Nonlocal Target Scope in Baiyinna Orochen

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1. Introduction

*Question:* Are there harmony patterns that propagate among vowels in adjacent syllables but involve nonlocal target scope?

- The one-to-many relational structure in (1) involves *nonlocal target scope*, referring to the scope of assessment for identifying possible targets for harmony from a trigger.

(1) Nonlocal target scope: \( V_1 \cdot V_2 \cdot V_3 \cdot V_4 \)

- One-to-many relations can be contrasted with successive local relations:

(2) Successive local relations: \( V_1 \uparrow V_2 \uparrow V_3 \uparrow V_4 \)

(3) Goals of this talk:
- Identify a harmony pattern with nonlocal target scope in Baiyinna Orochen.
- Identify theoretical approaches with which it is not compatible, e.g. AGREE(F).
- Discuss an approach with which it is compatible: Maximal licensing.
- Consider apparent local target scope in Yakut and show that it can possibly be analyzed as epiphenomenal.

2. Data: Baiyinna Orochen

- Baiyinna Orochen: a Tungusic language spoken in Baiyinna Village, Huma County, China.
- The data and description are drawn from Li (1996).
- Like other Tungusic languages, Baiyinna Orochen is a suffixing language.

(4) **Vowel inventory**

High: \( i \ i \ i \ i \ o \ o \ o \ u \ u \ u \)
Nonhigh: \( \overset{\circ}{o} \overset{\circ}{a} \overset{\circ}{a} \overset{\circ}{c} \overset{\circ}{o} \overset{\circ}{o} \)
Diphthongs: \( \overset{\circ}{ie} \overset{\circ}{ie} \)

(5) **Vowel harmony**

- Round harmony: Triggered by short /\( o \overset{\circ}{o} \)l.
- Tongue root harmony: Evident in the data but not the subject of analysis here.
2.1 The distribution of short [ɔ ɔ]

Root-initial syllables
• [ɔ ɔ] are unrestricted in the root-initial syllable.

(6) moliktə ‘a kind of wild fruit’
xixan ‘flame’

Noninitial syllables
• [ɔ ɔ] trigger round harmony in following short (and long) nonhigh vowels.
• [ɔ ɔ] only occur in a noninitial syllable when they follow a syllable with a nonhigh round vowel.

(7) a. Roots
    tfolpon ‘morning star’
moyon ‘silver’
oqet ‘strange’
sɔbgɔ ‘fish skin’
ɔmɔn ‘reindeer’
oŋktɔ ‘hay’

b. Suffixed forms
    somsok-ju ‘pasture’ INDEF.ACC.
    cf. ʊrə-ju ‘mountain’ INDEF.ACC.
    ɔlɔ-ju ‘fish’ INDEF.ACC.
    cf. ʊra-ja ‘river’ INDEF.ACC.

2.2 The distribution of long [ɔː ɔː]

Root-initial syllables
• [ɔː ɔː] are unrestricted in a root-initial syllable.

(8) tɔri- ‘to lose one’s way’
    ɔɔnn ‘he, she’

Noninitial syllables
• Short [ɔ ɔ] trigger round harmony in following nonhigh long vowels.
• [ɔː ɔː] only occur in a noninitial syllable when they follow a syllable with a nonhigh round vowel.

(9) sokko ‘muddy (water)’
    ɔlɔk ‘lie’
    ɡɔlɔ ‘log’
    ɔmɔn ‘fatty meat (of deer)’
Unlike their short counterparts, [oː ɔː] do not trigger round harmony.

(10) a. Roots
   oːdən  ‘velvet’
   koːməxə  ‘windpipe’
   kəːŋəkta  ‘hand-bell’
   təːlə  ‘pole used for supporting the coffin’

   b. Suffixed forms
   boːl-ja  ‘slave’ INDEF.ACC.
   gəːl-ja  ‘policy’ INDEF.ACC.
   kəː-xaːn  ‘wine pot’ DIM.

Despite not triggering round harmony (10), [oː ɔː] can be the product of round harmony and propagate it onward (11).¹

- Polysyllabic roots with [oː] or [ɔː] in the final syllable trigger round harmony in a suffix (11a).
- Round harmony produces [oː ɔː] in a suffix and continues to a later suffix (11b).

(11) a. sokkoː-mpə  ‘muddy (water)’ CONTEM.
    ɔmɔːn-ə  ‘fatty meat (of deer or roe deer)’ DEF.ACC.

   b. noːpə( xo)−xəːn-mpə  ‘bear’ DIM.-DEF.ACC.
      cf. luxi−xəːn-mpə  ‘arrow’ DIM.-DEF.ACC.
      oloː−wkəːn-noː  ‘cook’ CAUS.-PRES.
      cf. buː−wkəːn-noː  ‘give’ CAUS.-PRES.
      dʒəː-xəːn-ə  ‘stone’ DIM.-DEF.ACC.
      cf. birə−xəːn-ə  ‘river’ DIM.-DEF.ACC.
      bəːdə−wkəːn-noː  ‘think’ CAUS.-PRES.
      cf. waː−wkəːn-naː  ‘kill’ CAUS.-PRES.

2.3 The distribution of high round vowels

- Round high vowels do not trigger round harmony.

(12) ɲuriktə  ‘hair’
    ʊʃiː  ‘rope’
    dʒuːxəʃən  ‘otter’
    susə  ‘axe’
    urgə  ‘earthworm’
    bəːjʊ(n)-ksə  ‘elk hide’
    ʊɡəɡə  ‘bitter’
    ʊxəʃən  ‘spark’
    ʊʃiːn  ‘cheek’
    ŋəntə  ‘leather shoe’
    ɡʊəən  ‘male roe deer’
    tʃuːxə  ‘grass’

¹ A similar pattern is seen in Evenki (Nedjalkov 1997).
Round high vowels are unrestricted in noninitial syllables.

(13)  
• imuksɔ-ruk ‘oil container’
• kilu: ‘large piece of ice’
• ponku: ‘pilose antler’
• filuka ‘intestines’
• amu(n)-ruk ‘toilet’
• akku: ‘filled, solid’

Round and unround high vowels block round harmony.

(14)  
• bolboxi-wɔ ‘wild duck’ DEF.ACC.
• owon-du: ‘pancake’ DESTIN.
• tʃɔlik-pa ‘cloud-shaped design’ DEF.ACC.
• ɔrɔn-dola: ‘reindeer’ DESTIN.

Summary: Round harmony in Baiyinna Orochen
• Rounding contrasts in nonhigh vowels are restricted to the root-initial syllable.
• Short [ɔ ɔ] in the initial syllable trigger round harmony in following nonhigh vowels, both long and short.
• [ɔ: ɔ:] do not trigger round harmony.
• High vowels block round harmony, and round high vowels do not trigger it.

3. Analysis: Baiyinna Orochen round harmony

3.1 Nonlocal target scope

(16)  
Consider [olo:-wkon-no-] ‘cook’ CAUS.-PRES.
• Each suffix vowel is round by virtue of a relation between it and a short round vowel in the initial syllable, which is nonadjacent.
• This is because [ɔ:] does not trigger round harmony, exx. [boɭ-ja] ‘slave’ INDEF.ACC.
• Harmonizing vowels may thus stand in a nonlocal target relation with an initial short root vowel, as in (17). Arrows call out relations between triggers and targets of harmony.

(17)  
Nonlocal target scope in Baiyinna Orochen round harmony
[olo:-wkon-no-]
• Although target scope is nonlocal, other dimensions of round harmony are local in Baiyinna Orochen:

(18) **Myopia effects - local**
• Wilson (2003) has characterized unbounded harmony as *myopic* in the sense that in the sequence [...]V1 • V2 • V3...] whether harmony spreads from V1 to V2 does not depend on whether it proceeds to V3 or later.
• Myopic patterns show a kind of local effect in the sense that the operation of harmony between local elements is not sensitive to information about the operation of harmony between nonadjacent elements.
• Round harmony in Baiyinna Orochen is myopic, ex. [ɔlɔ-ṇi] ‘fish’ POSS. *[ɔlə-ṇi].

(19) **Feature associations - local**
• Harmony in Baiyinna Orochen proceeds among adjacent syllables, ex. [boloboxi-wa] ‘wild duck’ DEF.ACC., *[boloboxi-wo].
• In this and many other harmony patterns, the resulting feature associations may not skip a syllable, as enforced by *Skip (Uffmann 2004) or some similar measure.

**Consequences for locality:**
Locality for target scope in the round harmony of Baiyinna Orochen is
i) distinct from myopic effects in harmony
ii) distinct from that of feature associations resulting from harmony

### 3.2 Problematic theoretical approaches

• Nonlocal target scope in the round harmony of Baiyinna Orochen sheds light on the viability of certain harmony imperatives and representations for this pattern.
• Two approaches are not compatible with treating this pattern:
  o AGREE(F) (Baković 2000)
  o Local correspondence chains (Hansson 2006a, 2007)

(20) **Harmony imperative: AGREE(F)**
• AGREE(F) requires that adjacent elements have the same value for the feature [F].
• AGREE(F) cannot drive round harmony in Baiyinna Orochen.
  o Consider a word-medial sequence where a short nonhigh vowel is immediately preceded by a syllable with a long nonhigh round vowel, e.g [... oːCə ...].
  o Whether harmony occurs here depends on a syllable that is nonadjacent to the unrounded target, namely, a short nonhigh round vowel in a prior syllable.
  o Recall that if the sequence in question occurred in the first two syllables of the word, round harmony would not take place (see (10)).
• Other harmony imperatives that operate strictly over adjacent elements, such as SHARE(F) (McCarthy 2009), are likewise not capable of driving harmony in Baiyinna Orochen.
(21) **Representation: Local Correspondence Chain**
- Strategy: Harmonizing segments stand in a correspondence relation. They show harmony through the activity of constraints that enforce identity between corresponding segments.
- In multi-member correspondence chains, correspondence evaluation is restricted to chain-adjacent correspondents.

(22) **Illustration: Harmony in a local correspondence chain**
- Consider the following string, assuming that the vowels stand in a segmental correspondence chain. Identity constraints will be assessed over the following local pairs: $V_1 - V_2$, $V_2 - V_3$, $V_3 - V_4$

```
V_1 \bullet V_2 \bullet V_3 \bullet V_4
```
- Local correspondence chains cannot straightforwardly produce nonlocal target scope in Baiyinna Orochen, because harmony affecting $V_3$ in sequences like $[o_1 \ldots o_2 \ldots o_3 \ldots]$ is the result of a relation between $V_1 - V_3$, not the local pair $V_2 - V_3$.

<table>
<thead>
<tr>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Nonlocal target scope phenomena exist in vowel harmony.</td>
</tr>
<tr>
<td>• Harmony imperatives must exist that do not assess wellformedness relations solely among adjacent harmonizing elements.</td>
</tr>
</tbody>
</table>

3.3 Analysis as maximal licensing

**Overview**
- Round harmony in Baiyinna Orochen is a weak trigger pattern.
- The formal imperative for harmony is a maximal licensing constraint that enforces the realization of a feature in a weak trigger in all of the vowels in a word.
- Maximal licensing constraints have global target scope.

3.3.1 **The harmony imperative**

(23) **Trigger weakness**
- The triggers for round harmony in Baiyinna Orochen are weak (Kaun 2004).
  - Only short vowels trigger harmony
  - Round vowels that are nonhigh are perceived as less rounded than those that are high.
(24) Maximal licensing
  • Weak triggers can be characterized using F/Weak, referring to a given feature that is inherently perceptually weak or that occurs in a perceptually weak context.
  • LICENSE(F/Weak, Strong Position) constraints, which promote association of F/Weak with a prominent position, have been proposed to produce bounded harmony patterns with nonlocal target scope (Walker 2005, 2010).
  • Unbounded harmony patterns with weak triggers support extending the family of LICENSE constraints to include “word-maximal” licensing effects, where a relation is enforced between a weak trigger and all other vowels in a word (Jiménez & Lloret 2007, Walker to appear, for precursors, see Kaun 1995, 2004, Walker 2005).

(25) **Maximal Licensing constraint schema:**

\[
\text{LICENSE}(F/\text{Weak}, \forall v) \equiv \text{def}
\]

Let \( f \) be an occurrence of the feature \( F \), \( v \) be an occurrence of a vowel, and \( \text{Weak} \) be an occurrence of a given weak context.

Then for every \( f \) assign a violation to every \( v \) such that \( f \) and \( v \) belong to the same word and the following holds \( \exists f [\text{Coincide}(f, \text{Weak})] \land \neg \text{Coincide}(f, v) \)

• Coincide\((x, y)\) is true if \( x \) dominates \( y \), \( y \) dominates \( x \), or \( x = y \) (Zoll 1998)

• LICENSE(F/Weak, \forall V) penalizes every vowel in a word to which a feature \( F \) in a weak context is not associated.

(26) LICENSE([round]/V\_\mu[-high], \forall V): Round harmony constraint for Baiyinna Orochen

• Penalizes each vowel in a word that does not coincide with a given feature [round] that occurs in combination with [-high] in a short vowel.

(27) Illustration:

• In the following string, the second, third, and fourth vowel are each assigned a penalty, because there is a [round] feature in a nonhigh vowel that is not associated to them.

\[ o \cdot \varepsilon \cdot u \cdot \varepsilon : \quad \text{Earns three violations with respect to the licensing constraint} \]

| [rd] |

3.3.2 Rankings relevant to nonhigh vowels

(28) Constraints

1. IDENT-IO(round) (McCarthy & Prince 1995)
2. IDENT-IO-\( \sigma_{\text{initial}} \)(round) (Beckman 1998)
4. LICENSE([round]/ V\_\mu[-high], \forall V), henceforth MAX-LICENSE(round)
(29) Rankings

- \text{IDENT}-\sigma_{\text{Initial}(\text{round})} \gg \text{MAX-LICENSE}(\text{round})
  - A nonhigh round vowel is retained in the initial syllable even if there are vowels in the word that do not harmonize with its round feature.

- \text{IDENT}-\sigma_{\text{Initial}(\text{round})}, \text{MAX-LICENSE}(\text{round}) \gg *[\text{round}, -\text{high}]
  - Nonhigh round vowels can occur freely in the initial syllable, and they can occur elsewhere as the product of licensing-driven harmony.

- *[\text{round}, -\text{high}] \gg \text{IDENT}-\text{IO}(\text{round})
  - Nonhigh round vowels do not occur otherwise.

(30) Combined: \text{IDENT}-\sigma_{\text{Initial}(\text{rd})} \gg \text{MAX-LICENSE}(\text{round}) \gg *[\text{round}, -\text{high}] \gg \text{IDENT}(\text{rd})

(31) Only short vowels trigger round harmony

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>IDENT \sigma_{\text{Initial}(\text{round})}</th>
<th>MAX-LICENSE(\text{round})</th>
<th>*[\text{round}, -\text{high}]</th>
<th>IDENT (\text{round})</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. /ɔmɐŋ-ма/</td>
<td>a. ɔmɐŋ-ма</td>
<td>***</td>
<td>**</td>
<td>***</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>b. ɔmɐŋ-ма</td>
<td>!</td>
<td>**</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>c. ɔmɐŋ-ма</td>
<td>!*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. aмаːŋ-ма</td>
<td>!</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>ii. /bɔːl-jо/</td>
<td>a. bɔːl-jо</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. bɔːl-jо</td>
<td>***!</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Short vowel trigger (31i)

- The winner: Candidate (a), with harmony from a nonhigh round vowel, satisfies the licensing constraint. Harmony propagates through short and long nonhigh vowels.

- Candidate (b), which shows partial harmony, and (c), which is faithful, incur fatal violations of the licensing constraint.

- Candidate (d), where the vowel in the initial syllable becomes unround, violates the initial syllable faithfulness constraint.

Long vowel does not trigger (31ii)

- The winner: Candidate (a) has a long nonhigh round vowel in the initial syllable and no round harmony. This form obeys the licensing constraint, because [round] is not associated with a short nonhigh vowel.

- Candidate (b), with round harmony, is harmonically bounded by candidate (a).

3.3.3 Rankings relevant to high vowel blocking

(32) \text{GESTURAL\text{-UNIFORMITY}([\text{round}], [\text{high}])} (Kaun 1995, 2004)

A feature [round] is not dominated by vowels that differ in height.

(33) \text{GESTURAL\text{-UNIFORMITY}([\text{round}], [\text{high}])} \gg \text{MAX-LICENSE}(\text{round})

- Harmony is blocked when trigger and target vowels differ in height.
**High vowels block round harmony and do not trigger it**

<table>
<thead>
<tr>
<th>/oran-dola/</th>
<th>GESTUNI ([rd], [hi])</th>
<th>MAX-LICENSE(round)</th>
<th>*[round, -high]</th>
<th>IDENT (round)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. őrandula:</td>
<td>(\sqrt{[\text{rd}]})</td>
<td>**</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>b. őrandula:</td>
<td>(\sqrt{[\text{rd}]})</td>
<td>***!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. őponda:</td>
<td>(\sqrt{[\text{rd}]})</td>
<td>*!</td>
<td>***</td>
<td>**</td>
</tr>
</tbody>
</table>

- The winner: Candidate (a) with partial harmony. Violations of licensing are incurred for the high vowel and for the final nonhigh vowel.
- Candidate (b), which does not spread [round] at all from the nonhigh vowel in the initial syllable, incurs one more violation of the licensing constraint than candidate (a).
- Candidate (c), in which round harmony operates exhaustively in the word, is ruled out by GESTURAL UNIFORMITY, because [round] is shared across nonhigh and high vowels.

**Summary: Analysis of round harmony in Baiyinna Orochen**

- The harmony imperative is a maximal licensing constraint, which drives round harmony from a perceptually weak short nonhigh round vowel to all other vowels. This obtains the restriction on triggers, and it promotes unbounded harmony with nonlocal target scope.
- High vowels block harmony because of a gestural uniformity constraint that prohibits [round] from being shared across vowels of different heights. Thus, the harmony shows blocking effects, despite its nonlocal target scope.

**4. Local target scope?**

**4.1 Data: Yakut**

- Yakut is a Turkic language spoken in northeastern Siberia.
- The data and description are based on Krueger (1962).

**Vowel inventory**

High: \(i\ i: y\ y: uu\ uu: u\ u:\)

Nonhigh: \(e\ e:\ o\ a:\ o\ o:\)

Diphthongs: \(ie\ y\phi\ uua\ uo\)

**Vowel harmony**

- Round harmony: Operates among all vowels except when the trigger is high and the target nonhigh.
- Backness harmony: Evident in the data but not the subject of analysis here.
• Nonhigh round vowels trigger round harmony in high and nonhigh vowels:

\[(38)\]
\[
\begin{align*}
o\text{o}-\nu & \quad \text{‘child’ ACC.} \\
\text{b\text{o\text{r\text{o}}-\text{n}} & \quad \text{‘wolf’ ACC.} \\
\text{cf. p\text{a\text{r\text{t\text{n}}-\nu} & \quad \text{‘desk’ ACC.} \\
\text{cf. k\text{i\text{n\text{g\text{e}}-\text{n\text{i} & \quad \text{‘book’ ACC.} \\

o\text{h\text{o\text{r\text{e}}-\text{r}} & \quad \text{‘stove’ PL.} \\
\text{b\text{o\text{r\text{o}}-\text{r}} & \quad \text{‘wolf’ PL.} \\
\text{cf. e\text{t-\text{e}} & \quad \text{‘meat’ PL.} \\
\text{cf. a\text{y\text{a}}-\text{r}} & \quad \text{‘horse’ PL.} \\

\text{o\text{y\text{o-t\text{e\text{r}} & \quad \text{‘child’ COMP.} \\
\text{b\text{o\text{r\text{o}}-\text{t\text{e\text{r}} & \quad \text{‘wolf’ COMP.} \\
\text{cf. e\text{h\text{e-t\text{e\text{r}} & \quad ‘bear’ COMP.} \\
\]

• High round vowels trigger round harmony in high vowels:

\[(39)\]
\[
\begin{align*}
t\text{y\text{n\text{n-y} & \quad \text{‘window’ ACC.} \\
m\text{r\text{u\text{r-m-u}} & \quad \text{‘nose’ ACC.} \\
\text{cf. a\text{y\text{a}}-\text{n\text{u}} & \quad \text{‘father’ ACC.} \\

y\text{t\text{u-m} & \quad \text{‘milk’ 1SG.POSS.} \\
\text{cf. a\text{t-t\text{u}} & \quad \text{‘name’ 1SG.POSS.} \\
\]

• High round vowels do not trigger round harmony in nonhigh vowels:

\[(40)\]
\[
\begin{align*}
t\text{n\text{n-y\text{r}} & \quad \text{‘window’ PL.} \\
k\text{u\text{l-l\text{a}} & \quad \text{‘sack’ PL.} \\
\]

• A nonhigh round vowel fails to trigger harmony in a nonadjacent nonhigh vowel across a round high vowel:

\[(41)\]
\[
\begin{align*}
t\text{o\text{b\text{u\text{k-t\text{a}} & \quad \text{‘knee’ PL.} \\
o\text{y\text{u\text{s-t\text{a}}} & \quad \text{‘bull’ PL.} \\
b\text{\text{o\text{l-y\text{k-t\text{e}} & \quad ‘rooster’ PL.} \\
o\text{\text{r\text{y-r-t\text{e}} & \quad ‘river’ PL.} \\
k\text{\text{o\text{m\text{y-s-t\text{e\text{r}} & \quad ‘silver’ COMP.} \\
\]

• Examples like those in (41) suggest the possibility of a need for local target scope. Harmony can operate between nonhigh vowels, but the initial nonhigh vowel does not trigger harmony in nonhigh suffix vowels to which it is not adjacent.

\[(42)\]
\[
\text{Summary: Round harmony in Yakut} \\
\quad \text{Round harmony operates among all vowels except in sequences where the trigger is high and the target is nonhigh.} 
\]
4.2 Analysis: Yakut round harmony

(43) Previous analysis of Yakut (Kaun 1995):
- EXTEND[round]IF[-high] promotes harmony from nonhigh vowels, EXTEND[round] promotes harmony from vowels of any height.
- GESTURALUNIFORMITY or *[round, -high] >> EXTEND[round] – prevents harmony from high vowels to nonhigh vowels.
- Kaun (1995:179) shows this approach is successful for round harmony in disyllables.

(44) Problem: The ranking fails to obtain local target scope, where nonhigh vowels do not trigger harmony in a nonhigh vowel across a round high vowel /tobuk-tar/.

<table>
<thead>
<tr>
<th>/tobuk-tar/</th>
<th>EXTEND[rd]IF[-hi]</th>
<th>GESTUNI([rd], [hi])</th>
<th>*[rd, -hi]</th>
<th>EXTEND[rd]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. tobuktor</td>
<td>*</td>
<td></td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>b. tobuktar</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. tobuktar</td>
<td><em>!</em></td>
<td>*</td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

- EXTEND[round]IF[-high] >> GESTURALUNIFORMITY([round], [high]) predicts unbounded round harmony from a nonhigh vowel, even across a high round vowel. It thus predicts candidate (a) to be the winner instead of the attested candidate (b).
- The reverse ranking of these two constraints would wrongly select candidate (c), not (b).
- Question: Must local target scope be stipulated for round harmony in Yakut, i.e. is there a constraint restricting locality of target scope?

(45) An alternative solution
- Sasa (2001, 2009) splits GESTURALUNIFORMITY([round], [high]) into two constraints:
  - *H-L(round) prohibits [round] linked to a high vowel followed by a low vowel.
  - *L-H(round) prohibits [round] linked to a low vowel followed by a high vowel.
- The harmony-driving constraint is ranked between *H-L(round) and *L-H(round).

(46) Analysis of Yakut with a split version of GESTURALUNIFORMITY

<table>
<thead>
<tr>
<th>/tobuk-tar/</th>
<th>*H-L(round)</th>
<th>EXTEND[round]</th>
<th>*L-H(round)</th>
<th>*[round, -high]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. tobuktor</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>b. tobuktar</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. tobuktar</td>
<td><em>!</em></td>
<td>*</td>
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<td>*</td>
</tr>
</tbody>
</table>

- *H-L(round) >> EXTEND[round] prevents round harmony from a high vowel to a nonhigh vowel, ruling out candidate (a).
- The winner: candidate (b) spreads [round] from a nonhigh vowel to high (violating *L-H(round)), but not from a high vowel to nonhigh (which would violate *H-L(round)).
- Candidate (c), with no round harmony, incurs a fatal extra violation of EXTEND[round].
Under the analysis using a split version of GESTURAL UNIFORMITY, local target scope in Yakut emerges as an epiphenomenon of constraints on local gestural transitions for [round] across vowels of different heights.

Further research on this issue

- The diphthongs, [uo] and [yφ], pattern with high vowels in the round harmony of Yakut. They do not trigger round harmony in a following nonhigh vowel but do in a following high vowel or diphthong.
  - Can the representation of these diphthongs can be rendered consistent with the apparent avoidance of *H-L(round) in Yakut?
  - The first vocalic element in these diphthongs is possibly the nucleus; Krueger (1962:48) states that “the first element is sounded more strongly than the second” in diphthongs with unrounded vowels, but he characterizes both elements as “sounded fully” in round diphthongs.
  - Nevins & Chitoran (2008) discuss patterns of vowel harmony in Turkic languages where glides are transparent. Could the nonhigh vocoids in these diphthongs serve as glides?
- Examine whether there are other cases with apparent local target scope and consider whether they, too, can yield to an independent explanation.

5. Conclusion

Findings of this study

- Nonlocal target scope exists in patterns of vowel harmony that propagate only among adjacent syllables.
- The harmony imperative in these cases must enforce a relation between the trigger and all targets within the domain of harmony, not just between adjacent elements. Maximal licensing constraints serve this purpose.
- An apparent case of harmony with local target scope in Yakut can possibly be analyzed so that the locality effect is an epiphenomenon of other wellformedness constraints.
- Speculation: Possibly locality for target scope need never be stipulated, i.e. perhaps it is always global in the form under evaluation.
References
Wilson, C. 2003. Analyzing unbounded spreading with constraints: Marks, targets and derivations. Ms., UCLA.