Vowel Harmony in Khalkha Mongolian

Abstract

This document summarizes the system of vowel harmony as seen in Standard Khalkha Mogolian.

Vowel harmony refers to phonological assimilation for vowel feature(s) operating over a string of multiple segments.

The two principles of vowel harmony generally cited in this language are [ATR] harmony and Rounding harmony, which restrict the co-occurrence of vowels within a non-compound word. Mongolian is exclusively suffixing and the root/stem vowel is the trigger, determining the vowel harmony class of its suffixes.

Interestingly, we find both transparency and opacity in the vowels of Khalkha Mongolian, which alter the otherwise expected patterns of harmony.

1 The Vowel Inventory

The vowel inventory, consisting of seven vowels *i, e, a, o, ɔ, u and ʊ*, is somewhat skewed; we find an asymmetry in the distribution of the features [round], [back] and [high]. There is no high, back,unround vowel (Goldsmith, 1985).

The initial vowel is assumed to be specified. The non-initial vowels can be underlyingly /i/, /E/, or /U/. The archiphonemes /U/ and /E/ have missing features that are filled in through vowel harmony.

/U/ undergoes just [ATR] harmony,becoming either /u/ or /ʊ/. /E/ undergoes both [ATR] and [round] harmony,becoming /e/, /a/, /o/, or /ɔ/ (Godfrey, 2012).

The front- rounded vowels of Classical Mongolian [y] and [ө] have developed into back rounded vowels [u] and [o],in Khalkha. Backing has not led to merger with *u*, which has developed into *ʊ* by the process of pharyngealization (Svantesson,1985).

2 Harmony System

Goldsmith(1985) accounts for a backing harmony within vowels of Khalkha Mongolian.

However,Svantesson(1985) explains a shift in harmony process of Inner Mongolian dialects from 'palatal' to 'pharyngeal' (or [ATR]). Buraev (1959) concludes that the vowel harmony in Buriat (another Inner Mongolian dialect) is not of the front-back type, leading to Svantesson's extensive account of this shift.

He uses the framework of generative phonology; adopting the feature system proposed by Wood (1975b,1979), based on cross -linguistic studies of vowel-articulation. This captures the natural connection between front articulation and a relatively wide pharynx.

Pharyngeal articulation involves the hyoglossi muscle and pharyngeal constrictors.

For the purposes of this paper, we discuss [ATR] and Rounding harmony in Khalkha.

2.1 [ATR] Harmony

It distinguishes tense and lax vowels in Mongolian, which Svantesson refers to as 'pharyngeal' and 'non-pharyngeal'.

Vowels in a non-compound word must share values for [+/-ATR], depending on the root/stem vowel.

- Trigger vowels: *o, ɔ, u, ʊ, a, e* (in initial positions)

- Target vowels: Archiphonemes /E/ and /U/

Alternations:

- /E/: /e/, /a/, /o/, or /ɔ/

- /U/: /u/, or /ʊ/

The vowel *i* in the initial syllable also forces the following vowels in the non-compound word to be [+ATR] (Svantesson, 1985).

In Nevin (2010) and Godfrey (2012), the harmony is conceptualized as a search-copy mechanism by 'needy' vowels instead of there being harmony 'trigger's.
In [ATR] harmony, the search proceeds leftward and looks for the nearest contrastive instance of [ATR]. Once found, the value is copied. If none is found, default [+ATR] is inserted.

2.2 Rounding Harmony

This phonological process influences vowels to surface as rounded when the neighbouring vowel (the root/stem vowel for Khalkha Mongolian) is rounded.
However in most cases, conditions referring to tongue body position (height and/or backness) are imposed on either the triggering element, the target, or both (Kaun, 1995).
In Khalkha Mongolian,we observe two conditions for rounding harmony:

- *The trigger must be nonhigh.*

- *The trigger and target must agree in height.*

This kind of a system is similar to one seen in Sibe, a Tungusic language of China (Li, 1996).

- Trigger vowels: /o/, and /ɔ/

- Target vowels: Archiphoneme /E/

The archiphoneme /E/ surfaces as open rounded vowels *o, or ɔ* in the non-initial syllable when preceded by the same vowel.
An open vowel that follows a non-open rounded vowel (*u, u*) must be unrounded (*e or a*) (Svantesson, 1985).

Godfrey(2012) mentions that rounding happens only if necessary, after [ATR] harmony.
The search begins from where [ATR] harmony left off, and looks for the nearest vowel.If this vowel has a contrastive [round] feature, it is copied. If not, default [round] is inserted.
(*These abstractions need to be empiricized by conducting learning bias experiments.*)

3 Transparent *i*

Non-initial *i* is transparent in the sense that it is completely ignored by vowel harmony; neither does it participate in vowel harmony, nor does it block the process.
/i/ is the only vowel phoneme that is fully specified in non-initial vowels.

Example:

/po:r-ig-**E**/ po:r-ig-o *po:r-ig-e
(gloss)   'kidney-**ACC-RFL**'

Occurrence of transparent segments can be accounted for by assuming that search can only look for contrastive instances of a particular feature, rather than all instances.
Since /i/ is not *constrastively* [+ATR], it cannot be donor in [ATR] harmony (Godfrey, 2012).

4 Opaque *u and ʊ*

Intervening non-open velar vowels block rounding harmony.
Not only are they not affected by vowel harmony, they also prevent rounding harmony to spread across them.

Example:

/ɔr-ʊɟ-ɟ**E**/ ɔr-ʊɟ-ɟa *ɔr-ʊɟ-ɟɔ
(gloss)   'enter-**CAUS-DPST**'

The vowels following u and ʊ must be unrounded (a, or e)

This opacity, however, is restricted to rounding harmony; these segments don't behave so in the process of [ATR] harmony (Godfrey, 2012). (*This preferential behaviour needs further analysis.*)

A number of artificial language learning experiments on feature based vowel harmony such as Finley and Badecker (2009, 2010) have discussed the asymmetry between front and back vowels; this could provide generalized reasons behind the opacity of back vowels u and ʊ.

5 Other Exceptions

Svantesson(1985) cites three instances of exceptions in Khalkha Mongolian vowel harmony:

- **Compound words with constituents from different harmony classes.**
  As the domain of vowel harmony in Mongolian is a non-compound word, all compound words take suffixes with vowels from the harmony class of the last component.

- **Foreign loans.**
  Many loans, especially Russian words, which are introduced into Khalkha in their Russian orthographic form, violate the vowel harmony rules. Suffixes often follow the harmony class of the vowel which is stressed in Russian.

- **Words which contain unchangeable suffixes.**
  There are also a few suffixes, which are unchanged, regardless of the harmony class of the word they are affixed to. They include (in Khalkha) the narrative past suffix ɟe: / ce: and the negative *gui*.

Yamada(1983) and Odden(1977) have provided explanations to these exceptions.
However empirical re-analysis is in need for these aberrations.

6 Epenthesis

Consonants:

- When a suffix beginning with a vowel is added to a stem ending in a vowel, an epenthetic consonant is added to avoid hiatus. This consonant is *g* in non-pharyngeal and ɢ in pharyngeal words (Savntesson, 2005).

- The epenthetic consonant /g/ surfaces as uvular ɢ if the preceding vowel is [ATR], except if the following vowel is *i* (Godfrey, 2012)

Vowels: Vowel epenthesis is independent of vowel harmony in Khalkha Mongolian (Svantesson, 2005)

References

Abigail R. Kaun. 1995. *The Typology of Rounding Harmony: An Optimality Theoretic Approach.* Cambridge University Press.

Andrew Nevins. 2009. *Review of the Phonology of Mongolian by J.O. Svantesson et al.* Phonology,26.

Bing Li. 1996. *Tungusic vowel harmony: description and analysis.* Amsterdam: Holland, Institute of Generative Linguistics.

David Odden. 1977. *Overspecification and variables in phonology.* Linguistic analysis, 3: 177-96.

I. Buraev. 1959. *Zvukovoj sostav burjatskogo jazyka.* Ulan-Ude.

John Goldsmith. 1985. *Vowel harmony in Khalkha Mongolian, Yaka, Finnish and Hungarian*.* Phonology Yearbook 2 (1985) 253 275.

Jan-Olof Svantesson. 1985. *Vowel harmony shift in Mongolian.* Lingua 67 (1985) 283-327. North-Holland.

Jan-Olof Svantesson, Anna Tsendina,Anastasia Mukhanova Karlsson, and Vivan Franzen. 2005. *The Phonology of Mongolian.* Oxford University Press Inc., New York.

Ross Godfrey. 2012. *Opaque Intervention in Khalkha Mongolian Vowel Harmony: A Contrastive Account.* McGill Working Papers in Linguistics, Volume 22.1,Winter 2012.

Sydney Wood. 1979. *A radiographic analysis of constriction locations for vowels.* Journal of Phonetics I, 2543.

Norio Yamada. 1983. *A constraint on phonological variables.* Linguistic analysis, 12: 29-84.

Sarah Finley and William Badecker. 2009. *Artificial language learning and feature-based generalization.* Journal of Memory and Language, 61, 423-437.

Sarah Finley and William Badecker. 2010. *Linguistic and non-linguistic influences on learning biases for vowel harmony.* S. Ohlsson R. Catrambone (Eds.), Proceedings of the 32nd Annual Conference of the Cognitive Science Society (pp.706-711). Austin, TX: Cognitive Science Society.