Open and Closed Feet in Old English

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The stress system of Old English (OE) and metrical analyses of High Vowel Deletion (HVD) and other phenomena have recently been examined in this journal by Dresher and Lahiri (1991 = DL) and Halle, O'Neil, and Vergnaud (1993 = HOV). DL argue that the phenomena in question require a new type of metrical foot that they term the

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Germanic foot. The Germanic foot can contain up to four moras, essentially the canonical iambs of Hayes (to appear)—H, I.I., or I.H.—optionally followed by a light syllable. However, the Germanic foot has trochaic prominence, with the leftmost element as the head. HOV reexamine the facts within the framework of Halle and Vergnaud (1987 = HV), countering DL’s claim that such an analysis was not possible.

In this article I will reanalyze the phenomena examined by DL and HOV using simplified bracketed grid (SBG) theory (Idsardi 1992, 1993, Halle and Idsardi 1993, to appear). This reanalysis offers a better metrical interpretation of HVD and its exceptions, and can account for variability in secondary stress not handled by DL or HOV.

In SBGs the direct manipulation of metrical boundaries introduced by Halle (1990) is taken to the logical extreme by abandoning the assumption that metrical boundaries always come in pairs. Instead, a single metrical boundary is sufficient to define a metrical constituent. Thus, a representational distinction is introduced between constituents that have paired boundaries (closed feet) and those that have only one boundary (open feet). SBG theory also differs from HV’s framework in allowing unfooted elements, abandoning the principle of Exhaustivity proposed by HV and by Prince (1985). The other major departure from HV’s framework is that the construction of SBGs is achieved through the interaction of rules and constraints. The reanalysis of Germanic metrical structure will employ all of these innovations, thus offering further support for SBGs.

To construct SBGs, Universal Grammar provides parameterized rules for the placement of metrical elements (Projection/Head Placement) and metrical boundaries (Boundary Projection, Edge Marking, and Iterative Constituent Construction). The initial projection of line 0 is essentially the same as in HV’s framework. There is no disagreement between DL and HOV regarding the definition of stressable elements in OE—heavy syllables (closed or long) have two stressable elements, and light syllables have one. We can accomplish this by projecting all moraic/rimal elements, subject to the condition that no syllable can have more than two line 0 marks—that is, with rule (1a) subject to the constraint (1b).

\[
\begin{align*}
\text{(1a)} & \quad x \rightarrow x / \_ \_ \\
& \quad \_ \_ \\
& \quad \ &= \ \mu \\

\text{(1b)} & \quad \text{Avoid } * * * \text{ line 0}
\end{align*}
\]

Heavy syllables generally attract stress in OE. HOV achieve this by placing a line I asterisk above such syllables, but they also note that, following Halle (1990), a metrical boundary could be employed instead. SBG theory eliminates this choice—the only pos-

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1 Hayes (to appear) likewise allows unfooted elements, for example in his analysis of Chugach Alutiiq.
2 The lines in the diagrams sometimes represent direct association and sometimes indirect association, but the interpretation of the lines should be clear from context.
sibility is to mark such syllables through Boundary Projection. Boundary Projection offers the options of specifying that heavy syllables begin or end metrical constituents. For OE, the appropriate statement is that heavy syllables begin metrical feet; that is, a left metrical boundary is inserted for any pair of grid marks belonging to the same syllable, stated formally in (2)

\[
\emptyset \rightarrow ( / \, \# \, \# )
\]

We also know that the initial syllable receives stress. Thus, the initial syllable must also start a constituent. Such demarcative stress is achieved through Edge Marking, which can be viewed as a parameterization of the natural boundaries of HV (pp. 112ff.). In OE the left edge of the form defines a metrical boundary; that is, rule (3) is applied

\[
\emptyset \rightarrow ( / \, \# \, \# )
\]

Further, we know that pairs of light syllables can also function as metrical constituents. This is handled by Iterative Constituent Construction (ICC). In OE pairs of elements are grouped scanning rightward; that is, rule (4) is applied

\[
\emptyset \rightarrow ( / \, \# \, \# )
\]

ICC requires a pair of marks in order to create a constituent. Thus, when ICC encounters a single mark, it cannot create a constituent. In this way, some elements may be left unparsed. In the constituents constructed by these rules, the first element is more prominent than the others. This fact is modeled in the theory through the operation of Head Placement, which is set in OE to project leftmost elements of each line 0 constituent onto line 1.² Edge Marking and Head Placement also apply on line 1, yielding main stress on the initial syllable. The application of these parameters and constraints is illustrated in (5).

\[
\begin{align*}
\text{æþelinges} & \rightarrow \text{æþelinges} \\
(2) & \rightarrow \text{æþe linges}
\end{align*}
\]

Head, line 1

The metrical structures (without main stress) assigned to five words are shown in (6). Capitalized vowels are those vowels subject to HVD

² This will be modified slightly below to handle secondary stress
It is clear that the appropriate generalization is to delete unparsed high vowels (that is, those vowels not belonging to any metrical constituent). By deleting these unparsed elements, OE does strive toward the ideal of exhaustivity, but does not attain it everywhere.

However, these metrical parameters generate too many secondary stresses. The generalizations concerning secondary stress given by Campbell (1959:34–35) are quoted in (7). 4

(7) a. [H]eavy derivative suffixes have a half-stress [= secondary stress] after a long syllable (\(\text{s}\)) or its equivalent (\(\text{s}\)), when followed by an unaccented syllable...

b. As well as these suffixes, any long final syllable, after another long syllable or its equivalent, acquires half-stress when it becomes internal by the addition of the inflexion: Hēngēstes, Æglewēlice. Short final syllables which become long in inflexion are similarly treated: Ðōpērne.

c. The half-stresses all require to be preceded by a long syllable or its equivalent: thus āpelīnges, scælfōde, singēnde, hīntōpe have a half-stress, but cūnīnges, wūnode, wēsēnde, fārope, do not do so.

d. Such words, however, acquire a half-stress when they are the second element of compounds with accented first elements: þēōdscyninga, cnihtwēsēnde.

Thus, as DL point out, secondary stress must be precluded from appearing on heavy syllables in two positions: after an initial light syllable and word-finally. To handle the distinction between words with light and heavy initial syllables observed in (7c), the present analysis differentiates between initial light and heavy syllables followed by a heavy syllable, as shown in (8).

(8) a. fareldū  b. riidende
\((\text{s})(\text{s})\) \((\text{s})(\text{s})\) *

Words such as (8a) contain an open, degenerate first constituent, whereas those such as (8b) contain a closed, complete first constituent. Words such as (8a) have only an initial stress when they appear alone. 5 As noted in (7d), words such as (8a) do receive both stresses when they appear as the second element in a compound. This provides

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4 The divisions in (7) do not correspond directly to the divisions in Campbell 1959.
5 The behavior of #LH...words in OE is exactly opposite to their behavior in Malayalam and Wolof, where such words lack an initial stress placing main stress on the second syllable; see Idsardi 1992 for further details.
additional evidence that such words are initially parsed into two feet, contra DL. To
generate the correct stresses, we will merge the initial degenerate foot with the con-
stituent to its right; that is, rule (9) will be applied.

(9)  (→ $ / $#(*

Applying (9) to (8a) yields the correct result, shown in (10).

(10)  ferelU
       (* **) *
       *

Thus, the representational distinction between open and closed feet provided by
SBGs correctly captures the fluctuating stress behavior of stem-initial light syllables
preceding a heavy syllable. Because open feet are intermediate in strength between
closed feet and unparsed elements, they are more subject to various modifications,
whereas closed feet are less mutable. 7

To account for the fact that final heavy syllables do not receive secondary stress—
and also anticipating the resolution in poetic meter—we will restrict the operation of
Projection so that final syllables cannot receive more than one grid mark, by means of
constraint (11).

(11)  Avoid $↑
       \sigma
       *

Constraint (11) prevents the projection of more than one line 0 element on the final
syllable of the word. This generates the correct stressing, as shown in (12).

(12)  æþe linges
       (* (*) (**)*)
       (* *

Notice, however, that by making all final syllables metrically light, we predict that
forms such as (13) should be subject to HVD.

(13)  wörðum
       (**) *

6 I would like to thank the anonymous reviewer for bringing this point to my attention. However, it should
be noted that the “reappearance” of secondary stress in these compounds is explicitly denied by McCully
and Hogg (1990). In that case, rule (9) might be generalized by dropping the word-initial portion of its envi-
ronment.

7 Michael Kenstowicz (personal communication) has pointed out that merging degenerate feet with other
feet, as in (9), necessarily also modifies the adjacent closed foot. Thus, it is better to describe foot strength
not just in general terms of “open” and “closed,” but with respect to the individual boundaries. That is, in
Old English specifically feet with left boundaries are stronger than those without
However, HVD does not apply in such words; it can apply only to light syllables. One solution is to simply include this condition in the rule, so that HVD would delete unparsed high vowels in open syllables. Another solution is to notice that applying HVD to word-final closed syllables, as in (13), would result in the final consonant being stranded, because it cannot be adjoined to the preceding syllable. Thus, if there is a general constraint to avoid creating stranded material, HVD would be blocked in these cases.

Similarly, constraint (11) has the consequence that words such as those in (14) will be parsed alike

(14) a) heafUde b) heafUudem
(***)* (*)

In fact, cases such as (14a) motivate HOV to claim that in such words /æ/ was not projected onto the grid. However, in SBG theory there is an available distinction. The second foot in the forms in (14) is open on the left (that is, it lacks a left boundary), whereas the first foot will always be closed (due to Edge Marking and ICC), as will any nonfinal heavy syllable foot (due to Boundary Projection and ICC). Since initial elements can never be unparsed in OE, due to Edge Marking, there is environment common to the cases in (14) and unparsed elements. The generalization is exactly that of Keyser and O’Neil (1985:10): “A high vowel deletes following a foot, provided that the vowel is in an open syllable.” However, the SBG feet capture both stress and HVD, thus confirming DL’s main point that a single metrical structure defines both stress and HVD. Furthermore, the notion “following a foot” is made more precise by SBGs with the advent of unparsed elements and open feet, allowing the rule to be stated formally as in (15).

(15) \quad V \rightarrow \emptyset / \quad \wedge \quad \text{line 0}

\quad \quad \quad \quad [+\text{high}] \quad \quad \quad \quad \quad \quad \cdot \quad \cdot

Again we observe that open constituents occupy an intermediate position of strength, between closed constituents and unparsed elements. Indeed, OE offers further support for the weakness of open constituents in another restriction on secondary stress. There is general agreement regarding secondary stress only when it falls on heavy syllables. There is considerable debate regarding secondary stress on light syllables (see, for example, Suphi 1988, McCully and Hogg 1990, and Fulk 1992). That is, cases parallel to (14), shown in (16), have secondary stress, according to some authorities (see, for example, Campbell 1959), although others dispute this claim.

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8 Except in cases such as (14a). However, such feet are closed on the left, even though they are degenerate, and open on the right. Thus, such cases provide additional support for the independent existence of left and right metrical constituent boundaries.

9 Notice that open syllables are identified formally through reference to the syllable boundary, suggesting that syllabic constituents share some properties of SBGs.
(16) a. selfode
    \((++)* *\)
    *  

b. hun tobe
    \((**)* *\)
    *  

Furthermore, DL note that cases such as (16a) are problematic. Notice that the feet in question are open and thus not as strong as closed feet. OE evidently vacillated on the operation of Head Placement to open feet, limiting it to closed feet \(^{10}\).

DL also note that the /o/ in (16a) was long at an earlier stage. Since SBGs separate the representation of stressable elements (line 0) from the representation of syllable quantity (moras/times), SBGs even offer a formal insight into this problem that will give theoretical flesh to Hayes's (1980) notion of honorarily heavy syllables (see also Anderson 1984). Such vowels can be lexically associated with two line 0 elements \(^{11}\). Since Boundary Projection is defined in terms of syllables with two grid marks, vowels idiosyncratically specified for two line 0 elements will automatically be subject to Boundary Projection. Assuming that these syllables were lexically associated with two line 0 elements will result in secondary stress in such forms, as shown in (17).

(17) sealfo de
    \[\begin{array}{c}
    |\
    \hline
    oo
    \end{array}\]
    \((**)(**)*\)
    *

Further support for the SBG analysis is given by the exceptions to HVD discussed by HOV, listed in (18).

(18) a. monIge
b. monIgum
c. monigra

Assuming that /mon/, like /odl/, can be lexically specified for two line 0 marks yields the correct results, shown in (19).

(19) a. mnIge
    \[\begin{array}{c}
    |\
    \hline
    oo
    \end{array}\]
    \((**)* *\)
    *

b. mnIgum
    \[\begin{array}{c}
    |\
    \hline
    oo
    \end{array}\]
    \((**)* *\)
    *

c. mnigra
    \[\begin{array}{c}
    |\
    \hline
    oo
    \end{array}\]
    \((**)(**)*\)
    *

The deletion of unparsed high vowels by (15) again correctly predicts the observed deletions.

The remaining exceptions to HVD, cited in (20a,c), are slightly different.

(20) a. leng-u tiic-u
b. cilD-U huus-U
c. heaufd-U/heaufdU

\(^{10}\) Or, in light of (7d) and footnote 7, to feet closed on the left. Some Russian dialects also distinguish between feet open and closed on the left in the realization of stressed /o/ (see Idsardi 1992 1993)

\(^{11}\) Line 0 metrical boundaries can also be lexically stipulated.
The difference between (20a) and (20b) is that the cases in (20a) have an "unseen" /i/ postulated by Dresher (1978). Making this assumption, (15) yields the correct results, shown in (21).

(21) a. leng-I-u  
    (**) * *  
  b. cild-U  
    (**) * *

The form in (20c) involves another aspect of /-u/. As Dresher (1978) notes, /-u/ is also exceptional in triggering epenthesis unexpectedly in forms such as /miciu- / [micelu] (cf. * miicum). Dresher offers a number of insightful ways of treating these facts, but the appropriate one is that there is an allomorph of /-u/ that triggers exceptional syllabification. Put in formal terms, there is an allomorph of /-u/ with an initial empty consonant position. This will cause epenthesis in /miciu/, and will cause /heafudu/ to have a prefixl closed syllable, as shown in (22)

(22) hea fuCUCU  
    (**)(**) *  
  *  *

The variability in the deletion of the final vowel in heafud - heafudu can be attributed to variation in the acceptability of stranding an empty consonant.

Before turning to poetic resolution and Sievers's Law in Gothic, let us compare the present account of HVD and its exceptions with that of HOV. The rule employed by HOV (p. 532) is quoted in (23)

(23) Delete a high vowel in a noninitial syllable if it constitutes a nonbranching foot (tight syllable).

In the present account, there is no need for the noninitial condition required by HOV, since initial syllables, which can never follow a foot, can never meet the structural conditions for (15). Rule (15) also correctly accounts for cases such as (14a), without requiring HOV's special stipulation that in such forms /el/ does not project a line 0 mark. Moreover, in cases such as (20a,c) HOV allow vowels to escape HVD by idiosyncratically not projecting onto line 0. Such an analysis goes against the very foundation of the metrical grid: the more vertical grid marks a vowel has, the more prominent it is. Thus, we should expect vowels that fail to project a line 0 mark to be weaker, not stronger. For example, it is the schwas in Indonesian that are invisible in stress assignment (Cohn 1988, 1993, Halle and Idsardi 1993), and in Russian only stressed vowels show the full range of possible vowels, all other vowels being reduced (for an analysis within the present framework, see Bures and Idsardi 1993) The SBG analysis does not suffer from this shortcoming. In fact, the present analysis goes exactly as it should:

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12 Michael Kenstowicz (personal communication) points out that an alternative would be for the /-u/ suffix to lexically specify a preceding syllable boundary, further suggesting that syllabic constituents are representationally similar to SBGs.
unparsed elements are weaker than parsed elements, and open constituents are weaker than closed constituents.

The SBG analysis also provides a simple characterization of the poetic meter discussed by DL and HOV. The metrical structure assigned to the lines in question is given in (24)

\[
\begin{align*}
(24) a. & \quad \text{sinc-faage} / \text{sel} \\
& \quad (**) (**) * / ( * ) \\
& \quad * \quad * \quad * \\
\text{b.} & \quad \text{priist-hyy dig} / \text{biioden} \\
& \quad (***) (***) * / ( * * ) \\
& \quad * \quad * \quad * \\
\text{c.} & \quad \text{heal-pëg nes} / \text{hete} \\
& \quad (***)(***) * / ( * * ) \\
& \quad * \quad * \\
\text{d.} & \quad \text{heal-pëg nes} / \text{hete} \\
& \quad (***)(***) * / ( * * ) \\
& \quad * \quad * \\
\end{align*}
\]

As HOV (p. 536) note, the final syllable of a half-line is scanned as light. In the present analysis this is true for all word-final syllables through the operation of (11). For this meter, each line must consist of 3 feet, broken 2/1 with the proviso that unparsed elements can occur only at the caesura. In (24b) there is an unparsed element at the end of the line, and thus it is not a legal line.

To handle the Sievers's Law cases, it is easier to state where [j] occurs in SBG terms. As HOV (p. 537) state, [j] occurs only after word-initial light syllables. In the present theory this is when [j] is in the same foot as the initial syllable. Vocalization does occur for the forms in (25a), but is blocked from applying to (25b)

\[
\begin{align*}
(25) a. & \quad \text{mikiljis} \\
& \quad (***) * \\
\text{b.} & \quad \text{nasijs} \\
& \quad (* *)
\end{align*}
\]

Thus, vocalization occurs everywhere except inside closed feet.

Finally, Dresher (1978) discusses other phenomena conditioned by stress, including Open Syllable Reduction (OSR, p. 48), quoted in (26a) (the schwa indicates the possibility of a short diphthong), Gemination by eli (pp. 100, 112) (26b), and Glide Formation (p 130) (26c)

\[
\begin{align*}
(26) a. & \quad \left[\begin{array}{c}
+\text{syll} \\
-\text{stress}
\end{array}\right] \rightarrow e / \left[\begin{array}{c}
+\text{syll} \\
-\text{long} \\
+\text{stress}
\end{array}\right] (\circ) [-\text{syll}] [-\text{syll}] [-\text{syll}] [+\text{syll}]
\text{b.} & \quad \text{C}_{\xi} \rightarrow \text{C}_{\xi}\text{C}_{\alpha} / \text{V} \quad \text{V} \\
& \quad [+\text{stress}]
\text{c.} & \quad \left[\begin{array}{c}
+\text{syl} \\
+\text{hi}
\end{array}\right] \rightarrow [-\text{syll}] / \quad \text{V} \quad \text{V} \\
& \quad [+\text{stress}]
\end{align*}
\]

In the SBG analysis the environments of the rules in (26) include a common portion: an open syllable in the final position of a binary closed foot, as shown in (27)
(27) (*  *)
    |
   ___ o]

Because constituents are left-headed, this position is a weak position in the SBG analysis. Dresher notes that OSR is contingent on the presence of the following vowel, and he cites forms such as those in (28).

(28) a. scotad
    b. scoteden
    c. scotede

Because of the contingency on the following vowel, one might be led to believe that the Germanic foot, with its incorporation of a following vowel into the foot, would give a better analysis of the weakened position. That is, vowel reduction would take place in the environment shown in (29).

(29) \[ F
     S W
     m m m
     |
     |
     \

However, (29) is not very coherent with the analysis of HVD, since the weakenings occur in the strong branch of the foot. More problematic is the fact that OSR applies before both closed (28b) and open (28c) syllables. Constraint (11) of the present analysis correctly predicts that final syllables both behave light in OSR, as shown in (30). The vowel in (30c) does not reduce because it is in a closed syllable.

(30) a. (*)
    b. (*)
    c. (*)
    [sco][ta][de]     [sco][ta][den]     [sco][ta][d]
    e    e

The Germanic foot analysis predicts different structures for these cases, as shown in (31).

(31) a. F
    S W
    m m m
    sco ta de

b. F
    S
    m m m
    sco ta de

b. F
    S
    m [m m]
    sco ta d

The environment (29) works correctly for (31a,c) However, (29) incorrectly predicts
that (31b) should not be subject to OSR. DL do say that final heavy syllables are defooted, so it may be possible to adjoin the defooted elements to the preceding foot. However, this will further complicate the structure of the Germanic foot and will also require HVD to be restricted to open syllables, since this adjunction will cause LLH and LLL words to have the same structure, converging toward the SBG solution. Another option for DL would be to employ extrinsic ordering of the rules, with HVD preceding adjunction preceding OSR. Thus, the operation of HVD and OSR is not completely coherent under the Germanic foot; but appropriate rules can be succinctly formulated within SBG theory.

In summary, the present account offers support for the SBG theory in the roles that open and closed constituents play in OE prosody. In particular, the SBG analysis is better than the revision offered by HOV in that it maintains the strict relation between prominence and weakening: heads are stronger than nonheads, closed constituents are stronger than open constituents, and parsed elements are stronger than unparsed elements. The present analysis is also an improvement over DL's framework in accounting for variable secondary stresses, exceptions to HVD, and OSR. Furthermore, the present analysis does not require the elaborate internal structure of DL's Germanic foot.

References


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