Phonological Opacity and Icelandic Preaspiration

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It is a well-known fact of Icelandic phonology that, when followed by a sonorant, a stop loses its aspiration. However, there are two patterns. When followed by /l, n, m/, a stop surfaces with 'preaspiration', i.e. as a sequence of [h] + plain stop (1). When followed by /j, v, r/, the result is a plain stop preceded by a long vowel (2). The most promising approaches to this problem have attributed the difference between (1) and (2) to differences in syllabification, due to language-specific constraints on syllable contact (Vennemann, 1972; Gouskova, 2004). I propose that, in addition to syllable structure, a crucial factor in accounting for (1) and (2) are the phonological patterns of aspiration as well as stress.

The distribution of Icelandic aspirated stops is highly restricted: they only surface word-initially (3). In other positions they either lose their aspiration (with concomitant vowel lengthening) (4), spirantize (5), or surface as [h] + plain stop (6) (phonetic studies have shown that Icelandic 'preaspiration' has the duration of a full segment and therefore forms a consonant cluster with the following stop (Thráinsson, 1978)). The relevant generalization is that aspirated stops cannot appear in the coda or after another consonant. Next, Icelandic may not have complex codas. Intervocalic triconsonantal clusters are syllabified, if possible, as a coda + complex onset, as in (8-a), but are simplified when the last two consonants cannot form a permissible onset (8-b). It is evidently better to delete a consonant than to syllabify it with a preceding consonant to form a complex coda. Finally, aspiration is closely related to stress. Stress is word-initial in Icelandic and stressed syllables are bimoraic. Moreover, underlying aspiration can only surface within the stressed syllable; as a fricative in (5), as [h] in (6) or as aspiration on a sonorant in (7). Crucially, the occurrence of vowel length in (4) and of [h] in (6) is driven by the requirement that the stressed syllable be bimoraic.

We now return to the difference between (1) and (2). According to Vennemann (1972) and Gouskova (2004), only clusters that are relatively close in sonority can remain heterosyllabic in the output, as in (9-a), but not clusters in (9-b) which are further apart in sonority, as in Table 1. However, their analysis posits a complex coda in (9-a) which, as we have shown, goes against the phonotactic principles of the language. In fact the only possible surface syllabification is as in (10). In OT terms, the difference between (1) and (2) should arise because the two syllable contact constraints rank differently relative to other constraints. In (11) the ranking NLV >> INTEGRITY selects the 'preaspirated' candidate as the winner. In (12), however, this ranking fails to select the right winner, which should be (12-c). In fact for (12-c) to win, the reverse ranking is required, INTEGRITY >> NLV. Therefore, I conclude that the difference between (1) and (2) cannot be captured in terms of the standard OT but calls for a multi-leveled framework such as OT-CC (McCarthy, 2007).

I argue that (1) and (2) are indeed different due to syllable contact. While this is not reflected in the surface structure it is reflected in the intermediate stages of the derivation. In sum, accounting for this case calls for complex interactions of several different aspects of the Icelandic phonological system.

(1) *epli* /ep^{h}lɪ/ [ɛhplɪ] ‘apple’

(2) *lepja* /lep^{h}ja/ [lɛɛpja] ‘drink’

(3) *tapa* /t^{h}ap^{h}a/ [t^{h}aa.pa] ‘lose’

(4) *lepja* /lep^{h}ja/ [lɛɛ.pja] ‘drink’
tapa /t^{h}ap^{h}a/ [t^{h}aa.pa] ‘lose’

(5) *vakta* /vak^{h}t^{h}a/ [vax.ta] ‘watch’

(6) *epli* /ep^{h}lɪ/ [ɛh.plɪ] ‘apple’
hoppa /hop^{h}p^{h}a/ [hɔh.pa] ‘hop’

(7) *vanta* /vant^{h}a/ [van̥.ta] ‘lack’

(8) a. *vestra* /vest^{h}ra/ [vɛs.tra] ‘in the west’
b. *systkin* /sɪst^{h}k^{h}ɪn/ [sɪs.cɪn] ‘siblings’

(9) a. *epli* /ep^{h}lɪ/ [ɛhp.lɪ]
b. *lepja* /lep^{h}ja/ [lɛɛ.pja]

(10) a. *epli* /ep^{h}lɪ/ [ɛh.plɪ]
b. *lepja* /lep^{h}ja/ [lɛɛ.pja]

(11)

/ep^{h}lɪ/	*Dist+5	StressToWeight	NoLongVowel	*ComplexCoda	*Dist+4	Integrity
a. ☞ ɛh.plɪ						*
b. ɛp^{h}.lɪ					*!	
c. ɛɛ.plɪ			*!			
d. ɛ.plɪ		*!				
e. ɛhp.lɪ				*!	*	*

(12)

/lep^{h}ja/	*Dist+5	StressToWeight	NoLongVowel	*ComplexCoda	*Dist+4	Integrity
a. ☞ lɛh.pja						*
b. lɛp^{h}.ja	*!				*	
c. ☹ lɛɛ.pja			*!			

0			*+1*			*+2*			*+3*		*+4*			*+5*	*+6*	
p^{h}	t^{h}	k^{h}	s	p	t	k	f	θ	x	ɣ	ð	m	n	l	r	v	j

Table 1: Proposed sonority hierarchy for Icelandic.

References

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