

Deriving coda conditions through the interaction of markedness constraints

It is a basic fact of phonology that many languages that accept syllable codas limit the set of segments that may fill that position. These limitations, called coda conditions (Ito 1988), vary from language to language. Some concern place. The Australian language Lardil allows only coronals in coda position. Others concern sonority. Gumbaynggir bans all obstruents from syllable codas. Previous analyses of coda conditions (Ito & Mester 1993, Prince & Smolensky 1993) have looked to place or sonority, but not both. I propose to account for coda conditions by the conjunction of two constraint hierarchies, one concerning place markedness, and one concerning sonority. I will show that the interpolation of faithfulness constraints into the combined hierarchy yields constraint hierarchies that produce the coda conditions found in Lardil, Gumbaynggir, and many other languages.

A notable aspect of most coda conditions is that they reflect general markedness phenomena. Segments with labial or dorsal place are more marked than those with coronal place. Thus, it follows that Lardil allows only coronal in codas. Likewise, it is no surprise that a coda condition would disallow obstruents, as does that of Gumbaynggir, because codas with higher sonority are less marked than those with lower sonority. To capture these observations, I employ of the constraint hierarchies in (1) and (2).

- (1) PLACE MARKEDNESS: *_[lab/dor] >> *_[cor]
 (2) CODA SONORITY: *_{C/obstruent} >> *_{C/nasal} >> *_{C/approximant}

As noted above, neither place markedness nor coda sonority can alone account for coda conditions. To combine the two hierarchies, I employ the operation of constraint conjunction, proposed in Smolensky 1995 and elaborated in Gafos and Lombardi 1999. This operation combines each constraint from the first hierarchy with a constraint from the second hierarchy, resulting in six constraints, for which two rankings are possible, one that gives priority to place markedness, shown in (3) and another that gives priority to coda sonority, shown in (4).

- (3) PLACE HAS PRIORITY *_{C/obst&[lab/dor]} >> *_{C/nasal&[lab/dor]} >> *_{C/approx&[lab/dor]} >> *_{C/obst&[cor]} >> *_{C/nasal&[cor]} >> *_{C/approx&[cor]}

- (4) CODA SONORITY HAS PRIORITY *_{C/obst&[lab/dor]} >> *_{C/obst&[cor]} >> *_{C/nasal&[lab/dor]} >> *_{C/nasal&[cor]} >> *_{C/approx&[lab/dor]} >> *_{C/approx&[cor]}

Languages employ one or the other constraint hierarchy. Different coda conditions emerge from the ranking of faithfulness, so that the constraint ranking is (5), in which FAITH ranked in between the third and fourth constraints of the hierarchy in (3), can account for the coda condition of Lardil.

- (5) *_{C/obst&[lab/dor]} >> *_{C/nasal&[lab/dor]} >> *_{C/approx&[lab/dor]} >> FAITH >> *_{C/obst&[cor]} >> *_{C/nasal&[cor]} >> *_{C/approx&[cor]}

The Lardil form *ɛɾw* is derived from the underlying form *ɛɾwɪm*. In the attached tableau A, C/&[LAB/DOR] and C/&[COR] stand for portions of the hierarchy. Candidates (b) and (c) fail because they violate high ranked faithfulness constraints. The faithful candidate (a) is suboptimal because the constraint banning labial and dorsal obstruents is ranked higher than Max-IO. Though candidate (d) violates MAX-IO, it emerges as the winning candidate.

The hierarchies in (5) and (6) are two of fourteen rankings that are produced by the reranking of FAITH. Of the twelve remaining possible rankings, four can be eliminated because of redundancy and other markedness considerations. Of the remaining eight, seven of the hierarchies predict coda conditions that are attested in the world's languages. Thus, I have shown that diverse coda conditions can be explained by the interaction of basic markedness phenomena: coda sonority and place markedness. Further, this optimality theoretic account also predicts a typology of coda conditions, the majority of which are attested.

TABLEAU A: Lardil

/Pcrwm/	DEP-IO	IDENT(PLACE)	C/∫[LAB/DOR]	MAX-IO	C/∫[COR]
a. Pcrwm			*!		
b. Pcrw t		*!			*
c. Pcrwk A	*!				
∫ d. Pcrw <k>				*	

References

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