The disambiguating effects of phonological exceptions in grammar

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In OT, phonological processes are minimally driven by the ranking M >> F, where F is a faithfulness constraint violated to satisfy the markedness constraint M. In most cases, alternative ways to satisfy M are possible that do not occur. The minimal ranking to prevent an alternative like this is a partial ordering {M, X} >> F, where X represents a constraint that could be violated to satisfy both F and M. These partial orderings are often disambiguated by evidence from the general patterns of a language, but this is not universally true. The language may simply lack any evidence, in which case the ranking is non-identifiable but not detrimental. In other cases, the language will provide unclear or conflicting evidence; this type of ambiguity can be viewed as detrimental because it prevents the grammar from deciding between candidates.

Phonological exceptions are lexical items that exhibit a surface pattern that conflicts with another, more general one. These are problematic for generative models of phonology, especially classical OT, because they appear to introduce detrimental ambiguity. The solutions for these issues have often resulted in exceptions being treated as extragrammatical, either implicitly or explicitly. In this talk, I demonstrate that exceptions can disambiguate otherwise non-identifiable rankings, based on evidence drawn from exceptions in Mushunguli (Somali Chizigula, ISO [xma]), an endangered and under-described Bantu language. This indicates that exceptions are not extragrammatical; rather, I argue, they play a clarifying and reifying role in the grammar.

Exceptions to coalescence

Mushunguli exhibits a variety of context-sensitive hiatus repairs (Hout 2015). These repairs are robustly attested in multiple morphophonological contexts, but none are exceptionless. One set of exceptions and relevant regular processes are illustrated below (left regular, right exceptional):

(1) *Blocking of coalescence by some i/u-initial roots*

a.	ka+iva → k**e**va	‘(s)he heard’	c.	ka+ita → k**a.i**ta	‘(s)he went’
b.	ku+iva → k^{w}**i**va	‘to hear’	d.	ku+ita → k^{w}**i**ta	‘to go’

The examples in (1a,b) demonstrate that Mushunguli prefers coalescence to resolve /V$_{[+low]}$+V/ hiatus and glide formation to resolve /V$_{[+high]}$+V/ hiatus. Post-consonantal *w* is typically realized as labialization of the consonant, but full glides do surface in /#V+V/ contexts (e.g. **u+**edi → **w**edi; **i**+edi → **j**edi ‘good (cl3; cl4)’). Critically, *deletion* occurs in neither case. Because of this, the minimal ranking to generate the coalescence result in (1a) is {*V.V, MAX-V} >> IDENT[HI]. This is a partial order of the schematic {M, X} >> F type, where MAX-V represents the X constraint.

The exceptions in (1c,d) block coalescence but permit glide formation. Using lexically indexed constraints (Pater 2010), this can be captured by cloning and promoting IDENT[HI] above *V.V (clone denoted with a superscript ^{L}). This promotion *forces* disambiguation of the ranking between *V.V and MAX-V; otherwise no decision can be made between fully-faithful ([a.i^{L}]) and deletion ([Øi^{L}]) candidates for exceptions. Furthermore, to select the correct form, disambiguation must result in an undominated MAX-V (tableau on the right below); otherwise the exceptions are incorrectly predicted to *undergo* deletion (tableau on the left). A significant consequence of this ranking is that vowel deletion is now predicted to be an *impossible* hiatus repair.

/a+i^{L}/	ID[HI]^{L}	*V.V	MAXV	ID[HI]
a.i^{L}		*a.i !		
☹ Øi^{L}			*a→Ø	
e^{L}	*i^{L}→e !			*i^{L}→e

/a+i^{L}/	ID[HI]^{L}	MAXV	*V.V	ID[HI]
☞ a.i^{L}			*a.i	
Øi^{L}		*a→Ø !		
e^{L}	*i^{L}→e !			*i^{L}→e

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How one hiatus exception predicts another

A second set of repairs and exceptions is illustrated below in (2).

(2) */di/→[ɟ] as an alternative to glide deletion for CL5 demonst. prefix and verb 'eat'*

a.	**zi**+etu → z**e**tu	'our (cl10)'	c.	**di**+etu → **ɟ**etu	'our (cl5)'
b.	si+**di**+az+a → si**da**za	'I lost it (cl5)'	d.	ku+**di**+aɲ+a → ku**ɟ**aɲa	'to eat for'

While all other patterns in the language unproblematically support the "no deletion" analysis, the patterns in (2a,b) are problematic. The examples in (1b,d) showed that glide formation applies post-consonantally for /u/, but for /i/ no glide—or vowel, or secondary articulation—surfaces.

Because deletion is independently excluded, we must assume that glide formation is general at some lexical level of the language, and that CC onsets (which includes both *[Cj] and *[Cw]) are disallowed and are repaired at some later level (e.g. for (2a) /zi+etu/ → |zjetu| → [zetu]). The repair for post-consonantal *j* in all regular cases is C deletion (as opposed to labialization for *w*). The minimal ranking required for this is again ambiguous: {*CC, *C^{j}} >> MAX-C, where *C^{j} represents the X constraint prohibiting palatalization.

The exceptions in (2c,d) block deletion, just as the exceptions in (1) block coalescence. This requires indexation of MAX-C, and, again, a ranking disambiguation. However, this is not a simple case of faithfulness preservation; here, when deletion is blocked, palatalization from |dj| → [ɟ] occurs as an *alternative repair*. This means *CC (= M), not *C^{j} (= X), must be undominated; compare the correct ranking in the rightmost tableau below to the incorrect ranking on the left.

|dj^{L}|	MAXC^{L}	*C^{j}	*CC	MAXC
☹ dj^{L}			*dj	
ɟ^{L}		*dj→ɟ!		
dØ^{L}	*j^{L}→Ø!			*j^{L}→Ø

|dj^{L}|	MAXC^{L}	*CC	*C^{j}	MAXC
dj^{L}		*dj !		
☞ ɟ^{L}			*dj→ɟ	
dØ^{L}	*j^{L}→Ø!			*j^{L}→Ø

This type of exception is predicted by all OT-based models of exceptionality but is not commonly attested relative to the simple blocking example exemplified by (1).

Both cases in Mushunguli demonstrate that exceptions can determine otherwise ambiguous rankings, whether they involve blocking or application of an otherwise avoided process. This indicates that the apparently detrimental ambiguity introduced by exceptions is potentially beneficial: exceptions reflect and refine the grammar, rather than undermine it.

Implications of Mushunguli exceptions for models of exceptionality

In their stratified lexicon model of loanword adaptation (a form of exceptionality), Ito & Mester (1995 *et seq.*) have observed that the interleaving of stratally-sensitive faithfulness constraints appears to determine rankings among otherwise unranked markedness constraints. However, these rankings are determined only via transitivity; the constraints involved are typically loosely related at best, if not completely unrelated. This makes it difficult to investigate the consequences of the determined rankings, and so it is unclear whether the "disambiguating" effect is truly informative or simply an inert byproduct of the model. In the Mushunguli case study reported here, all relevant exceptions and regular forms are related by the resolution of hiatus. The consequences of exceptions for the system are thus easier to explore, and the fact that implicational relationships still exist at this level of granularity indicates that exceptions themselves determine rankings.

References: Hout, K. 2015. A lexical indexation account of exceptions to hiatus resolution in Mushunguli. Ito, J. & A. Mester. 1995. The core-periphery structure in the lexicon and constraints on re-ranking. Pater, J. 2010. Morpheme-specific phonology: constraint indexation and inconsistency resolution.