Resolved—not Germanic—feet in Old English

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1. Introduction

Varieties of ternary feet, some under the cover of binarity, have been posited to account for Old English stress and high vowel deletion. Rice's (1992) ternary feet have bisyllabic heads, with only one of those syllables actually bearing stress—an analysis similar in form to Dresher and Lahiri's (1991) Germanic foot, which consists of a head and a dependant, with the head automatically monosyllabic only if heavy. If light, then the head is light or light–heavy, depending on what comes next. For both Rice (1992) and Dresher and Lahiri (1991), the peak of the third right-edged member of the foot deletes if it a high vowel. McCartney (1999, forthcoming, and to appear) shows that the resolved moraic trochee can be employed word-initially to capture an initial ternarity effect without extending any analysis of ternarity throughout the word (and therefore the language), an effect which seems to have been the driving force in these analyses.

This paper shows that the same facts are accounted for if one assumes a moraic trochee analysis, with resolved trochees ($\acute{L}$ H) where applicable. I show that by positing a word-initial resolved trochee, the facts initially inspiring the development of the bisyllabic-headed or Germanic foot are accounted for, precluding the need to posit a foot type that is not part of the universal inventory of foot types in Hayes (1995). A moraic trochee analysis is not only consistent with stress patterns throughout the rest of the word, it further allows for an explanation of high vowel deletion without resorting to a serial creation of foot and deletion of weak member, a further fact purported to support many of the previous proposals. Under the current proposal, high vowels are simply not realized if they would project heads of feet. This is consistent with the shunning of high vowels from peak positions, not, as alternative analyses suggest, the shunning of high vowels from non-peak positions.

1.1 Background

The end goal here is to account for the stress facts without appealing to any of the mechanisms not supported outside ternarity. But before that, some discussion is necessary.

Ternary rhythm in its strictest sense is stress on every third syllable; alternatively, a lapse of more than one syllable between stresses. Ternarity is relevant necessarily only on the syllabic level, for the canonical iamb is in fact ternary on the moraic level ($\sigma_{\mu}\,\acute{\sigma}_{\mu\mu}$). As a result of the various proposals, a more extended definition of ternary rhythm has evolved, and that is any circumstance under which …σ́ σ… is not followed by …σ́… or …σ #….

The simplest proposals involve pure ternary feet (e.g. Halle and Vergnaud 1991, Levin 1988; Blevins and Harrison 1994) or weak local parsing (Hayes 1995). They are perhaps the least satisfying because they are not only unsupported outside ternarity, but they also leave questions unanswered, such as why the linguistic maxim of binarity is violated. The subsequent proposals, while also ultimately unsatisfying, are steps in the right direction, in their utilization of binarity whenever possible.

Ternary feet are exactly that: feet comprising three syllables, one of which is stressed, and of which the other two are not. Their set includes dactyls, (σ́ σ σ); amphibrachs, (σ σ́ σ); and anapests, (σ σ σ́). Local parsing is the parsing that occurs in the vicinity of any two feet, and when it is weak, two feet are in fact not adjacent, but separated by an unfooted syllable: (σ́ σ) σ (σ́ σ).

The later proposals of the early 1990s ensure binarity is encoded in their representations. Crowhurst (1991) employs a parametric approach and Rice (1992), a templatic one. Thus words with an initial sequence of # $\acute{\sigma}_{\mu}\,\sigma_{\mu\mu}$ ... are specified ON for the $\mathrm{Head}_{\mathrm{MIN}}$ parameter or mapped to the (H N)[1] template, respectively. These approaches I feel culminate in Dresher and Lahiri's (1991) Germanic foot, which is defined as the head, which is of the metrical equivalent of a heavy or two light syllables, and a non-head. Thus all of [$\acute{\sigma}_{\mu\mu}$], [$\acute{\sigma}_{\mu}\ \sigma_{\mu}$], or [$\acute{\sigma}_{\mu}\,\sigma_{\mu\mu}$] constitute heads.

1.2 Objections

The problems facing any account of the Old English facts are threefold: apparent stress on third mora, apparent high vowel deletion in weak position of Germanic foot, and, beyond Old English, a glide alternation sensitive to Germanic feet in Gothic. Previous accounts fail to provide constituents that are attested outside the pattern or constraints (or potential constraints under conversion to a constraint-based framework) that are attested outside the pattern. It is in pursuit of this goal that this paper is written.

[1] Head–non-head

2. Examples of ternarity in Old English

This section provides the backdrop of the ensuing analysis, which pits the *resolved expanded moraic trochee*[2] against Dresher and Lahiri's (1991) Germanic foot. The present proposal limits feet in Old English to the moraic trochee, allowing resolved trochees only under word-initial duress. As this is sufficient to account for Old English stress, it obviates the need for a novel foot.

The data in this section are from Cassidy and Ringler (1971/1891), unless specified *DL*, indicating Dresher and Lahiri (1991). Underlying representations are given for those surface forms said to have undergone high vowel deletion, which will be under discussion in a subsequent section. I have added overties to the examples here in the description to indicate "short diphthongs".

Main stress in Old English forms always appears on the initial syllable, regardless of weight.

(1)	a.	wórd	'words'	(DL)	/wordu/
	b.	héafdes	'head' (gen. sg.)	(DL)	/heafudes/
	c.	wérdu	'troops	(DL)	/werudu/

Secondary stress occurs on non-final syllables (heavy or light) that follow another heavy syllable.[3]

(2)	a.	ó:.ðèr.ne	'other' (acc. sg.)	(DL)
	b.	ǽl.mìh.tig	'almighty'	
	c.	wrǽc.là:.stas.	'exile tracks'	
	d.	e͡áld.hèt.tèn.de	'ancient enemy'	
	e.	brím.lì:.þèn.dra	'seafarer (=Viking)' (gen. pl.)	
	f.	hrím.gì.ce.lum	'frost icicle' (dat. pl.)	
	g.	e͡órð.sè.le	'cave/barrow'	
	h.	hórd.cò.fan	'heart' (acc./dat./gen. sg., nom./acc. pl.)	

[2] A resolved trochee is (Ĺ H). Iambic systems, canonically (L H́), allow (H́) when no light syllable is available. Thus, a head syllable is required, but not necessarily a non-head-syllable. Systems of either type that allow degenerate feet yield (Ĺ). For Dresher and Lahiri (1991), the resolved trochee constitutes the head only. The dependent syllable is optional. So (Ĺ H) may stand on its own, but when it does, it does so as a head, not as a full foot.

[3] Dresher and Lahiri (1991) indicate one exception to this generalization: *ní:tenu*, **ní:tènu*. If it is not an error, I can only assume that one of the sets of data constitutes an exception of some sort, because otherwise identical syllable distributions have differing patterns. This is not to say that either can not be counted for phonologically; rather, they can not be visibly governed by the same constraints.

	i.	fórð.wè.ge	‘way forth’ (dat. sg.)		
	j.	wí:n.sà.lo	‘wine hall’ (nom./acc. pl.)		

Secondary stress occurs on any non-final syllable that follows an unstressed light one.

(3)	a.	ǽ.ðe.lìŋ.ges	‘prince’ (gen. sg.)	(DL)	
	b.	hré:o.sèn.de	‘falling’		
	c.	se͡â.ro.þòn.cèl.ra	‘wise/cunning’ (gen. pl.)		
	d.	cý.le.gì.ce.lum	‘cold icicle’ (dat. pl.)		
	e.	mé.do.bỳ.rig	‘rejoicing city’ (dat. sg., nom./acc. pl.)		
	f.	sé.le.drè:o.rig	‘homesick’		
	g.	há.fe.nò.de	‘lifted’		

Heavy syllables following stressed light syllables do not appear stressed.

(4)	a.	cý.niŋ.ga;	‘king’	(DL)	*cý.nìŋ.ga
	b.	wé.sen.de	‘being’ (v.)	(DL)	*wé.sèn.de
	c.	be-lí.den.ne[4]	deprive of (p.p.)		*be-lí.dèn.ne

Stress does not occur word-finally.

(5)	a.	ó:.ðer	‘other’	(DL)	
	b.	ǽ.ðe.liŋ	‘prince’	(DL)	

I assume the lack of any instances of *(σ́ σ) L H L* is accidental, although the language does not appear high in 5-syllable words. Stress across such a sequence as either *(σ́ σ) (Ĺ H...* (FOOT ALIGNMENT » WEIGHT-TO-STRESS) or *(σ́ σ) L (H́...* (WTS » FTALIGN) would yield further insight into the nature of the interaction between quantity and alignment.

3. Analysis

3.1 How Germanic feet work

Dresher and Lahiri (1991) suggest that the Germanic foot accounts for the systematic absence of stress on peninitial heavy syllables and an apparent deletion

[4] This is a non-stressing prefix, common in Germanic.

of high vowels in metrically weak positions. This nomenclature reflects the applicability of the structure proposed to account for similar phenomena that are metrically-based in other Germanic languages as well.

The Germanic foot can be generalized as comprising a head and a single dependent syllable if present. (Dependent syllables, or weak members, must be non-branching, so heavy syllables adjacent to another will always parse separate feet.) It is not restricted to $(\sigma_s\ \sigma_w)$, however, because the head is as loosely defined as $([\ \ ]_s\ \sigma_w)$, in order to accommodate a bisyllabic head if necessary. The head must comprise two moras, even if it takes two syllables to do so; this leaves the weak member of the foot to be projected from a third syllable. Accordingly, any of $([\acute{\sigma}_{\mu\mu}]_s\ \sigma_w)$, $([\acute{\sigma}_{\mu}\ \sigma_{\mu}\ ]_s\ \sigma_w)$, and $([\ \acute{\sigma}_{\mu}\ \sigma_{\mu\mu}]_s\ \sigma_w)$ fits that description. The term *head* to describe a stressed syllable is not available for use in this context, because under this analysis, both the stressed syllable and its other head-internal syllable may be required to comprise the head constituent.

A light–heavy sequence highlights how this type of analysis differs from others. In a form like *wé.sen.de* ‘being’ (optimal), stress might have been predicted on the central heavy syllable (**wé.sèn.de*), where it occurs when the initial syllable is heavy, as in *ó:.ðèr.ne* ‘other’ (acc. sg.) as illustrated below.

(6)
```
             Ft
            /  \
        [ ]s   σw
        /\      |
       /  /\    |
      μ  μ μ    μ
      |  | |    |
   ([w é.s e n]d e)
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Dresher and Lahiri (1991) restrict an exhaustive monosyllabic foot to those syllables that are heavy (when the subsequent syllable is also heavy), such that an initial heavy syllable is the head of its own foot, while an initial light syllable is not. Since the weak member (of a foot, not of a head) must be non-branching, the second of two heavy syllables cannot be a dependant syllable.

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(7)        Ft          Ft
            |          / \
          [  ]s     [  ]s  σw
           /\         /\    |
           μμ       μ μ   μ
           \/       | |    |
         ([ó:])([ð è r]n e)
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This allows a syllable adjacent to a stressed heavy syllable also to bear stress, something that does not happen with the initial syllable is light. Nevertheless, an initial light syllable still bears stress, so on some level, it must be comprise, either in whole or in part, a head.

2.2 How resolved trochees work

Back-burnering the assignment of initial stress for a moment, Old English displays a clear moraic trochee parse: the syllable supporting the left of every pair of moras is stressed; once a mora is unstressed, the following mora gets stressed. My initial qualification here should not be understood as an indication that the case of initial stress is incompatible with a moraic trochee parse. Rather, it simply is not transparent at this point; but it is still compatible.

I start with the stressing of heavy syllables after heavy syllables. Clash remains unresolved, because WEIGHT-TO-STRESS ("heavy syllables are stressed") outranks *CLASH ("no stresses on adjacent syllables"). (The non-stressing of adjacent light syllables derives from a different section of the constraint hierarchy.) Unless *CLASH is highly ranked, then it falls out of an exhaustive moraic trochee parse that adjacent heavy syllables get stressed, as is illustrated below.

(8) WTS » *CLASH

/o:ðerne/	WTS	*CLASH
a. (ó:)ðerne	*!	
b. ☞(ó:)(ðèr)ne		*

Footing final light syllables creates degenerate feet, not allowed in this language, and footing final heavy syllables violates NONFINALITY ("feet are non-final in the foot"). Although posttonic heavy syllables can be stressed, as in the preceding example they are not automatically so. They are not stressed word-finally, because NONFINALITY dominates WEIGHT-TO-STRESS. This fact further contributes to undermining the need for a Germanic foot, as the lack of stress on the second peninitial syllable here is accounted for independently of foot type.

(9) NONFIN » WtS

/o:ðer/	NONFIN	WTS
a. ☞(ó:)ðer		*
b. (ó:)(ðèr)	*!	

Different is the case when the initial syllable is light, and the second is heavy. In this case, the peninitial heavy syllable is not stressed. This goes directly to the question of what it means to be a moraic trochee. A moraic trochee, although having a maximum boundary (FTMAX (μ)—"feet are maximally bimoraic"), also has a minimum (FTMIN(μ)—"feet are minimally bimoraic") (Crowhurst 1996). This is seen in the failure of initial light syllables in Finnish (McCartney to appear) and Estonian (McCartney 2001) to project to degenerate feet, even at the expense of peninitial heavy stress.

The appearance of a resolved trochee rather than a degenerate foot shows that meeting lower boundary requirements outweighs meeting upper boundary requirements. The choices here are to have the pre-heavy light syllable constitute its own foot, or to have it be the head of a lopsided foot. The latter is the selected outcome.

(10) FTMIN(μ) » FTMAX(μ)

/cyninga/	FTMIN(μ)	FTMAX (μ)
a. (cý)(nìŋ)ga	*!	
b. ☞(cý.niŋ)ga		*

A word with this initial light–heavy shape further indicates that FOOT MINIMALITY outranks WEIGHT-TO-STRESS. Otherwise, the heavy syllable would have either removed the stress completely from the initial syllable (cf. 12b below), or else been stressed itself in addition to the initial syllable (10a), neither of which applies.

(11) FTMIN(μ) » WTS

/cyninga/	FTMIN(μ)	WTS
a. (cý)(nìŋ)ga	*!	
b. ☞(cý.niŋ)ga		*

The appearance of a non-canonical head foot tells us that is more important for the head foot of the prosodic word to be properly situated (i.e. at the left edge) than for it to be well-formed, should the two compete. This is also evident in Finnish (McCartney to appear) and Estonian (McCartney 2001), where main stress had to occur word-initially, regardless the distribution of any weight elsewhere in the word.

Given that light syllables normally do not get stress when they immediately precede heavy syllables, some constraint is necessary here to enjoin the postponing of word-initial stress. FOOT MAXIMALITY and WEIGHT-TO-STRESS, both of which are dominated by FOOT MINIMALITY, are also both dominated by HEAD ALIGNMENT ("prosodic words are left-headed"), ensuring a resolved trochee over a displaced better-formed head foot word-initially.

(12) HDALIGN(L) » FTMAX(μ), WTS

/cyninga/	HDALIGN(L)	FTMAX(μ)	WTS
a. ☞(cý.niŋ)ga		*	*
b. cy(níŋ)ga	*!		

The last ranking here is one that would have been expected given the rankings already established, but it is stated explicitly here anyway. FOOT MAXIMALITY violations are better than FOOT MINIMALITY ones, and that the head foot must be initial no matter what; we are left with ensuring that the head foot is trochaic with respect to the location of its head within the foot (FTFORM(T)—"feet are left-headed"), even at the expense of realizing a trochee that is uneven.

(13) FTFORM(T) » WTS

/cyninga/	FTFORM(T)	WTS
a. (cy.níŋ)ga	*!	
b. ☞(cý.niŋ)ga		*

For stress, word-initial phenomena can be accounted for by positing word-initial resolved moraic trochees, without necessity of the typologically unmotivated Germanic foot. In the next section, this proposal accounts for the distribution of high vowels and stress, in an analysis that does not rely on the serial creation of a binary foot—an odd one at that—and the subsequent deletion of its weak member.

4. Support from outside ternary stress

4.1 "High vowel" deletion

The objection to the method of defining the environment as the one created by footing comes directly from Optimality Theory. Serial creation of an environment later to be targeted is an impossibility in a framework that does not support derivations, leaving the Optimality Theoretician in search of an alternative analysis, and possibly even description. That aside, atheoretically lacking is any reason why the weak member of any constituent should delete; its identification as weak presupposes the existence of a head. Furthermore, if transition is from less canonical/less optimal to more canonical/more optimal, then we should expect feet looking more like members in the inventory (e.g. branching), not less. This necessitates a new description. Accordingly:

Non-initial high vowels occur after a stressed short syllable.

(14)	a.	cý.niŋ	'king'
	b.	ló.fu	'praises'
	c.	wé.rud	'troops'

They do not occur after unstressed short syllables.

(15)		wé.rud	'troops'	cf. /werudu/

They do not occur after stressed long syllables.

(16)	a.	word	'words'	cf. /wordu/
	b.	héaf.des	'head'	cf. /heafudes/

The distribution of high vowels here derives from the tension between markedness and faithfulness. Prominent positions naturally gravitate towards having prominent segments; placing weak segments in strong position has a cancellation effect, or at least a mitigating one.

High vowels are least among the non-schwa vowels likely to be syllable peaks, so it seems likely that they should also be less likely to be in a prominent position in which their prominence would be enhanced. This can alternatively be seen as a restriction on having marked segments in positions where their markedness is enhanced.

Following Kenstowicz (1994), from Prince and Smolensky (1993), I manipulate the intrinsic ranking of the sonority hierarchy and prominence preference as applied to the peak–margin range of a syllable and apply it to the peak–trough poles of a metrical foot. In such a framework, the relative preference for a certain segment in a certain realm is translated into an intrinsic ranking expressing the same information. For example, P/a ➤ P/i, readable as low vowel peak preference over high vowel peaks, translates into constraints as a negative preference represented in the opposite direction: *P/i » *P/a, which reads that high vowel peaks are more marked than low vowel peaks; the disallowance of high vowel peaks outweighs the disallowance of low vowel peaks. An intervening constraint such as MAX-IO ("Input segments must be in the output") would indicate that high vowels are deleted rather than serve as peaks, but low vowels remain.

Kenstowicz (1994) accounts for the role sonority plays in stress by reducing the difference between stressed and unstressed syllables to one identical to the difference between peaks and margins within syllables. For him, the stress wave is simply a matter of peaks and troughs, and what is preferred or dispreferred for one peak or trough is preferred or dispreferred for another peak or trough. Accordingly, high vowels are as dispreferred as peaks of feet as they are as peaks of syllables (*P_{Ft}/*u*—"no stressed syllable has [u] as a peak"). It is just such a parallel that I engage here. (Henceforth *u* shall represent high vowels here).

The restriction on high vowels as peaks necessarily interacts with vowel MAXIMALITY (MAX-V), which works towards retaining as much vocalic input material as possible in the output. Since that particular instantiation interacts with PARSE, it is necessary to decompose MAX-V into (at least a subset of) its intrinsic component constraints, MAX-[+high] (henceforth MAX-*u* ("every /u/ has an output correspondent")) and MAX-[-high]. The restriction of high vowels while preserving non-high vowels now becomes possible.

For Old English, if the footing were such that the head of a foot contained a high vowel peak, the parse would fail. The restriction against high vowels as peaks outweighs the realization of underlying high vowel material.

(17) *P_{Ft}/*u* » MAX-*u*

/heafudes/	*P_{Ft}/*u*	MAX-*u*
a. (héa)(fù.des)	*!	
b. ☞(héaf)des		*

An alternative strategy of course would be for footing simply to ignore that syllable. This, in fact, is the angle from which McCartney (forthcoming) approaches an analysis of Winnebago. Any time a syllable is transparent to a parse, that syllable cannot possibly head a foot, as none exists for it to head. That candidate vacuously satisfies *P_{Ft}/*u*.

(18) PARSE » MAX-*u*

/heafudes/	PARSE	MAX-*u*
a. (héa)fu.des	**!	
b. ☞(héaf)des	*	*

Here an unfooted second syllable is fatal. Even if the final syllables in both candidates were footed, they would still tie under that constraint for that syllable, and the loser would still have one more unfooted syllable than the winner.

The restrictions on foot size notwithstanding, PARSE ("syllables are footed") plays a contributing role in that it, too, restricts the occurrence of high vowels. A candidate can fail when its high vowel in which a non-foot-peak high vowel underparses does not survive. Recall that PARSE is a constraint on syllables, not segments, so its effects are visible only on syllables that are footed, not on whether specific segments individually surface or not.

In the examples that follow, the restriction against high vowel peaks is visible, as none of the candidates contain stressed syllables with high vowels. Rather, other constraints targeting high vowels, not constraints specifically dealing with stress, are active. In this next example, the domination of PARSE over MAX-*u* means a candidate without a non-parsing syllable is wins over one with a high vowel.

(19) PARSE » MAX-*u*

/wordu/	PARSE	MAX-*u*
a. (wór)du	*	
b. ☞(word)		*

Since these candidates tie under the restriction against high vowel peaks, the system is left only to evaluate PARSE and MAX. A third candidate that satisfies both of these conditions, that is, it retains its high vowel and it parses a foot, could conceivably win. But moraic FOOT MAXIMALITY ("feet are maximally bisyllabic"), which prevents a foot that is too large from satisfying lower limit requirements, blocks this.

(20) FTMAX(μ) » MAX-*u*

/wordu/	FTMAX(μ)	MAX-*u*
a. (wór.du)	*!	
b. ☞(word)		*

Here the foot-internal high vowel in the non-optimal candidate satisfies MAX-*u*, and, if it were indicated, would satisfy PARSE too. However, the consequent foot is trimoraic, a violation of moraic FOOT MAXIMALITY.

Although FOOT MAXIMALITY is not an issue when there are enough segments only to fill a foot and nothing else, FOOT MINIMALITY is an issue when there are (or can be) less than enough segments to support a full foot. The unfooted high vowel yields either an additional PARSE violation, or a high vowel MAXIMALITY violation, if it does not surface.

(21) $*P_{Ft}/u$, PARSE » MAX-*u*

/lofu/	$*P_{Ft}/u$	PARSE	MAX-*u*
a. ☞(ló.fu)			
b. (lóf)			*!
c. (ló)fu		*!	

A simple way of precluding stress on high vowels without too much displacement is to alter the vowel quality. If high vowels surface as mid, for example, then there is no high vowel to present a problem if stressed. The IDENTITY family of constraints as they relate to features of segments militates against this. The specific instantiation that is relevant here is IDENT(*height*) ("correspondent segments are identical in height").

Not surprisingly, this constraint ranks above the constraint that the optimal candidate violates, which is MAX-*u*. The domination of height IDENTITY over MAX-*u* means vowel deletion is better than modification.

(22) IDENT(*height*) » MAX-*u*

/heafudes/	IDENT(*height*)	MAX-*u*
a. (héa)(fò.de)s	*!	
b. ☞(héaf)des		*

In this example, rather than projection of the syllable containing a high vowel to the head, the vowel quality is changed. As a lower vowel, it does not meet the description of the environment for the constraint against high vowel peaks. The tradeoff is that it incurs a height IDENTITY violation, which is fatal.

4.2 Siever's Law in Gothic

Dresher and Lahiri (1991) further proposed that their Germanic foot could be used to account for a glide–vowel alternation in Gothic, known as Siever's Law. (More accurately, this should be described as a long vowel–rising diphthong alternation, and all the ramifications of so terming them.)

In Gothic, [ii] occurs after polysyllabic stems.

(23)	a.	mí.ki.lìis	'you (sg.) glorify'
	b.	glít.mu.nìis	'you (sg.) glitter'
	c.	sí.poo.nìis	'you (sg.) be a disciple'

[ii] occurs after heavy stems.

(24)	a.	sóo.kìis	'you (sg.) seek'
	b.	nám.nìis	'you (sg.) name'

[ji] occurs only after light stems.

(25)	a.	nás.jis	'you (sg.) save'
	b.	ár.jis	'you (sg.) plow'

The "conventional" vocalization rule is /j/ glides when preceded by a tautosyllabic consonant (.Cji >.Cii). The vocalization rule works for heavy stems: [soo.kjis] > /soo.kiis/. The vocalization rule also works for polysyllabic stems: [mi.ki.ljis] > /mi.ki.kiis/, [si.poo.njis] > /si.poo.niis/.

The vocalization rule makes wrong predictions for light stems, with "expected syllabification": [a.rjis] > /ar.jis/ *[a.riis]. Furthermore, the vocalization rule would make correct predictions for light stems with "special syllabification": [ar.jis] > /ar.jis/. This is a vacuous application of the vocalization rule.

According to Dresher and Lahiri (1991), vocalization occurs after *H* or *L σ*, but not *L*, the shape of head of the Germanic foot. Therefore, vocalization occurs only in the weak position of the Germanic foot. The Germanic foot generalization works for heavy stems: *([soo].kjis) > ([soo])([kiis])*. The Germanic foot generalization works for polysyllabic stems: *([mi.ki]ljis) > ([mi.ki])([liis])*, *([si.poo]njis) > ([si.poo])([niis])*. The Germanic foot generalizations works for light stems: *([a.rjis]) > ([ar.jis])*. Note that here, *([ar.jis]) > ([ar.jis])* would still work. The Germanic foot generalization begs the syllabification question, because syllabification of the pre-glide consonant to either syllable leaves each syllable light.

Under the moraic trochee analysis put forth in this paper, the glide–vowel distribution is predictable according to what makes the most optimal (including exhaustive) moraic trochaic parse. The following examples show how each form is footed under resolved moraic trochaism, and how each is an optimal exhaustive parse.

(26) a. heavy stems

(só$_{\mu\mu}$)(kì$_{\mu\mu}$s) *(so$_{\mu\mu}$)kji$_{\mu}$s *(so$_{\mu\mu}$k)ji$_{\mu}$s

b. polysyllabic stems

i. (mí$_{\mu}$.ki$_{\mu}$)(lì$_{\mu\mu}$s) *(mi$_{\mu}$.k$_{\mu}$i)lji$_{\mu}$s *(mi$_{\mu}$.ki$_{\mu}$l)ji$_{\mu}$s

ii. (sí$_{\mu}$.po$_{\mu\mu}$)(nì$_{\mu\mu}$s) *(si$_{\mu}$.po$_{\mu\mu}$)nji$_{\mu}$s *(si$_{\mu}$.po$_{\mu\mu}$n)jis

c. light stems

(á$_{\mu}$r.ji$_{\mu}$s) *(a$_{\mu}$.ri$_{\mu\mu}$s)

An added bonus here is satisfaction of the Richness of the Base (alternatively, the Freedom of the Input) requirement that we avoid selecting one or the vowel or the glide as crucially underlying.

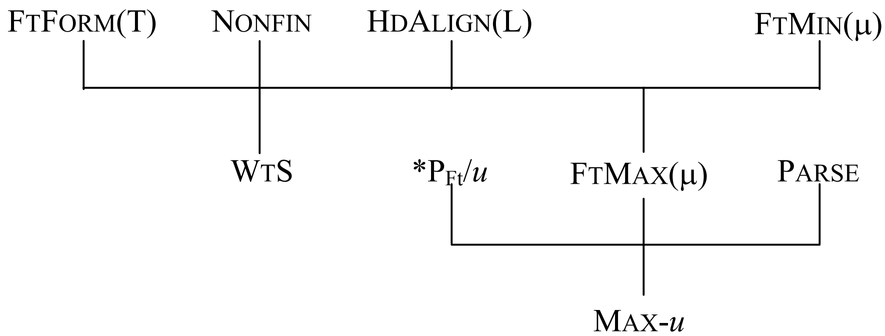
5. Summary

The Germanic foot, defined as a foot of the shape head–non-head, where the head has the shape [L σ], allows for a heavy syllable, two light syllables, or a light–heavy combination to comprise a head. Dresher and Lahiri (1991) proposed this foot type to account for two things, the initial ternarity effect, and high vowel deletion. This foot type accounts for the facts, but the moraic trochee, resolved initially, of the current proposal fits into the inventory of basic foot types. This is in contrast to the Germanic foot, the application of which is outside beyond these circumstances. The resolved (moraic) trochee, although marked, is not only still a member of the basic inventory of feet, but has applications beyond this system. Because the head foot must be leftmost in the word, the initial ternarity effect is derivable from constraints on location dominating those on foot well-formedness.

The analysis I propose for high vowel deletion does not make wrong predictions that the Germanic foot would have otherwise accounted for; high vowels in non-prominent positions do in fact not surface. The difference between these two approaches lies in the non-prominent position in which they are located. For Dresher and Lahiri (1991), they are outside (next to) the head; in my analysis, they are avoided not because they are too weak to fulfill a foot, but the opposite. They are too weak to sustain headedness of the foot.

The constraint hierarchy for Old English is graphically presented here:

(29) Summary ranking



The word-initial resolved trochee results from a conspiracy of undominated left HEAD ALIGNMENT and moraic FOOT MINIMALITY. These two together allow neither word-initial degenerate syllables nor full feet that are not left-aligned. This indicates that these two constraints dominate moraic FOOT MAXIMALITY and WEIGHT-TO-STRESS, since heavy syllables cannot alter the ALIGNMENT or MINIMALITY requirements. Altering trochaic foot form is of no avail either, since an initial iamb, while perhaps satisfying a constraint on initial footing, could not satisfy head placement. The distribution of high vowels inside well-formed feet then results not from serially creating a foot and then deleting its weak member; rather, it is the result of a more optimal parse, omitting material that does not fit.

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