

## Chain-shifting Mutation in Irish and Multi-valued Features

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Cases of “quirky” (phonologically non-uniform) consonant mutation have led many researchers to stipulate mutation-specific rules and constraints (Lieber, 1992; Zoll, 1996; Wolf, 2005a, 2005b) or to attribute mutation to a basically unrestricted morphology component (Green, 2005; Iosad, 2006, 2007, 2008). In this talk, I show, using data from Irish, that one substantial subtype of quirky mutation, chain-shifting mutation (Gnanadesikan, 1997), receives a straightforward interpretation as affixation under the multi-valued feature model of sonority and stricture features proposed for independent reasons by de Lacy (2002).

**Problem:** In the “eclipsis” type of Irish consonant mutation (Pullman, 2004 and references cited there), specific morphological contexts trigger a change of root-initial voiceless stops (fricatives) to voiced stops (fricatives), and of voiced stops to nasals (1a). Under standard assumptions on feature inventories and possible OT-constraints, this cannot be captured by assuming a mutation morpheme containing the floating features [+nasal] and [+voiced] since a faithfulness constraint ensuring preservation of [+nasal] for roots starting with voiced stops should also effect its realization for roots starting with voiceless stops (\* /pkt/ → /mɲn/). The phonological change triggered by eclipsis is quirky/non-uniform because it cannot be characterized by a natural class of features, but systematic in that it chain-shifts: Every mutated sound is transformed into a more sonorous sound.

(1) a. **Eclipsis**

p	k	t
b	g	d
f		s
v		
m	ŋ	n

b. **Representation of Sonority**

<b>Voiceless Stops:</b>	son:x
<b>Voiced Stops:</b>	son:xx
<b>Voiceless Fricatives:</b>	son:xxx
<b>Voiced Fricatives:</b>	son:xxxx
<b>Nasals:</b>	son:xxxxx

**Theoretical Background:** de Lacy (2002) argues independently, based on a general theory of scale-effects in markedness constraints, for a grid-like representation of sonority where the sonority scale is directly incorporated into phonological features as in (1b), and more sonorous segments contain more grid marks.

**Analysis:** Under this approach, the eclipsis morpheme can be represented as a prefix consisting of a defective segment (Zoll, 1996) which fuses obligatorily with the root-initial consonant and is specified (among other features) as [son:x]. The high-ranked constraint MAX  $x_{\text{son}}$  ensures that for every instance of a sonority grid mark in an input segment there is a grid mark in the corresponding output segment such that fusion with the defective segment leads in effect to shifting the sonority value by one. The ranking of faithfulness constraints for other features sanctions concomitant voicing and nasalization, but blocks fricativization for the given input which forces epenthesis of an additional sonority element for root-initial voiced stops resulting in a two-step sonority shift to nasals. The same type of analysis extends naturally to the second major mutation type in Irish (“Lenition”) where (drastically simplifying) nasals and stops spirantize, and fricatives debuccalize or delete. This can be derived if stricture is represented in a similar way as (1b) assuming a three-way contrast between nasals/stops ([stric:x]), fricatives and approximants ([stric:xx]) and glottal consonants ([stric:xxx]), and a mutation affix containing [stric:x].