The disambiguating effects of phonological exceptions in grammar

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“Exceptions” are both constrained by the grammar and can serve as a constraint on it as well
Roadmap

1. Briefly define “exception”
2. Identify typological and theoretical predictions made by lexical indexation
3. Present two relevant case studies from Mushunguli
4. Wrap up/future directions
What do I mean by “exception”? 

“Exception” is a loosely-defined term

For this talk, “exceptions” have the following characteristics:

- **Restricted** sets of morphemes
- **Unproductive and conflicting** patterns
- **Introduce ranking paradoxes**
Constraint

Indexation
This talk adopts locality-restricted lexical indexation (Pater 2000, 2010)

Indexed constraints are clones of more general constraints

Indexed constraints can only “see” the morpheme(s) they are indexed to

Finley 2010; Ito & Mester 1995, et seq; Pater 2000, 2010
## Exceptional blocking (indexed Faith)

### Regular

<table>
<thead>
<tr>
<th>Symbol</th>
<th>( /V_1 + V_2 / )</th>
<th>( \text{MAX}^L )</th>
<th>( *V.V )</th>
<th>( \text{MAX} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( V_1 \cdot V_2 )</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \emptyset_1 V_2 )</td>
<td></td>
<td>*</td>
<td></td>
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</tbody>
</table>

### Exceptional

<table>
<thead>
<tr>
<th>Symbol</th>
<th>( /V_1^L + V_2 / )</th>
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<td></td>
<td>( V_1^L \cdot V_2 )</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \emptyset_1^L V_2 )</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>
Violation of F or X can satisfy M

Unknown ranking between M & X

What happens when we try to block deletion?
No decision can be made!

The existence of the exception forces disambiguation

```
F^L
 /   \
M   X
 /   \
 F
```

<table>
<thead>
<tr>
<th>/V_1^L + V_2/</th>
<th>MAX^L</th>
<th>DEP</th>
<th>*V.V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>? V_1^L V_2</td>
<td></td>
<td></td>
<td>* ?</td>
<td></td>
</tr>
<tr>
<td>Ø_1^L V_2</td>
<td>* !</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>? V_1.CV_2</td>
<td></td>
<td></td>
<td>* ?</td>
<td></td>
</tr>
</tbody>
</table>
```
One type of blocking...

"Simple Blocking"
No Repair

<table>
<thead>
<tr>
<th></th>
<th>MAX&lt;sup&gt;L&lt;/sup&gt;</th>
<th>DEP</th>
<th>*V.V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>/V&lt;sub&gt;1&lt;/sub&gt;&lt;sup&gt;L&lt;/sup&gt;+V&lt;sub&gt;2&lt;/sub&gt;/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V&lt;sub&gt;1&lt;/sub&gt;&lt;sup&gt;L&lt;/sup&gt;.V&lt;sub&gt;2&lt;/sub&gt;</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Ø&lt;sub&gt;1&lt;/sub&gt;LV&lt;sub&gt;2&lt;/sub&gt;</td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>V&lt;sub&gt;1&lt;/sub&gt;.CV&lt;sub&gt;2&lt;/sub&gt;</td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>
...and another

<table>
<thead>
<tr>
<th>V^L_1+V^L_2</th>
<th>MAX^L</th>
<th>*V.V</th>
<th>DEP</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>V^L_1.V^L_2</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø^L_1V^L_2</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F V^L_1.CV^L_2</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Walljumping”
Alternative/marked repair
Two types of blocking

“Simple Blocking”
No Repair

“Walljumping”
Alternative/marked repair
The disambiguation effect has theoretical consequences:

- Exceptions predict (or rule out) other exceptions
- Exceptions predict (or rule out) regular repairs
Testing our predictions

Are both typological predictions empirically supported?

YES

Are both consequences empirically supported?

YES*
Mushunguli
Exceptions
Mushunguli (Somali Chizigula, ISO [xma]) is an endangered Somali Bantu language.

- Hiatus at prefix+stem and prefix+prefix boundaries
- Less common: stem+suffix boundaries
- Lots of feature/position-sensitive hiatus repairs

Hout 2012, 2016, 2017; Hout & Baković submitted; Dayley et al 2018
Lightning Round: Hiatus Resolution

Coalescence

/a + V₂/
becomes mid w/ place of V₂

/kɑ+iːva/ → [keːva]
‘(s)he heard’

Glide Formation

/i + V/ & /u + V/
become glides

/u+iːva/ → [wiːva]
‘it (cl 3) heard’

Simplification

/Vᵢ + Vᵢ/
becomes Vᵢ

/si+iːv+iːs+a/ → [si+iːva]
‘I heard a lot’

Exception to coalescence

Exception to glide formation
Deletion is a repair that we need to rule out in this context.

<table>
<thead>
<tr>
<th>/a₁+i₂/</th>
<th>MAX-V</th>
<th>*V.V</th>
<th>ID(HI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a₁.i₂</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e₁,₂</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Ø₁i₂</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Status of deletion in the language is otherwise unclear.

Exception 1: Non-coalescing stems

A handful of high-vowel initial stems exceptionally fail to undergo coalescence, but repair hiatus in all other contexts.

Regular (-iv- ‘hear’)

/ka-iv-a/ ke:va ‘s/he heard’

Exceptional (-it- ‘go’)

/ka-it-a/ ka.i:ta ‘s/he went’
The existence of the non-coalescing stems forces disambiguation.

This is the **simple blocking** ranking.

---

### Disambiguation Table

<table>
<thead>
<tr>
<th></th>
<th>/a₁+i₂²</th>
<th>ID(HI)</th>
<th>MAX-V</th>
<th>*V.V</th>
<th>ID(HI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a₁.i₂</td>
<td>ID(HI)</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e₁₂</td>
<td>*!</td>
<td>MAX-V</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Ø₁.i₂</td>
<td>*!</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Consequences

- Because MAX is undominated, deletion is never a viable hiatus resolution strategy.

- Fortunately, most hiatus repairs can be analyzed as coalescence:
  - $V_iV_i$ simplification = vacuous coalescence
  - Low + mid $\rightarrow$ mid = “mostly” vacuous coalescence
Glide Formation: #V+V

Recall: prevocalic high vowels become corresponding glides

\[ u+V \rightarrow wV \quad \text{and} \quad i+V \rightarrow jV \]

\[ u+edi \rightarrow wedi \text{ ‘good (cl 3)’} \quad \text{and} \quad i+edi \rightarrow jedi \text{ ‘good (cl 9)’} \]

Post-consonantal is a little different
Glide formation: \#CV+V

Back vowels: secondary articulation

\[ ku+iva \rightarrow k^{w}i:va \quad \text{‘to hear’} \]
\[ mu+iva \rightarrow m^{y}i:va \quad \text{‘you pl heard’} \]

Front vowels: deletion?

\[ si+asama \rightarrow sa:sa:ma \quad \text{‘I gaped’} \]
\[ vi+edi \rightarrow vedi \quad \text{‘good (cl 8)’} \]

How do we handle this?
Building deletion into the analysis is impossible without greatly weakening generalizations re: exceptions and regular forms.

A solution: glide formation is general, and some other mechanism cleans up the CG onset (post-cyclically)

\[
/Ci+V/ \rightarrow [CjV] \rightarrow [CV]
\]

(glide deletion)

Bermudez-Otero 2011; Kiparsky 2000
The (important) choices are: delete, palatalize, or nothing.

The relevant constraints form another partial order:

```
*CC.  *C^j
\hspace{1cm} Max-C
```

<table>
<thead>
<tr>
<th></th>
<th>*C^j</th>
<th>*CC.</th>
<th>Max-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CjV.</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CØV.</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>CjV.</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Again, we have “no” evidence for the ranking of M and X.
Exception 2: Palatalization

All class 5 prefixes are /di-/

Most class 5 prefixes exhibit the glide deletion pattern

**SUBJ** /di+asama/  
**OBJ** /si+di+aza/  

\[\text{d-a:sa:ma} \rightarrow \text{si-d-a:za} \]

‘it (cl5) gaped’  
‘I lost it (cl 5)’

But one does not
<table>
<thead>
<tr>
<th>CL 5 Demonstrative</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 5 demonstrative prefix is also /di-/ but in /di+V/ contexts it exhibits <strong>palatalization</strong> instead of glide deletion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>/di+C/</td>
<td>/di+no/</td>
<td>di-no</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘this (cl 5)’</td>
</tr>
<tr>
<td>/di+V/</td>
<td>/di+ŋŋu/</td>
<td>ŋ-ŋŋu</td>
</tr>
<tr>
<td></td>
<td>/i-di-o/</td>
<td>i-ŋ-o</td>
</tr>
<tr>
<td></td>
<td>/di-etu/</td>
<td>ñ-etu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘my’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘that (prox)’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘our’</td>
</tr>
</tbody>
</table>
The verb ‘eat’ is also /-di-/ but only surfaces that way in simplification contexts; otherwise, it too palatalizes.

\[
\begin{align*}
\text{‘I ate a lot’} & \rightarrow \text{si-}d\text{-i:s-a} \\
\text{‘I ate’} & \rightarrow \text{si-}j\text{-a} \\
\text{‘I will eat’} & \rightarrow \text{nani:-}j\text{-e}
\end{align*}
\]
Disambiguation for palatalization

- This is an example of a walljumping exception
- When deletion is blocked, an alternative applies

<table>
<thead>
<tr>
<th>$dj^L V$</th>
<th>MAX-CL</th>
<th>*CC.</th>
<th>*Ci</th>
<th>MAX-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>dj$^L$V.</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>dØ$^L$V.</td>
<td></td>
<td>!</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>dØ$^P$ fj$^L$V.</td>
<td></td>
<td>!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Typological Predictions

“Simple Blocking”
No Repair

Non-coalescing stems
Typological Predictions

*Complex \quad \text{Max-C}^l

*C^j

Max-C

Palatalization

F

M

X

F

“Walljumping”
Alternative/marked repair
Two Consequences

Exceptions predict other exceptions?

- Yes: strategies ruled out by one set of exceptions restrict the possible forms of other exceptions

Exceptions predict general patterns?

- Yes*: because indexed constraints are part of the grammar, the rankings they determine affect the rest of the grammar
Future Directions

▶ We don’t know much about the typology of exceptions cross-linguistically

▶ Low linguistic diversity

▶ Long-term project: building a catalog of exceptions (and other phenomena under the umbrella)
Lexical indexation predicts that different types of exceptions can exist, and that exceptions can influence other patterns in the language.

The Mushunguli case studies support these predictions.

The “breakdown” of a system is a reflection of how it truly functions.
Thank you!

(SEND ME YOUR EXCEPTIONS!!!
Acknowledgements

Thanks to...

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Finley, S. 2010. Exceptions vowel harmony are local. Lingua 120.
Hout, K. 2017. Exceptions to hiatus resolution in Mushunguli (Somali Chizigula). In Africa’s Endangered Languages: Documentary and Theoretical Approaches.