The need for indexed markedness constraints: evidence from spoken Persian

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Since the advent of Optimality Theory (Prince and Smolensky 1993/2004), there have been proposals that only faithfulness constraints can be indexed to account for exceptions (Fukazawa 1999, Itô and Mester 1999, 2001, among others). However, this paper, as the first OT account of pre-nasal vowel raising in spoken Persian (Sadeghi 2001, Miller 2011, Rohany 2012), shows that both indexed faithfulness and markedness constraints (Pater 2000, 2010 and Jurgec 2010) are required to account for exceptional blocking and triggering of a process.

To account for the exceptions, it is required to know the default pattern: in spoken Persian (SP), *a* raises to *u* when it immediately precedes a nasal consonant (1 & 2). Hence, configurations [ɑn] and [ɑm] are avoided, which is the effect of the markedness constraints *ɑn and *ɑm that outrank the faithfulness constraint ID(LO). But the *am* sequence resists raising in two prominent positions (Beckman 1998): in monosyllabic words (3) and in multisyllabic items with *a* and *m* in separate syllables (4). To account for blockage in monosyllabic and multisyllabic words, I introduce two positional faithfulness constraints of $\text{ID(LO)}/(\sigma)_w$ and $\text{ID(LO)}/\_]_\sigma$, respectively. They outrank *ɑm, but not *ɑn since the *an* sequence undergoes raising in these two environments (5 & 6). Thus, *ɑn outranks the faithfulness constraints and by transitivity dominates *ɑm. This results in the argument ranking of *ɑn >> $\text{ID(LO)}/\_]_\sigma$, $\text{ID(LO)}/(\sigma)_w$ >> *ɑm >> ID(LO).

(1) /rɑn/→[run] ‘leg’ (2) /bɑdɑm/→[bɑdum] ‘almond’ (3) /xɑm/→*[xum] ‘raw’
(4) /æ.lɑ.mæt/→*[æ.lu.mæt] ‘sign’ (5) /ne.ʃɑ.ne/→[ne.ʃu.ne] ‘sign’ (6) /nɑn/→[nun] ‘bread’

The above argument ranking accounts for the regular pattern and not exceptions which cause ranking paradoxes. To account for exceptions, we need both indexed faithfulness and markedness constraints as SP has two different classes of exceptional blocking and triggering of pre-nasal raising. Class 1 includes words that do not have any blockers for raising and should undergo the process but don’t (7 & 8). In the default situation *ɑn and *ɑm dominate ID(LO), but the class 1 words, with exceptional resistance to raising, require that ID(LO) dominate *ɑn and *ɑm. To resolve this ranking paradox, the undominated indexed faithfulness constraint ID(LO)_k is introduced (11a). Class 2 includes words that due to the existence of blockers should not undergo raising but do (9 & 10). Class 2 items show a ranking paradox as in regular situation, $\text{ID(LO)}/\_]_\sigma$ and $\text{ID(LO)}/(\sigma)_w$ dominate *ɑm. Yet, the mapping in (9) with exceptional raising requires that *ɑm dominate $\text{ID(LO)}/(\sigma)_w$. Likewise, exceptional raising in (10) entails that *ɑm dominate $\text{ID(LO)}/\_]_\sigma$. This is where we need an indexed markedness constraint for such exceptions; thus, I introduce the undominated indexed markedness constraint $*\text{ɑm}_j$ to account for exceptional triggering of raising in class 2 words (11b). The updated argument ranking with indexed constraints is shown in (11).

(7) /sæ.lɑm/→[sæ.lɑm], *[sæ.lum] ‘hello’ (8) /dɑstɑn/→[dɑstɑn], *[dɑstun] ‘story’
(9) /bɑm/ →[bum], *[bɑm] ‘roof’ (10) /ɑ.mæd/→[u.mæd], *[ɑ.mæd] ‘came’

(11)

		$*\text{ɑm}_j$	ID(LO)_k	*ɑn	$\text{ID(LO)}/\_]_\sigma$	*ɑm	ID(LO)
a. /dɑstɑn$_k$/	☞[dɑstɑn]	n.a		*	n.a.	n.a	
	[dɑstun]	n.a	*!		n.a.	n.a	*
b. /ɑ.mæd$_j$/	☞[u.mæd]		n.a	n.a	*		*
	[ɑ.mæd]	*!	n.a	n.a		*	

Consequently, this study shows that to account for exceptions, in addition to indexed faithfulness constraints for exceptional blocking of a process, indexed markedness constraints are required to account for the exceptional triggering of that process. Thus, it is through both types of indexed constraints that a unified grammar can be presented which is able to account for exceptions and regular patterns.

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