Long-distance Licensing in Harmonic Grammar

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1 Introduction

- Walker (2011): when vowel features are restricted to a prominent position by Positional Licensing, 3 kinds of patterns can result:

(1) a. Direct Licensing
\[ \sigma \sigma \sigma \]
\[ \text{[F]} \]

b. Indirect Licensing
\[ \sigma \sigma \sigma \]
\[ \text{[F]} \]

c. Identity Licensing
\[ \sigma \sigma \sigma \]
\[ \text{[F]}_i \text{[F]}_i \]

- All three satisfy LICENSE([F],\(\sigma\)).


(2) kals-\(\text{it}\)-o ‘sock (MASC. SG.)’
kant-\(\text{i}\)-se ‘sing (1PL.)’
m\(\text{u}\)-o ‘move (1SG.)’
kant\(\text{u}\)-r ‘choir singer (MASC. SG.)’
\(\text{ord}\)en\(\text{o}\) ‘order (1SG.)’

kals-\(\text{ii}\)-i ‘sock (MASC. PL.)’
kant-\(\text{i}\)-si-mo ‘sing (1PL. IMPF. SUBJ.)’
m\(\text{ii}\)-v-i ‘move (2 SG.)’
kant\(\text{u}\)-\(\text{r}\)-i ‘choir singer (MASC. PL.)’
\(\text{ur}\)din\(\text{i}\) ‘order (2SG.)’

- Under Walker’s system, indirect licensing results from the following ranking:

(3)

<table>
<thead>
<tr>
<th>/(\text{orden})/</th>
<th>LICENSE([+high]_{\text{post-tonic}}, (\sigma))</th>
<th>*DUPLICATE</th>
<th>IDENT(high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (\text{orden})</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (\text{urden})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (\text{urden})</td>
<td></td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

- A variety of constraints rule out spreading in the opposite direction. I will ignore this complication.

*Thanks to Abby Kaplan and audiences at the University of Utah for feedback on this work.
• Under Harmonic Grammar (e.g. Legendre et al. 1990), this system introduces pathologies.

  – No Distant Licensing: Indirect licensing across short distances; no harmony over longer distances.

(4) a. /é-i/ | \( \text{LICENSE}_5 \) | \( \text{*DUPLICATE}_4 \) | \( \text{IDENT}_2 \) | \( H \)
  a. é-i | -1 | | | -5
  b. í-i | | | -1 | -2

b. /éé-i/ | \( \text{LICENSE}_5 \) | \( \text{*DUPLICATE}_4 \) | \( \text{IDENT}_2 \) | \( H \)
  a. éé-i | -1 | | | -5
  b. íé-i | | -1 | -1 | -6
  c. íí-i | | | -2 | -4

c. /ééé-i/ | \( \text{LICENSE}_5 \) | \( \text{*DUPLICATE}_4 \) | \( \text{IDENT}_2 \) | \( H \)
  a. ééé-i | -1 | | | -5
  b. íéé-i | | -1 | -1 | -6
  c. ííí-i | | | -3 | -6

d. /éééé-i/ | \( \text{LICENSE}_5 \) | \( \text{*DUPLICATE}_4 \) | \( \text{IDENT}_2 \) | \( H \)
  a. éééé-i | -1 | | | -5
  b. íééé-i | | -1 | -1 | -6
  c. íííí-i | | | -4 | -8

• My argument: eliminating this pathology requires a significant reformulation of Posi-
tional Licensing.

  – It must be sensitive to intervening positions, not just the licensing position.
  – It must reward spreading instead of penalizing its absence.
2 The Problem

- An asymmetrical trade-off: failure to spread violates LICENSE once, but spreading violates IDENT potentially many times.

- For \( n \) positions targeted by harmony, spreading occurs if:

\[
(5) \quad n \cdot w(\text{IDENT}) < w(\text{LICENSE})
\]

- No matter the constraints’ weights, IDENT violations overwhelm LICENSE if \( n \) is sufficiently large.

- To eliminate the pathology, we must eliminate the asymmetrical assignment of violations by LICENSE and IDENT.

- Two options:
  - Let LICENSE assign violations in proportion to distance, just like IDENT.
  - Change IDENT so it doesn’t assign violations in proportion to distance.

- I will argue for (a version of) the former.

3 Proportional LICENSE

3.1 Negative Licensing

(6) Revised LICENSE([F],\( \hat{\sigma} \)) (version 1): assign -1 for each [F] that does not coincide with a stressed syllable and -1 for each syllable that intervenes between [F] and the nearest stressed syllable.

- Equal penalties for spreading and not spreading:

<table>
<thead>
<tr>
<th></th>
<th>LICENSE</th>
<th>IDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. é-i vs. í-i</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>b. éé-i vs. íí-i</td>
<td>-2</td>
<td>-2</td>
</tr>
<tr>
<td>c. ééé-i vs. ííí-i</td>
<td>-3</td>
<td>-3</td>
</tr>
<tr>
<td>d. éééé-i vs. íííí-i</td>
<td>-4</td>
<td>-4</td>
</tr>
</tbody>
</table>

- Now spreading always occurs as long as \( w(\text{IDENT}) < w(\text{LICENSE}) \).
• New problem: identity licensing is impossible:

<table>
<thead>
<tr>
<th>/ée-i/</th>
<th>LICENSE</th>
<th>IDENT</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. éé-i</td>
<td>-2</td>
<td></td>
<td>-2n</td>
</tr>
<tr>
<td>b. ĭe-i</td>
<td>-1</td>
<td>-1</td>
<td>-n - m</td>
</tr>
<tr>
<td>c. ĭi-i</td>
<td>-2</td>
<td></td>
<td>-2m</td>
</tr>
</tbody>
</table>

• [é-į] is collectively harmonically bounded (Samek-Lodovici & Prince 1999, 2002):
  - if $n > m$, $-2m > -n - m$: (c) wins
  - if $n < m$, $-2n > -n - m$: (a) wins

• Solution:
  - The penalty for not spreading to the licensor must always overcome IDENT’s penalty for doing so. Ensured by $w$(LICENSE) > $w$(IDENT).
  - The penalty for not spreading to intervening positions should only sometimes overcome the penalty from IDENT.
  - Therefore, the penalty for skipping intervening positions must be smaller than the penalty for not spreading to the licensor.

(9) Revised LICENSE([F], 쳐), version 2: assign -1 for each [F] that does not coincide with a stressed syllable and -.5 for each syllable that intervenes between [F] and the nearest stressed syllable.
• Indirect and identity licensing are possible without the no-distant-spreading pathology:

\[
\frac{w(\text{LICENSE})}{w(\text{IDENT})} > 2 \rightarrow \text{indirect}
\]

\[
\frac{1 < \frac{w(\text{LICENSE})}{w(\text{IDENT})} < 2 \rightarrow \text{identity}}
\]

Interim Summary: Distance-sensitive LICENSE addresses the No-Distant-Licensing pathology. Reducing the penalty for not targeting intervening positions permits both indirect and identity licensing.

### 3.2 Positive Licensing

• New pathology: too many solutions (Blumenfeld 2006, Kimper 2011, Wilson 2001)
  
  – Two ways to remove LICENSE violations:
    1. Spread to intervening vowels (attested)
    2. Delete intervening vowels (unattested)
Kimper (2011): positive versions of spreading constraints avoid this problem.

Revised LICENSE([F],σ) (final version): assign +1 for each [F] that coincides with a stressed syllable. Assign [+5] for each syllable that is also associated with [F] between [F]'s original host and the licensing position.

\[ w(\text{LICENSE}) > 2 \rightarrow \text{indirect} \]

\[ w(\text{LICENSE}) < 2 \rightarrow \text{identity} \]
• Deletion is no longer viable:

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{/é-ì/} & \text{LICENSE} & \text{IDENT} & \text{MAX} & H \\
\hline
\text{a. é-ì} & 0 & & & \\
\text{b. ì-ì} & 1 & -1 & & 3 \\
\text{c. íì-ì} & 1.5 & -2 & & 3.5 \\
\text{d. í-ì} & 1 & -1 & -1 & 2 \\
\hline
\end{array}
\]

• *DUPLICATE is unnecessary: the choice between identity and indirect licensing is made by other means.

Interim Summary: Positive LICENSE inherits the advantages of its negative counterpart and avoids its defects.

4 Gradualness

• The danger of positive constraints: if spreading to one position is good, spreading to many must be better:

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{/é-ì/} & \text{LICENSE} & \text{IDENT} & \text{DEP} & H \\
\hline
\text{a. é-ì} & 0 & & & \\
\text{b. í-ì} & 1 & -1 & & 4 \\
\text{c. íííí-ì} & 3 & -1 & -4 & 10 \\
\hline
\end{array}
\]

Gradual theories like Harmonic Serialism avoid this problem (Kimper 2011):

– Must epenthesize on one step and spread in another step.
– With no motivation for epenthesization (absent assimilation), we can’t reach the point where spreading to it is advantageous:

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{/é-ì/} & \text{LICENSE} & \text{IDENT} & \text{DEP} & H \\
\hline
\text{a. é-ì} & 0 & & & \\
\hline
\text{b. í-ì} & 4 & & & \\
\end{array}
\]

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{/í-ì/} & \text{LICENSE} & \text{IDENT} & \text{DEP} & H \\
\hline
\text{a. í-ì} & 5 & & & \\
\text{b. íé-ì} & 4 & & & \\
\end{array}
\]
4.1 Summary

- Proportional LICENSE eliminates the no-distant-spreading pathology.
- Positive LICENSE address the too-many-solutions problem.
- Serial HG rules out infinite epenthesis.

5 Categorical IDENT

- Strategy here: keep LICENSE as originally formulated; change IDENT to avoid increasing penalties.
- Serious problems arise

(19) Counting effects: accumulation of markedness violations can compel violation of higher-weighted IDENT:

<table>
<thead>
<tr>
<th></th>
<th>IDENT(high)</th>
<th>*Mid</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>/bed/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>a. bed</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>-</td>
<td>b. bid</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>b.</td>
<td>/bede/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>a. bede</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>-</td>
<td>b. bide</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>-</td>
<td>c. bidi</td>
<td>-1</td>
<td>-3</td>
</tr>
</tbody>
</table>

6 Conclusion

- The asymmetrical assessment of violations between LICENSE and IDENT leads to pathological predictions in HG.
- The only viable approach is manipulation of LICENSE.
- Even closely related theories like OT and HG can require very different constraint sets.
- Licensing-based phenomena provide evidence for positive constraints and Serial HG.
- Positional Licensing revolves around the enhanced perceptual salience of strong positions. But paying attention to weak positions that get caught up in licensing-driven assimilation reveals much about the Positional Licensing formalism.
References


