

## Paradigm Resolution in the Life Cycle of Norse Umlaut

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This paper follows on recent work (Iverson & Salmons 2004, 2007; Kiparsky 2005, 2006) seeking to resolve Kock's 1888 paradox introduced in his celebrated "period theory" of Old Norse *i*-umlaut. The basic finding is this: In paradigms where a phonological innovation has been rendered opaque by the operation of other sound changes, restructuring of the base form incorporates rather than derives the results of the innovation as it dies out; but if the innovation remains transparent in certain other paradigms, its expiration enables reversion to the antecedent phonological form. Both patterns can be subsumed under the traditional rubric of analogy, resulting in allomorphically uniform paradigms, but the former generalizes a sound change to contexts in which it never occurred naturally, whereas the latter actually undoes, or reverses, a sound change.\*

### 1. Introduction.

The historical process of umlaut, specifically *i*-umlaut, has left reflexes across the Germanic languages (save Gothic), albeit sometimes only residually, as in English *geese* < <sup>+</sup>*gōs+i*, the unlauded plural of *goose*. However, in most of West Germanic, and in North Germanic, relict alternations and restructured reflexes of the process by which back vowels were fronted before an *i* or *j* in the next syllable are pervasive. In this

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paper, we take up, and seek to resolve satisfactorily, a long-standing issue in the development of *i*-umlaut in Old Norse, namely, why long stem words that underwent the process generally show *i*-umlaut reflexes throughout their paradigms, but short stem words do not.

Our 2004 contribution to this journal presented a view of Old Norse umlaut anchored in what we have called an ingenerate view of sound change. The present paper extends that account to other paradigms. We include new philological support for the view and show how the analysis can be expanded conceptually. The data and analysis presented here lead to several conclusions, including these:

- A fuller dataset than used by Iverson & Salmons (2004) provides new support for an ingenerate view of umlaut in Norse.
- Analyses based on the assumption of umlaut having once been active in long stems but never in short stems face grave and previously unrecognized difficulties.
- In those long versus short asymmetries, we identify conditions under which lexical RESTRUCTURING is likely to take place in contrast to those under which REVERSION to an earlier phonetic form can occur, a type of language change we refer to as PARASITIC RULE LOSS.

North Germanic languages were transformed by these complex sets of changes—and others—to the point that the patterns they evince today bear only an indirect relationship to their historical roots. In particular, the presence of umlaut in long stems and its absence in short stems reverses what was likely the earlier pattern. Perhaps surprising in this instance, reversal or obfuscation of sound change is a situation certainly familiar to historical and comparative linguists. For instance, Hamp (1992:98–99) remarks for languages that have been subject to “a massive set of events” (emphasis in original):

Notice, we are not concerned with the break in *similarity* or *resemblance*; we will be hard put just to find the correspondences. And this will be the case all the more in proportion as the *regular* changes are *contextual* in *many* separate contexts, and as these old contexts get wiped out by later *context-effacing* change, e.g. by syncope or assimilation.

Let us now turn to the particulars of this instance of “break in similarity,” one in fact defined by the interaction of complex patterns of syncope and vowel-to-vowel assimilations. Much recent work in this area still attempts to address the paradox introduced in Kock’s (1888) celebrated “period theory” of Old Norse *i*-umlaut (see, for instance, Iverson & Salmons 2004, 2007, 2009; Kiparsky 2005, 2006; Lahiri 2000). On Kock’s view, *i*-umlaut came into the language and effected certain changes, went dormant for a time but later started up again before finally ceasing to function in a phonetically determined manner. Umlaut took place first only in long stems, for example in <sup>+</sup>*gast+iR* > <sup>+</sup>*gest+iR* ‘guest-NOM.SG’, then was followed by syncope in these contexts to yield attested umlauted forms like *gestr*. Later, syncope would occur after short syllables as well, but at a point when umlaut was no longer active. Accordingly, the etymological /i/ in <sup>+</sup>*stað+iR* ‘place-NOM.SG’ or <sup>+</sup>*katil+aR* ‘kettle-NOM.PL’ had no fronting effect on the preceding vowel, thus accounting for, upon subsequent generalization of syncope to all syllable types, the absence of umlaut in *staðr* and *katlar*. However, umlaut then reactivated to affect back vowels followed by any remaining instances of /i/, as in <sup>+</sup>*katil+aR* ‘kettle-NOM.SG’ > *ketill*, before finally dying out altogether as a phonetically triggered process, *staðir* < <sup>+</sup>*stað+iiR* ‘place-NOM.PL’.

This theory of umlaut as a special, on-off-on-off again sound change has been subject to extensive criticism. Yet, even most critics of the period theory continue the tradition of Kock’s view that umlaut was originally restricted to long stems. Lahiri (2000:120) is quite explicit about this (emphasis in original):

Our claim is that umlaut was always restricted to heavy stems—i.e. light stems NEVER underwent umlaut. ... [G]iven the overwhelming tendency of the attested light *i*-stems NEVER showing umlaut in Old Norse, it seems that forms like *steðr* are more likely to be the innovations rather than the other way around.

We break with that tradition to present evidence that umlaut in North Germanic unfolded in accord with the same principles that governed umlaut in West Germanic. Namely, Norse umlaut did not begin among the long stems alone but rather occurred in all relevant environments; the attested distributions then reflect later phonologization of umlaut as it

had come to be interpreted within the inflectional morphology. This is a point of departure we share with Hesselman 1945 (reviewed by Sturtevant 1946 and critiqued by Schulte 1998:38–44), namely, that Norse *i*-umlaut affected the language in a uniform way during the period of its phonetic viability, but that absence of umlaut in attested short stem forms like *staðr* and *katlar* is due to reversion to the phonological *status quo ante*, to “omljudsväxling,” in Hesselman’s terminology. Hesselman attributes umlaut reversion to the weakening of unaccented *i* to *e* (perhaps phonetically [ə]) following short stems; thus,  ${}^+staðir > {}^+stedir$  (umlaut)  $> {}^+stedër$  (weakening)  $> {}^+staðer$  (reversion), because *e* could no longer condition *i*-umlaut, yielding finally *staðr* upon the effects of syncope. After long stems, where syncope apparently was not mediated by reduction, the development was more direct:  ${}^+gastiR > {}^+gestiR$  (umlaut)  $> gestr$ . Of course, this begs the question as to why restructuring rather than reversion took place in long stems inasmuch as a syncopeated *i* is no better able to sustain umlaut than a reduced one. Below, we lay out and motivate the sequenced events which would have induced restructuring in long stems as opposed to reversion in short stems, representing the latter as the result of a specific kind of change we refer to as parasitic rule loss.

First, in section 2 we anchor our analysis in a broader understanding of umlaut across Germanic as the product of a particular life cycle of language change. Then, we reprise the key Norse facts (section 3) and characterize the restructuring versus reversion events as two sides of a single coin of paradigm resolution (section 4). We present data that bear on this characterization from weak verbs (section 5), denominal adjectives in *-isk/-sk* (section 6), and nouns of the *ketill/katlar* type (section 7).<sup>1</sup> Section 8 adduces additional morphological evidence for

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<sup>1</sup> A response to our original paper appeared in Voyles 2005, which recapitulates views on Norse umlaut the author has repeatedly published over decades. Readers will consider which approach to exceptional forms in general is preferable: We sift apparent exceptions for insight into the unfolding of change, while Voyles (2005:273) dismisses them as mere “peripheral” cases. The support for his idiosyncratic position that “many—if not most” sound changes are morpho-syntactically conditioned from the very outset comes from a “newly added phonological rule,” African-American English consonant cluster reduction (2005:268). In this famous case, clusters including past tense marking (*passed*, *missed*) are less likely to simplify than monomorphemic ones (*past*, *mist*). The

this view, showing remnants of umlaut in short stem words. We conclude by placing the analysis in the context of Riad's chronology of Norse (section 9).

## 2. An Ingenerate View of *i*-Umlaut across Germanic.

Many of the best scholars take the philological facts at face value as evidence for the original patterns of Norse umlaut, as shown in 1.

- (1) a. long stem = umlaut  
 b. short stem = no umlaut

However, this contradicts the usual picture of how sound change unfolds. In the many various life cycle of language change models (Ohala 1993, Kiparsky 1995, Iverson & Salmons 2009, and many others), regular sound change grows from phonetic seeds typically nurtured by coarticulatory and/or perceptual biases. Phonetic effects are then reinterpreted by later generations as phonological generalizations, and these are integrated into the broader grammatical fabric of the language and over time often lead to new morphological generalizations, such as association with particular inflectional categories. Later changes eventually obscure earlier generalizations but may leave clear traces in exceptional or marginal patterns. Umlaut, as a quintessential assimilatory process, can be expected to follow such a path, as argued for West Germanic umlaut by work in the tradition of the "Wisconsin School" over the last 20 years, such as Iverson, Davis, & Salmons 1994, Iverson & Salmons 1996, Howell & Salmons 1997, and more recent work, all inspired by Buccini 1992 (see also Buccini 1995).

On a whole set of points, that work makes an account of umlaut *sensu lato* as restricted to long stems improbable. For instance, phonetically, assimilation in long stems is obviously interrupted both by more intervening material and more distance between the triggering *i* and the target stem vowel. If distance assimilation is sensitive to intervening material, we expect it to operate over less and not over more intervening material. Blocking in Old High German umlaut (like many other

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pattern is centuries old, however, and remains stylistically variable rather than phonologically categorical, and thus hardly counts as an emerging, phonetically driven process. We devote no further space to this matter.

assimilatory patterns in the languages of the world) behaves in ways thoroughly consistent with this: *aCi* forms umlaut in OHG regularly, while umlaut-blocking strings are typically of the shape *aCCi*. Phonologically, short vowels appear more susceptible to umlaut, as in primary umlaut, while umlautless residues involve either complex intervening structures, as just described, or long vowels, for instance in the lack of secondary umlaut of /a:/ in Dutch, as in *kaas* ‘cheese’ (German *Käse*). Finally, the broad tendency across Germanic is for reduction and loss to proceed earlier and faster in long stem forms than in short stem forms, so that umlaut triggers remain in the grammar later in the latter than in the former paradigms. Given the chronological interaction between trigger loss and umlaut, this generalization provides more opportunity for umlaut to have operated in short stem forms than in long stem forms.

Also, directly within the historical and modern Nordic languages, we find weight-related patterns consistent with the basic principle that short stem forms are more susceptible to V-to-V assimilations. Nordic dialects, especially varieties of Swedish, exhibit phenomena known as VOWEL BALANCE and VOWEL HARMONY (Riad 1998, 2005). In these, short stems show more general assimilations than long stems, as illustrated here with data from Älvdalen in western Sweden for the bidirectional process known as VOWEL HARMONY II (from Riad 2005:1110):

(2) <b>Light root</b>	<b>Heavy root</b>
fōt-ǫs (a > ɔ) ‘to be wanting’	gambl-as ‘to age’
fæt-ǣs (a > æ) ‘want.PRES.SG’	gambl-es ‘age.PRES.SG’
dypyl (i > y) ‘dip’	pynḑel ‘bundle’

Suffix vowels in the light forms assimilate to the quality of root vowels, while suffix vowels in heavy forms do not, as indicated by the bolded vowels.

As we have argued elsewhere (Iverson & Salmons 2009), the story of Old Norse umlaut is one of a very late life cycle change, which suggests that we should see strong morphological and analogical effects in its distribution. More generally, anchoring the emergence of Norse umlaut in a life cycle view pushes us to make explicit not only the phonological interpretation but also the earlier phonetic and later morphological context into which the phonology fits.

We hasten to add that the philological record differs between West Germanic, especially Old High German, and North Germanic: While we have some data from the key time period in Old High German, early *i*-umlaut in Norse falls between earliest Runic and the textual attestation of Norse. We have only sparse evidence from the key period, as surveyed by Riad (1992). In terms of ultimate outcome, then, Norse stands squarely between its West Germanic cousins English and German. In the former, *i*-umlaut is overwhelmingly ousted from the grammar; in the latter, it has seeped into every morphological nook and cranny. Norse has kept it, but in a contained way, deeply embedded in the inflectional morphology but not spread across it as far as in German. This, too, is consistent with a late stage life cycle.

### 3. Old Norse *i*-Umlaut.

The key point of this overall analysis is that the analogical changes ensuing from the morphologization of phonetically expiring umlaut over the course of the 8th and 9th centuries caused umlauted vowels to associate morphoprosodically with long stem words like *gestr* < <sup>+</sup>*gest+iR* < <sup>+</sup>*gast+iR* ‘guest’ rather than with short stems like *staðr* < <sup>+</sup>*steð+iR* < <sup>+</sup>*stað+iR* ‘place’. The full attested paradigms as given by Noreen (1970: 266ff.) and recapitulated by Iverson & Salmons (2004:85) are presented in 3.

#### (3) Attested Old Norse masculine *i*-stem nouns

	Short <i>i</i> -stem	Long <i>i</i> -stem
SG. NOM	staðr	gestr
GEN	staðar	gests
DAT	stað	gest
ACC	stað	gest
PL. NOM	staðer	gester, gæstir
GEN	staða	gesta
DAT	støðom, staðum	gestom, gæstum
ACC	staðe	geste, gæsti

Thus, the familiar distinction here is between short and long stems: The short stem nouns, whose stem rhyme consists of short vowel plus single

consonant, have the unumlauted vowel throughout (/a/), whereas the long stem nouns, whose stem ends in short vowel plus two consonants or long vowel plus single consonant, have an umlauted vowel throughout (/a/ > /e/). As both of these noun classes would have had a thematic *-i-* in each of their case forms in Proto-Norse, for example, *\*stað-i+R* ‘place-NOM.SG’, *\*stað-i* ‘place-ACC.SG’, *\*gast-i+R* ‘guest-NOM.SG’, *\*gast-i* ‘guest-ACC.SG’, etc. (following Iverson & Salmons 2004:85), it would be expected that unumlauted stem vowels should appear throughout the short stems as well as the long stems. However, this is famously not the case. The solution we laid out in 2004 was that the various losses of suffix vocalism, or syncope, took place after umlaut had exercised its effects to begin with only after long stems, as in the traditional view. These effects can be charted as in 4 (Iverson & Salmons 2004:93).

(4) Umlaut and syncope in early Proto-Norse nouns

	Short stem		Long stem	
	NOM.SG	NOM.PL	NOM.SG	NOM.PL
	/stað+iR/	/stað+iiR/	/gast+iR/	/gast+iiR/
Umlaut:	steð+iR	steð+iiR	gest+iR	gest+iiR
Syncope:	-----	-----	gest+R	gest+iR
	[steðiR]	[steðiiR]	[gestR]	[gestiR]

At some point, syncope generalized so as to occur after short stems, too, of course. However, at the restricted early stage summarized in 4, when umlaut was still a purely phonetic process, long stem syncope introduced a measure of opacity inasmuch as, superficially, an unumlauted vowel shows up in some words (namely, [gestR]) where the trigger for umlaut (an [i] in the next syllable) no longer appears. We reasoned that the TRANSPARENT status of umlaut at this early stage induced follow-on generations of speakers to rethink the way a word like [gestR] could acquire an unumlauted stem vowel even in the absence of a phonetic trigger for umlaut. With umlaut still phonetically very much alive, and with unumlauted stem vowels occurring throughout the paradigm (trigger or no trigger), young learners could produce outputs identical to those of older speakers, with a regular occurrence of unumlauted vowels throughout the long stem paradigms, by restructuring, or relexifying, the base form of a



stem like /gast-/ to /gest-/. Maintaining an allomorphy-free paradigm by sticking with the stem representation /gast-/ would not do, since umlaut still changes /gast-/ into /gest-/ in the nominative plural and other words in the paradigm which still have an [i] in the suffix, and to preserve transparency of umlaut as a purely phonetic process meant that the umlauted vowel in the nominative singular had to have come about by some other means. That means was the restructuring of lexical /gast-/ to /gest-/, resulting in outputs identical to those of the older generation, just by different means. This development is laid out in 5 (Iverson & Salmons 2004:94).

(5) Relexification of long stems in later Proto-Norse

	Short stem		Long stem	
	NOM.SG	NOM.PL	NOM.SG	NOM.PL
	/stað+iR/	/stað+iiR/	/gest+iR/	/gest+iiR/
Umlaut:	steð+iR	steð+iiR	(vacuous)	
Syncope:	-----	-----	gest+R	gest+iR
	[steðiR]	[steðiiR]	[gestR]	[gestiR]

However, restructuring, we supposed, did not take place in the similarly uniformly umlauted paradigms of the short stems because here umlaut remained transparent: Stem vowels are umlauted where and only where an [i] vowel follows inasmuch as syncope had not yet generalized to take place after short stems as well as long. Thus, the presence versus absence of umlaut in short stems at this point was still fully predictable, as in nominative singular *\*sted̥iR* versus genitive singular *\*stað̥aR*, motivating retention of the unumlauted vowel in the underlying form. This contrasts with the situation in the long stem paradigms, where syncope has disturbed umlaut's phonetic determination, prompting its lexicalization. Yet at some later point in this still early period of pre-Old Norse, syncope did generalize so as to apply irrespective of stem weight, resulting in the loss of suffix vocalism in the short stems as well.

The other key event, which we would date to about this same time, was the demise of umlaut as a purely phonetic process, initiated in the familiar way by the loss of trigger vowels due to syncope and other opacity-inducing adjustments. Associating the inevitable demise of

phonetic umlaut temporally with the emergent generalization of syncope to all stem types results in a natural reversion of the (unattested) superficially umlauted vowels in short stems to unumlauted vowels: As the underlying form of the short stems had not changed, the removal of suffix vowels more or less simultaneously with the expiration of phonetically triggered umlaut automatically surfaces the base form of the stems, as charted in 6 (Iverson & Salmons 2004:95).<sup>2</sup> (As described below, this also creates other relevant morphological alternations, such as competing suffixes that would or would not have triggered umlaut, as in *-isk/-sk*.)

(6) Umlaut loss and generalization of syncope to short stems

	Short stem		Long stem	
	NOM.SG	NOM.PL	NOM.SG	NOM.PL
	/stað+iR/	/stað+iiR/	/gest+iR/	/gest+iiR/
Umlaut:	.....(phonetically dead).....			
Syncope:	stað+R	stað+iR	gest+R	gest+iR
	[staðR]	[staðiR]	[gestR]	[gestiR]

Thus, this maintains the chronology in which umlaut occurs prior to syncope, which itself—following Riad’s (1992:113–114, elsewhere) well-known, detailed survey of the Runic evidence—began around 625 in long stem words, then extended to medial environments in short stems ca. 675 and to final syllables in short stems ca. 830. The chronology of Norse syncope in 7 is adapted from Riad 1992, with his orthography.

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<sup>2</sup> Morphological and lexical reversions are commonplace, in fact. The history of English offers a direct parallel via the removal of umlaut from plurals and other categories, with Middle English dialectal *bōc ~ bēc* and *lamb ~ lemb* becoming *book ~ books* and *lamb ~ lambs*, respectively (see Krygier 1997).

(7) ca. 450	No syncope	fáahidðo, -gástiz, etc.
ca. 625	Long stem medial syncope	+wáatijèe > waatee
ca. 675	Short stem medial syncope	+sátidèe > satte
ca. 700	Trisyllabic final syncope	+skórinaz > skorinn, etc.
626–700	Long stem final syncope	wúlfaz > wulfz, etc.
	Short stem syncope of <i>a</i>	+wíra > ver
ca. 830	Short stem final syncope	súnu > sun, etc.

To recapitulate, since umlaut remained predictable in short stem words until the later losses of trigger vowels, short stems retained, and thus surfaced, their underlying unumlauted vowels upon the death of umlaut as a phonetic process. In contrast to the reversion in short stems, underlying vowels in long stems restructured to unumlauted variants with the earlier disappearance of umlaut-inducing vocalism because in these words syncope took place when umlaut was still phonetically alive, forcing generalization to the unumlauted forms of paradigms. The general result in the literary language, then, is that long stems have unumlauted vowels, while short stems do not.

#### 4. Paradigm Resolution via Rule Loss: Restructuring versus Reversion.

Thus, the course of *i*-umlaut in Old Norse took two paths, both emanating from loss of the rule as other changes, namely, those of syncope, made its effects unrecoverable. On the one hand, in long stems umlaut generalized throughout paradigms because that was the only way to achieve parity in unumlauted vowels between a generation of speakers who could derive them phonetically (prior to syncope) and another who could not (after syncope). On the other hand, in short stems umlaut remained phonetically determined even as its effects were lexicalized elsewhere. However, with umlaut no longer derivationally active in long stems, its utility to the grammar reduced to a point where its dynamic function could be dispensed with altogether, resulting in its removal from the phonology per se.

The loss of phonological *i*-umlaut was primed by the opacity of the process that arose in long stems, but its consequent coincidental dismissal from the grammar affected short stems (where it had still been operating transparently prior to the generalization of syncope) in quite the opposite way, namely, with reversion to the unumlauted *status quo ante*. The loss of phonetically determined umlaut in short stems was thus

precipitated by its syncope-induced invalidation in long stems—a passenger, as it were, that sank on the same ship.

It has often been observed that languages do not lose transparent rules, only OPAQUE ones (King 1973, among others), and the phonological demise of umlaut due to its opacity in long stems had the automatic consequence of stopping its operation in short stems as well. We refer to loss of a rule under this condition as *parasitic*, presumably the only circumstance under which transparent loss may occur, that is, as part of a rule which is otherwise opaque. Our basic understanding of the effects of rule-related sound change on paradigm resolution is this: In paradigms where a phonological innovation has been rendered opaque by the operation of other sound changes, restructuring of the base form incorporates rather than continues to derive the results of the innovation as it dies out; but if the innovation remains transparent in other paradigms, its expiration enables reversion to the antecedent phonological form.

Both patterns might be understood as instances of the traditional notion of analogy, as they result in allomorphically uniform paradigms, but the former generalizes a sound change to contexts in which it never occurred naturally, whereas the latter actually undoes, or reverses, a sound change. In the case of *gestr* < <sup>+</sup>*gest+iR* < <sup>+</sup>*gast+iR*, opacity arose via the early effect of syncope in long syllable contexts. That is, the chronologically prior fronting of /a/ to /e/ due to umlaut was caused by a vowel that no longer exists, namely, syncopated /i/, rendering umlaut *qua* rule opaque with respect to *gestr*. At this stage, learners seeking to match the output of speakers who continued to derive *gestr* from /*gast+iR*/ through sequenced interaction of umlaut and syncope, chose instead to arrive at *gestr* directly from /*gest+R*/, there being no longer reason for positing underlying /i/ in the increasingly invariable, syncopated form of the nominative singular suffix, /*R*/. At the same time, umlaut is functioning transparently in short stems, before syncope had extended to all syllable types; hence, /*stað+iR*/ > <sup>+</sup>*steð+iR*.

However, this is the point at which umlaut became opaque in other classes, namely, long stems like *gestr*, causing learners to give up on it derivationally in these cases and to restructure the base form. As umlaut loses its derivational vitality, the further loss of its conditioning factor through the generalization of syncope to short stems, where umlaut had been operating transparently, further removes reasons for positing its

phonological existence and leads to the rule's demise generally (residually restricted now to stem-internal /i/, as in /katil+R/ > *ketill*) and to automatic reversion to the base form: /stað+iR/ (> <sup>+</sup>*steð+iR* > <sup>+</sup>*steð+R*) > *staðr*. Moreover, the syncope pattern of vowels in short stems paralleled as well as followed that in long stems, that is, the two types were not distinguished, in the manner of Hesselmann 1945, as to whether unaccented vowels reduced (short stems) or not (long stems); rather, syncope proceeded in a uniform, chronological way.

### 5. Umlaut in Weak Verb Paradigms.

The situation in verb paradigms is basically the same: Long stem class I weak verbs like *dæma* 'to deem' < <sup>+</sup>*dōm+jan* (compare *dōm* 'judgment', also 'doom') have umlauted vowels throughout their paradigms, whereas short stems, like *telja* 'to tell' < <sup>+</sup>*tal+jan* (compare *tal* 'tale'), do not show umlaut in preterit indicatives (*talða* 'told.1.SG'). However, short stem verbs do have umlauted vowels elsewhere (subjunctives and present indicatives). Paradigms exemplifying this difference are listed in 8, adapted from Gordon (1957:303).

(8)		telja < <sup>+</sup> taljan		dæma < <sup>+</sup> dōmjan	
		INDICATIVE	SUBJUNCTIVE	INDICATIVE	SUBJUNCTIVE
	PRES. SG	1 tel	telja	dæmi	dæma
		2 telr	telir	dæmir	dæmir
		3 telr	teli	dæmir	dæmi
	PL	1 teljum	telim	dæmum	dæmim
		2 telið	telið	dæmið	dæmið
		3 telja	teli	dæma	dæmi
	PAST SG	1 talða	telða	dæmda	dæmda
		2 talðir	telðir	dæmdir	dæmdir
		3 talði	telði	dæmdi	dæmdi
	PL	1 tǫlðum	telðim	dæmdum	dæmdim
		2 tǫlðuð	telðið	dæmduð	dæmdið
		3 tǫlðu	telði	dæmdu	dæmdi
	PRES. PART		teljandi	dæmandi	
	PAST PART		tal(i)ðr	dæmdr	

Kiparsky (2006) points out that these and many other verbs in the weak class are denominal, so that a derivational association would still exist between the noun forms without umlaut and the verb forms with. Yet with umlaut no longer phonetically active, but rather morphologized so as to apply only in specific word categories, the question naturally arises as to how the difference in extent of umlaut between long and short stem weak verbs might have come about. The paradigms in 8 reveal that the synchronic morphophonological umlaut rule required for Old Norse weak verbs is restricted because stem vowels are umlauted everywhere except in short stem preterit indicative forms. The synchronic morphologized remnant of once phonetically productive umlaut must then be something like 9, a “crazy rule” (Bach & Harms 1972, Blevins 2004, 2006) rising out of the vicissitudes of fading historical changes.

- (9) Weak verbs of the first conjugation have umlauted stem vowels in the present tense and in subjunctives, and, for long stems, also in the past tense.

A rule like 9, peculiar as it may be, is necessary if denominal verbs like *telja* and *dæma* are still synchronically derived from their source nouns *tal* and *dōm*. Of course, derivational morphology is often easily separated from source words, so it could be that the psychological association between Old Norse *tal* and *tel-* or *dōm* and *dæm-* was synchronically no closer than that between modern English *tale* and *tell* or *doom* and *deem*. Consider, for another parallel, the once phonetically identical German words *Weg* ‘path, way’ with [e:] and *weg* ‘away’ with [ɛ]—the former has analogized to the long vowel of the plural, while the latter has retained its historical short vowel (Fourakis & Iverson 1984, Page 2007). Here, even very close semantics and zero derivation did not prevent one member of the pair from changing while the other remained the same. At any rate, even assuming that *telja* still derived from *tal* and *dæma* from *dōm*, a morphologically restricted umlaut rule for Old Norse to the effect in 9 would be necessary in order to account for the synchronic relationship between noun and verb paradigms.

Our approach, parallel to traditional descriptions, is that umlaut applied before syncope historically, first after long stems like /do:m-/ , later after short stems like /tal-/. In view of the *-j-* (or *-i-*) affix originally

present in all forms of the weak class I conjugation (compare paradigms of Gothic *nasjan* ‘to save’, *sōkjan* ‘to seek’, Heusler 1964:101–102), there would have been umlauted vowels throughout both stem classes at the earliest stage when umlaut was still phonetic, as sketched in 10.

(10) Umlaut and syncope in early Proto-Norse class I weak verbs

	Short stem		Long stem	
	1.PL.PRES.IND	1.SG.PAST.IND	1.PL.PRES.IND	1.SG.PAST.IND
	/tal+jum/	/tal+iðɑ/	/do:m+jum/	/do:m+iðɑ/
Umlaut:	tel+jum	tel+iðɑ	dœm+jum	dœm+iðɑ
Syncope:	-----	-----	dœm+um	dœm+ðɑ
	[teljum]	[teliðɑ]	[dø:mum]	[dø:mdɑ]

Except for the preterit indicatives in short stems, umlaut pervades the paradigms, even in forms that no longer have an umlaut conditioning suffix, such as *tel* < \**tal+ja* ‘tell-1.SG.PRES.IND’ and *telr* < \**tal+jir* ‘tell-2.SG.PRES.IND’. Of course, these are accounted for if umlaut preceded the syncope of finals but would also fall into place via the analogizing effects of rule 9 even if that sequence were reversed. However, the question remains as to why particularly the preterit indicatives, and only in short stems, should have emerged without umlaut in the literary language.

On the traditional view that umlaut took place before syncope, the special status of the preterit indicative short stems becomes clear once it is recognized that regular syncope in long stems—which, as we and most others claim, occurred earlier than in short stems—resulted in restructuring of the suffix /-iðɑ/ to just /-ðɑ/. Thus, the syncope of medial /i/ in long stems like /dōm+iðɑ/ happened after otherwise phonetically transparent umlaut to result in *dæmdɑ*. This, in turn, led speakers to adduce a morphologically triggered version of umlaut operating in the long stems because, though still generally based on the occurrence of a following /i/ or /j/, umlaut in the long stem paradigms could no longer be phonetically predicted everywhere, just as was the case in the development of long stem nouns charted in 4 and 5.

Ultimately, the regular absence of syncopated vowels had the effect of synchronically separating some of the suffixes in this conjugation

according to stem weight, so that short stems had  $-\emptyset$ ,  $-r$ ,  $-r$  in the first, second, and third persons of the singular present indicative, respectively, versus  $-i$ ,  $-ir$ ,  $-ir$  in the long stems, as shown in 8. We doubt that these variants continued to be determined by synchronic syncope during the literary period; rather, we believe that they came to be associated with existing forms directly, as allomorphs conditioned by stem weight in this class. Similarly, at the stage exemplified in 10, the  $-i\delta a$  of short stem preterits corresponded superficially to  $-\delta a$  (or  $-da$ ) in long stems, which, we expect, led to synchronic separation of these affixes according to stem weight, too, even at the point where syncope still had not extended its effects to short stems. This is exemplified in 11.

- (11) Umlaut in Proto-Norse class I weak verbs after effects of syncope in long stems

	Short stem	Long stem
	/tal+ið̥a/	/do:m+ð̥a/
Umlaut (phonetic):	tel+ið̥a	-----
Umlaut (morphologized, per 9):	-----	dœm+ð̥a
Syncope (long stem):	-----	-----
	[telið̥a]	[dø:mda]

With the generalization of syncope to all stem types, umlaut would have become opaque in the short stem preterits, too, as shown in 12.

- (12) Umlaut in Proto-Norse class I weak verbs with syncope in all stem types

	Short stem	Long stem
	/tal+ið̥a/	/do:m+ð̥a/
Umlaut (phonetic):	tel+ið̥a	-----
Umlaut (morphologized, per 9):	-----	dœm+ð̥a
Syncope (all stems):	tel+ð̥a	-----
	[telð̥a]	[dø:mda]

We suppose that the allomorphy with respect to historical  $/-i\delta a/$  (sometimes  $-i\delta a$ , sometimes  $-\delta a$ ) combined with the emergent extension



of syncope in short stem medials to restructure the suffix to simply /-ð̥a/ everywhere. This was a relatively early development, too, taking place while umlaut was still subject to phonetic triggering (though also to morphological determination in long stems). However, with no basis any longer for positing /i/ in the preterit suffix, which, at this juncture, was always surface [-ð̥a] ([-da]), learners came to interpret the suffix consistently as underlyingly /-ð̥a/, too. The result of this restructuring was that preterit indicatives had no /i/ vowel to continue to induce umlaut, as represented in 13 (Noreen 1970:§159).

(13) Umlaut in later Proto-Norse with /-ið̥a/ restructured to /-ð̥a/ in all stems

	Short stem	Long stem
	/tal+ð̥a/	/do:m+ð̥a/
Umlaut (phonetic):	-----	-----
Umlaut (morphologized, per 9):	-----	dœm+ð̥a
Syncope (all stems):	-----	-----
	[talð̥a]	[dø:mda]

At this point, in long stems umlaut was already being implemented by a morphological generalization imposing a front vowel throughout the paradigms; indeed, this was the only transparent way, following syncope of the umlaut trigger, to generate vowel fronting in the syncopated forms. However, with syncope extending to short stems and the consequent restructuring of /-ið̥a/ to /-ð̥a/—umlaut still being a phonetically active process, too—the motivation for retaining umlaut in <sup>+</sup>*telð̥a*, now from /tal+ð̥a/, simply disappeared. As a result, /tal+ð̥a/ came to surface as *tal-ð̥a*, much in the same manner as /stað̥+R/ came to surface as *stað̥r* despite earlier pronunciation as <sup>+</sup>*steð̥r*.

The consequence of these developments is that short stem class I weak verbs do not show umlaut in preterit indicative forms, but all other forms of verbs in this class do. This is the “crazy,” morphologized generalization in 9 that speakers in the literary period appear to have arrived at and to have followed, and the steps outlined here chart the path that led their linguistic predecessors to morphologize umlaut this way in the face of its impending phonetic demise. Unlike short stem nouns, then, which generalized to a uniform, unumlauted allomorph throughout the paradigm once the umlaut triggers disappeared, short stem weak verbs

emerged with the absence versus presence of *i*-umlaut serving to reinforce a major morphological distinction between preterits and other forms of the verb. The end state of affairs is illustrated in 14, where umlaut is fully morphologized in the broader manner of 9 and no longer functions phonetically, the effects of suffix syncope having been lexicalized.

(14) Morphologized umlaut per 9 in the literary period

	Short stem		Long stem	
	2.SG.PRES.IND	1.SG.PAST.IND	2.SG.PRES.IND	1.SG.PAST.IND
	/tal+r/	/tal+ða/	/do:m+iR/	/do:m+ða/
Umlaut (9):	tel+r	-----	døem+iR	døem+ða
	[telR]	[talða]	[dø:miR]	[dø:mda]

The reason we find umlaut throughout the class I weak verbs, except in the preterit indicatives of short stems, is that these *-jan* verbs etymologically had umlaut everywhere by virtue of their suffix forms. Subsequent syncope in the long stems made otherwise phonetically transparent umlaut opaque, giving rise to a morphological generalization distinguishing short stems, where umlaut was still transparent, from long stems, where umlaut now was imposed on the stem class irrespective of phonetic context. As syncope generalized to short stems, however, the transparency of umlaut there came under challenge as well but was maintained (to begin with, at least) by analogical reversion to the basic vowel wherever the trigger for umlaut was no longer in evidence—most notably, in the preterit indicatives. These formed a sufficiently identifiable subclass to retain their basic rather than derived character as umlaut itself was progressively losing its phonetic motivation, and resulted in the morphologized remnant of umlaut described in 9 exempting just preterit indicatives in short stems from vowel fronting. The pathway to this state of affairs is thus well laid out as the preferred (if not inexorable) choice, and it makes coherent the traditional claim that phonetically conditioned umlaut is of greater vintage than the various forms of syncope.

## 6. Umlaut in Denominal Adjectives with *-isk/-sk*.

The basic phenomenon described above is part of a broad pattern. Consider now the asymmetry of adjectives derived with the suffix */-isk/*, exemplified by the (umlauted) long stem versus (unumlauted) short stem pair, *bernskr* < *\*barn+isk+R* ‘childish-MASC.NOM.SG’ versus *danskr* < *dan+isk+R* ‘Danish’ (see Kiparsky 2006). Parallel to the above analysis of *-iða* in the verbal alternations, we infer that the historical suffix *-isk* was reanalyzed to *-sk* (its now invariant form), and that this restructuring was driven, to begin with, by the early occurrence of syncope in the long stems.<sup>3</sup> That is, as elsewhere, umlaut took place first, followed by long stem syncope: *barn+isk+R* > *bern+isk+R* > *bernskr*; *dan+isk+R* > *deniskr*. With the trigger vowel now gone in long stems, the suffix separated into two weight-conditioned variants: */-isk/* after short stems and */-sk/* after long stems. Though otherwise still phonetically conditioned, umlaut came to be morphologized (parallel to the restrictions that arose in the verbal system, see 9) so as to apply to syncopated denominal long stem adjectives ending in *-sk*. Of course, the *i* remaining in short stems continued to trigger umlaut phonetically rather than according to morphological category, but ultimately the suffix generalized to */-sk/* everywhere, thus removing the phonetic basis for umlaut in short stems.

As the morphologization of umlaut did not extend to the other class in these paradigms, the short stems, but rather remained associated with long stems generally (as in the nouns and verbs), the result of the restructuring of */-isk/* to */-sk/* was automatic reversion of *deniskr* > *danskr*, just as *телиða* > *talða*. The sequenced developments are summarized in 15. The suffix *-(i)sk* divides into two allomorphs according to stem weight, and umlaut partially morphologizes (“Umlaut denominal long stem adjectives ending in *-sk*”), Stage II. After generalizing to short stems, the effects of syncope are lexicalized, causing the historical *-isk* suffix to restructure to */-sk/* throughout, precipitating reversion of umlaut in short stems, Stage III.

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<sup>3</sup> A reviewer for this journal calls our attention to the fact that Modern Swedish has reintroduced the *-isk* suffix (from German), complementing the *-sk* form, as described in Riad 1999.

(15) Effects of umlaut and syncope in denominal adjectives with *-(i)sk*

	<b>Long stem</b>	<b>Short stem</b>
<b>Stage I</b>	/barn+isk+R/	/dan+isk+R/
Umlaut (phonetic)	bern+isk+R	den+isk+R
Syncope (long stem)	bern+sk+R	-----
	[bernskR]	[deniskR]
 <b>Stage II</b>	 /barn+sk+R/	 /dan+isk+R/
Umlaut (phonetic)	-----	den+isk+R
Umlaut (morphol.)	bern+sk+R	-----
Syncope (long stem)	-----	-----
	[bernskR]	[deniskR]
 <b>Stage III</b>	 /barn+sk+R/	 /dan+sk+R/
Umlaut (phonetic)	-----	-----
Umlaut (morphol.)	bern+sk+R	-----
	[bernskR]	[danskR]

Presumably, umlaut continued to function elsewhere as a phonetically conditioned phenomenon for a period; but with the inherited, oddly restricted variant in 15 still at play in the language—a relict of once transparent phonetic processes associated with stem weight but now identified also with morpholexical class—umlaut remained under morphological determination in long stems like *bernskr* < *barn+sk+R*, parallel to *dæmda* < *dōm+ðā*.

This view finds ready support in Noreen (1970:138–139), who writes: “Wo innerhalb eines paradigmas synkopierte und unsynkopierte formen ... mit einander wechselten, ist oft ausgleichung—gewöhnlich zu gunsten der synkopierten formen.” (Where, within a paradigm, syncopated and unsyncopated forms alternated, there is often leveling—usually in favor of syncopated forms.) He exemplifies this point with “*danskr* statt \**deneskr* nach pl. *dansker* dänisch.” In other words, Noreen indicates that syncopated forms tended to generalize, reducing the number of surface forms of the suffix as *-isk* and increasing the numbers showing *-sk*. Moreover, as a process in derivational rather than inflectional morphology, resolution of the alternation is promoted by increasing distance from the base, sometimes augmented by later

developments serving to reduce unwieldy consonant clusters created by the syncope, as in *bernskr* > *berskr* (Noreen 1970:214).

### 7. Umlaut in Nouns of the *ketill/katlar* Type.

Consider now umlaut in a set of nouns containing the derivational suffix *-ill* (also treated in Kiparsky 2006) that show syncope and no umlaut in some cells of the paradigm (*katlar* ‘kettles’) but the reverse pattern in others (*ketill* ‘kettle.NOM.SG’). Even the handbooks show considerable complexity, such as Noreen (1970:252, emphasis added):

Wörter mit kurzer wurzelsilbe und dem ableitungsvokal *i* sollten eigentlich in den nicht synkopierten formen kasus umgelautes, in den synkopierten kasus aber nicht umgelautes vokal ausweisen. ... Diese regel ist aber nur in wenigen wörtern aufrecht erhalten worden: *fetell* tragband, *ketell* kessel, *lykell* schlüssel, *trygell* kleine schüssel, *tygell* schnur der und [sic] eigenname *Egell* mit dat. *katle*, *lukle* usw., pl. *katlar* usw. JEDOCH KOMMEN AUCH BEI DIESEN WÖRTERN (BES. BEI FETELL) IN DEN SYNKOPIERTEN KASUS NEBENFORMEN MIT UMGE-LAUTETEM VOKAL ... VOR, doch bei *ketell* nicht im pl.

Words with short root syllable and the thematic vowel *i* should actually show an umlauted vowel in the unsyncoated cases versus an unum-lauted vowels in the syncoated cases. ... This pattern is followed, however, in only a few words: *fetell* strap, *ketell* kettle, *lykell* key, *trygell* small bowl, *tygell* string and the proper name *Egell* with dative forms *katle*, *lukle* and so forth, and plural forms *katlar* and so forth. HOWEVER, EVEN WITH THESE WORDS (ESPECIALLY WITH FETELL), IN THE SYNCOPATED CASES, VARIANTS OCCUR WITH AN UMLAUTED VOWEL but not in the plural for *ketell*.

Even Noreen, in fact, significantly understates how common umlaut is throughout whole paradigms in nouns of this type. The online Old Norse dictionary *ONP* shows numerous examples of just this type where umlaut is found across the board, like these from the first few letters of the alphabet.<sup>4</sup> In 16, Old Norse nouns derived in *-ill* show umlaut across the full paradigm.

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<sup>4</sup> We provide etymological information given for words showing *e* stem vocalism to make clear that these indeed reflect umlaut and not original *e* vocalism.

- (16) *bygill*, plural *byglar* ‘yoke’  
*bukka-sperðill*, plural *sperðlar* ‘turd’[?] (Runic Danish *sbarlu*, de Vries)  
*dregill*, dative *dregli*; plural *dreglar* ‘ribbon’, etc.  
*ferill*, *ferlar* ‘trip’ (see *fara*)  
*drag-kyrtill*, accusative *kyrtla*, *með drag-kyrtlana* ‘shirt’  
*eir-kyrtill*, *kyrtlar*

Indeed, these examples show umlaut, variably or categorically, either in the whole paradigm or in all singulars (that is, including the dative singular). In 17, we illustrate the latter with the entries from Cleasby-Vigfusson 1957, de Vries 1977, and Fritzner 1954. Nonumlauting plurals derived from umlauting singulars are compared to the forms attested in standard reference works.

- (17) *ketill* ‘kettle’. A dative singular form *ketli* is reported in Fritzner, plus occasional late dialectal forms like *kætslar* (Noreen 1970:252). (Variable)

*fetill* ‘strap’. A dative singular form *fetli*, plural *fetlar*. Cleasby-Vigfusson does give a problematic dative singular *fatla*. (Unexpected)

*depill* ‘spot’. Cleasby-Vigfusson shows dative singular *depli*; Fritzner has dative plural *deplinum*. (Unexpected)

*snepill* ‘snip, flap’ *eyrasnepill*. Fritzner gives a plural form *eyrnasneplar*. (Unexpected)

*hefill* ‘clew-line, bunt-line (nautical)’. Fritzner shows umlauted plurals like *heflunum*, and Cleasby-Vigfusson as well. (Unexpected)

*lykill* ‘key’. Fritzner gives a string of citations with umlauted plurals, for example, *hér eru lykklar*. Cleasby-Vigfusson gives dative singular with umlaut, while plural without. (Variable)

*tygill* ‘string’. Fritzner gives *tugla* as plural; Cleasby implies dative singular *tygli*. (Leveling in singular)

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*ONP*, though still under construction, has the advantage of giving clearly attested forms rather than regularized Old Norse.

*trygill* ‘small bowl’. There are no comments or relevant examples in Cleasby-Vigfusson, Fritzner, or de Vries. (Inconclusive)

We have seen above that earlier syncope in some paradigms interacted with still-live umlaut to create these patterns. *Ketill*-type nouns could have fallen into the same pattern once it was well established.

Crucially, other factors contributed significantly to variability in this class: Old Norse had not only the nominalizing (sometimes diminutivizing) suffix *-il* but also variants in *-al*, *-ul*, and *-el*, which naturally did not trigger *i*-umlaut (though the middle variant did trigger *u*-umlaut). Note, for instance, that Noreen consistently gives the citation forms of these nouns with *-ell*. Even without prosodic reduction of unstressed vowels (which are largely maintained to the present in Faroese and Icelandic), confusion arose with respect to their distribution in particular words, driving speakers to make generalizations on the basis of the individual lexeme—as probably happened with Open Syllable Lengthening in English (see Iverson & Salmons 2004). A search of nouns in *ONP* ending in the relevant forms delivers items ending in the string *-Vll* as follows:

- (18) *-ill* = 556  
*-ell* = 140  
*-ull* = 238  
*-all* = 365

Since not all nouns ending in this string do necessarily contain this suffix, this count is crude and imprecise, but it suggests that fewer than half of *-Vll* forms probably contained an *i*-umlaut trigger, namely 42.8% or 556 of 1,299.

This already provides an answer to why a residue of additional words might show no umlaut anywhere in the paradigm: They had or were reinterpreted as having one of the other suffixal variants, *-al*, *-ul*, *-el*. Even in Old Norse we find evidence for suffix variation: *drasill* is given alongside the form *drqsull* (de Vries and Cleasby-Vigfusson) and the same holds with *vaðill/vöðull*. For the last, Noreen gives *veðill* in parentheses. That word, then, shows three different stem vowels: Historical /a/, *i*-umlauted *e*, and *u*-umlauted *ö*.

For a word like *stuðill*, contemporary languages provide the evidence: Modern Icelandic and Faroese both reflect the historical *-ul* form, see Icelandic *stuðull* ‘prop’, etc. It is, of course, possible that the couple of remaining words analogized idiosyncratically to derivationally related words, such as *skutill* to *skutr* ‘shot’ or *svaðill* to *svað* ‘slippery place’, though we hesitate to make anything more of this than its sporadic character suggests. (See Schulte 1998 on possible analogical models for restructuring of individual lexical items.)

In short, closer scrutiny of attested data reveals a picture quite consistent with our account. If our scenario is right, umlaut should have left traces; *ketill*, according to Noreen the one word that holds strictly to this pattern, attests some variation in Old Norse and later. *Ketill* is the last lexical remnant of phonological umlaut, parallel to Modern Icelandic *u*-umlaut. More broadly, learners and speakers would not have heard consistent umlauted vowels across this class of words.

### 8. Evidence from Exceptional Forms.

If phonetic umlaut once existed across forms with the relevant triggering segments, we should expect to find scattered evidence of its phonologization in some short stem forms. In this section, we present such evidence and argue that it does indeed reflect retention of earlier umlaut and is unlikely to represent a later innovation. We have shown above that variability in the presence of umlaut is often rooted in morphological variability, as in the suffixal variation just described. Lahiri (2000:120) and others note that Old Gutnish shows forms like *steþr*, related to the iconic nonumlauting short stem lexeme, and scattered place names reflect an umlauted form as well, like *städe* (see Andersson 2002:299). Lahiri is right in her view that such forms could be plausibly seen as innovations.

Wadstein 1892, a work apparently since forgotten in the literature, reviews a considerable body of short stem words in Old Norse containing *i*-umlaut. These are often forms in which analogy could or would not have happened, such as noninflecting forms and Latin loanwords, as in 19.

- (19) a. *gegn* < *gegin* < \**gagina*  
 b. *mylna* (also *mølna*) < Lat. *molina*



This securely indicates the phonetic and then phonological process of *i*-umlaut, as there is no plausible explanation for how a regular sound change could appear widely in some categories, like long stems, and some phonetically and phonologically short stem forms, but not have once existed more broadly, like *steþr*.

Yet more relevant here is umlaut in mass nouns of the short stem masculine *i* class, as in 20 (Wadstein 1892:414).

- |      |    |       |                 |                     |
|------|----|-------|-----------------|---------------------|
| (20) | a. | glymr | <i>Geräusch</i> | ‘noise’             |
|      | b. | gnyþr | <i>Brummen</i>  | ‘murmur’            |
|      | c. | kylr  | <i>Kälte</i>    | ‘cold’              |
|      | d. | ryg   | <i>Roggen</i>   | ‘rye’ (Old Gutnish) |

The importance of these cases is that they confirm the earlier presence of umlaut in short stem masculine *i*-stem nouns, but precisely where morphological processes would not have removed such forms, since, as mass nouns, the examples in 20 had no plurals. It is unclear to us how analogy might have motivated umlaut here.

## 9. Conclusion.

We have argued that the life cycle of language change is often more local, subtler than can be captured in a broad-brush approach, the core properties of which are sometimes not reflected in numerically dominant patterns. Thus, the origins of umlaut lay in short stem configurations even though in the philological record these generally conceal rather than reveal the historical operation of the process. Seeing the development of Old Norse umlaut from that perspective and working to bring it into harmony with accounts of West Germanic umlaut offers a more coherent and complete understanding of umlaut as sound change (and ultimately as morphological marker) than do the familiar alternative narratives.

Patterns of complexity of *i*-umlaut do not instantly migrate as a whole to a different component but proceed in a stepwise fashion. In particular, in two of the major morphological classes in question, long stem syncope triggered a reanalysis of one inflectional and one derivational morpheme, *-iða* > *-ða* and *-isk* > *-sk*, respectively. There, learners heard surface forms and acquired representations of long stem forms with underlyingly umlauted vowels at a time when umlaut remained an active phonological process elsewhere in the grammar, including short

stems of the same class. The spread of the new (syncopated) morphemes removed umlaut triggers and, therefore, led to umlautlessness in, for instance, preterits of the *talða* type. (Note the continuation of umlaut into the literary period in the present paradigm, where there was no morphologically driven reversion.) During late stages of the cycle, the resolution of paradigms often involves relexification to reflect the output of the rule that has become opaque. In this particular complex case, where umlaut came to function under both morphological and phonological conditions, its disappearance from the grammar resulted naturally in reversion to the *status quo ante*.

Overall, the processes of restructuring and reversion described here have led to a classic “crazy rule” result: the association of *i*-umlaut with stem weight. This strikingly unnatural outcome has come down an utterly possible and plausible diachronic path, passing through events of both restructuring and reversion. Many accounts of Norse umlaut posit at least some instances of phonological reversion, or the reemergence of historical forms, albeit few to the extent that Hesselman’s (1945) does. Thus, short stem plural nouns like *staðir* are considered to have been subject to umlaut in an earlier period (*\*steðir*), yet attested *staðir* bears the same stem vocalism as the word had prior to the introduction of umlaut (*\*stað+iiR*).

The analogical achievement of regularity in short stem noun paradigms without umlauted vowels and in long stem paradigms with them came about, we have argued, through the interplay of the restructurings and reversions we have laid out here. These changes are reminiscent of the regularization of strong verb paradigms in Gothic, which came about through the elimination of Verner’s Law (and with that, reversion to voiceless stem consonants rather than retention of voiced: *\*wurþans* > *\*wurðans* > *wurþans* ‘turn.PT.PART.MASC.NOM.SG’). More broadly, a reviewer for this journal has raised the question of whether truly transparent rules are subject to loss without the influence of other opacity-inducing changes. We follow on this important question the traditional line developed by King (1973) and others, namely that fully transparent phonological operations should remain active in the grammar as long as they remain undisturbed by other events, whether phonetic or externally-driven, such as language contact. This is a core question worthy of further investigation.

Having drawn on Riad's (1992) chronology, we return in closing to complete the picture with the key developments, as they must have unfolded under our view. In 21, we give an overview of our proposal, aligned with Riad's (1992) chronology.

- (21) a. Long stem syncope, medial and final, beginning ca. 625  
 ([dø:mda], [gestr])
- Umlaut triggers are lost in long stems, but umlaut is still phonologically active.
  - This forces restructuring in nouns and verbs.
  - A weight correlation is established: heavy = umlaut.
- b. Short stem medial syncope, ca. 675  
 ([talða], but [telja])
- Most triggers remain, and umlaut remains phonologically active ([telja]).
  - As a result, we find surface forms reflecting unrestructured underlying forms ([talða]).
- c. Short stem final syncope, ca. 830  
 ([telr], [steðr])
- In short stem verbs, we find umlaut morphologized to particular categories, for instance, present tense.
  - In short stem nouns, the minority umlauted forms give way through leveling to the *status quo ante* ([staðr]).

As we emphasized in section 2, the role umlaut ultimately takes in Old Norse grammar is intermediate between its role in German, where it becomes deeply ingrained across myriad morphological categories, and English, where it is lost down to a few remnants. This paper sketches an account of how the Norse situation could have arisen: Learners basically build their grammars, including lexical representations, to be close to those of the earlier generation. For instance, as long stem umlaut triggers weaken, children do not hear them enough to build an active umlaut rule

there, but they do hear the front rounded vowels and build lexical representations that contain those vowels as underlying.<sup>5</sup>

At the same time, nothing precludes, in principle, umlaut remaining an active phonological process elsewhere in the grammar, namely, in the short stems of the same classes. The attested correlation of umlaut with long stems and its absence in short stems derives from an original situation presenting the reverse correlation, namely, the presence of umlaut in short stems but its absence in long. Careful sifting of the historical record shows just how that “break in similarity” arose.

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<sup>5</sup> We intend this in terms of basic grammatical structures, of course, and in no way mean to deny a role, for example, for peer-group driven changes in pre-adolescence and adolescence, or certain kinds of change even in the speech of adults.

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