

Syllable Structure and Grammaticalization: The Weak Preterite

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1 Five puzzles of Germanic phonology

The dental preterite of weak verbs remains one of the most troublesome chapters of Germanic historical-comparative grammar. The morphological provenience of its dental formative *-d-* has been debated for nearly two centuries, and there is still no consensus on whether it is a reflex of one or more of the Indo-European dental suffixes, a grammaticalized form of the light verb *dō* ‘do’, or some mix of these. The category’s phonological development within early Germanic presents a series of other mysteries, to which this article proposes a novel solution.

Q1: Why does the effect of syllable weight on umlaut in preterite stems differ in North and West Germanic?

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|-----|--------------|-----------------|---------------|--------------|-----------|
| (1) | | Germanic | OHG | Old Icel. | |
| a. | Light stems: | * <i>tali</i> ǣ | <i>zelita</i> | <i>tal</i> ǣ | ‘counted’ |
| b. | Heavy stems: | * <i>dōmi</i> ǣ | <i>tūomta</i> | <i>dōm</i> ǣ | ‘judged’ |

Q2: Why should umlaut be sensitive to vowel length or to syllable weight at all? Umlaut and harmony processes are often subject to *qualitative* constraints on the target and on the intervening trigger; they are rarely if ever categorically restricted to applying just to light syllables or just to heavy syllables.

Q3: Why does the dental preterite seem to undergo distinct “stages” of umlaut in North Germanic? According to Kock (1888, 1916) there were three:

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| (2) | Stage 1: | Unstressed <i>i</i> drops after a long syllable, causing umlaut. |
| | Stage 2: | Unstressed <i>i</i> drops after a short syllable, without causing umlaut. |
| | Stage 3: | Remaining <i>i</i> ’s cause umlaut. |

Other stages have been proposed, but no analysis does quite without them.

Q4: Why is the dental preterite the only category that undergoes early medial syncope in West Germanic? As a standard handbook states:

“Synkope ... tritt im Ahd. konsequent nur bei dem *i* im Praet. (Part. Praet.) der langsilbigen schw. V. I auf” (Braune/Mitzka 1961:63).

The following examples illustrate the unique position of the weak preterite with respect to early syncope in Old High German:

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|-----|----|------------------|---|-----------------|------------------|
| (3) | a. | <i>*hōr-i-ta</i> | → | <i>hōrta</i> | ‘heard’ |
| | b. | <i>blīd-iro</i> | ↛ | <i>*blīdro</i> | ‘blither’ |
| | c. | <i>leng-isto</i> | ↛ | <i>*lengsto</i> | ‘longest’ |
| | d. | <i>muoter-um</i> | ↛ | <i>*muotrum</i> | ‘mothers’ (Dat.) |
| | e. | <i>heilag-es</i> | ↛ | <i>*heilges</i> | ‘holy’ (Gen.) |
| | f. | <i>offan-ōn</i> | ↛ | <i>*offnōn</i> | ‘to open’ |

Although this striking contrast is erased by later syncope processes, it must still be accounted for, and no good explanation for it exists to my knowledge.

Q5: Why is there no umlaut in the OHG Optative Preterite of Rückumlaut verbs such as (4) (Robinson 1980)?

- (4) **hang-i-t-i* → *hangti* (**hengti*) ‘hung’

The puzzle here is this: if umlaut precedes syncope, why was it not triggered by the past tense ending *-i-*, and if umlaut follows syncope, why was it not triggered by the Opt.Pret. ending *-i* — which we did otherwise trigger umlaut:

- (5) **dank-t-i* → *dæhte* ‘thought’

I propose that these five questions have one answer: the weak preterite originated as a light verb, and *umlaut and syncope applied in West Germanic before it was reduced to a stem-level suffix*.

Lahiri 2000 was the first to connect the morphological puzzle of the weak preterite’s etymology with the first of the above phonological puzzles. She proposed that the form’s periphrastic origin actually explains some of its phonological peculiarities. In this paper I propose a somewhat different causal link between the morphology and the phonology, which provides a simpler resolution to the first phonological puzzle, and which disposes of the other four puzzles as well. Each problem, in fact, is not so much solved as eliminated.

- (6)
- Umlaut operates under exactly the same conditions in North and West Germanic.
 - Umlaut is not sensitive to vowel length or to syllable weight.
 - There are no umlaut “stages”. Umlaut is a normal sound change.
 - The dental preterite in West Germanic undergoes regular syncope.
 - The dental preterite in West Germanic undergoes regular umlaut.

Our analysis starts from the assumption that the dental preterite ending is descended from the past tense of the light verb *dōn* ‘do’, probably first proposed by Bopp 1816. Though not uncontroversial, it is perhaps the most widely accepted etymology of the dental preterite (Streitberg 1896, Sverdrup 1929, von Friesen 1925, Tops 1974, Bammesberger 1986).

(7) shows this familiar grammaticalization trajectory, on the assumption that the reduction from the light verb to the suffix goes through a more loosely attached ‘word-level suffix’ or ‘clitic’ stage analogous to English Level 2 suffixes. (The symbol ω stands for Prosodic Word.)

- (7) Stage 1: [[tal + i] ω + [dēd+un] ω] ω nominal form + light verb
 Stage 2: [[tal + i] ω + d + un] ω word-level (“level 2”) suffix
 Stage 3: [zel + i + t + un] ω stem-level (“level 1”) suffix

From a morphological point of view, the assumption is certainly attractive. The templatic ablaut morphology by which “strong” verbs formed their past tenses, inherited from the Indo-European perfect, was restricted to monosyllabic roots. Longer verbs in Germanic would accordingly have formed their perfects with an auxiliary, just as they do in Sanskrit (where disyllabic stems like *cint-ay-* ‘think’ form perfect with “be” or “do”, e.g. *cint-ay-ām ās-a* (or *cint-ay-ām ca-kār-a*). The grammaticalization of the Germanic periphrastic forms into inflected forms would be quite analogous to the grammaticalization of the Sanskrit periphrastic forms in Middle Indic.

An uncontroversial parallel to this trajectory is the grammaticalization of Latin *cantāre habeo* to French *chanterai* ‘I will sing’.¹ The Germanic dental preterite can be assumed to have followed a similar path from the original light verb *dōn* to the suffix *-d-*.

- (8) a. [[cantā + re] ω + [habe + o] ω] ω → [chant + er + ai] ω
 b. [[tal + i] ω + [dēd + un] ω] ω → [zel + i + t + un] ω

In a sense, (7) reverses the proposal of Lahiri 2000 that the new dental suffix first functions as a stem extension, on a par with derivational suffixes, and later becomes treated as an inflectional ending.

- (9) a. [(Verb + Suffix + d) $_{Stem}$ + Inflection] ω
 b. [(Verb + Suffix) $_{Stem}$ + d + Inflection] ω

This alternative seems less attractive because it has the ending migrate “downwards” from the stem level, the opposite direction from what is usually observed, and from what the present proposal implies. Also, it does not explain the phonology as well as ours does.

¹Lahiri 2000 presents a parallel development in Bengali with an interesting additional twist. In this language, the auxiliary *ač^h* ‘to be’ has been recruited to supply the endings of both the progressive and the perfect; in the former the grammaticalization has gone to completion and the erstwhile auxiliary is now just a suffix, while in the latter it has only reached the clitic stage.

The link between the morphology and phonology of the weak preterite that I will explore here is both more direct and more radical. The core idea is simple: umlaut and vowel deletion took place *before* the complement of the light verb was reduced from a phonological word to a stem in West Germanic, and *after* this reduction in North Germanic. Unlike all previous accounts, this achieves fully general and maximally simple formulations of umlaut and vowel deletion, both of which moreover can now be seen to be invariant throughout Germanic. In particular, umlaut applies to light and heavy syllables alike, and apocope and syncope apply freely in both branches, subject to the respective syllable and foot structure of each. No distinct “phases” or “stages” need be posited for either process.

Let us take a closer look at the phonology. In a nutshell, the problem is that West and North Germanic seemingly differ in the conditions under which umlaut and syncope apply — a difference manifested *only* in the dental preterites. Whereas West Germanic *umlauts light stems* and *syncopates heavy stems* (see (10a)), North Germanic *umlauts heavy stems* and *syncopates both light and heavy stems* (see (10b)).

(10)		Germanic	OHG	Old Icel.	
a.	Light stems:	* <i>tali</i> ða	<i>zelita</i>	<i>tal</i> ða	‘counted’
b.	Heavy stems:	* <i>dōmi</i> ða	<i>tūomta</i>	<i>dōm</i> ða	‘judged’

In Old High German, then, the distribution of medial *-i-* in dental preterites is governed by the weight of the preceding root syllable. The vowel is without exception lost after a syllable that is heavy in virtue of a long root vowel, as in (11a), a consonant cluster, as in (11b), or a geminate consonant (which then shortens again before the dental suffix), as in (11c). After short roots (whose final consonant, to be sure, is geminated before the stem-forming suffix *-j-*), the medial *-i-* is normally retained, see (11d).

- (11)
- a. CVC- roots: *tuomta* ‘judged’, *hōrta* ‘heard’
 - b. CVCC- roots: *dampfta* ‘steamed’ (from *dempfen*), *starcta* ‘strengthened’ (from *sterken*), *durstta* ‘thirsted’ (from *dursten*), *wanta* ‘turn’ (from *wenten*)
 - c. CVCC- roots in geminates: *stalta* ‘put’ (from *stellen*), *branta* ‘burned’ (from *brennen*), *kusta* ‘kissed’ (from *kussen*)
 - d. CVC- roots: *nerita* ‘saved’ (from *nerren* < **ner-ja-n*), *knusita* ‘crushed’ (from *knussen* < **knus-ja-n*)

The distribution in (11) seems to indicate that medial vowels were lost after heavy syllables in Old High German. That is indeed what has always been assumed. Yet this putative syncope process is extremely problematic, for it does not apply in other morphological categories in early Old High German, where it is massively contradicted by the data. The fact is that in Old High German, medial vowels are regularly deleted after heavy syllables *only* in weak past tense forms, and retained in other morphological categories. To quote the standard handbook:²

²See also Baesecke 1918:66, 225 ff. for the details.

- (12) “Zum durchgreifenden Gesetz ist der Schwund nach Länge in Prät. der swV.I ... geworden, sonst verbreitet er sich nur unsicher und meist analogisch.” (Baesecke 1918:66).

“Synkope von ursprünglichen Mittelvokalen, die in den übrigen westgerman. Sprachen nach langer Stammsilbe sehr verbreitet ist ... tritt im Ahd. konsequent nur bei dem *i* im Praet. (Part. Praet.) der langsilbigen schw. V. I auf, z.B. *nerita*, *gineritēr*, aber *hōrta*, *gihōrter*... — Sonstige ursprüngliche Mittelvokale werden im Ahd. (abgesehen von den ¶65 A. 3 genannten Fällen³) durchaus bewahrt; also z.B. Part. Praet. auf *-an*: *gibuntanēr*, *eigan* — *eiganemu*; *offanes*, schw. V. *offanōn*; Adj. auf *-ag*, *manag*, *heilag*, Gen. *manages*, *heilages*; Komparative wie *lengiro* zu *lang*.” (Braune/Mitzka 1961:63).

The periphrastic origin of the weak preterites entails a surprising possibility: the medial vowels of heavy-stem preterites need not have been lost by medial syncope: rather, they could well have been lost by *word-final apocope*, at a stage when the stem before former light verb still constituted a phonological word. The light verb that followed it could also still have been a phonological word (structure (13a), like German *-bar*, *-schaft*), or it could already have been reduced to an ending (structure (13b), like the Level 2 inflectional suffixes of English).

- (13) a. [[tal + i]_ω + [dēd + un]_ω]_ω
 b. [[tal + i]_ω + dēd + un]_ω

These two alternatives are equally compatible with our hypothesis: the essential assumption is that the stem was a phonological word.

If the medial *-i-* of heavy-stem preterites was lost while the stem was still a phonological word, it would have been lost by word-final apocope, rather than by medial syncope. And this immediately explains the phonology. For it is a fact that *West Germanic word-final apocope took place precisely after heavy syllables*. The distribution is especially perspicuous in Old English and Old Saxon (high vowel deletion as in *sunu* vs. *word* is a much discussed case in point). In spite of considerable analogical reshuffling,⁴ Old High German reflects the same distribution:

- (14) Old High German *-i* stems (original distribution)

<i>-i</i> stems	Light	<i>wini</i> ‘friend’, <i>quiti</i> ‘saying’, <i>turi</i> ‘door’	(<i>-i</i> retained)
	Heavy	<i>gast</i> ‘guest’, <i>anst</i> ‘favor’, <i>durft</i> ‘need’	(<i>-i</i> deleted)
<i>-u</i> stems	Light	<i>situ</i> ‘custom’, <i>fridu</i> ‘peace’, <i>fihu</i> ‘cattle’	(<i>-u</i> retained)
	Heavy	<i>hand</i> ‘hand’ (later joined the <i>-i</i> stems)	(<i>-u</i> deleted)

By attributing the deletion of the medial vowel in weak past tense forms to normal word-final apocope prior to grammaticalization we can eliminate outright the anomalous early syncope process for the West Germanic weak verb preterites — obviously a good result because it simply does not work outside the weak verb preterites, as

³This refers to a small set of words whose original medial vowels have been analogized to words with original epenthetic vowels. E.g. *meistar* ~ *meist(e)ra* — an originally disyllabic stem (in fact a loanword) which follows the pattern of an originally monosyllabic stem such as *fingar* ~ *fingra*.

⁴Ultimately, most light *-i* stems adopted the declension of heavy stems, and nearly all heavy *-u* stems joined the *-i* stems.

shown by forms like *wirsiro* ‘worse’, *blintemu* ‘blind’ (dat.sg.) or those cited in cited in (12).

The same assumption directly explains the lack of umlaut in the Old High German forms with a deleted medial vowel, such as *tuomta* versus *zelita* (see (10)). For we know on independent grounds that in continental West Germanic, word-final vowels were deleted *before* they could trigger umlaut — that is why the back vowel is retained without umlaut in long *-i* stems like *gast* ‘guest’, *hūt* ‘hide’, *anst* ‘favor’ (contrast *meri* ‘sea’ from **mari*).

By the same token, the analysis makes an immediate prediction for Old English. In that branch of West Germanic, Umlaut did not follow final High Vowel Deletion, but *preceded* it, as shown by the umlaut in long *-i* stems like *giest* ‘guest’, *dæd* ‘deed’, *hȳd* ‘hide’, *ēst* ‘favor’. The chronology of sound changes correctly predicts that — unlike Old High German — Old English has Umlaut even in heavy-stem preterites. In other words, our derivation, as a bonus, helps explain why Rückumlaut occurs in continental West Germanic but not in Old English.

(15) a. Old High German (Final HVD precedes Umlaut):

	$*[[h\bar{u}ti]]_{\omega}$	$*[[tuomi]_{\omega}-t-a]_{\omega}$
HVD	$[h\bar{u}t]_{\omega}$	$[[tuom]_{\omega}-t-a]_{\omega}$
Umlaut	$[h\bar{u}t]_{\omega}$	$[tuom-t-a]_{\omega}$

b. Old English (Umlaut precedes final HVD):

	$*[h\bar{u}di]_{\omega}$	$*[d\bar{o}mi]_{\omega}-d-a$
Umlaut	$[h\bar{y}di]_{\omega}$	$*[d\bar{o}mi]_{\omega}-d-a$
HVD	$[h\bar{y}d]_{\omega}$	$[d\bar{o}m-d-a]_{\omega} (> d\bar{e}mde)$

Note that, although the proposed solution invokes the light-verb origin of the dental preterite, it places a very light burden on the morphology. To get the phonology right, we need only the irreducible minimum assumption that the weak verb stem was a separate *prosodic word* (that is, a *phonological word* in West Germanic when apocope took place. It need not have been a separate *morphological word* at that time, nor indeed (as far as our phonological analysis is concerned) at any time. The identities of the morphological categories are also not important for our purposes — the phonology works regardless of whether the stem was an infinitive, or a verbal noun, or something else,⁵ and whether what followed it was a separate word (a light verb or an auxiliary, stage (7b)), or already degraded to a word-level suffix or clitic, as a transitional stage between word and suffix (stage (7b)). The analysis is even consistent with the idea that the dental suffix is a conflation of the light verb *dōn* with one or more of the Indo-European dental suffixes (such as the perfect participle *-to-*), as long as it inherited its prosodic character from the former. Nor does it matter whether the tense suffix, once

⁵In Sanskrit, it is a special nominalized verb form derived by affixing *-ā* to the *present stem*. E.g. *cint-ay-* ‘think’ forms the periphrastic perfect *cint-ay-ām ās-a* (or *cint-ay-ām ca-kār-a*).

reanalyzed, became a class marker or an inflectional ending (or a stem-level or word-level ending). Sorting out all these options is an engrossing task for future research, but the phonological evidence discussed here does not contribute to it directly. By the same token, the hypothesis that the weak verb stem had the status of a separate prosodic word at the point at which West Germanic apocope applied stands on its own feet, being robustly compatible with a wide range of morphologization scenarios.

2 Explaining the phonological divergence

Now let us examine in more detail how the conditioning of apocope and syncope can be understood on these assumptions. With Optimality Theory, we suppose that phonological processes are limited by ranked violable constraints defined on output representations. In particular, vowel deletion is governed by constraints on the prosodic form of words. The two most important families of such constraints, in Germanic and elsewhere, are those on foot structure and on syllable structure.

Feet have both a lower bound and an upper bound on their size. In the Germanic languages under discussion — as in modern English — the basic metrical unit is a moraic trochee, that is, a bimoraic unit consisting of two short syllables or a long syllable. As is not uncommon in moraic trochee systems, Light–Heavy sequences *could* be parsed into feet as a last resort in order to avoid metrically homeless syllables (the phenomenon called *resolution*).⁶ An additional proviso, formally corresponding to high-ranking NONFINALITY, is that word-final consonants are weightless (“extrametrical”).

- (16) a. FOOTBIN: A foot must contain at least two moras.
b. A phonological word must contain at least a foot.

If feet must have at least two moras (FOOTBIN) and words must contain at least a foot, then words must be minimally bimoraic; this minimum word length requirement excludes [C $\check{V}$] words, and, insofar as final consonants are weightless, also [C $\check{V}$ C] words. Such a word minimality requirement will block word-final V-deletion (apocope) in disyllables after a *short* syllable, viz. [C $\check{V}$ CV] _{ω} $\nrightarrow$ [C $\check{V}$ C] _{ω} . Finnish is an example of just this prosodic constellation. Monosyllabic words may be of the form C $\check{V}$ C, but C $\check{V}$ C words are excluded, for they would be monomoraic because final -C is weightless. In certain registers, Finnish final -i is deleted, e.g. *olisi* $\rightarrow$ *olis*, *nousi* $\rightarrow$ *nous*, *veisi* $\rightarrow$ *veis*; this option is disallowed precisely in C $\check{V}$ CV disyllables: *pesi* $\nrightarrow$ **pes*, *kosi* $\nrightarrow$ **kos*. The same constraining effect of word minimality on apocope is seen in Germanic, as illustrated by the Old High German *i*-stems in (14).

Vowel deletion is also subject to constraints on *syllables*. These typically involve an upper bound on the complexity of the syllable rhyme, or on the number of moras in the

⁶For arguments that the Germanic languages have moraic trochees as their basic foot type, see Kiparsky 2000, and for other views, see Lahiri, Riad, and Jacobs 1999.

syllable. A common restriction of this type is the prohibition of superheavy (3-mora) syllables.

(17) *μμμ: A syllable rhyme is maximally binary.

In a language with this constraint, medial V-deletion (syncope) might fail to apply after a *long* syllable: CVC.CV.CV $\nrightarrow$ *CVCC.CV, and CV.CV.CV $\nrightarrow$ *CVC.CV. An example is Cairo Arabic, where words such as **kalbna*, **baabna* are not possible for this reason, and the syncope process seen in words like *i.di.la* $\rightarrow$ *id.la* ‘straight’ (f.) is blocked in *yik.ti.bu* $\nrightarrow$ **yikt.bu* ‘they write’. As in Germanic, word-final consonants are weightless, so words of the type *baab*, *kalb* are admissible, but, by the same token, **bab*, **kal* are not possible words.

Now let us apply this idea to Germanic.

West Germanic

In West Germanic, by hypothesis, *-i/-* in past tense forms of *-jan* verbs was lost at a time when the stem of weak preterites was still a phonological word in its own right; hence *-i/-* in these forms was lost by apocope. Apocope would have had to apply to the *-i-* in the preterite of *-jan* verbs in heavy stems, but not in light stems, because of FOOTBIN. Since the umlaut-triggering vowel was lost in heavy stems, the later umlaut process could take effect only in light stems. Moreover, there is no need to assume an early medial syncope process, which would be otherwise unattested in the language. This accounts for all the West Germanic data discussed.

(18) West Germanic: syncope in light stems blocked by FOOTBIN

	Light stems	Heavy stems
	[[zali] _ω -t-a] _ω	[[hōri] _ω -t-a] _ω
apocope:	[[zali] _ω -t-a] _ω	[[hōr] _ω -t-a] _ω
reanalysis:	[zali-t-a] _ω	[hōr-t-a] _ω

In light stems, the umlaut-triggering *-i-* is retained: **zalita* $\rightarrow$ *zelita* ‘told’. In heavy stems, apocope takes effect, bleeding umlaut: *hōrta* ‘heard’ ($\nrightarrow$ **hōrta*).

Polysyllabic stems are correctly predicted to pattern with the heavy monosyllabic stems in undergoing vowel deletion and no umlaut, for FOOTBIN does not block apocope in them, e.g. [[mahal+i]_ωta]_ω $\rightarrow$ [[mahal]_ωta]_ω ‘magnified’.

The solution to the fifth puzzle is obvious now: just as syncope in West Germanic treated the stem as a phonological word, so did umlaut. And umlaut operated within the phonological word. The Opt.Pret. endings of Rückumlaut verbs trigger umlaut regularly within words (see (19)a), but fail to trigger it precisely when they are separated from the target vowel by a phonological word boundary (contrast (19)b).

- (19) a. [*dank-t-i]_ω $\rightarrow$ [dæhte]_ω ‘thought’
b. *[[hang-i]_ω-t-i]_ω $\rightarrow$ [[hang]_ω-t-i]_ω (*hengti) ‘hung’

The blocking of phonological processes such as stress and vowel deletion across internal word boundary in English is an exact parallel (e.g. *nationálicity* vs. *nátionalism*, *Vedic* vs. *thirtyish*).

North Germanic

The apocope process just discussed, which applied early in West Germanic, did not extend to North Germanic, as contrasts such as Old Icelandic *gestir* (runic *-gastiR*) versus OHG *gast* demonstrate. Early runic inscriptions (up to the 6th century) preserve final vowels consistently (*wiwaR* (Tune), *þaliR*, *horna*, *dagar*, *sitiR*). We can safely conclude that in this branch of Germanic word-final vowels were still intact at the point when the main verb fused with the following light verb into a single word (at stage (7c)). This conclusion is fully supported by runic weak past tense forms from the same period, such as *satiðo*, *tawiðo*, *fahiðo*, which retain the medial vowel, confirming that syncope in this category took place well after the weak past tense was fully grammaticalized.

If North Germanic weak past tenses lost their medial vowel when the weak preterites were already single words, their deletion must have been governed by the constraints on medial *syncope* — not by the constraints on apocope, as in West Germanic.

Its subsequent deletion is not governed by final apocope, but (as has of course always been assumed) by medial syncope, which is not constrained by FOOTBIN but by syllable structure. What are the relevant North Germanic syllable structure constraints? The Runic evidence shows that early North Germanic, unlike the Old Icelandic of later written texts, was subject to the three-mora prohibition (17) $*\mu\mu\mu$.

(20)	attested Runic form	ON version	
	<i>irilaR</i> (early 7th c.)	<i>iarl</i>	‘earl’
	<i>āsugīsalas</i> (ca. 400)	<i>Āsgīsls</i>	(compound PN)
	<i>wanðarāðas</i> (6th c.)	<i>Vandraþs</i>	(compound PN)

This suggests that there was a shift in the syllable structure of North Germanic between the runic period and later Old Icelandic, perhaps during the 6th century:

- (21)
- Early North Germanic (Runic): the $*\mu\mu\mu$ constraint limited syllables to maximally two moras (CVC, $\bar{C}\bar{V}$), excepting monosyllabic words as usual.
 - Later (Old Icelandic): CVCC- and $\bar{C}\bar{V}\bar{C}$ -syllables became admissible, and arose through syncope, apocope, and certain other processes.

There is independent evidence for the more restrictive syllable structure of early North Germanic compared to West Germanic. There were phonological processes in North Germanic which evaded 3-mora syllables. Some of these processes ‘actively’ eliminated three-mora syllables. These include deletion of *-j-* in overlong syllables, shortening, and possibly the insertion of anaptyctic vowels (though this anaptyxis provides at best weak evidence because it also happened in other consonant clusters, e.g. Istaby *-wulafa*, *-wulafR*, from $< -wulf-$).

- (22) a. North Germanic: [*hirð.joo] → NGmc *[hir.ðo] (ON *hirþa*); light stems kept *j*, e.g. *nīþja*.
 b. West Germanic: no deletion, e.g. OHG *hirtio* [hirt.joo].
- (23) Kragehul *Asugisalas* (< *-gīs.la-), Tune *worahto* (< *worh.to)

Other phonological processes contributed ‘passively’ to the avoidance of three-mora syllables, by failing to apply when they would have given rise to such a syllable. Thus, high ranking of the *μμμ constraint blocks Coda gemination in North Germanic, leading to another isogloss between the two groups:

- (24) a. North Germanic *[tel.jan] (ON *telja*).
 b. West Germanic *[tal.jan] → *[tell.jan] (OHG *zellen*)

Another consequence of high-ranked *μμμ is that it constrained Apocope, as can be seen in in *-i* stems (here we can assume that *-r* is parsed as an extrasyllabic mora):

- (25) Apocope in light stems: [sta.ði(-R)] → [stað(-R)] (↯ *[steð(-R)])
 No apocope in heavy stems: [gas.ti(-R)] → [ges.ti(-R)] (↯ *[gast(-R)])

From (21)-(25) we can infer that in North Germanic, medial syncope would have been originally restricted to *light* stems by *μμμ. Therefore, syncope would have removed the trigger for umlaut in light stems, leaving scope for it to apply only in heavy stems. Hence we would have originally had *dōmiðā → *dōmiðā (later *dōmðā), but *taliðā* → *talðā* (and not ↯ *telðā).⁷

- | | | | |
|------|----------------------------|---|---------------------------|
| (26) | | Light | Heavy |
| | Structure at suffix stage: | [CVC+i+ð+a] _ω | [CVVC+i+ð+a] _ω |
| | Syncope in light stems: | [ta.li.ðā] _ω → [tal.ðā] _ω | [dō.mi.ðā] |

Our conclusion that medial syncope applied first in light stems and later in heavy stems in Old Norse reverses the traditionally assumed relative chronology of those sound changes in Old Norse. So it behooves us to examine carefully the reasons for the traditionally assumed chronology. As far as I can tell, the assumption is based mainly on the West Germanic parallel.⁸ The Runic inscriptions offer a few hints, however, and they seem to confirm that syncope began in *light* stems. The very oldest inscriptions (5th century and earlier) show sporadic syncope with no quantitative bias. However, the Eikeland fibula (archeologically dated to ca. 550) has syncope after medial light syllables but not after heavy syllables (Birkmann 1995:161).

- (27) a. *wiwaR *wir*
 *wiwjon *wiwjo*
 b. *writu *writu* ‘I write’ (cf. Järsberg *waritu*)

⁷We cannot be sure that this was a synchronically stable stage, but if it was, it is of the type that is intractable in parallel OT. On the other hand, it can readily be modeled in Stratal OT (constraint-based Lexical Phonology). A stem-level constraint system with the ranking FOOTFORM ≫ *μμμ ≫ *σ provides the input to a word-level constraint system, where *σ ≫ *μμμ.

⁸In Gothic, the incidence of apocope is governed almost completely by the quantity of the affected syllable, the quality of the vowel, and its position in the word (final vs. medial). The only case of sensitivity to the weight of the stem is perhaps that short *-u* is dropped after some heavy stems (not in *-u* stems, however).

The basis for the handbooks' assumption of the opposite chronology is the late apocope in *short disyllables*, e.g. *kuþumu[n]t*, *sunu* (Helnæs, ca. 800), which would be ON *Guþmund*, *sun* ([guþu]_ω[mundu]_ω, [sunu]_ω). In view of the considerations presented above, this inference is invalid. If both the minimum foot/word constraint FOOT-BIN and the maximum syllable constraint *μμμ were dominant in early Old Norse, and final -C was weightless (NONFINALITY), then *final* apocope would have taken place in *heavy* stems, and *medial* syncope would have taken place in *light* stems. This would be a system like the one of Cairo Arabic, mentioned above. And it fits exactly both the syncope data and the distribution of umlaut seen in the early records.

In the last period of apocope, it seems that the effects of *3-MORA become morphologized to some extent. In the -*ja* stems it dominates FOOTFORM:

- (28) Light -*ja* stems: *kyn* 'kin', *ber* 'berry', *fen* 'fen'
 Heavy -*ja* stems: *rīke* 'kingdom', *kuāþe* 'saying', *dōme* 'judgment'

On the other hand, 3-mora syllables eventually became admissible, so that syncope is extended to heavy stems:

- (29) **dōmiðā* → *dōmðā*, *gestiR* → *gestR*.

Analogical developments such as *talðā* > *telðā* and N.Pl. *steðir* > *staðir* also indicate morphologization of Umlaut. Apparently it became a stem-level process and ceased to be triggered by word level (inflectional) suffixes. (Cf. Lahiri 2000, and the parallel later development of *u*-Umlaut, see Kiparsky 1984.)

- | | | | |
|------|-------------------------|--------------------------------|---|
| (30) | | heavy stems | light stems, later heavy stems |
| | Light - <i>i</i> stems | <i>wini</i> | <i>vin</i> (> <i>vin+r</i>) |
| | | (<i>Ab</i>)- <i>guti</i> | <i>guþ</i> |
| | Heavy - <i>i</i> stems | <i>gast</i> | * <i>gestir</i> > <i>gest+r</i> (Umlaut!) |
| | | - <i>durft</i> | <i>þyrft</i> > <i>þurft</i> (Umlaut!) |
| | Light - <i>u</i> stems | <i>sunu</i> (> <i>sun</i>) | <i>son</i> (> <i>son+r</i>) |
| | | <i>fridu</i> | * <i>frið</i> (> <i>frið+r</i>) |
| | Heavy - <i>u</i> stems | <i>hand</i> | <i>hōnd</i> |
| | Light - <i>ja</i> stems | <i>beri</i> | <i>ber</i> |
| | Heavy - <i>ja</i> stems | <i>tuom</i> (> <i>a</i> -stem) | <i>dōme</i> (Umlaut!) |
| | Light - <i>wa</i> stems | <i>haro</i> , - <i>u</i> | <i>hōr</i> 'flax' |
| | Heavy - <i>wa</i> stems | <i>drang</i> (?) | <i>þrōng</i> 'throng' |

I conclude that the proposed perspective is no less fruitful on the North Germanic side. It sweeps away the unnatural restriction of umlaut to heavy stems posited in previous analyses. Umlaut can now be assumed to apply identically and in full generality in all branches of Germanic. And we can bid good riddance to any weight conditions on umlaut, which were phonetically quite arbitrary — why would a *heavy* syllable be more likely to assimilate to a following high front vowel? — as well as suspiciously redundant on account of repeating a condition which is needed for syncope anyway,

where it *does* make excellent phonetic sense, for the reasons just explained. In any case, there is plenty of evidence that umlaut did apply also in short stems, such as the nouns *telip*, *lykell*, *fetell* (versus Rök *fatlapR* from /fatilaðVr/, where it was bled by syncope). These data then fall out straightforwardly.

A second gain for North Germanic is that the difference between the conditioning of final apocope and medial syncope is derived on principled grounds from the fact that the output of the former (but not of the latter) is subject to word minimality constraints.

3 Conclusions

- The dental preterit's origin as a light verb is the key to its phonology.
- The *-i-* of weak preterites was lost in West Germanic while the ending was still a word-level suffix, and the stem was therefore still a phonological word. In North Germanic it was lost after the ending had already become a stem-level suffix.
- The differences in the chronology of vowel deletion processes in West Germanic and North Germanic follow from the respective syllable structures of these dialects.
- Umlaut need not be restricted to heavy stems in North Germanic. Rather, heavy stems do not lose the umlaut-triggering vowel by medial syncope, because of early North Germanic's avoidance of superheavy syllables. Such a restriction on umlaut would repeat conditions needed for V-deletion anyway, and would be undesirable in view of cases like *telip*, *lykell*, *fetell* (Rök *fatlapR* from /fatilaðVr/).
- There is no need to posit an for weak preterites an otherwise unattested medial syncope process for early Old High German.
- The odd umlaut pattern of Optative Preterites is predicted in its entirety.

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