DECONSTRUCTING A CONSPIRACY IN ICELANDIC*

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1. Introduction

The concept of conspiracy, first proposed by Kisseberth (1970), has been a topic of discussion in phonological theory over the last decade or so. Calabrese (2005, 22), who proposes a constraints-and-repairs model, describes conspiracies as follows: "In the case of a conspiracy, a variety of different phonological processes have in common the avoidance of a given configuration." McCarthy (2002, 26, 95), proposing an Optimality Theoretic (OT) approach, refers to conspiracies as "homogeneity of target/heterogeneity of process." In both models, the configuration to be avoided, or the "target," is stated as a negative constraint. For example, Calabrese (2005: 25, simplified) states "avoid vowel hiatus" as *V_1 V_2 ($V_1 \neq V_2$). Several processes may function to "repair" the starred configuration. In Chicano Spanish, vowel hiatus is resolved by glide formation (*mi ultima* → [myultuma] 'my last') or by vowel deletion (*esta hija* → [estixa] 'his daughter') (examples from Calabrese 2005: 75–76). Repairs are predicted by independently needed constraints—in OT, by ranked, violable constraints, and in Calabrese's model, by ranked repair operations together with inviolable constraints.

Ringen (1999) analyzes Preaspiration and Spirantization in Icelandic in an OT framework. (Ringen includes other processes in her analysis, but I will focus here on Preaspiration and Spirantization.) I will show that a process of Irregular Vowel Lengthening in Icelandic presents problems for OT analyses, including Pater's (2006) theory of morpheme-specific phonology and McCarthy's (2005) Optimal Paradigms model, and also for Calabrese's (2005) constraints-and-repairs model. I will suggest that a conspiracy approach is not a fruitful way to look at Preaspiration and Spirantization and that they may be better viewed as rules within a derivational framework.

2. An OT Analysis

2.1 Preaspiration and Spirantization

The underlying consonant inventory of Icelandic is given in (1). Orthographic symbols are in parentheses in italics. Orthographic representations will be given

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in italics in the text.

(1) Underlying consonant inventory of Icelandic (adapted from Gibson 1997)

	Labial	Coronal	Palatal	Velar	Glottal
Aspirated voiceless stops	p^h (*p*)	t^h (*t*)		k^h (*k*)	
Unaspirated voiceless stops	p (*b*)	t (*d*)		k (*g*)	
Voiceless fricatives	f (*f*)	θ (*þ*), s (*s*)			h (*h*)
Voiced fricatives	v (*v*)	ð (*ð*)			
Nasals	m (*m*)	n (*n*)			
Liquids		l (*l*), r (*r*)			
Glides	w (*v*)		j (*j*)		

Aspiration or [spread glottis] ([SG]) is distinctive in Icelandic. Stops contrast for [SG]; stops are uniformly voiceless (2). A contrast for [SG] between vowels (2b) can be found in the northern dialect, which allows non-word-initial aspirated stops (see (3)). The paired words with unaspirated stops are loanwords, since intervocalic (underlying) unaspirated stops are geminate in native words (see (9)). Examples in (2b) are from Rögnvaldsson (1989: 28, 29).

(2) a.

panna	[p^hanːa]	'pan'	banna	[panːa]	'forbid'
tala	[t^haːla]	'speak'	dala	[taːla]	'valley (gen pl)'
kaldur	[k^haltʏr]	'cold'	galdur	[kaltʏr]	'magic'

b.

Northern dialect			*Loanwords*		
hopa	[hɔːp^{h}a]	'retreat'	túba	[t^{h}uːpa]	'tuba'
lita	[lɪːt^{h}a]	'colour'	Skódi	[skouːtɪ]	'place name'
reka	[rɛːk^{h}a]]	'drive'	sígaretta	[siːkarɛhta]	'cigarette'

Word-initial [SG] stops are aspirated in all dialects. Non-word-initial [SG] stops are unaspirated in the Southern dialect, but not in the Northern dialect (3). I assume, following Thráinsson (1978) and others, that aspiration ([SG] is underlying in both dialects. In this paper, for the sake of clarity, I will cite phonetic representations from the Northern dialect.

(3)

		Southern	Northern	
a.	api	[aːpɪ]	[aːp^{h}ɪ]	'ape'
b.	hata	[haːta]	[haːt^{h}a]	'to hate'
c.	loka	[lɔːka]	[lɔːk^{h}a]	'to close'

Aspirated stops occur in syllable onsets, word-initially (4a) and word-medially (4b), except after voiceless consonants (4c).[1]

(4)	a.	prófa	[pʰrou:vɑ]	'to examine'
		trú	[tʰru:]	'belief'
	b.	apríl	[ɑ:pʰril]	'April'
		akrar	[ɑ:kʰrɑr]	'fields'
	c.	spara	[spɑ:rɑ]	'to save'

Vowel length is the diagnostic for syllable divisions, such as those in (3) and (4). Vowel length is predictable and dependent on stress. The first syllable of the word carries the primary stress; a primary stressed syllable is heavy and maximally bimoraic (the second vocalic mora cannot branch). Thus, the syllable rhyme has the shape in (5a). A word-final consonant is extrametrical (but compare footnote 1), giving a stressed monosyllable the shape in (5b).

(5) a. Primary stressed syllable: VV; VC; VCC; *VVC; *VVCC
b. Stressed monosyllable: VVC#, VCC#, *VC#
tal [tʰɑ:l] 'speech', *tals* [tʰɑls] (gen.sg.)
lív [li:v] 'life', *lifs* [lifs] (gen.sg.)

The effect of (5) is that vowels are long in primary-stressed open syllables, and short in closed syllables. Examples of syllabification are given in (6) and (7); syllable divisions are marked by a period.

(6) a. (C)V:.{p,t,k,s}{v,j,r}

b.	nepja	[nɛ:.pʰjɑ]	'coldness'
	vitja	[vɪ:.tʰjɑ]	'to visit'
	vekja	[vɛ:.kʰjɑ]	'to awaken'
	vökva	[vœ:.kʰvɑ]	'to water'
	flysja	[flɪ:.sjɑ]	'to peel'

(7) a. (C)VC(C).CV(C) (where CC is not a sequence specified in (6a))

b.	elda	[ɛl.tɑ]	'to cook'
	belja	[pɛl.jɑ]	'to bellow'
	hylmdi	[hɪlm.tɪ]	'concealed' (*hylma* 'to conceal')

Turning now to Preaspiration and Spirantization, Preaspiration applies to

[1] Aspirated stops can also occur word-finally, as in *lok* [lɔ:kʰ] 'end' ([lɔ:k] in the Southern dialect). The final stop may be analyzed as an onset of a degenerate syllable. For examples and discussion, see Jónsson (1994).

geminate aspirated stops (8). (For convenience, I represent underlying forms of both non-derived and derived forms with aspirated stops, but I do not take a theoretical position on these representations.)

(8) Preaspiration: geminate *p*, *t*, *k*

a. *Non-derived forms*

kappi	[kʰɑhpɪ]	/kʰɑpʰpʰɪ/	‘hero’
hatt	[hɑht]	/hɑtʰtʰ/	‘hat’ (acc.sg.)
þakka	[θɑhkɑ]	/θɑkʰkʰɑ/	‘thank’

b. *Derived forms*

adj fem. sg.	*adj. neut. sg.*	
feit [feiːtʰ]	feitt [feiht] /feitʰ + tʰ/	‘fat’
ljót [ljouːtʰ]	ljótt [ljouht] /ljoutʰ + tʰ/	‘ugly’

verb infinitive	*verb past*	
mæta [mɑiːtʰɑ]	mætti [mɑihtɪ] /mætʰ + tʰ + ɪ/	‘meet’
nýta [[niːtʰɑ]	nýtti [nihtɪ] /nitʰ + tʰ + ɪ/	‘utilize’

Geminate stops are allowed, but only if they derive from unaspirated stops (9).

(9)

a.	kobbi	[kʰɔpːɪ]	‘young seal’
b.	haddur	[hɑtːʏr]	‘hair (poetic)’
c.	bagga	[pɑkːɑ]	‘pack (oblique)’

Preaspiration applies also to aspirated stops preceding *l*, *m*, or *n* (10).

(10) a. *Non-derived forms*

epli [ɛhplɪ] /ɛpʰlɪ/ ‘apple’ opna [ɔhpnɑ] /ɔpʰnɑ/ ‘open’

ekla [ɛhklɑ] /ɛkʰlɑ/ ‘scarcity’ vakna [vɑhknɑ] /vɑkʰnɑ/ ‘awaken’

rytmi [rɪhtmɪ] /rɪtʰmɪ/ ‘rhythm’ (Rögnvaldsson 1986, 26)

b. *Derived forms*

pípa [pʰiːpʰɑ] ‘fem.sg.’	pípna [pʰihpnɑ] /pʰipʰ+nɑ/ gen.pl.‘pipe’
gata [kɑːtʰɑ] ‘fem.sg.’	gatna [kɑhtnɑ] / kɑtʰ+nɑ/ gen.pl. ‘street’
depill [tɛːpʰɪtl̥] ‘m.sg.’	deplar [tɛhplɑr] /tɛpʰɪl+ɑr/ ‘nom.pl.’ ‘dot’
jökull [jœkʰʏtl̥] ‘m.sg.’	jöklar [jœhklɑr] /jœkʰʏl+ɑr/ ‘pl’ ‘glacier’

The effect of Preaspiration is to split an aspirated stop in the syllable coda into aspiration or [h] followed by an unaspirated stop. This is shown more clearly in the schematization in (11) (not meant as a formal analysis).

(11) Preaspiration (Obligatory) (Syllable divisions are marked by a period.)

a. input: $\breve{V}C^h_i.C^h_j$ $(C^h_i = C^h_j)$ $(C^h_{i,j} = \{p^h, t^h, k^h\})$

output: $\breve{V}h.C_j$

b. input: $\breve{V}C^h_i.\{l, m, n\}$ $(C^h_i = \{p^h, t^h, k^h\})$

output: $\breve{V}hC_i.\{l, m, n\}$

Spirantization applies to aspirated *p* and *k* preceding a non-identical aspirated stop, and turns the *p* or *k* into the homorganic fricative (12).[2]

(12) a. *Non-derived forms*

snökta [snœxtɑ] 'to sob' (*snökt* 'sob')

september [sɛftɛmpɛr] 'September'

b. *Derived forms*

gleypti [kleiftɪ] (past) gleypa [klei:p^{h}ɑ] 'swallow'

vakti [vɑxtɪ] (past) vaka [vɑ:k^{h}ɑ] 'be awake'

tæpt [t^{h}aift] (neut) tæpur [t^{h}ai:p^{h}ʏr] 'uncertain'

djúpt [tjuft] (neut) djúpur [tju:p^{h}ʏr] 'deep'

dýpka [tifkɑ] 'deepen' (djúp + ka) (djúpur [tju:p^{h}ʏr] 'deep')

(cf. blíðka [pliðk^{h}ɑ] 'soften' (blíð 'mild' + -k + -a)

dýpkun [tifkʏn] /tip^h + k^{h}ʏn / (djúp + kun) 'deepening'

Spirantization does not apply to *t* (13) (Rögnvaldsson 1986, 36).[3]

(13) vits (vit + s) 'intelligence (gen.sg.)' [vɪts] *[vɪθs] (KMJ)

Spirantization is represented schematically in (14).

(14) Spirantization (Obligatory) (Syllable divisions are marked by a period.)

input: $\breve{V}\ C^h_i.C^h_j$ $(C^h_i \neq C^h_j)$ $(C^h_i = \{p^h, k^h\})$

output: $\breve{V}\ F.\ C_j$ (If $C^h_i = p^h$, F = [f]; If $C^h_i = k^h$, F = [x])

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[2] Unaspirated stops may also spirantize before stops in some contexts, as in *byggt* [pɪxt] /pɪk:+t^h/'built,' past participle neuter singular of *byggja* [pɪk$_j$:ɑ] /pɪk:+j+a/ 'to build.' This would not be a problem for Ringen's analysis, but it would pose a problem for constraint (39) proposed in section [3].

[3] The failure of *t* to spirantize before *s* may be due to a constraint against the sequence [θs]; compare *baðs* 'bath, gen.sg.' [pɑðs], *[pɑθs]. We will see in section 3 that [t^h] can spirantize to [θ] dialectally in *tk* clusters.

Ringen (1999) develops an OT account of Preaspiration and Spirantization. She proposes the "driver" constraint (15).

(15) *µptk[sg] Obstruent stops that are [spread glottis] may not be moraic. (Ringen 1999)

The stops that are affected by Preaspiration and Spirantization are in a position to receive a mora by Weight by Position; that is, they are postvocalic in the syllable rhyme, as can be seen in the schematizations in (11) and (14). (I am not considering here the deaspiration of the second onset consonant in (11a), which can be viewed as a regular deaspiration of stops after voiceless obstruents, as in *spara* (4c).) Ringen assumes the moraic theory of geminates (Hayes 1989), by which the geminate stops in (11a) are moraic in underlying representation and must be deconstructed in the output so that the mora is on the [h] and not on the stop. Other constraints in Ringen's analysis are in (16).

(16) a. ID-IOobs[sg] (Correspondent input and output obstruents must have the same specification for [spread glottis])

b. IdentIOµ (Correspondent consonants must have identical numbers of moras in the input and output.)

c. Multiple Link[sg] ([spread glottis must be linked to more than one consonant)

d. Dep Root (Do not insert root nodes)

e. ID-IO(f) (Correspondent input and output segments have identical specifications for all features)

f. *n̥, m̥, l̥ (Nasals and l may not be [spread glottis].)

The constraints are ranked as in (17), with (15) highly ranked.

(17) *µptk[sg] >> ID-IOobs[sg] >> ID-IOµ >> MultiLink >> *n̥, m̥, l̥ >> Dep Root >> ID-IO(f)

Due to lack of space, I will not illustrate Ringen's analysis, which however does account for the cases of Preaspiration and Spirantization.

2.2 Spirantization before *s*

Stops also spirantize before *s*, which is the only fricative that occurs in sequences of aspirated stop followed by a fricative. Strong masculine and neuter nouns and adjectives ending in *p* or *k* optionally spirantize before the genitive singular ending *-s*. In addition, the stem vowel may lengthen before an

unspirantized *p*, *t*, or *k*. In the dialect represented in (18), spirantization and vowel lengthening are the only options for the stem ending in *k*.

(18) Long vowel before genitive -*s* (from Kristinsson 1982: 34)

a.	*laks* (lak + s) /lɑk^{h}+s/ (gen.sg.n.)	[lɑxs]	*[lɑks]	[lɑ:ks]
b.	*lags* (lag + s) /lɑk+s/ (gen.sg.n.)	[lɑxs]	[lɑks]	*[lɑ:ks]
c.	*lak*	[lɑ:k]	/lɑk^{h}/	nom.sg.n. ‘bedsheet’ (southern dialect)
d.	*lag*	[lɑ:ɣ]	/lɑk/	nom.sg.n. ‘layer’

In (18), the stem-final stop can spirantize in both *laks*, with stem-final aspirated stop, and *lags*, with stem-final unaspirated stop.[4] In the variant where spirantization does not apply, only *laks* allows a long vowel (and requires it in this dialect). The long-vowel form is not possible for *lags*. Notice that *laks* and *lags* have the same syllable structure, as well as the same morphological structure, both being comprised of stem + -*s*. The only way they differ is in the final stop of the stem, which is aspirated underlyingly in *laks*, but not in *lags*. This suggests that it is the aspiration ([SG]) on the *k* that forms the conditioning environment for the vowel lengthening.

Strong masculines and neuters with stem-final *p* and *t* also allow a long vowel before genitive -*s* (19, 20). Stem-final *p* and *k* (but not *t*, compare footnote 3) may also spirantize before *s*. The vowel may be short before the stop in some dialects, giving three variants for stems ending in *p* and *k*. Examples in (19a, b) are from Gíslason and Þráinsson (2000: 80–81, 185).[5]

(19)

a.	*skips*	[sk$_{j}$ɪ:ps]	[sk$_{j}$ɪps]	[sk$_{j}$ɪfs]	(skip+s) ‘ship (gen.sg.)’
b.	*þaks*	[θɑ:ks]	[θɑks]	[θɑxs]	(þak+s) ‘roof (gen.sg.)’

(20) *vits* [vɪ:ts] (APK) [vɪts] (KMJ) *[vɪθs] (APK, Rögnvaldsson (1986: 36)) (vit+s) ‘intelligence (gen.sg.)’[6]

The long stem vowel occurs only in stems ending in *p*, *t*, *k* followed by genitive -*s*. The forms in (21) do not allow a long stem vowel before the stop.

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[4] I assume that final /k/ in *lag* is spirantized word-finally ([lɑ:ɣ]) and between vowels (*laga* [lɑ:ɣɑ]) ‘genitive plural’). This spirant is palatalized before the dative singular –*i* (*lagi* [lɑ:jɪ]).

[5] Gíslason and Þráinsson (2000: 185) cite a variant [θɑ:k^{h}s] for *þaks* in the northern dialect. Gunnar Ólafur Hansson (p.c.) has commented that aspirating the stop in this form before *s* is probably implausible on articulatory grounds.

[6] In *báts* [pɑus:] (/pɑut^{h} + s/), genitive singular of *bátur* [pɑu:t^{h}ʏr] ‘boat’, the *t* of the stem totally assimilates to *s*. I consider this different from the spirantization before *s* discussed above. The assimilation in *báts* is total rather than partial. Furthermore, this total assimilation may be limited to frequent lexemes (Gíslason and Þráinsson 2000: 85). For *báts*, three variants are possible: [pɑu:ts], [pɑuts], [pɑus:] (Árnason 1980: 233).

(21) a. lax ‘salmon’ [lɑxs] [lɑks] *[lɑ:ks] (Kristinsson 1982: 36)
öxull ‘axis’ [œxsʏtl̥] [œksʏtl̥] *[œ:ksʏtl̥] (Kristinsson 1982: 36)

b. tókst ‘took (pret.2sg)’ [t^{h}ouxst] [t^{h}oukst] *[t^{h}ou:kst] (APK)
(tók ‘took (pret) + -st ‘2 sg. pret’)
mýkstur ‘softest’ [mixstʏr] [mikstʏr] *[mi:kstʏr] (APK)
(mjúk- ‘soft’ + -stur ‘superlative’)
dýpstur ‘deepest’ [tifstʏr] [tipstʏr] *[ti:pstʏr] (APK)
(djúp- ‘deep’ + -stur ‘superlative’)

Other consonant-final stems with genitive *-s* have a short stem vowel (22).

(22) a. *tals* (gen.sg.) [t^{h}ɑls] *[t^{h}ɑ:ls] *tal* [t^{h}ɑ:l] ‘speech’
b. *lifs* (gen.sg.) [lifs] *[li:fs] *lív* [li:v] ‘life’
c. *dóms* (gen.sg.) [toums] *[tou:ms] *dómur* ‘judgment’

2.3 *tk* Clusters

Clusters of *tk* are found in a few words, such as *notkun* ‘use’ and *litka* ‘to colour.’ (*t* does not occur in clusters before *p*.) These words have a long stem vowel in the southern dialect (23).

(23) a. notkun ‘use (m.sg.)’ [nɔ:tkʏn] (APK, ER)
(*not*- ‘use’+ *k* ‘inchoative’ + *-un* ‘nominalizer’)
b. litka ‘to colour’ [lɪ:tkɑ] (APK)
(*lit*- ‘colour’ + *k* ‘inchoative’ + *a* ‘infinitive’

2.4 Vowel Length in Icelandic: Benua (1995)

Benua’s (1995) OT account of vowel length in Icelandic assumes the constraints in (24a–c), ranked in (24d).

(24) a. Stress-to-Weight (S → W) “If stressed, then heavy.”
b. No-Long-V (*VV) “no long vowels”
c. Ident-IO(v-length)
d. (S → W) >> (*VV) >> Ident-IO(v-length)

Benua assumes that coda consonants are moraic in Icelandic. In the tableau in (25), the stressed vowel is heavy in all candidates, satisfying S → W. The decision falls to the next constraint in the ranking, *VV, which ensures that a closed syllable with a long vowel is not optimal when there is a closed syllable available that has a short vowel. Thus, the (b) and (c) candidates with long vowels in the first (stressed) syllable are rejected in favour of the (a) candidates.

(25) ham.ra ‘to hammer’ (based on Benua 1995, 95)

Input	Output	S → W	*VV	ID-IO(v-length)
/hɑm.rɑ/	☞ a. hɑm.rɑ			
	b. hɑɑm.rɑɑ		**!	**
	c. hɑɑm.rɑ		*!	*
/hɑɑm.rɑɑ/	☞ a. hɑm.rɑ			**
	b. hɑɑm.rɑɑ		**!	
	c. hɑɑm.rɑ		*!	*

In (26) and (27), I apply Benua’s analysis to the long-vowel pronunciations of *laks* (18a) and *notkun* (23a). Tableaux are based on Benua with constraints from Ringen. The constraints select only the regular short-vowel candidates, but not the desired irregular long-vowel candidates.

(26) *laks* [lɑ:ks] ‘bedsheet (gen.sg.)’ ([ɑɑ] = long [ɑ]) *[lɑks] is optimal candidate (☛ is optimal but incorrect output; ☹ is desired output)

Input	Output	S → W	*VV	*µptk[sg]	ID-IOobs[sg]	ID-IO(v-length
/lɑk^{h}+s/	a. lɑk^{h}s			*!		
	☛ b. lɑks				*	
	c. lɑɑk^{h}s		*!	*		*
	☹ d. lɑɑks		*!		*	*

(27) *notkun* [nɔ:tkʏn] ‘use’ ([ɔɔ] = long [ɔ]) *[nɔtkʏn] is optimal candidate (☛ is optimal but incorrect output; ☹ is desired output)

Input	Output	S → W	*VV	*µptk [sg]	ID-IOobs [sg]	ID-IO (v-length)
/ nɔt^{h}k^{h}ʏn/	a. nɔt^{h}kʏn			*!	*	
	☛ b. nɔtkʏn				**	
	c. nɔɔt^{h}kʏn		*!	*	*	*
	☹ d. nɔɔtkʏn		*!		**	*

2.5 Morpheme-Specific Phonology (Pater 2006)

Pater (2006) proposes a model that accounts for lexical exceptions by encoding the exceptional structure in the underlying form. A lexically indexed faithfulness constraint ranked over the relevant markedness constraint forces that structure to be kept in the output. We could account for the exceptional long-vowel *-s* genitives in Icelandic with the lexically indexed constraint, ranking and underlying forms in (28). The index L applies to (28a) and the stems in (28c).

(28) a. Ident-IO(v-length)-L
b. Ident-IO(v-length)-L >> (*VV) >> Ident-IO(v-length)
c. *notkun* /nɔɔt$^{h}_{L}$ + k^{h}ʏn/ ‘use’; *lak* /lɑɑk$^{h}_{L}$/ ‘bedsheet’
d. *dýpkun* /tip^{h} + k^{h}ʏn / ‘deepening’; *lag* /lɑk/ ‘layer’

The tableaux in (29) and (30) show the desired outputs. ([SG] faithfulness constraints, not shown, are lower ranked.)

(29) *laks* [lɑ:ks]; *lags* [lɑks] ([ɑɑ] = long [ɑ])

Input	Output	S → W	ID-IO(v-length)-L	*VV	ID-IO(v-length)
/lɑɑk$^{h}_{L}$ + s/	☞ a. lɑɑks			*	
	b. lɑks		*!		*
/lɑk+s/	a. lɑɑks			*!	*
	☞ b. lɑks				

(30) *notkun* [nɔ:tkʏn]; *dýpkun* [tifkʏn] ([ɔɔ] = long [ɔ]; [ii] = long [i])

Input	Output	S → W	ID-IO(v-length)-L	*VV	ID-IO(v-length)
/nɔɔt$^{h}_{L}$ + k^{h}ʏn/	☞ a. nɔɔtkʏn			*	
	b. nɔtkʏn		*!		*
/tip^{h} + k^{h}ʏn/	a. tiifkʏn			*!	*
	☞ b. tifkʏn				

(*dýpkun* is phonetically [tifkʏn] by other constraints.)

The morpheme-specific account works when the vowel length is the same throughout the paradigm, as it is for *lak* and *notkun*. But when there is alternation in length, as in the definite paradigm of *skápur* ‘cupboard’ (31), it makes the wrong prediction. The genitive singular of *skápur* has a long stem

vowel (31b), requiring a lexically indexed stem (31c), which incorrectly predicts a long stem vowel in the definite dative singular (32c).[7]

(31) a. skápur [skɑu:pʏr] 'cupboard'
b. skáps [skɑu:ps] (gen.sg.) (APK)
c. /skɑu:$p^{h}{}_{L}$/

(32) a. skápurinn [skɑu:pʏrɪn] (def.nom.sg.)
b. skápinn [skɑu:pɪn] (def.acc.sg.)
c. skápnum [skɑuhpnʏm] (def.dat.sg.) *[skɑu:hpnʏm]
d. skápsins [skɑu:psɪns] (def.gen.sg.) (APK)

2.6 Optimal Paradigms (McCarthy 2005)

The discussion in 2.5 suggests that the function of irregular vowel lengthening in the strong masculine and neuter genitive singulars may be to regularize the paradigms of these forms, as suggested by Árnason (1998). McCarthy's (2005) Optimal Paradigms correspondance model is intended to account for uniformity in inflectional paradigms with respect to some property of the paradigm, while respecting phonological patterns of the language. The Optimal Paradigms (OP) constraint in (33) accounts for uniformity with respect to vowel length.

(33) OP-ID-v-length

The tableaux in (35) and (36) for *skápurinn* (32) and *dómurinn* (34) give as candidates the definite nominative singular, definite genitive singular, and definite dative singular. The constraint ranking respects the pervasive pattern requiring short vowels in closed syllables. Hence, for the paradigms of both *skápurinn* and *dómurinn,* the paradigm selected is the one that conforms to this pattern. This gives the correct output for *dómurinn*, but not for *skápurinn*, which should (irregularly) have a long vowel in the closed syllable of the genitive. The definite singular paradigm of *dómurinn* is in (34).

(34) a. dómurinn [tou:mʏrɪn] 'judgement (def. nom.sg.)'
b. dóminn [tou:mɪn] 'def.acc.sg.'
c. dómnum [toumnʏm] 'def.dat. sg.'
d. dómsins [toumsɪns] 'def.gen.sg.'

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[7] A possible solution might be to adopt an allomorphy approach, specifying /lɑɑ$k^{h}{}_{L}$/$_{gen.sg.}$ as the genitive singular stem of *lak*. However, in this approach, we could also specify /skɑu:$p^{h}{}_{L}$/$_{dat.sg.}$ as the dative singular stem of *skápur*, giving *[skɑu:hpnʏm]. Note that the problem in (32c) does not arise with the definite dative singular of *lak*, *lakinu* ([lɑ:kɪnʏ]), which keeps the long stem vowel.

(35) *dómurinn*, *dómsins*, *dómnum* (with constraints from Benua (1995) and Ringen (1999). (*VV » OP-ID-v-length)

/toum/+{r+inn, s+ins, num}	S → W	*VV	OP-ID-v-length	*µptk[sg]	ID-IO(v-length)
a. tou:mʏrɪn, tou:msɪns, tou:mnʏm		***!			***
b. tou:mʏrɪn, tou:msɪns, toumnʏm		**!	*		**
c. tou:mʏrɪn, toumsɪns, tou:mnʏm		**!	*		**
☞ d. tou:mʏrɪn, toumsɪns, toumnʏm		*	*		*

(36) *skápurinn*, *skápsins*, *skápnum* (with constraints from Benua (1995) and Ringen (1999). ☛ is optimal but incorrect output; ☹ is desired output.)

/skɑup^h/+{r+inn, s+ins, num}	S → W	*VV	OP-ID-v-length	*µptk[sg]	ID-IO(v-length)
a. skɑu:pʏrɪn, skɑu:psɪns, skɑu:hpnʏm		***!			***
☹ b. skɑu:pʏrɪn, skɑu:psɪns, skɑuhpnʏm		**!	*		**
c. skɑu:pʏrɪn, skɑupsɪns, skɑu:hpnʏm		**!	*		**
☛ d. skɑu:pʏrɪn, skɑupsɪns, skɑuhpnʏm		*	*		*

Either ranking of *VV and OP-ID-v-length achieves the wrong result in (36): ranking OP-ID-v-length over *VV would select the wrong candidate (36a).

3. Constraints and Repairs

Preaspiration (11) and Spirantization (14) have in common a tautosyllabic input sequence V̆C^h. In both, the output alters this sequence, either by changing the value of [SG] on C^h or by changing its manner of articulation. The same can be said of Spirantization before *s*, which is schematized in (37).

(37) Spirantization before *s*

input: V̆ C^h_i(.)s (C^h_i = p^h, k^h)

output: V̆ F(.) s (If C^h_i = p^h, F = [f]; If C^h_i = k^h, F = [x])

This suggests the constraint in (38).

(38) *V̆C^{h} (where C^{h} is in the syllable rhyme)

Irregular vowel lengthening repairs this forbidden sequence by lengthening the vowel, e.g. for *laks*, taking underlying /lɑk^{h}+s/ to /lɑ:k^{h}+s/ (surface [lɑ:ks] by deaspiration). This suggests constraint and repairs as in (39). Deaspiration as a repair would account for the short-vowel variant [lɑks] for *laks* (cf. (19)).[8]

(39) Constraint: *V̆C^{h} (where C^{h} is in the syllable rhyme)
Repairs: Preaspiration; Spirantization; Vowel Lengthening; Deaspiration

Calabrese (2005) proposes a derivational approach in which repairs are ranked in order of priority, and the derivation starts with the highest ranked repair and proceeds until a successful repair is achieved. In repairing vowel hiatus in Chicano Spanish, glide formation is ranked above vowel deletion. This means that glide formation will be used for the repair unless it violates another constraint and cannot be repaired, in which case vowel deletion will be used.

The Icelandic data pose a problem for Calabrese's model. In forms with irregular vowel lengthening, all or most of the repairs are found on a dialectal basis, as in (40) for *-s* genitives and (41) for *tk* clusters.

(40) *þaks* (þak + s) 'roof (gen.sg.)'—three pronunciations (Gíslason and Þráinsson (2000: 185))
a. [θɑ:ks] (vowel lengthening)
b. [θɑxs] (spirantization)
c. [θɑks] (deaspiration)

(41) *notkun* — five pronunciations
a. [nɔ:tkʏn] (vowel lengthening, southern standard) (ER, APK)
b. [nɔhtkʏn] (preaspiration) (Rögnvaldsson 1984, 4)
c. [nɔθkʏn] (spirantization) (APK, Bérkov 1962)
d. [nɔtkʏn] (deaspiration, fast speech) (APK)
e. [nɔtk^{h}ʏn] (despiration), (northern) (KMJ)

(APK reported hearing the pronunciations in (41c, d)).

Suppose we assume a constraint No Stop Sequence (42).

[8] The constraint in (39) would seem to operate only at an abstract level, since the stop is deaspirated independently in most contexts. In the southern dialect, deaspiration is general in non-word-initial position. In the northern dialect, stops probably deaspirate for articulatory reasons when they precede another obstruent; compare footnote 5 and (41e). However, Jónsson (1994:39) cites [stɛlp^{h}nɑ] for *stelpna* 'girl, gen. pl.'

(42) No Stop Sequence: *stop_i – stop_j $(i \neq j)$
[-cor]

Then constraint (39) together with (42) predicts the correct output for Spirantization, as in (43). When a repair is selected, for example Preaspiration, No Stop Sequence rules it unacceptable (43b), and another repair is selected, until the acceptable output is achieved (43a).

(43) *dýpka* /tip^{h}k^{h}ɑ/ 'to deepen'

a.	Spirantization:	[tifkɑ]	(doesn't violate No Stop Sequence)
b.	Preaspiration:	*[tihpkɑ]	(violates No Stop Sequence)
c.	Deaspiration:	*[tipkɑ]	(violates No Stop Sequence
d.	Vowel Lengthening:	*[ti:pkɑ]	(violates No Stop Sequence)

Each dialect in (40 and (41) would select as top-ranked the repair that achieves the correct output for that dialect. If Preaspiration is selected as the top-ranked repair to get [nɔhtkʏn] (41b), [θɑhkɑ] (*þakka*) (8a) and [ɛhplɪ] (*epli*) (10a) will also be the correct outputs. However, we will also get *[θɑhks] (*þaks*) (40) and *[lɑhks] (*laks*) (18a), which are incorrect but phonotactically well-formed (44).

(44) Preaspiration in *–s* genitives (Gíslason and Þráinsson (2000: 80)

a.	hrepps	[r̥ɛhps]	(gen.sg. of *hreppur* 'township')
b.	hatts	[hɑhts]	(gen.sg. of *hattur* 'hat') (Einarsson 1945)
c.	stakks	[stɑhks]	(gen.sg. of *stakkur* 'coat, stack')

Likewise, if Deaspiration is top-ranked to get [nɔtkʏn] (41d) and [θɑks] (40c), we will also get *[θɑk:ɑ] (*þakka*), which is incorrect but phonotactically well-formed (compare *þagga* [θɑk:ɑ] 'to silence'), and *[ɛplɪ] (*epli*), which is incorrect but phonotactically well-formed (compare *efla* [ɛplɑ] 'to strengthen').

4. Conclusion

The constraint in (38) states a formal commonality in the inputs to Preaspiration, Spirantization, Spirantization before *s*, and Irregular Vowel Lengthening. It is more comprehensive than Ringen's constraint (15), in that it allows for Irregular Vowel Lengthening as a repair. However, it does not appear to have a role in predicting outputs, except for Spirantization (43). It defines the environment for Irregular Vowel Lengthening, which only occurs before aspirated stops *p*, *t*, *k*. But the restriction to strong masculine and neuter noun and adjective -*s* genitives still has to be stated, making the constraint redundant.

Rather than regarding the Icelandic processes as a conspiracy, it would seem more productive to regard them as rules, within a derivational framework. This is consistent with Calabrese's model, which allows processes to be considered rules when they cannot be accounted for by constraints.

References

Árnason, Kristján. 1980. Ritdómur um *Drög að hljóðkerfisfræði* eftir Magnús Pétursson. *Íslenskt mál og almenn málfræði* 2: 229-239.

Árnason, Kristján. 1998. Vowel shortness in Icelandic. In Wolfgang Kehrein and Richard Wiese, (eds.) *Phonology and Morphology of the Germanic Languages.* Tübingen: Max Niemeyer Verlag, 3–25.

Benua, Laura. 1995. Identity effects in morphological truncation. In Beckman, J., Dickey, L., & Urbanczyk, S. (eds.) *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. Amherst, Mass: GLSA, 77-136.

Bérkov, V.P. and Árni Böðvarsson. 1962. *Íslenzk-Rússnesk Orðabók*. Moscow.

Calabrese, Andrea. 2005. *Markedness and Economy in a Derivational Model of Phonology*. Mouton de Gruyter, New York.

Einarsson, Stefán. 1945. *Icelandic: Grammar, Texts, Glossary*. The John Hopkins Press, Baltimore.

Gibson, Courtenay St. John. 1997. *Icelandic Phonology in Optimality Theory*. PhD dissertation, University of Iowa.

Gíslason, Indriði and Höskuldur Þráinsson. 2000. *Handbók um Íslenskan Framburð*. Rannsóknarstofnun Kennaraháskóla Íslands, Reykjavík.

Hayes, B. 1989. Compensatory lengthening in moraic phonology. *Linguistic Inquiry* 20: 253–306.

Jónsson, Jóhannes G. 1994. The feature [ASP] in Icelandic phonology. *Studia Linguistica* 48:1, 28–45.

Kisseberth, Charles. 1970. On the Functional Unity of Phonological Rules. *Linguistic Inquiry* 1:3, 291–306.

Kristinsson, Ari Páll. 1982. *Hljóðkerfisgreining gómhljóða í íslensku*. Ritgerð til B.A.-prófs. Heimspekideild Háskóla Íslands, Reykjavík.

McCarthy, John J. 2002. *A Thematic Guide to Optimality Theory*. Cambridge University Press, New York.

McCarthy, John J. (2005). Optimal Paradigms, in *Paradigms in Phonological Theory,* Laura J. Downing et al, eds, Oxford University Press, New York, 170–210.

Pater, Joe. 2006. "The Locus of Exceptionality: Morpheme-Specific Phonology as Constraint Indexation," in L. Bateman et al (eds), *University of Massachusetts Occasional Papers in Linguistics 32: Papers in Optimality Theory III*. Amherst, Mass: GLSA.

Ringen, Catherine O. 1999. Aspiration, Preaspiration, Despiration, Sonorant Devoicing and Spirantization in Icelandic. *Nordic Journal of Linguistics* 22: 137-156.

Rögnvaldsson, Eiríkur. 1984. Hvað og hvar er aðblástur? (unpublished ms.)

Rögnvaldsson, Eiríkur. 1986. *Íslensk hljóðkerfisfræði*. Málvísindastofnun Háskóla Íslands, Reykjavík.

Rögnvaldsson, Eiríkur. 1989. *Íslensk hljóðfræði*. Málvísindastofnun Háskóla Íslands, Reykjavík.

Thráinsson, Höskuldur. 1978. On the Phonology of Icelandic Preaspiration. *Nordic Journal of Linguistics* 1: 3-54.