different phonological properties by virtue of the different systems of contrast they enter into. Conversely, two sounds that differ in their surface phonetics may be very similar in their phonological behaviour, because they occupy parallel positions in their systems of contrasts.

Exactly how contrast enters into the picture, and its influence on phonological representations, have been much-debated questions. In this paper we will propose that contrast plays an important role in accounting for the patterning of vowel systems in the Manchu languages. We will argue in particular that the high back round vowel [u], which exists in all Manchu languages, can have quite different phonological representations, depending on whether the vowel is contrastively round or not. This account in turn depends on a particular notion of what it means to be contrastive.

The variable behaviour of the vowel [u] is particularly striking against the background of certain properties of Manchu vowel systems that remain constant from language to language. We will argue that these constants require a theory of substantive features, as well as of contrast. These features are organized into a contrastive hierarchy that appears to be common to the Manchu languages.

1. The Vowel System of Written Manchu

We will begin with Written Manchu, an older member of the southern branch of the Manchu-Tungus languages.

(1) Written Manchu (Zhang 1996, etc.)

i	u
	ʊ
ə	
	ɔ
a	

The chart in (1) represents a partial phonological analysis of the Written Manchu vowel system. It indicates that Written Manchu has six contrastive vowel phonemes. The horizontal line divides the vowels into two height classes: a set of relatively high vowels above the line and a set of relatively low vowels below the line. This division into two contrastive heights is not obvious from the phonetics: phonetically, one might suppose that Written Manchu has four different heights (or five, if, as is likely, [a] is lower than [ɔ]).

However, Zhang (1996) has argued that the distinction between /u/ and /ʊ/ and /ə/ and /a/ has to do with the tongue root: the first vowel in each pair is ATR (Advanced Tongue Root), the second is not.[1] ATR vowels tend to be higher than their non-ATR counterparts, thus accounting for the difference in height that accompanies the ATR contrast.

The diagram in (1) suggests that the main contrast in the Manchu vowel system is the horizontal division into two height groups, and this suggestion is supported by the way the vowels pattern in the grammar. Written Manchu vowels participate in two

different harmony processes. One is ATR harmony, whereby all vowels in a word, apart from /i/, must agree with respect to ATR. This harmony is most clearly seen in the case of /ə/ and /a/: suffixes with these vowels alternate depending on the ATR value of the stem vowels, as in (2).

(2) ATR harmony in Written Manchu: /ə/ ~ /a/

a.	həhə	'woman'	həhə-nggə	'female'
	aga	'rain'	aga-ngga	'of rain'
b.	icə-lə	'new'	icə-lə	'make new'
	bakcin	'opponent'	bakci-la-	'oppose'
c.	susə	'coarse'	susə-də-	'make coarsely'
	hʊrha	'fishing net'	hʊrha-da-	'catch in a net'
d.	h ətu	'stocky'	hətu-kən	'somewhat stocky'
	farhʊn	'dark'	farhʊ-kan	'somewhat dark'

Similarly, /u/ alternates with /ʊ/, as in the suffixes in (3).

(3) ATR harmony in Written Manchu: /u/ ~ /ʊ/

a.	hərə-	'ladle out'	hərə-ku	'ladle'
	bakta-	'contain'	bakta-kʊ	'internal organs'
b.	sidərə-	'hobble'	sidərə-shun	'hobbled/lame'
	banjin	'appearance'	banji-shʊn	'having money'

This alternation is apparent only after back consonants, however, as in the examples in (3).[2] In other contexts, /u/ and /ʊ/ merge at the surface into [u], except for a few sporadic examples. Therefore, Written Manchu has a rule that adds ATR to /ʊ/ in most contexts, as shown in (4).

(4) Partial merger of /ʊ/ with /u/ (Zhang 1996: 83)

$$\begin{bmatrix} V \end{bmatrix} \rightarrow \text{ATR} / - \begin{bmatrix} C \\ \text{Dorsal} \end{bmatrix} \_\_\_\_\_$$

According to (4), a vowel without features (i.e. /ʊ/) becomes ATR when not following a consonant specified for Dorsal (i.e. a back consonant).[3] We assume that this rule is a late phonetic rule, since it does not affect the behaviour of /ʊ/ with respect to ATR harmony, as shown in (5).

(5) ATR harmony with [u]

a.	juwə	'two'	juwə-də-	'lean to two sides'
	dulba	'careless'	dulba-da-	'act carelessly'
b.	səktu	'clever'	səktu-kən	'somewhat clever'
	dacun	'sharp'	dacu-kan	'somewhat sharp'

In each pair in (5) the [u] in the first word patterns with ATR vowels, and the [u] in the second word patterns with non-ATR vowels. Evidently, the first [u] derives from /u/, but the second [u] derives from /ʊ/.

It is significant that the vowel alternations occur only within the height classes indicated in (1): /ə/ alternates with /a/, and /u/ alternates with /ʊ/.

Let us now consider the vowel /i/. Phonetically, this vowel is ATR. If the phonological representation of a vowel were the same as its phonetic specification, we would expect that /i/ should co-occur only with ATR vowels. But we find that when /i/ is in a position of undergoing harmony, it co-occurs with all vowels. Examples where /i/ is a suffix, are given in (6), where [i] occurs after stems with ATR as well as with non-ATR vowels.

(6) ATR harmony in Written Manchu: /i/ is neutral

a.	səjən	‘wagon’	səjə-ci	‘wagoner’
	cagan	‘books’	caga-ci	‘clerk’
b.	əm ʁ	‘one each’	əmtə-li	‘alone; sole’
	daha-	‘follow’	daha-li	‘the second’
c.	təmən	‘camel’	təmə-ri	‘camel-coloured’
	hasi	‘eggplant’	hasi-ri	‘dark purple’

However, when /i/ is in a position to trigger harmony, it occurs only with non-ATR vowels, as in (7).

(7) Stems with only /i/: Suffixes with non-ATR vowels

a.	fili	‘solid’	fili-kan	‘somewhat solid’
b.	ici	‘direction’	ici-ngga	‘having direction’
c.	ili-	‘stand’	ili-ha	‘stood’
d.	jili	‘anger’	jili-da-	‘get angry’
e.	iji-	‘put in order’	iji-shʊn	‘obedient’
f.	sifi-	‘stick in the hair’	sifi-kʊ	‘hairpin’

This last fact is incompatible with the idea that there are two distinct /i/ phonemes in Written Manchu, one ATR and the other non-ATR. For in that case, some share of words with initial /i/ should trigger ATR harmony, but none does. Therefore, there appears to be only one /i/ phoneme. But if this vowel is designated as non-ATR, why does it co-occur with preceding ATR vowels?

An elegant answer to this question is available if we suppose that the feature ATR is present on vowels that have it and absent otherwise. Thus, there is no -ATR, but

simply the lack of ATR. Vowels that have the feature, namely /ə/ and /u/, spread it to their right; vowels that lack the feature may receive it from a vowel to their left, and may then pass it on, but do not initiate ATR harmony themselves. In the case of /i/, we may assume that it receives the feature in the context of ATR harmony, but this creates no perceptible difference, because all /i/ vowels become phonetically ATR anyway (8).

(8) /i/ becomes ATR phonetically

V
[Coronal] → ATR

Leaving /i/ unmarked for ATR thus allows for a simple description of the facts, but now we must ask another question: why is it that /i/, which is phonetically ATR, is not specified underlyingly for this feature? To answer this question we need to look more closely at the notion of contrast.

2. On contrast

Consider again the chart in (1). We can identify three sets of vowels (we will continue to ignore /ɔ/ for the moment). Two of the sets have contrasting ATR and non-ATR vowels; the third set consists only of /i/, which is the only vowel that does not have a partner with respect to its value for ATR. Intuitively, then, we might suppose that this lack of a partner, or counterpart, has something to do with the lack of specification for ATR.

We will propose that this is exactly the right answer here, but it is by no means obvious. Consider for a moment the simple three-vowel system shown in (9):

(9) A simple three-vowel system

a. High > Labial

i		u
	a	

High

b. Labial > High

i	u
a	

Labial

Suppose the vowels can be specified for the features High and Labial, where /i/ and /u/ are phonetically high and /u/ is phonetically labial. Given that /a/ is a non-high vowel, what is its high counterpart? The answer is that it depends. If we draw the chart as in (9a), it looks like both /i/ and /u/ are equally high counterparts to /a/. That is, they are both distinctively High. The two high vowels are then distinguished by the fact that /u/ is distinctively Labial. This way of viewing the set of contrasts corresponds to the feature chart in (10a); we represent the presence of a feature by a check mark (√).

(10) Feature charts for the vowel systems in (9)

a. High > Labial

	i	a	u
High	√		√
Labial		√	

b. Labial > High

	i	a	u
Labial		√	
High	√		

But consider the chart in (9b), which corresponds to a different way of viewing the contrasts in the system. In (9b), the main distinction is based on the feature Labial, which splits the vowels into two groups: /u/ is marked for Labial, whereas /i/ and /a/ are not. Viewed this way, the high counterpart of /a/ is clearly just /i/. Though /u/ may be phonetically high, it is not contrastively so. This way of viewing the contrasts corresponds to the markings in (10b).

The difference between (9a) and (9b) can be understood in terms of the scope of a feature. In (9a), High takes scope over Labial (notated High > Labial), so that the Labial distinction is relevant only among the high vowels; in (9b), the Labial distinction has the widest scope (Labial > High), and High is relevant only among the non-labial vowels. Put differently, in (9a) the High contrast is ordered before the Labial contrast, whereas in (9b) this ordering relation is reversed.

The purpose of this brief digression was to show that the set of contrasts operative in a system is not entirely self-evident. We need a theory of what the relevant contrasts are. We suggest that contrast should be viewed in terms of the scope, or ordering, of distinctive features. In many situations, such as (9), different orderings will yield a different set of contrasts.

A theory that assigns a key role to ordering of contrastive features is the Successive Binary Algorithm proposed by Dresher (1998a, b) and Dresher, Piggott and Rice (1994). [4] The algorithm is presented in (11).

(11) Successive Binary Algorithm (Dresher 1998a, b)

a. In the initial state, all sounds are assumed to be variants of a single phoneme.

b. If the set is found to have more than one phoneme, a binary distinction is made on the basis of one of the universal set of distinctive features; this cut divides the inventory into a marked set and an unmarked set.

c. Repeat step (b) in each set, dividing each remaining set until all distinctive sounds have been differentiated.

3. Contrast in the Written Manchu Vowel System

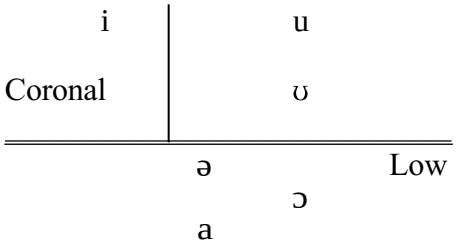
Let us return now to the case at hand, the vowel system of Written Manchu given in (1). We have already seen that the vowels are distinguished by height, which we will designate by the feature Low, as well as by ATR. How should these features be ordered in setting up the contrasts of Written Manchu? Let us suppose for a moment that ATR is ordered first, that is, has widest scope. That would mean that all vowels of Manchu are divided into two sets, those that are ATR, which will receive the feature ATR, and those that are not, which will be unmarked for this feature. The vowels /ə/ and /u/ are clearly ATR, but so is /i/, which we have observed is phonetically ATR. There is thus no reason why /i/ would not be assigned ATR in this approach. But we have also seen that /i/ does not behave phonologically as an ATR vowel. Thus, ordering ATR first leads to the wrong specification of /i/.

So let us suppose instead that the feature Low is assigned first, as indeed is suggested by the chart in (1). This means that the vowels are split into a low set, assigned the feature Low, and a non-low set, which remains unmarked. Let us consider the non-low set. Two more contrasts need to be made, as we will have to distinguish between three phonemes in this set. We know that one of these contrasts will involve ATR. It is not obvious what the other contrastive feature is, but let us anticipate our analysis and suppose for now that it is Coronal. The feature Coronal distinguishes front vowels – in this case /i/ - from vowels that are not front – here, /u/ and /ʊ/.

Now we must decide how to order the features Coronal and ATR. If ATR goes first, we divide the three vowels into two sets based on this feature. Again, however, this would require marking /i/ as ATR, which is the wrong result. Rather, we must first divide

the set on the basis of Coronal - /i/ is assigned Coronal, the other vowels are unmarked for that feature. We now have the sets shown in (12). Notice that /i/ is now distinct from all other vowels, and no further contrasts are needed to distinguish it further. On this ordering, the feature ATR is needed only to distinguish /u/ from /ʊ/ (among the non-low vowels – it is of course also needed in the Low set).

(12) Written Manchu: Low, Coronal > ATR



Therefore, the features Low and Coronal must take scope over ATR. In other words, ATR applies only within domains already defined by Low and Coronal. We will now show that Low precedes Labial in the Written Manchu contrastive hierarchy.

The evidence comes from a second vowel harmony process in Written Manchu, Labial Harmony (Zhang 1996, Zhang and Dresher 1996). A suffix vowel /a/ becomes /ɔ/ if preceded by two successive /ɔ/ vowels (13a). Thus, Labial Harmony is not triggered by a single short or long /ɔ/ (13b), nor by the high round vowels (13c, d).

(13) Labial Harmony in Written Manchu

a.	bɔcɔ	‘colour’	bɔcɔ-nggɔ	‘coloured’
	fɔhɔlɔn	‘short’	fɔhɔlɔ-kɔn	‘somewhat short’
b.	dɔ-	‘alight (birds)’	dɔ-na-	‘alight in swarm’
	dɔɔ-	‘cross (river)’	dɔɔ-na-	‘go to cross’
c.	gucu	‘friend’	gucu-se	‘friends’
	kumun	‘music’	kumu-ngge	‘noisy’

d.	hʊdun	‘fast’	hʊdu-kan	‘somewhat fast’
	dursun	‘form’	dursu-ngga	‘having form’

The fact that Labial Harmony is confined to the low vowels shows that the height contrast is more fundamental than the labial contrast: Labial Harmony operates within a domain defined by the feature Low. In terms of our theory of successive contrastive divisions, this suggests that the feature Low has wider scope than Labial.

Let us suppose for a moment that Labial took precedence over Low. That means that the first division of the Written Manchu vowel space distinguishes labial vowels from those that are not labial. The high back vowels are phonetically round, hence they would be grouped with the low round vowel, as illustrated in (14):

(14) Written Manchu: Labial as the main contrast (incorrect)

(Non-labial)	Labial
i	u
	ʊ
ə	
	ɔ
a	

We might now expect that the non-low labial vowels should also participate in Labial Harmony, but they do not. Now, even if the Low feature takes precedence over Labial, it is still possible that the high back vowels would be specified Labial, since they are phonetically round. If this were the case, we would be forced to conclude that the restriction of Labial Harmony to low vowels is simply stipulated, that for some reason, only the Labial feature associated with low vowels spreads.

However, our theory of contrastive specification leads us to a more radical solution: it appears that the high back vowels are not specified for Labial at all. Consider

again the non-low vowels. We have shown that /u/ is specified ATR, whereas /ʊ/ is not. We assumed above that /i/ is specified as Coronal. This was argued by Zhang (1996: 84) on the basis of the fact that /i/ provokes the palatalization of neighboring consonants (Odden 1978, Hayata 1980, Ard 1984). Now, in our theory of contrastive specification, we specify segments only as far as is needed to distinguish them from every other segment. If we specify /i/ for Coronal, all the non-low vowels are now distinct, and there is no further specification permitted. This means that the non-Coronal vowels are not specified Labial. Just as the phoneme /i/ lacks the ATR specification, even though it ends up as phonetically ATR, in the same way the vowels /u/ and /ʊ/ surface as labial, but without possessing this feature phonologically.

Suppose, alternatively, we were to specify the back vowels as Labial. Then we would have no need to specify /i/for Coronal, since the three phonemes in the non-low region are already distinct: /u/ would be Labial and ATR, /ʊ/ would be Labial, and /i/ would be unspecified. The problem with this solution is that we could not then account for the fact that /i/ causes palatalization. This fact suggests rather that the Coronal feature of /i/ is phonologically active, not just phonetically present. Interestingly, there is no such evidence that the Labial feature is active in the non-low vowels.

The evidence suggests, then, that Coronal is specified in the non-low vowels, but not Labial. This specification in turn requires that Coronal take precedence over Labial. Once Coronal is specified, there is no need to specify Labial, since it does not serve to make any further contrast. Finally, ATR distinguishes the two non-Coronal vowels. We thus arrive at the feature ordering shown in (15):

(15) WM ordering of contrasts in the non-low vowels

Low, Coronal > Labial, ATR

Let us now consider the Low region. Recall that here there is evidence that /ɔ/ is Labial, because it triggers Labial Harmony. Moreover, there is no evidence that any of the Low vowels are Coronal. Evidently, the feature Coronal is not contrastive among the Low vowels, because no Low vowels meet the requirements for being Coronal. Therefore, we move on to Labial, the next feature in the hierarchy, which is assigned to /ɔ/.

Finally, we have not seen any evidence concerning the relative scopes of Low and Coronal. Given that Written Manchu has only one potentially Coronal vowel, /i/, we obtain the same results with either Low or Coronal taking precedence. Zhang has observed that a two-height system is very stable across all the Manchu-Tungus languages surveyed in Zhang 1996, suggesting that the division into two height classes is a basic property of these vowel systems. This would argue in favour of ordering Low highest. Thus, we arrive at the Written Manchu contrastive hierarchy shown in (16).

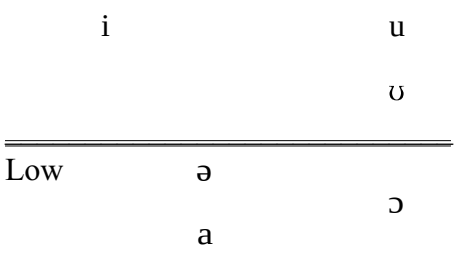
(16) WM contrastive hierarchy

Low > Coronal > Labial > ATR

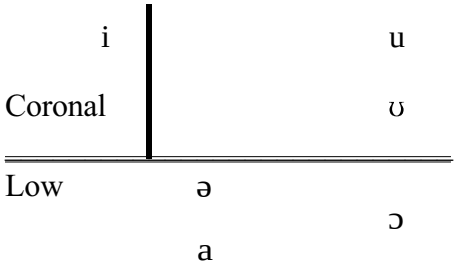
To sum up, we show in (17) the successive contrasts by which the Written Manchu vowel space is divided up, and in (18) the feature specifications that result from this procedure.

(17) Written Manchu: Contrasts in the vowel system

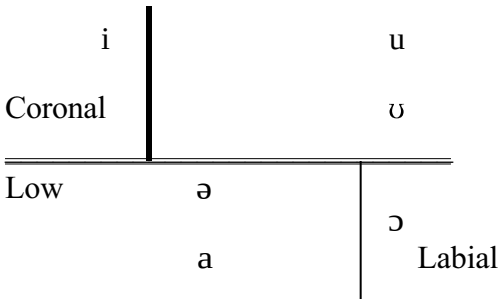
a. First cut: Low



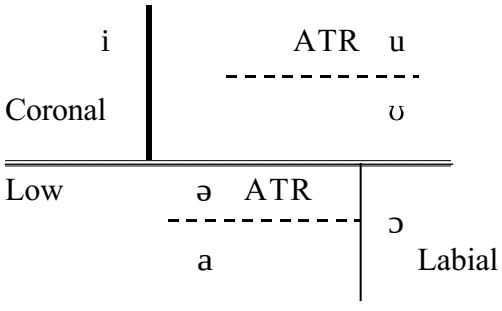
b. Second cut: Coronal



c. Third cut: Labial



d. Fourth cut: ATR



(18) Feature matrix for Written Manchu vowels

Phoneme	/i/	/u/	/ʊ/	/ə/	/a/	/ɔ/
Low				√	√	√
Coronal	√					
Labial					√	
ATR		√		√		

4. The Spoken Manchu Vowel System

Let us consider now the vowel system of Spoken Manchu (Zhao 1989, Ji et al. 1989). Spoken Manchu is a later form of Written Manchu, and it displays some interesting continuities with the older form of the language, as well as some striking differences that shed further light on the role of contrast in phonology.

The vowel system of Spoken Manchu is presented in (19).

(19) Spoken Manchu (based on Zhao 1989, Ji et al. 1989)

i	y	ə	u
ɛ		a	ɔ

In comparing this vowel system with that of Written Manchu in (1), we note a number of differences, which we tabulate in (20):

(20) Differences between WM and SM vowel systems

a) Spoken Manchu no longer has a contrast between /u/ and /ʊ/.

b) In Spoken Manchu /ə/ is a non-low vowel, in Written Manchu it is a low ATR counterpart to /a/.

c) Spoken Manchu has added coronal phonemes /y/ and /ɛ/.

We will argue that change (20b) follows from (20a), and (20c) follows from (20b). We will begin with the first change.

We observed that in Written Manchu the contrast between /u/ and /ʊ/ was already neutralized phonetically to [u] in most contexts, surviving only after velar/uvular consonants and in sporadically in other contexts in a few words. It is no surprise, therefore, to see this neutralization continue to completion in Spoken Manchu, resulting in the total merger of /u/ and /ʊ/ into [u], and hence the complete loss of the /ʊ/ phoneme.

In a contrast-driven approach to vowel systems, the loss of a contrast in one part of the system could have wider effects. Thus, in the Written Manchu system, the contrast between /u/ and /ʊ/ involves the feature ATR, just like the contrast between /ə/ and /a/. The unity of the ATR contrast was made more salient by the rule of ATR harmony, which would clearly indicate to language learners that the vowels were to be sorted into ATR and non-ATR sets. But with the loss of /ʊ/, the position of ATR in the system becomes much more tenuous. The vowel /u/ would now join /i/ as a neutral vowel, occurring with both ATR and non-ATR vowels.

Now, the entire burden of the ATR contrast falls on the contrast between /ə/ and /a/. Many languages, however, have these vowels in their inventories, without attributing the contrast to ATR. As we observed earlier, the contrast between these vowels could

more straightforwardly be attributed to a difference in height. Indeed, the feature Low, which is required independently, can also serve to distinguish /ə/ from /a/.

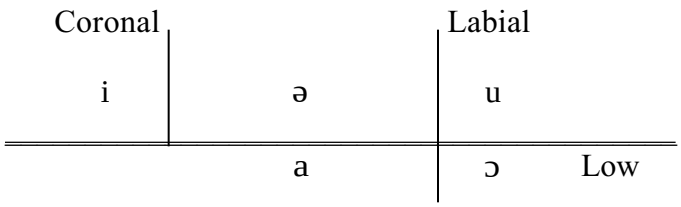
Therefore, without assuming that the phoneme /ə/ changed phonetically, the loss of /ʊ/ could have indirectly led to a change in the phonological status of /ə/, from Low to non-low. This reclassification, in turn, could have influenced the phonetic realizations of /ə/, because in Spoken Manchu it is definitely a non-low vowel. Zhao (1989) characterizes it as a mid-high back unrounded vowel, with an allophone [ɤ]; according to Ji et al. (1989), /ə/ is in free variation with a high back unrounded vowel [ɯ]. It is reasonable to suppose that there is a mutual influence between phonology and phonetics in such cases. The phonetics of a vowel obviously influence its phonological representation; but this influence is not simply one way, and the phonological representation can in turn affect the phonetics, by defining the space within which the vowel can vary.

The change in status of /ə/ in turn has consequences for the specification of /u/. Recall that in Written Manchu we found evidence that the vowel /i/ is phonologically Coronal, but no evidence that the vowels /u/ and /ʊ/ are phonologically Labial, though they clearly are phonetically round. Recall also that this lack of Labial specification is entirely expected under the theory of contrastive specification we are assuming: because only a single place contrast exists in the non-low vowels, that contrast can be either Coronal or Labial, but not both.

The elevation of /ə/ to a non-low vowel, joining /i/ and /u/, changes the situation. Assuming, as before, that Coronal takes precedence, /i/ is again specified Coronal, distinguishing it from /ə/ and /u/. But now we must still distinguish the latter two vowels

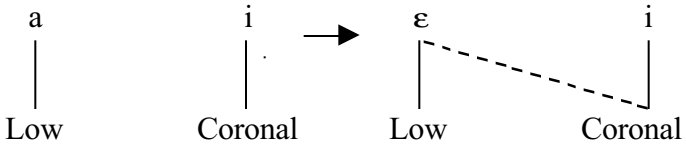
from each other. The most straightforward distinction is again a place distinction, whereby /u/ is specified Labial, as diagrammed in (21).

(21) Spoken Manchu after loss of /ʊ/



Is there evidence that Spoken Manchu /u/ has acquired a Labial specification? We cannot appeal to Labial harmony, because both Labial and ATR harmony have been destroyed in Spoken Manchu (Zhang 1996). However, the development of the new phonemes /ɛ/ and /y/ does provide evidence bearing on this question. According to Zhang (1996), Spoken Manchu /ə/ often corresponds to Written Manchu /a/ when followed by /i/. It is likely, then, that this phoneme originated from /a/ followed by /i/. Since /i/ has a Coronal feature and /a/ has a Low feature, it follows that the addition of the Coronal feature from /i/ to an /a/ would result in a Low Coronal vowel, i.e. /ɛ/, as shown in (22).

(22) Creation of /ɛ/ from /a/ - /i/

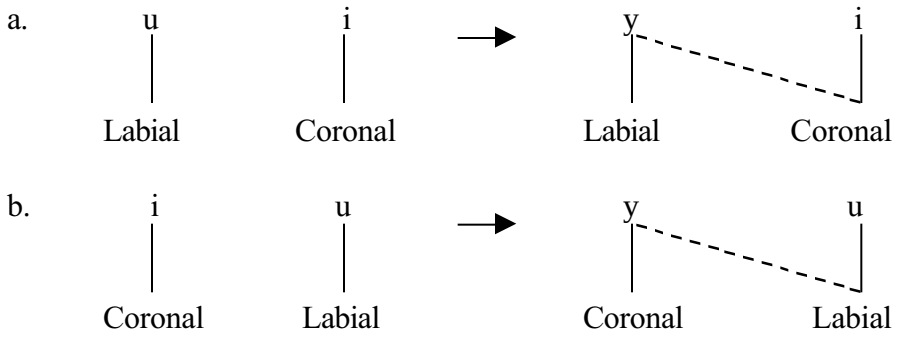


This development could have even begun in Written Manchu, since the features that participate in the process were all in place. Over time, however, as various other changes caused the original environment of the rule to become obscure, the vowel /ɛ/ started appearing in unpredictable contexts and became a new phoneme.

The Spoken Manchu vowel /y/ also developed from a sequence of vowels. As Zhang (1996) shows, Spoken Manchu /y/ corresponds to Written Manchu /i/ followed by

/u/, as well as /u/ followed by /i/. Now, /y/ is a front round vowel and thus has the features Coronal and Labial. The feature Coronal is clearly contributed by the /i/, parallel to its role in the creation of /ɛ/. But the feature Labial must come from the /u/. In Written Manchu, we have argued that this vowel did not possess a Labial feature, but that in Spoken Manchu, following the elevation of /ə/ to a non-low vowel, it does. The creation of /y/ thus provides evidence for the Labial specification of /u/ in Spoken Manchu.

(23) Creation of /y/ from /u/ - /i/ and /i/ - /u/



Like /ɛ/, the new vowel /y/ came to stand in environments where it could not simply be analyzed as deriving from /i/ and /u/, and thus became a separate phoneme which does not depend on receiving a Labial specification from /u/. However, the development of [y] in the first place provides evidence for a labial feature on /u/.

We have seen, then, that the vowel systems of Written Manchu and Spoken Manchu act as expected given our theory of contrastive specification. Further evidence supporting this approach comes from another descendent of Written Manchu, to which we now turn.

5. The Xibe Vowel System

The vowel inventory of Xibe is shown in (24).

(24) Xibe (Sibo) (based on Li and Zhong 1986)

Coronal			Labial	
	Labial			
i	y	ə	u	
ɛ	œ	a	ɔ	Low

The development of the Xibe vowel system is similar to that of Spoken Manchu: the contrast between /u/ and /ʊ/ has been lost along with the feature ATR, the vowel /ə/ has been reinterpreted as a non-low vowel, and new phonemes /y/ and /ɛ/ have developed from combinations of other vowels. As in Spoken Manchu, the development of these new phonemes supports the theory that /u/ has acquired a Labial specification. In addition, a third new vowel, /œ/, has arisen, most likely from earlier /ɔ/ followed by /i/ (Zhang 1996: 126).

Unlike Spoken Manchu, Xibe retains a labial harmony rule. According to Li and Zhong (1986), there is an alternation between /ə/ and /u/ in Xibe suffixes (this alternation is not found in Norman 1974). / u/ occurs if the stem-final vowel is round, /ə/ occurs otherwise.

(25) Alternation between /ə/ and /u/ in Xibe suffixes

	Written Manchu	Xibe	Gloss
a.	gətə-hə	gətə-xə	‘awoke’
	uli-hə	uli-xə	‘stringed’
	ana-ha	anə-χə	‘pushed’
	Gɔci-ha	gɔçi-χə-	‘replied’

b.	bu-hə	bu-xu	‘gave’
	bɔdɔ-hɔ	bɔdu-χu	‘thought’
c.	nəci-kən	nəçi-kən	‘somewhat flat’
	ərdə-kən	ərdə-kən	‘somewhat early’
	amba-Kan	am-qən	‘somewhat big’
	Hanci-Kan	χantɕi-qən	‘somewhat near’
d.	juçsuhu-kən	dʑyɕxu-kun	‘somewhat sour’
	hətu-kən	xətu-kun	‘somewhat stocky’
	labdu-kan	lavdu-qun	‘somewhat many’
	farHʊ-Kan	farχu-qun	‘somewhat dark’
	fɔHɔlɔ-Kɔn	fœχulu-qun	‘somewhat short’
	ɔsɔHɔ-Kɔn	ɔsχɔ-qun	‘somewhat small’

Recall that in Written Manchu labial harmony was restricted to the low vowels, and created an alternation between /a/ and /ɔ/. In Xibe, non-initial vowels tended to be raised – almost always in suffixes, frequently in stem vowels – so an original sequence of the form /a/ - /a/ would become /a/ - /ə/ or /ə/ - /ə/, and a sequence of the form /ɔ/ - /ɔ/ would become /ɔ/ - /u/ or /u/ - /u/. The labial harmony observed in Xibe is not merely a holdover of Written Manchu labial harmony, however, for in Xibe harmony is triggered not only by /u/ derived from older /ɔ/, but also by original /u/. The fact that /u/ triggers and undergoes labial harmony further supports the hypothesis that it has a Labial specification in Xibe.

6. Conclusion

We have argued that an approach to contrastive specification in terms of the contrastive hierarchy provides an illuminating account of the vowel system of Written Manchu, as well as of the evolution of the later Manchu languages.[5] In this approach, unary features are specified following the Successive Binary Algorithm and a particular hierarchy of features. In Manchu, the hierarchy has the feature Low at the top, followed by Coronal, then Labial, and finally ATR at the bottom.

It remains to be seen to what extent this ordering is universal, and to what extent it contains elements particular to the Manchu languages.[6]

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Notes

[1]Li (1996) also proposes that these contrasts are based on the tongue root. Unlike Zhang (1996), however, Li argues that RTR (Retracted tongue Root) is the marked feature that distinguishes the two pairs. The choice of ATR or RTR is not relevant to the theme of this paper. See Zhang and Dresher (this conference) for further discussion.

[2]The phonetic distinction between [u] and [ʊ] is further supported by a phonetic distinction in the preceding back consonants: velars are found before ATR vowels, including [u], and uvulars are found before non-ATR vowels, including [ʊ]. This consonantal alternation is purely allophonic, and is not indicated in the transcriptions in this paper except where relevant, in which case the uvulars are transcribed with capital letters.

[3]The notation –[C, Dorsal] means a segment that is not specified for [Dorsal], not that there is a feature with the value [–Dorsal]. The context might be unnecessary if vowels receive a feature from a preceding uvular consonant, since ATR is assigned only to a vowel without features.

[4] The idea of a contrastive hierarchy consisting of a series of binary splits is due to Roman Jakobson, and is employed in Jakobson, Fant, and Halle 1952, Jakobson & Halle 1956, and Halle 1959). The notion was abandoned within generative phonology after Stanley 1967.

[5] We have not discussed Hezhen, another Manchu language, whose vowel system is similar to the other modern Manchu languages discussed here. However, the vowel system of Hezhen offers no evidence bearing on our topic, because of the loss of harmony and the lack of other relevant phonological processes. See Zhang (1996), Zhang and Wu (1992), and Zhang et al. (1989) for discussion and further references on Hezhen.

[6] This topic is the subject of ongoing work in the project on Contrast in Phonology at the University of Toronto (http://www.chass.utoronto.ca/ ~contrast/). Some relevant references are: Avery (1996), Avery and Rice (1989), Balcaen (1998), Causley (1999), Dresher (1998a, b), Dresher and Rice (1993), Dresher, Piggott, and Rice (1994), Dyck (1995), Ghini (1999), Hall (1998), Rice (1993, 1995, 1997), Rice and Avery (1995), Walker (1993), Wu (1994), Zhang (1996), and Zhou (1999).

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