Some Applications of the Primary Accent First Parameter

B. Elan Dresher and Aditi Lahiri
University of Toronto & University of Oxford

1 Introduction

Harry van der Hulst has contributed to virtually every area of phonology, including segmental structure, syllable structure, metrical structure, prosody, sign language phonology, and the history of phonology.[1] In this paper we focus on one of his contributions to the study of accentual systems and foot typology. In a number of publications (van der Hulst 1984, 1996, 1997, 2009, 2010, 2012; Lahiri and van der Hulst 1987; Goedemans and van der Hulst 2014), he has argued that there are stress systems that have 'Primary Accent First'. In such systems, a main stress is put down at a word edge, independently of metrical structure that may be set up later.[2]

In this paper we call attention to two different applications of this idea. In section 2, building on Lahiri and van der Hulst (1987), we show how Primary Accent First applies to the metrical structure of West Germanic. In section 3, we propose that Primary Accent First can help solve a conundrum in the learnability of metrical structure.

2 Primary Accent First in West Germanic

Quantity-sensitive (QS) languages with fixed initial stress, including on light syllables, pose a problem for moraic trochees as proposed in Hayes (1986). Under a strict moraic trochee analysis, LH words (where L represents a light syllable and H a heavy syllable) cannot be stressed on the initial light syllable, unlike HL words. In particular, the initial L of an LH word cannot be parsed into a moraic trochee, as neither (L H) nor (L) (H) are possible parses. We thus expect initial LH to be parsed as in (1a), where stress would be expected to fall on the second syllable. Unfortunately, Germanic languages, from reconstructed West Germanic to Gothic, Old English, and Old High German, all show fixed initial stress (excluding certain unstressed prefixes), no matter the type of syllable.

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[1] We are pleased to be able to participate in this volume in honour of Harry van der Hulst, a star among phonologists and a superb colleague and friend to both of us. Aditi and Harry go back three and a half decades, including projects together, arguments on metrical feet, schwas, train timetables, and Dutch eating habits, and have enjoyed many hours of talking about phonology! Elan has been working with Harry since the 1990s, when we collaborated on papers on acquisition and head-dependent asymmetries at workshops in the Netherlands, and continuing to the present day, co-editing a new history of phonology (Dresher and van der Hulst 2022). Harry was also instrumental in the founding of the University of Toronto Linguistics Department band.

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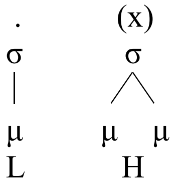
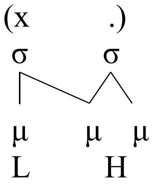
[2] In the cited publications, van der Hulst proposes that Primary Accent First is the default mode that characterizes most stress systems except certain types, such as 'count systems' in which all the feet of a word must be calculated before main stress can be assigned. In this paper we take the conservative position that Primary Accent First applies *at least* in the cases where the main stress is fixed on a particular edge syllable; see further section 3 for a proposal of how Primary Accent First might co-exist with the more metrically integrated main stress parameter.

(1) a. Expected moraic trochee



b. With ambisyllabic mora (based on Lahiri and van der Hulst 1987)



An important principle proposed by Harry van der Hulst is that primary stress could be assigned first, before assigning feet to the rest of the word (Primary Accent First; see also in this volume Bogomolets; Goedemans and Prokic; Revithiadou; and Vaxman). In a paper on foot typology, Lahiri and van der Hulst (1987) showed that one set of problems could be resolved for LH words by allowing a stress to first be assigned to an initial L, and then assuming that the first mora can be supported by a following mora, which becomes ambisyllabic. That is, a mora from the H syllable of an LH word could be subsumed into the first syllable, and this would still make up a moraic trochee, as shown in (1b).

In this section we revisit the Germanic data, reiterating the fact that the moraic trochee alone does not cover the facts of Germanic, unlike what has often been claimed (Keyser and O'Neil 1985; Halle, O'Neil, and Vergnaud 1993; Idsardi 1994; Hutton 1998; Bermúdez-Otero and Hogg 2003; Bermúdez-Otero 2005; Goering 2016a, 2016b), and even allowing for the ambisyllabic mora. We will show that van der Hulst's notion of Primary Accent First and mora borrowing holds; however, we still need the trochee to be an asymmetric one, allowing for at least a bimoraic head which can be maximally trimoraic and no more.

We show how the asymmetric trochee applies to Old English high vowel deletion, West Germanic gemination, and Sievers's Law. The crucial facts are discussed in the following sections.

2.1 Old English High Vowel Deletion

High vowel deletion (HVD) is observable in both Old English (OE) and Old High German (OHG). Our examples are from Old English. HVD deletes a high vowel *u* or *i* after a heavy syllable (either a long vowel, V̄, or a syllable closed by a consonant, VC) or after a light syllable (ending in V) followed by another syllable. Lahiri and van der Hulst (1987) and Dresher and Lahiri (1991) showed that the moraic trochee is insufficient to account for the data in (2).

(2) Old English high vowel deletion (HVD)

Gloss	a. 'ship-NOM.PL'	b. 'word-NOM.PL'	c. 'head-GEN.SG'
UR	/scip-u/	/word-u/	/hēafud-es/
HVD	—	word	hēafdes
Gloss	d. 'head-DAT.SG'	e. 'chicken-NOM.PL'	
UR	/hēafud-e/	/ċīcen-u/	
HVD	hēafde	—	

If these words were parsed into moraic trochees where an unfooted [u] is deleted, we would have the derivations in (3); we obtain the wrong result in (3d), where the [u] cannot be deleted from *hēafude* since it is the head of a foot.

(3) OE HVD with a moraic trochee

	a. (x .)	b. (x) .	c. (x) . (x)
	sci pu	wor du	hēa fu des
HVD	—	word	hēafdes
	d. (x) (x .)	e. (x) (x .)	
	hēa fu de	ċī ce nu	
HVD	*hēafude	—	

A further problem occurs with words such as *wordum* 'word-DAT.PL' and *lofum* 'praise-DAT.PL' where the second syllable is heavy. These words are identical in the sense that neither lose their [u] and both are stressed on the initial syllable. Dresher and Lahiri (1986), an earlier reiteration of their paper in (1991), had argued that all feet must have at least two moras. If the first syllable was light, a mora had to be borrowed from the second syllable (a process known in the study of metre as *resolution*). This was their 'sub-foot' analysis. Lahiri and van der Hulst (1987) accounted for this by assuming that the mora was borrowed from the second syllable. To allow a stress on a lone initial L in the first place, though, Lahiri and van der Hulst proposed that Primary Accent First creates a stress on a word-initial syllable, be it H or L.

The notion of stress assignment without foot construction can be expressed in terms of the simplified bracketed grid (SBG) theory of Idsardi (1992, 2009) and Halle and Idsardi (1995). In SBG, single unpaired brackets can be assigned to designated elements. In our case, we can specify that a left bracket is constructed at the left edge of the word, and that a stress is assigned to the first mora to the right of this bracket (4a). In a second step, metrical feet are created, with a second mora borrowed from the second syllable if necessary (4b).[3] The only [u] which is not footed is in *wordu* and it is subject to HVD (indicated by underlining).

(4) Steps in stress assignment (based on Lahiri and van der Hulst 1987)

a. Create initial stress on first syllable

(x	(x	(x	(x
μ μμ	μ μ	μμ μ	μμ μμ
lo fum	lo fu	wor du	wor dum

b. Create metrical feet with an ambisyllabic mora when needed

(x)	(x)	(x) .	(x) (x)
μ‿μμ	μ‿μ	μμ μ	μμ μμ
lo fum	lo fu	wor du	wor dum

[3] We do not attempt here an entire SBG analysis of OE stress. The device of assigning an initial bracket may have applications beyond Primary Accent First; see Dresher (2009) for an SBG analysis of Tiberian Hebrew.

Lahiri and van der Hulst's analysis had the added benefit that a moraic trochee analysis could be retained. Indeed, this was precisely the sort of analysis which Dresher and Lahiri (1991) had in mind when they argued in support of a resolved trochee. The resolved trochee is supported by two points: first, the initial syllable, which is the head of its foot, has to minimally have two moras; and second, the foot could branch. Thus, it could not be a strict moraic trochee. The resolved trochee could contain up to three moras in the head (one mora from an initial L + two from a following H) and a single mora as the weak branch of the foot. The crucial examples are words which have an initial heavy syllable followed by a [u] (*hēafude* > *hēafde*) or an initial light syllable followed by either a light or a heavy syllable and then a syllable with [u] (*fareldu* 'journey-NOM.PL' > *fareld*). The resolved trochee analysis is given in (5).

(5) Resolved trochee: μμ head labelled within square brackets

	a. (x)	b. (x .)	c. (x .) (x)
	[μ‿μ]	[μμ] μ	[μμ] μ μμ
	sci pu	wor du	hēa fu des
HVD	—	word	hēafdes
	d. (x .) .	e. (x .) .	f. (x .)
	[μμ] μ μ	[μμ] μ μ	[μ‿μμ] μ
	hēa fu de	ċī ce nu	fa rel du
HVD	hēafde	ċīcenu	fareld

Lahiri and van der Hulst's analysis correctly allows a L syllable to group together with a H syllable as well as with another L syllable (i.e. LX). But to argue that this is a strict moraic trochee would imply that HVD applies to a high vowel that is not part of a foot. HVD applies correctly to the first three words in (6) but not to the fourth one, where the u which ought to be deleted is parsed as the head of a foot (in bold).

(6) HVD with moraic trochees with no weak branch

	a. (x) .	b. (x) (x .)	c. (x) .	d. (x) (x .)
	μ‿μμ μ	μμ μ μ	μμ μ	μμ μ μ
HVD	fa rel du	ċī ce nu	wor du	*hēa **fu** de

Under this analysis, the unfooted final u would be deleted for both *wordu* and *fareldu.* Note that the final [u] in *cīcenu* is retained correctly but the u in *hēa**fu**de* should delete and cannot. The rule of HVD applies only to the underlined [u]s in the weak branch of the foot, as shown in (5).

The ambisyllabic mora indeed is the right idea for the head of the foot—viz. that it ought to be resolved so that LX=H; but it is also the case that the foot has to be asymmetric and branching to allow for all the facts.

2.2 West Germanic Gemination and the Resolved Trochee

Gemination in West Germanic affected all consonants except /r/. Stem-final consonants geminated when followed by /j/, which could be a suffix or a stem extension. However, gemination was only permissible if the stem was 'light'.[4] Here, too, we see that the LX resolved sequence patterns with H. The underlying glide /j/ was absorbed in the process of gemination; when there was no gemination, it became an /i/ if followed by a vowel or at the end of a word. The high vowel so produced was subject to HVD or lowered to *e* at the end of the derivation. The resolved trochee (7) assumed by Dresher and Lahiri (1991) and later permits the analysis in (8) (see Lahiri 1982 for further discussion of these rules and derivations).

(7) Resolved trochee: [x]= HEAD OF THE FOOT

	a. H L	b. L L L	c. L H L
Foot	(x .)	(x .)	(x .)
Head	[x]	[x]	[x]
Moras	μμ μ	μ⁀μ μ	μ⁀μμ μ
Syllables	H L	L L L	L H L

(8) OE gemination and HVD

UR	/STEM-j-GEN.SG/	/STEM-j-NOM.PL /	/STEM-j-NOM.SG/
a. *race*	/cyn-j-es/	/cyn-j-u/	/cyn-j-Ø/
Gemination	cynnes	cynn-u	cynn
/j/ > vowel/___V	—	—	—
HVD	—	cynn	—
word-final /j/ > [i]	—	—	—
word-final [i] > [e]	—	—	—
Output	[cynnes]	[cynn]	[cynn]
b. *piece*	/styċċ-j-es/	/styċċ-j-u/	/styċċ-j-Ø/
Gemination	—	—	—
/j/ > vowel/___V	styċċies	styċċiu	—
HVD	styċċes	styċċu	—
word-final /j/> [i]	—	—	styċċi
word-final [i] > [e]	—	—	styċċe
Output	[styċċes]	[styċċu]	[styċċe]

[4] Note that a CVC stem is considered to be 'light', even though CVC itself is a heavy syllable, because when inflected, typically by a vowel or glide, the stem-final C syllabifies as an onset to the following syllable, thus making the stem-initial syllable truly L; e.g., CVC+V is syllabified CV.CV.

c. *noble*

Gemination	/æþel-j-es/	/æþel-j-u/	/æþel-j-Ø/
Gemination	—	—	—
/j/ > vowel/___V	æþelies	æþeliu	—
HVD	æþeles	æþelu	—
word-final /j/ > [i]	—	—	æþeli
word-final [i] > [e]	—	—	æþele
Output	[æþeles]	[æþelu]	[æþele]

The point to note is that gemination and HVD interact when the stem is L (8a), but gemination is blocked for H (8b) and LL (8c) stems. Finally, the /j/ glide is vocalized during syllabification if it is not word final. It survives to the very end, when it has to vocalize to survive and eventually becomes a schwa (written <e>) like all unstressed vowels. A summary of the interaction of gemination and HVD is given in (9).

(9) Interaction of gemination and HVD

a. Gemination feeds HVD: *cynnu* > *cynn.*
b. Gemination is blocked in stems of the form H (*styċċ*) and LL (*æþel*).
c. HVD appears not to apply to the final *u* in the H (*styċċu*) and LL (*æþelu*) *ja*-nouns (unlike what occurs in the *a*-nouns).

In (10) we compare the light and heavy stems of the the *ja*-nouns with the *a*-nouns; the difference is that the *ja*-nouns have a /j/ stem extension.

(10) Comparing OE neuter *a*- and *ja*-nouns

	a. neuter *a*-nouns		b. neuter *ja*-nouns	
L stem	/lof-Ø/	/lof-u/	/cyn-j-Ø/	/cyn-j-u/
	[lof]	[lofu]	[cynn]	[cynn]
H stem	/word-Ø/	/word-u/	/styċċ-j-Ø/	/styċċ-j-u/
	[word]	[word]	[styċċe]	[styċċu]

On the surface it looks as if the H stems maintain the [u] in the *ja*-nouns but not in the *a*-nouns and that the L stems are exactly the opposite. The reason, of course, is the interaction of gemination and HVD as we saw in (8). We observe the following generalization about gemination:

(11) Generalization about WGmc gemination

Stem final C+*j* is geminated unless the HEAD of the foot would be trimoraic. If gemination leads to a trimoraic head, gemination is blocked.

The resolved trochee accounts for gemination and HVD as shown in (12).

(12) Derivations of L, H, and LL stems

	Footing →	*Gemination* →	*j > i* →	*HVD* →	*Output*
a. ‘*race*-DAT.SG’					
	([x]) μ‿μ cy nje	([x] .) μμ μ cyn ne	—	—	cynne
‘*race*-NOM.PL’					
	([x]) μ‿μ cy nju	([x] .) μμ μ cyn nu	—	([x]) μμ cynn	cynn
b. ‘*punishment*-GEN.SG’					
	([x]) (x) μμ μμ wī tjes	([x]) (x) *μμμ μμ wīt tjes BLOCKED	([x] .) (x) μμ μ μμ wī ti es	([x]) (x) μμ μμ wī tes	wītes
‘*punishment*-NOM.PL’					
	([x] .) μμ μ wī tju	([x] .) *μμμ μ wīt tju BLOCKED	([x] .) . μμ μ μ wī ti u	([x] .) μμ μ wī tu	wītu
c. ‘*noble*-DAT.SG’					
	([x] .) μ‿μ μ æ þe lje	([x] .) *μ‿μμ μ æ þel lje BLOCKED	([x] .) . μ‿μ μ μ æ þe li e	([x] .) μ‿μ μ æ þe le	æþele
‘*noble*-NOM.PL’					
	([x] .) μ‿μ μ æ þe lju	([x] .) *μ‿μμ μ æ þel lju BLOCKED	([x] .) . μ‿μ μ μ æ þe li u	([x] .) μ‿μ μ æ þe lu	æþelu

Gemination is blocked in /æþel-j/ (12c) because the result of this process would <u>not</u> make the foot any heavier; instead it is the ambisyllabic mora of Lahiri and van der Hulst (1987) or the sub-foot of Dresher and Lahiri (1991) which would become heavier. In the case of /wīt-j/ (12b), gemination is blocked because the head syllable would become trimoraic. That, too, is not permitted.[5]

[5] In fact, a similar constraint is still valid in Level 1 English phonology: all stressed syllables can be maximally trimoraic (*wide, safe*) unless the coda ends with a coronal cluster such as *field, kind.*

To summarize, gemination has the consequences and constraints shown in (13):

(13) Constraints on WGmc gemination

a. Gemination occurs:	Cj > C:		CVCj > CVC:	
b. Gemination is blocked:	CV:Cj	(*CV:CC)	CV CVC j	(*CV CVC:)

2.3 Sievers's Law in Gothic

Sievers's Law, most clearly manifested in Gothic, is equally relevant for the resolved trochee. The main facts are as follows. The glide /j/ vocalizes when an /i/ follows, leading to a long vowel /i:/. However, the vocalization is blocked under certain conditions which are very similar to the constraints on gemination. The data (Lahiri 1982) is summarized in (14).

(14) Results of Sievers's Law (in orthography [ii] = <ei> in Gothic)

STEM.2SG	Sievers's Law	Gloss	Stem type
a. Light stems			
nasjis	— (*nasiis)	'save.2SG'	CVC = L
arjis	— (*ariis)	'plow.2SG'	VC = L
b. Heavy stems			
sookjis	sookiis	'plow.2SG'	CV:C = H
namnjis	namniis	'name.2SG'	CVCC = H
c. Polylsyllabic stems			
sipoonjis	sipooniis	'be a disciple.2SG'	CV CV:C = LH = H
mikiljis	mikiliis	'glorify.2SG'	CV CVC = LL = H

As before, LH, LL, and H stems behave like a single category. Building the resolved trochee on these forms (15), we find that Sievers's Law and gemination have very similar constraints (16). Both gemination and Sievers's Law are blocked if the foot HEAD becomes trimoraic. This analysis again crucially hinges on being able to assign the first (x in (15a, c) by Primary Accent First.

(15) Resolved trochee and Sievers's Law

	a. Light stems	b. Heavy stems	c. Polysyllabic stems
Foot	(x)	(x) (x)	(x) (x)
μμ head	[x]	[x] x	[x] x
	μ⁀μμ	μμ μμ	μ⁀μ μμ
	na sjis	soo kjis	mi ki ljis
	nasjis	*sookiis*	*mikiliis*

(16) Sievers's Law

/ji/ > [i:] iff the HEAD of the foot does not gain an additional mora.

Van der Hulst's intuition that the initial syllable must be assigned a stress by Primary Accent First remains supported, as does the notion that a mora is 'borrowed' from the next syllable. What is necessary in addition is that the foot type must be an asymmetric trochee, i.e. a branching trochee with a bimoraic or trimoraic head. Mora borrowing alone does not solve all the problems.

3 Primary Accent First and the Learnability of Metrical Structure

In this section we consider the way that Primary Accent First can help solve an incongruity that arises in the learning model for metrical stress developed by Dresher and Kaye (1990) and continued in Dresher (1994, 1999, 2016). This model assumes that the acquisition of the grammar of stress involves setting a number of parameters to their correct values. Parameter setting proceeds in an order set by Universal Grammar that largely reflects inherent dependencies between parameters. That is, if setting a parameter Q depends on having correctly set parameter P, then the acquisition of P must precede that of Q.

For example, in order to determine what sort of metrical feet a language has, it is necessary to know if the language distinguishes light from heavy syllables, and if it does, it is necessary to know which syllables are light and which are heavy. The parameter order proposed by Dresher and Kaye (1990) is given in (17):[6]

(17) Dresher and Kaye (1990) order for setting metrical parameters

a. Syllable Quantity: The language {does not/does} distinguish between light and heavy syllables (a heavy syllable may not be a dependent in a foot).
b. Extrametricality: A syllable on the {right/left} {is not/is} extrametrical.
c. Bounded constituent construction: Line 0 constituents {are not/are} bounded.
d. Main stress: Project the {left/right}-most element of the line 1 constituent.
e. Headedness and directionality of feet: {Left/right}-headed feet are constructed from the {left/right}.
f. Destressing: {Various types of} feet are destressed in {various situations}.

The parameters in (17) presuppose a metrical theory in which main stress is the result of promoting either the leftmost or rightmost metrical foot in a word. As the ordering of (17) indicates, to find where the main stress is it is not necessary to know whether feet are left- or right-headed, or whether they are constructed from the left or from the right. But in order to know if main stress falls within the leftmost or rightmost foot, one has to know how large a foot is.

For example, the main stress rule of Present Day English (PDE) nouns assigns the main stress to the penultimate syllable if it is heavy, and otherwise to the antepenultimate (18).

(18) PDE main stress rule (nouns)

Main stress falls on the penultimate syllable, if heavy, or if the word contains no more than two syllables; otherwise, stress falls on the antepenult.

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[6] The grid lines 0 and 1 mentioned in (17) have been conflated in the grids in this paper: a mark on line 0 that is not projected to line 1 is indicated by a dot, and a line 0 mark that is projected to line 1 is indicated by x.

In order to locate the PDE main stress in terms of metrical structures, one must know that the final syllable is extrametrical and that feet are binary and QS, with long vowels and syllables closed by a consonant both counting as heavy. If one does not know this, one could be misled by words like *álgebra* (19a), where the stress appears on the leftmost syllable. A word like *agénda* (19b), with a heavy penult, is highly ambiguous as to the location of main stress if one does not know about quantity, foot size and headedness, and extrametricality. Of the words in (19), only *Mànitóba* (19c) reveals in a straightforward manner that main stress is on the rightmost foot.

(19) PDE main stress on the rightmost foot

```
a.  x                  b.      x             c.          x
   (x    .) <.>            .  (x)  <.>          (x   .)  (x) <.>
    al  ge   bra           a  gen   da          Ma  ni   to:  ba
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In other types of stress systems the location of main stress can be even more difficult to perceive at first appearances. Selkup, for example, has the stress system in (20) and sample words as in (21) (Halle and Clements 1983; Dresher 1999).

(20) Selkup main stress rule

Main stress falls on the rightmost long vowel; if there is no long vowel, stress falls on the initial syllable.

(21) Selkup words

qúmmin	‘human being (GEN)’	kanaŋmí:	‘our dog’
qummí:	‘our friend’	qól^{y}cimpati	‘found’
ámirna	‘eats’	u:cikkó:qɪ	‘they two are working’
qumó:qɪ	‘two human beings’	qumo:qlɪlí:	‘your two friends’

As is evident from (21), in Selkup stress can fall anywhere in the word, depending on the distribution of heavy syllables (long vowels). It is only after one has discovered that Selkup feet are unbounded that one can analyze a word like *qól^{y}cimpati* as being consistent with main stress being on the right. Moreover, in the absence of secondary stress one cannot perceive a main stress following a secondary stress, as in English *Mànitóba*; in Selkup, secondary stresses are theoretical as in (22), but not perceived in the signal.

(22) Selkup main stress on the rightmost foot (secondary stresses not realized phonetically)

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a.  x                  b.        x           c.               x
   (x    .   . .)         (x  .)  (x)           (x)  (x    .)  (x)
   qolʸ cim  pa ti         ka naŋ  mí:           qu   mo:q lɪ   lí:
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In languages such as English and Selkup, it makes sense for a learner not to rush to conclusions in determing the location of main stress. However, in many languages the location of main stress is very easy to find: it is fixed on a certain syllable or mora of the word relative to the left or right edge. An example is Old English, which, as discussed above, always has main stress on the initial syllable of a word (barring certain unstressed prefixes), no matter the weight of the initial syllable. It is a counterintuitive result of the learning path in (17) that a learner must first determine a number of less self-evident parameters before being able to locate the main stress in such languages. Indeed, Trubetzkoy (1939: 245) has identified the main stress in such languages as a *Grenzsignal* ('boundary signal'), a marker that indicates to speakers the relationship of the stressed syllable or mora to a word boundary. One might suppose that such markers would be useful to language learners in acquiring the prosodic structure of their language, but only if they are able to identify them relatively early in the learning path.

It is one thing to observe that the position of main stress in some languages is very easy to find; it is another matter to incorporate this observation into the learning path in (17), or some learning path like it, while still allowing the learner to successfully find the main stress in languages like English and Selkup. To this problem van der Hulst's notion of Primary Accent First provides a simple solution, which is to split the main stress parameter in (17) into two separate parameters, as in (23).

(23) Revised order for setting metrical parameters

- a. Primary Accent First: A main stress is consistently observed on a fixed syllable.
- b–d. Syllable quantity, extrametricality, bounded constituents
- e. Main stress: Project the {left/right}-most element of the line 1 constituent.
- f–g. Headedness and directionality of feet and destressing.

That is, very early in the learning path the learner checks to see if main stress appears on a fixed syllable. If it does, then the learner assigns an accent, either by putting down a bracket or by putting a mark on line 1 of the grid, as the particular form of the theory requires. As van der Hulst has proposed, this accent is 'non-metrical' in the sense that it exists independently of any other metrical structure, and does not depend even on knowledge of QS. If learners do not find fixed accent, then they move on to set the rest of the parameters, eventually arriving at the main stress parameter in (23e).

As listed in (23), Primary Accent First appears to be *hors système*, as if tacked on to an otherwise cohesive metrical system. However, in the revision of the learning path proposed by Dresher (2016), it can be seen to be better integrated into the model than appears in (23). Dresher (2016) observes that the cue for QS proposed by Dresher and Kaye (1990), shown in (24), does not directly address syllable quantity, whose metrical manifestation is characterized in (25).

(24) Cue for syllable quantity (Dresher and Kaye 1990: 190)

- a. Parameter: The language {does not/does} distinguish between light and heavy syllables.
- b. Default: Assume all syllables have the same status; i.e., that they are quantity insensitive (QI).
- c. Cue: Detect words of *n* syllables with conflicting stress contours (QS).

(25) QS in metrical theory

In a QS system, a heavy syllable may not be a dependent in a foot. Depending on the theory, heavy syllables are assigned a left or right bracket on line 0, or a mark on line 1.

There is an obvious disconnect between what QS practically means in metrical theory (25) and the cue for QS in (24c). The rationale for (24c) is that in a QI language, all syllables are equal as far as the metrical system goes; therefore, it follows that every word of *n* syllables is metrically indistinguishable from every other word of *n* syllables. Thus, all three-syllable words should have the same stress, and the same for words of any other length. Dresher (2016) points out that Dresher and Kaye (1990) were primarily interested in the distinction between QI and QS systems, and if we restrict stress systems to those two types, the cue makes sense.

However, there are reasons other than QS for a language to have different stress contours on words of a given number of syllables. A language could have lexical accent, which is lexically assigned and not determined by syllable structure. Russian, for example, has words like *golová* 'head-NOM.SG', *gólovu* 'head-ACC.SG', and *koróva* 'cow-NOM.SG', *koróvu* 'cow-ACC.SG', where the stress is determined by the distribution of lexically-accented roots and affixes, and not by syllable quantity. Another way for a language to show stress differences unrelated to syllable structure is if there is influence from the morphology. English, for example, has noun ~ verb stress doublets such as *pérmit* (NOUN) ~ *permít* (VERB), and similarly *rébel ~ rebél, récord ~ recórd, cónvict ~ convíct,* etc.

Dresher (2016) observes that the cue in (24c) is not actually a cue for QS, but is part of a more general principle of contrast:

(26) Principle of contrast (Dresher 2016: 20)

Do not make more distinctions than are required.
Or more positively:
Create only as many distinctions as are required.

Learners following the principle of contrast will start out assuming that there are no contrasts based on stress, and that all words are equal with respect to the metrical system. This necessarily implies that there are no distinctions based on syllable weight, lexical accent, or morphology: that is, a QI system with no further complications. While it is correct to assume QI if one does not find any contrasts based on stress, it does not hold that the finding of contrasts demonstrates that the language is QS. Rather, the existence of stress contrasts could have a number of sources, and it is up to the learner to determine if the cause is QS, or lexical accent, or morphology. Dresher (2016: 27) concludes that 'we can now understand the learning model of Dresher and Kaye (1990) and the variation of it proposed here as containing two types of cues: cues for discovering how many contrasting elements there are, and cues for identifying specific bits of structure that may be parametrically present or absent'.

Primary Accent First has a clear connection to contrast, or rather its absence: it is detected just in case the language does not show contrasts in the position of main stress. It is thus a restricted version of the cue in (24c) that is used to detect or rule out simple QI. Whereas (24c) looks for *n* syllables with conflicting stress contours, including both main and secondary stresses, Primary Accent First is triggered if main stress occurs on the same syllable (measured from the edge) in every word.

4 Conclusion

Primary Accent First instantiates Harry van der Hulst's correct intuition that in some stress systems, the main stress is not derived by calculating which of the metrical feet in a word is the strongest, but rather is identified at a relatively early stage independently of the other metrical parameters that may be relevant in the given language. We have looked at two different ways that Primary Accent First contributes to phonological theory.

In the analysis of a language like Old English it gives us a way to assign the main stress to a word-initial syllable even when it is light, in apparent defiance of metrical foot typology. This initial assignment then forces an adjustment in the form of mora borrowing from the next syllable (resolution) to bring the first foot into compliance with the requirement that it be associated with a minimum of two moras.

We have also shown that separating out stress systems with Primary Accent First from those where main stress is more integrated into metrical structure also results in a more intuitive learning path, and provides a theoretical justification for having two types of main stress parameter. On this model, main stress can serve as a Trubetzkoyan boundary signal in those languages with Primary Accent First without interfering with the acquisition of main stress in languages where it is dependent on the successful setting of other metrical parameters.

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