A Quantitative Analysis of the Old English Verse Line

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Abstract

Analyses of Old English verse have depended on typologies of acceptable verse forms, however, there has never been a means of determining unacceptability, and the underlying phonological causes of the features described by these typologies have never been adduced. There are many existing analyses, but the only point of agreement is that each line has prototypically four stressed syllables marked by alliteration. These analyses become increasingly complex as they become more precise. This paper proposes that these phonological underlying features can be both identified and explained by entirely quantitative means, and that there is a single metrical model for every line of OE verse.

A large corpus of Old English verse was created and annotated for stress, syllabic weight and alliteration. It is shown that line length, foot size and metrical prominence are functions of a verse structure based around a quantitative line of 8–16 moras, with a prototypical line of 12 moras. Metrical prominence, often congruent with stress, is determined by foot length, which is normally distributed around 10 syllables (with a minimum of 8 and a maximum of 14) and 12 vocalic moras (with a minimum of 8 and a maximum of 16). This analysis is contrasted with Old Saxon verse and Old Icelandic fornyrðislag verse forms, and it is shown that despite the superficial similarities, the model presented here is applicable only to Old English.

These findings and the model developed from them both represent a substantial deviation from previous, qualitative, studies and provide a reliable means of distinguishing acceptable from unacceptable lines in Old English verse, while allowing all Old English verse lines to be described with a single metrical pattern.
1 Introduction

All lines of Old English poetry show evidence of having a common underlying metrical structure marked by alliteration. Nevertheless, they also show great variation in the usual quantitatively measurable indicators of metrical structure: line length and the position of stresses. The study of this mysterious form has a long but fairly homogenous history. Scholars have produced various models based on typologies of acceptable arrangements of stressed and unstressed syllables. These typologies are usually very complex and fail to investigate the underlying factors which distinguish acceptable metrical structures from unacceptable ones. The lack of systematicity in these studies makes them of limited value for linguistic study. This paper presents a metrical model of the Old English verse line using entirely quantitative criteria and without the need for a typology of acceptable forms.

Previous studies of Old English metrical structure have largely depended on a theoretical paradigm in which metrical patterns of stressed and unstressed syllables are sorted into categories of types of acceptable verses, ultimately relying on the work of Eduard Sievers (1887, 1893). These systems take into account both stress patterns and metrical weight, and can be simple, in which case they are imprecise, or precise, in which case they become increasingly complicated (e.g. Bliss 1958; Cable 1974; Kendall 1991; Hutcheson 1995; Momma 1997; Bredehoft 2005; Goering 2016). Other analyses have used OE as a test case for a newly developed theory (e.g. Halle–Keyser 1971; Getty 2002; Fabb–Halle 2008). I provide a summary of Sieversian analyses and their various limitations in Cooper (2017).

Rarely, scholars have tried to produce a new model from scratch, sometimes with a statistical basis, with both limited scope and success (Hoover 1985; Golston–Riad 2003). Russom (1987, 1998) offers a heuristic describing an OE half-line as containing any two dictionary words, an appealing but limited generalisation. In the first modern attempt at a purely quantitative analysis of Beowulf, Golston & Riad (2003) demonstrate that standard lines in Beowulf can be measured according to their total metrical weight, with the unusual proviso that consonantal codas are not counted. They show that standard lines have a length of between 8 and 16 vocalic moras. These two heuristics represent serious modern attempts to describe OE verse lines without complicated typologies. To these heuristics are added a core set of fundamental features, including the four-position principle (Cable 1974) and the association between alliteration and metrical prominence (Bliss 1962). These principles inform and prefigure the development of the model in section 4.

An understanding of the distribution of phonological structures in the OE verse line is dependent on an understanding of stress and its relationship with metrical prominence. Primary stress in OE is associated with the root syllables of words from nominal word classes (Campbell 1959; Kuhn 1933; Riad 1992). Secondary stress is found in polymorphemic words as the result of compounding, or affixation under certain circumstances (Campbell 1959). Long strings of unstressed syllables are sorted into verse feet and compete with one another so that the most lexical syllable forms the metrical head (Cooper 2017). In addition to analyses of stress conditions, a treatment
of metrical quantity is also included in all successful previous studies. Quantitative analyses depend on the distinction between short and long syllables, a distinction which is controversial in OE. All these analyses regard open syllables with a short vowel as light, with 1 mora. Some scholars also regard syllables with a short nucleus and a short coda as light (Campbell 1959; Lass 1994; Lahiri 2000), while others, especially scholars of metrical studies, view them as heavy (e.g. Bliss 1962; Dresher–Lahiri 1991; Hogg 1992; Russom 1998). This disagreement is complemented by Minkova and Stockwell (1994) who demonstrate that CVC syllables (i.e. those with a short vowel followed by a single consonant) can be either heavy or light in different phonological or historical circumstances. In the analysis presented in the present study, words with syllabic structures like se ‘the’ and sel ‘hall’ are therefore counted as light for metrical purposes. Syllables with long nuclei, e.g. sel ‘good’, or with a complex coda, e.g. seld ‘seat’ are unambiguously heavy. A distinction in the orthography should be made between complex codas, which have two consonants with distinct articulations, and those with spelling conventions which indicate underlying geminate consonants and affricates, such as sett ‘seated’ and secg ‘man’. These are considered non-complex codas for determining metrical weight in word-final syllables. These assumptions regarding stress distribution, syllable quantity and the association between the prosodic word and the verse foot underlie the model presented in the following sections.

2 A metrically annotated corpus of Old English verse

The metrical analysis presented in the present study is based on a selected corpus of OE verse texts which were subjected to a line-by-line analysis for stress, syllable quantity, and alliteration patterns. The OE line is identifiable in verse texts because of alliteration, and sometimes punctuation. Considering the factors described in the preceding section, a corpus of Old English verse (14 texts for a total of c. 7000 lines) was analysed for metrical structure including syllabic structure, metrical quantity, stress and alliteration. The small size of the surviving OE manuscript collection means that any large selection from it will inevitably be opportunistic and unbalanced. Unbalanced corpora are unsuitable for statistical analysis, so only descriptive statistics have been used to show broad tendencies. Each text in the corpus was entered into a spreadsheet, split into lines, verses and syllables, and annotated manually for stress, metrical quantity and alliteration. TAB. 1 shows the texts, number of lines and percentages of the total corpus.

The texts shown in TAB. 1 provide a sample of OE verse with a range of subject matter, metrical features and sources. In the figures which follow, degenerate and hypermetric lines are removed, as is Genesis B. Hypermetric lines are listed by Bliss (1962), and degenerate lines in the study are defined as any line not containing a caesura in editions. A total of 846 lines are removed from the figures in the next section. Of these, 209 are hypermetric (see list in Bliss 1962), which I address separately elsewhere (Cooper 2017), 617 are from Genesis B, which is metrically distinct from the
rest of the poem, and 20 are degenerate. The data below comprise a reduced selection with only standard lines, for a total of 6107.

2.1 Comparative balanced corpora of Old Icelandic and Old Saxon

The variation in line length found in old English verse lines is much greater than that found in Old Icelandic, and much less than in Old Saxon. To place the Old English data in the context of its two nearest traditions, two small balanced and representative samples of lines were collected from them. There are only two extant verse texts in Old Saxon of any significance, Heliand and Genesis, sampled from Behaghel (2012). As examples of Old Icelandic verse, Rígsþula, Völuspá and Hymiskviða were selected as being representative of the fornyrðislag from Bray (1908).

From each text, 100 lines were collected, with the criterion that they should be rendered as whole lines in the edited version. The Old Icelandic corpus comprised samples from the following three poems:

- The first 27 stanzas of Rígsþula, plus the first two lines of stanza 28,
- The first 23 stanzas of Völuspá, plus the first line of stanza 24,
- The first 29 stanzas of Hymiskviða.

The Old Saxon texts are taken in 25-line sections from the first four fitts of the Heliand and the Genesis, excluding the preface and any degenerate lines. The principles of the phonology of OS are taken from Robinson (1993) and Rauch (1992). These lines were subjected to the same analysis as the Old English lines, for comparative purposes.
3 Results

The texts were entered and annotated manually into MSExcel with markings for metrical weight, stress and alliteration. TAB. 2 shows an example line with these annotations.

<table>
<thead>
<tr>
<th>9</th>
<th>Syll</th>
<th>ro</th>
<th>fe</th>
<th>rin</th>
<th>cas</th>
<th>X</th>
<th>pon</th>
<th>ne</th>
<th>ron</th>
<th>and</th>
<th>hand</th>
<th>XX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mora</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>stress</td>
<td>/</td>
<td>x</td>
<td>/</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>/</td>
<td>x</td>
<td>/</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>allit</td>
<td>R</td>
<td></td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TAB. 2: Example line, Andreas 9, with phonological annotations

In TAB. 2, X in the Syll row marks the caesura, and XX the line end. The line is divided into syllables. The mora row shows metrical quantity values for each syllable. The stress row uses / for a stressed syllable, and x for an unstressed syllable. The allit row shows the alliterating syllables. The totals for each line and half-line were automatically calculated and compiled in MS Excel 2013.

3.1 Line lengths by syllables

The quantitative analysis of the corpus revealed a range in line lengths by syllables and metrical weights. The figure for the lengths of the standard lines by syllables is shown in TAB. 3.

<table>
<thead>
<tr>
<th>Syllable length</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>20</td>
<td>607</td>
<td>1707</td>
<td>1914</td>
<td>1136</td>
<td>505</td>
<td>161</td>
<td>33</td>
<td>14</td>
<td>6</td>
<td>1</td>
<td>6107</td>
</tr>
<tr>
<td>Percent</td>
<td>0.3</td>
<td>9.9</td>
<td>27.9</td>
<td>31.3</td>
<td>18.6</td>
<td>8.3</td>
<td>2.6</td>
<td>0.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.0</td>
<td>100</td>
</tr>
</tbody>
</table>

TAB. 3: Line lengths by syllables

These figures show that lines of OE verse have a mean length of 9.98 syllables (σ), with a mode of 10σ. Because of the tail of a small number of long outliers, the median average of 12σ is unhelpful. The data are visualised in FIG. 1.

The corpus data showed the length of lines in syllables to be normally distributed, with a near-minimum of 8σ, an average of 10σ, and a quickly diminishing tail of lengths after 12σ. The 7σ lines are all from Genesis A, and all contain infinitive weak verbs with an -ian suffix. The longest lines are mostly from the late and metrically divergent Battle of Maldon, and may contain some hypermetric lines not identified by Bliss (1962).

1 ‘...valiant men, | when shield and hand...’
3.2 Line lengths by syllables

The quantity analysis is based on the phonological weight of words as described in sections 1 and 2. The figures for the lengths of the standard lines in moras are shown in TAB. 3.

Outliers are condensed to a single column for ease of reference. These long lines are restricted to the metrically divergent *Battle of Maldon*, of which the longest is 23µ. The data are visualised in FIG. 2.

In FIG. 2, the moraic quantity of the lines in the corpus is shown. The values are normally distributed with an average of 12µ. Minimal and near-minimal lines of 8µ and 9µ are very few, less than 3%. There is a rightward skew towards longer lines, with less than 5% longer than 16µ.

The relationship between the 10σ and the 12µ average are the key features of the quantitative data which inform the model described in the next section.

4 A quantitative model of the prototypical Old English verse line

The results show lines with an average of 10σ and 12µ, as well as a range between 8–14σ and 8–16µ with some outliers, which may be significant. It is clear from previous studies that the underlying metrical system depends on the association of alliterating syllables with four prominent metrical positions. Because of this, lines must be divided into four metrical structures, each of which is headed by a prominent position. In prototypical lines, the prominent positions are marked by primary stress, of which there are four. A prototypical standard line therefore should have four verse feet, each of which has 3µ and 2–3σ. Each foot comprises two metrical positions.
In each foot, the left position is by default strong, meaning that it attracts prominence, such as primary stress, and is by preference long (\(\mu\mu\)). The right position is by default weak, meaning that it does not attract prominence, and is short (\(\mu\).). This creates a binary branching structure with the feet as shown in FIG. 3. Parentheses are used to show the congruence between the verse feet and the prosodic words which occupy them. The terms on the right are the prosodic structures upon which the metrical structures are modelled, and with which they are preferentially matched (Nespor–Vogel 1986; Selkirk 1986; Hayes 1989).

In FIG. 3, a metrical structure modelled on the prosodic hierarchy is shown (Selkirk 1980). The categories are similar to those given by Golston and Riad (2003) with the modification that the right metrical position (m) of each verse foot (VFt) is short by default. This leaves each prototypical VFt with 3\(\mu\). To allow for the variation found in the line length analyses, the metrical positions may alternate between 1\(\mu\) and 2\(\mu\). This analysis allows for the description of 94% of the standard lines between 8\(\mu\) and 16\(\mu\), as well as explaining the distribution of moraic and syllabic line lengths within the corpus in terms of deviation from an average line length. In accordance with Russom (1987, 1998), the default structure of the verse foot reflects a prototypical prosodic word. These are grouped into two pairs, verses, with a syntactic break between them. This feature is fixed, except in hypermetric lines in which one or two verses contain three feet (Bliss, 1962). The foot is the same in both types of line. The OE prosodic word includes the head, any other unstressed syllables within the word and any prosodic clitics, and the stress is assigned to the root of lexical words. However, the metrical template allows a prominent position to occur anywhere within the verse foot.
As such, stress is not assigned by this model to any particular position, but can occur anywhere within the foot. In terms of stress, left-headedness is preferred only because the verse foot is prototypically congruent with the preferred prosodic structure of OE words (Dresher–Lahiri 1991; Riad 1992). This congruence between the prototypical prosodic word and the default verse foot serves only to describe highly regular prototype lines. However, the variation in lengths, and the variable amount of unstressed syllables which are apparently permitted around the metrical heads, needs to be taken into account.

In prototypical lines, there are four phonological words which are congruent with four verse feet. Each of these verse feet contain 3µ according to the phonological generalisations given above. In example 1, a prototypical line, long vowels (marked with a macron) have 2µ, short (unmarked) vowels have 1µ. In addition, each verse foot contains two metrical positions, one with two moras (µµ) on the left and another with only one mora (µ-) on the right. Close matching between metrical structures and their equivalent prosodic structures is usual for prototypical and shorter lines. A prototypical 10σ/12µ line in which verse feet and prosodic words overlap is shown in FIG. 4.

In FIG. 4, a prototypical line is shown in which metrical and prosaic phonological structures exactly match. In this line, the four verse feet are congruent with four prosodic words, which are also graphological word. Each verse comprises three moras and has a prominent syllable on its left boundary. Note that the highest phonological category, the intonation phrase, is not included at the bottom of the figure, as the line very rarely represents a whole syntactic sentence, which is the usual domain of the intonation phrase (Selkirk 1980). An actual sentence (and therefore intonation phrase) in OE can be any number of phrases (and therefore verses) long, and can start either at the beginning of the line or after the caesura, which is more common. The line therefore embodies the core prototypical features of the OE metrical verse line as a combination of two syntactic phrases congruent with two metrical verses.
4.1 Variation from the prototype

Describing prototypical lines is only the first step. Most lines are not prototypical and it is this variation which causes the verse structure to be so difficult to adduce. In this model, all variation in length in standard (i.e. non-hypermetric) lines is explained in terms of single moras being added to or subtracted from verse feet. Depending on word choice factors, including the lexical items chosen by the author, and the grammatical items required to express the meaning, each position can be switched to either long or short, depending on the phonology of the word(s) occupying the foot. With this condition, the default foot can be modified to have two further possible structures. A reduced first position, with 1µ instead of 2µ, allows a short foot, and an expanded second position, with 2µ instead of 1µ, creates a long foot. Each of these modifications constitutes one deviation from the default foot structure and, in combination, several violations allow for the variation between lines of 8µ and 16µ.

<table>
<thead>
<tr>
<th>Default</th>
<th>Short</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>(µµ µ-)</td>
<td>(µ- µ-)</td>
<td>(µµ µµ)</td>
</tr>
</tbody>
</table>

TAB. 5: Available foot structures
The value of these feet depends on word choice, which determines whether the syllables in the feet are long or short. A foot may be occupied by a single heavy syllable, or four light syllables, or anything in between. Metrical positions may be simple, with a single syllable, or resolved, with two light syllables. The verse foot, if minimal, can in turn be resolved, so that two 1µ positions can unite in a single heavy syllable. These conditions allow for the development of a variably-sized verse foot with a minimum of 2µ/1σ, and a maximum of 4µ/4σ. The possible arrangements of syllables are shown in TAB. 6.

In TAB. 6, eight structures are shown, giving the available arrangements of moras for each verse foot, and the possible syllable arrangements. Heavy syllables are marked with a macron. There are two possible 3µ feet: a left-heavy foot with 2σ and a resolved foot with 3σ. This kind of default foot can have two syllables, of which the first is heavy (µµ µ-), or three syllables, all of which are light (µ µ µ-). The minimal 2µ foot always has one mora per position, but may cover one long or two short syllables. The maximal 4µ foot can have two, three or four syllables, in various combinations, shown in structures e-h. The variety shown in the corpus data in FIG. 1 and 2 is produced by a combination of any four of these verse feet in each line, with a preference for the left-heavy structures shown in a and b.

4.2 Shortened lines

Both the syllabic and the moraic data sets show a leftward skew to the moraic distribution and particularly an overrepresentation of 11µ lines relative to 13µ lines. This suggests that the addition of 1µ to the rightward, degenerate position in the foot should be considered a more serious deviation than the reduction of the leftward, full position. Any line that is shorter than 12µ has one or more short feet, such as in the first foot of example 1.

1. (µ- µ-) (µ µ µ-) (µ µ µ-) (µ µ µ-)
   sorgum geswenced | sigore gewyrðod²
   Σ=11µ
   Andreas 116

The 11µ line in example 1 comprises four verse feet, three of which have the default asymmetrical arrangement (µµ µ-). The first verse foot, however, is short with two light positions (µ- µ-).

The flexibility of the length of the verse feet allow for sorgum at 2µ to be accommodated across two minimal metrical positions.³ The shortest possible line is one composed of four verse feet, each of which has two light positions making 8µ and because of the four-position principle, 8σ, as in example 2a.

² ‘with sorrows wearied | with victory honoured’
³ If Minkova’s (2008) notion of the prefix ge- being outside the PrWd is accepted, the foot boundaries in TAB. 6b could be considered more optimal than TAB. 6a.
Example 2a shows a minimal line in which the foot boundaries coincide with word boundaries. Example 2b shows a derived noun, *waldendes*, with secondary stress on its middle syllable, which occupies the head of the second foot. Minimal lines are always 8σ/8µ long and composed of four feet each with two light syllables. These minimal lines are very few but entirely acceptable according to all existing theories mentioned in section 2, in which they are sometimes assumed to be default, or minimally metrically complex, perhaps because they are most common to Old Icelandic verse lines.

### 4.3 Lengthened lines

In FIG. 1 above, it is shown that the line length by syllables is normally distributed around 10σ per line, accounting for roughly 30% of the total. This distribution is marked by a leftward skew, showing a large proportion of 9σ lines compared to 11σ lines. The 8σ minimal lines are less than 10% of the total, which fails to support Sievers’ implication that 8σ lines are prototypical. 9σ lines are necessarily made of one 5σ verse and one 4σ verse, in either order. 10σ lines can either be composed of one 6σ verse and one 4σ verse, or of two 5σ verses. Longer standard lines can be made up of a combination of verses between 4σ and about 8σ. These maximally long lines are very few, such as example 1, which has 14 syllables, marked for stress value, in which   indicates primary stress, and   indicates unstress.

3. (       ) (       ) (         ) (       ) 15µ/14σ
   *Abraham maðelode | hæfde on ān gehogod* 6
   *Genesis 2893*

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4. ‘Adam spoke wicked words’
5. ‘perform his lord’s will’
6. ‘Abraham spoke, he had about one [thing] thought’
In example 3, each verse has seven syllables. The first verse comprises two prosodic words which overlap with the graphological words. The second verse has more graphological words, but only two prosodic words. This exemplifies the longest an OE line can become without adding further stresses and becoming hypermetric.

Theoretically, lines can have any number of syllables between $8\sigma$ to $16\sigma$, but because of the available words in the language, their inflectional morphology and grammatical requirements, $16\mu$ lines are usually $10–14\sigma$. Lines longer than $14\sigma$ tend to fulfill at least some of the requirements for $16\mu$ lines but the boundaries of the prosodic words do not coincide with the boundaries of the feet. In maximal lines, one of the verse feet usually stretches over the caesura, and syllables are often split across feet, as shown in example 4b. Example 4a is a rare $16\mu$ line where no foot crosses over either the caesura or prosodic word boundaries.

4a. (µµ µ µ) (µ µ µ µ) (µµ µµ)(µ µ µ µ)
ādrifen from duguðum | dōð swā ic hāte

4b. (µ µ µµ)(µµ µ µ)(µ µ µ µ)(µ µ µ µ)
efne swā wide | swā ðā wī... te...lāc

In 4a, the verb ādrifen has $4\mu$ over $3\sigma$ and occupies a foot on its own. The second foot is occupied by a prepositional phrase which is a prosodic word congruent with the foot. The third foot is occupied by two words with $2\mu$ each, a verb in the imperative and a common adverb. The fourth foot contains a pronoun and inflected verb. In this line, the feet neatly align with the boundaries of the prosodic words. In contrast, the first foot of 4b conforms to the edges of the first two graphological words. In a breach of the footing structure, the swā after the caesura borrows one mora from the second foot (mostly occupied by wide) and another from the third. ðā is within a foot, but split across two positions, which is more common and a less serious breach. The compound noun wītelāc is written with ellipses to allow the foot boundary to be shown. With $5\mu$, wītelāc must reach over two verse feet, but at only $3\sigma$, it cannot occupy a verse on its own. With an inflectional suffix this word can occupy a verse on its own, such as in wēras bāsnedon | wītelāces (Genesis 2419). In this second verse, the minimum length requirement (at $4\sigma$), and the prototypical quantity requirement for two verse feet ($3\mu +3\mu$) for the verse are met. In 4b, however, wītelāc is aligned to the right edge of the line, where it occupies the whole of the fourth foot and borrows the final mora of the third foot. This final mora is also part of the prosodic head of the third foot, as is demonstrated by the alliteration between the second and third feet. This line shows the effectiveness of the metrical template, even when tested with multiple breaches of the basic structure. Example 4b is analysed with the metrical structure divided into verse feet and with the prosodic structure divided into prosodic words in FIG. 5.

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7 ‘driven from the company, | do as I command!’
8 ‘even as widely | as the punishments...’
In FIG. 5, a metrically complex line is shown, and an ellipsis is added to allow the foot marking to be accommodated. Lines with so many disjunctions between the PrWds and the VFt are disfavoured and therefore rare.

### 4.4 The primary stress problem in non-typical lines

This section addresses how different types of words occupy the heads of verse feet, and how relative metrical prominence is established between different word groups. It is argued that while nominals have a special status in relationship to prominent metrical positions, there is no need to posit further superordinate categories. A heuristic is described by which the head of a verse foot is shown to be filled by the most prosodically prominent word within the foot.

Highly lexical words, such as nouns and adjectives, come with a root stress and prototypically occur in alliterating positions. This root stress creates the head of a prosodic word in the prose phonology, and also prototypically occupies the head of a verse foot in the metre. There is a distinction between verbs in the infinitive and finite verbs, in that infinitive verbs frequently occupy the final non-alliterating prominent position, but finite verbs do so less frequently (Bliss 1962; Cable 1974). In this way they are similar to other middle-ranking words, such as underived adverbs, in that they only occupy alliterating positions under certain circumstances (Bliss 1962; Kendall 1991). In addition to these, some function word classes, including conjunctions and demonstratives, are not included by Bliss (1962), as they have no detectable effect on
alliteration. In feet which do not contain a root stress, it can be shown that other words gain metrical prominence without being displaced and without necessarily needing to invoke positionally assigned stress, or a change in prosodic categories. In the absence of lexically stressed syllables, other morphologically prominent syllables occupy the heads of verse feet, such as in example 2. This example is theoretically unacceptable in all analyses which associate alliteration with primary stress.

   genāp under nihthelm | swā hēo nō wērē

In example 2, : indicates secondary stress, while ! indicates syllables without lexical stress (according to e.g. Bliss 1962), but which nevertheless occupy the heads of metrical feet. In the first verse, genāp is an inflected verb and nihthelm, a compound noun. In the second half-line, swā is a conjunction, and hēo is a pronoun. Nō, which takes the alliteration, is a common adverb. The final position is fulfilled by the inflected verb wērē alone. This distribution can be treated with the same analysis as for prototypical lines.

4.5 Secondary stress

In verses where two nominals occur as separate words, the stressed syllables are straightforward to identify on morphological grounds alone. This generalisation, however, only applies to those words which fulfill the prominence requirements of a single verse foot. For words long enough to occupy two feet, the system must be elaborated. In the cases of compounds and derivational nouns, it can be shown that they sometimes occupy the heads of two feet and sometimes only the head of one. In example 6, three instances of the commonplace compound ælmihtig ‘almighty’ with different inflections are shown to occupy different metrical structures in different metrical circumstances, with stress conditions and metrical weights included.

   (μμ μ)(μ μ μ) (μμ μ) (μμ μ-
   ëce ælmihtig, | ànfor...lētan,

   (μμ μ μ)(μ μ μ) (μ μ μ) (μ μ μ-
   ìcest þi...ne yrmðo.| Ðe se æl...mihtiga

6c. ( . . :).( . . :) ( : .) ( : .)
   (μ μ μ)(μ μ μ) (μ μ μ) (μ μ μ-
   Hím þā feran gewāt | fæder ælmihtiges

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9 ‘disappeared under cloak of night | as if it had never been’
10 ‘eternal almighty | forsake [me]’
11 ‘you increase your misery | whom the almighty [humbled]...’
12 ‘he then set out to depart | of the Father almighty’s [commands he was mindful]’
In 6a, ælmihtig occupies the second verse foot alone. In 6b, alliteration reveals that the first component of the suffixed form ælmihtiga occupies the head of the third foot, while the second component of the word occupies the final foot alone. In both instances, an ellipsis is added to show verse foot boundaries. In 6c, alliteration reveals that the suffixed form ælmihtiges occupies the whole final foot on its own. The generalisations shown in the examples 6 a-b are typical of the distribution of nominal compounds.

4.6 An example analysis of a section of OE verse text

The system presented in this chapter can be used to analyse any section of Old English verse comprised of whole lines. An example analytical procedure of the first four lines of the Seafarer follows.

1. Count Moras

Identify and sum the vowels in the line. Vowels or diphthongs can be long with 2µ, in which case they are marked with a macron in editions. Otherwise they are short with 1µ. If a short vowel is followed by a complex coda, a further 1µ is added for a maximum of 2µ per syllable. In example 8, only the syllables mē and sōð have long vowels, and no syllable has a complex coda.

\[
\begin{array}{cccccccc}
\mu & \mu & \mu & | & \mu & \mu & \mu & \mu \\
\end{array}
\]

\(\Sigma = 12\)

\(mæg\ ic\ be\ mē\ sylfum\ |\ sōðgied\ wrecan^{13}\)

Seafarer 1

2. Identify heads

Locate the prominent positions, firstly by stress conditions, and in the absence of primary or secondary stress, find the most lexical word within the range of a verse foot. In example 8, stress notation is given and arrows point to the underlined prominent syllables.

\[
\begin{array}{cccccccc}
\cdot & \cdot & \cdot & | & \cdot & \cdot & \cdot & \cdot \\
\end{array}
\]

\(mæg\ ic\ be\ mē\ sylfum\ |\ sōðgied\ wrecan\)

In example 8, stress is the first indicator of prominence. In the b-verse, the primary alliteration is on the first syllable of sōðgied, a compound noun, with primary stress. The unalliterating final position is occupied by wrecan, a non-finite verb, with primary stress. The alliterating item in the a-verse is on sylfum, a reflexive pronoun. Reflexive pronouns are usually left out of lists of stressed elements, perhaps because they are so morphologically similar to nouns. Nevertheless, the alliteration shows unambiguously that sylfum occupies the second prominence. The first prominence is occupied by the auxiliary verb mæg, which as a verb is prominent compared to the personal pronoun ic and the preposition be. This identifies the heads of the feet.

\[^{13}\] ‘I can, about myself, | tell a true story’
3. Build feet
On the basis of the presence of the metrical heads, group the vowel moras into feet of between 2 and 4 moras. Ensure that all syllables are included, use word boundaries as a guide for foot boundaries.

9. \((\mu \mu \mu)(\mu \mu \mu)(\mu \mu)(\mu \mu)\)
\text{mæg ic be mē sylfum | söðgied wrecan}

In example 9, the feet are enclosed by parentheses. The foot boundaries are neatly aligned with the boundaries of prosodic words.

4. Identify metrical positions
Fill in the feet by identifying the full (2µ) and degenerate (1µ) positions. Identify eight metrical positions. There must be two metrical positions per verse foot, one of which must contain a prominent position. Each position may consist of one or two moras distributed over one or two syllables. In example 10, the metrical positions are shown to comprise four verse feet, as found in all standard lines.

10. \((m m)(m m)(m m)(m m)\)
\((\mu \mu \mu)(\mu \mu \mu)(\mu \mu \mu)(\mu \mu)\)
\((\Sigma = 12)\)
\text{mæg ic be mē sylfum | söðgied wrecan}

In Seafarer 1, the less prototypical a-verse can be explained according to the same analysis as the seemingly more orderly b-verse, and with the same number of modifications to foot lengths. The a-verse is however more metrically complex because the alliterating syllable is in the right branch of the second verse foot. The b-verse has its primary alliteration in the preferred initial position. The dispreferred but acceptable alliteration pattern in the first verse is forced by word choice and word order constraints.

The subsequent lines show further features, not found in Seafarer 1. Seafarer 2 shows a foot breaching the caesura and a primary alliteration position some distance rightwards of the caesura, which is nevertheless accommodated by the analysis.

11. \((m m)(m m)(m m)(m m)\)
\((\mu \mu \mu)(\mu \mu \mu)(\mu \mu \mu)(\mu \mu)\)
\((\Sigma = 12)\)
\text{sīþas secgan, | hū ic geswincdagum}^{14} \text{Seafarer 2}

In the a-verse of example 11, the first foot is prototypical. The second foot reaches over the caesura, so that the verse foot covers the entire prosodic word 
\text{secgan} and part of the following verse, the subordinator \text{hū}. The primary alliteration position is in the final position of the third foot on the alliterating syllable -\text{swinc-}. This complexity is forced by subordination and word choice.

Seafarer 3 exhibits maximal breaches of the default structure, which cause the third foot to reach over the caesura.

---

14  ‘tell of journeys, | how I, in laborious days’
12. (m m)(mm)(m m)( m m )
   (µ- µ-)(µ- µ-)(µ- µ-)(µ- µ-)
   (Σ = 10)
   earfoðhwī...le | oft þrōwade,15
   Seafarer 3

In example 12, the third foot borrows a syllable across the caesura, crossing both the
caesura and a word boundary, an ellipsis is added to allow the annotation to fit above
the line, but has no metrical significance.

Line 4 is a much more orderly, near-prototypical line, with four phonological words
matching onto four verse feet.

13. (m m ) ( m m ) ( m m )
   (µ- µ-)(µµ µ-)(µ- µ-)
   (Σ = 11)
   bitre brēostceare | gebiden hæbbe,16
   Seafarer 4

This procedure for taking lines of variable length and fitting them into a four foot
model based on metrical weight can be applied to the great majority of OE lines with-
out modification, and to hypermetric lines by adding an additional foot to the hyper-
metric verse. The first four lines of the Seafarer show variable levels of metrical
complexity but can all be explained using the basic model.

5 Comparison with Old Saxon and Old Icelandic

One of the most dominating limitations on the study of Old Germanic metrical struc-
ture is the assumption that the rules of composition or analysis should apply equally
to the three extant verse forms with substantial corpora: Old English, Old Icelandic
and Old Saxon. This desire for unity is inherited from but not originated by Sievers
(1893). This conflation leads to the further assumption that the features shared by
these traditions must be the core components of a single metrical system, regardless
of other features, no matter how dissimilar. This section demonstrates that the analy-
sis presented in the present study is not applicable to these related traditions, but
only to Old English.

5.1 Syllable count in comparison

The following histograms show the line lengths by syllables for Old Icelandic, Old
English and Old Saxon respectively.

<table>
<thead>
<tr>
<th>Syllable length</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>26</td>
<td>20</td>
<td>32</td>
<td>20</td>
<td>34</td>
<td>19</td>
<td>15</td>
<td>15</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>Percent</td>
<td>8.7</td>
<td>6.7</td>
<td>10.7</td>
<td>6.7</td>
<td>11.3</td>
<td>6.3</td>
<td>5.0</td>
<td>5.0</td>
<td>6.0</td>
<td>1.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>100</td>
</tr>
</tbody>
</table>

TAB. 7: Syllable sample from the Heliand and the Genesis

15 ‘a time of hardship | often suffered’
16 ‘bitter anxiety | I have endured’
The syllable lengths of Old Saxon lines have a flat distribution between 9 and 16 σ, with zero 8σ lines. There is a tail-off after 17σ. These data are not particularly informative, as they lack a clear pattern, particularly when compared to the OE data in FIG. 1 above.

The Old Icelandic data are shown in TAB. 8 and FIG. 7 below.

<table>
<thead>
<tr>
<th>Syllable length</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>15</td>
<td>122</td>
<td>109</td>
<td>41</td>
<td>10</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>Percent</td>
<td>5.0</td>
<td>40.7</td>
<td>36.3</td>
<td>13.7</td>
<td>3.3</td>
<td>1.0</td>
<td>100</td>
</tr>
</tbody>
</table>

TAB. 8: Syllables in the Rígsþula, the Völuspá and the Hymiskviða

The Old Icelandic data show a clear preference for shorter lines, composed of verses of four or five syllables, with very little variation.
5.2 Metrical quantity distribution

The following data are the metrical quantity lines from the samples of Icelandic and Saxon verse:

<table>
<thead>
<tr>
<th>Moraic weight</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>9</td>
<td>12</td>
<td>28</td>
<td>52</td>
<td>58</td>
<td>45</td>
<td>44</td>
<td>58</td>
<td>14</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>Percent</td>
<td>3.0</td>
<td>4.0</td>
<td>9.3</td>
<td>17.3</td>
<td>19.3</td>
<td>15.0</td>
<td>14.7</td>
<td>19.3</td>
<td>4.7</td>
<td>2.7</td>
<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
<td>100</td>
</tr>
</tbody>
</table>

TAB. 9: Metrical quantity in the Rígsþula, the Völuspá and the Hymiskviða

These data are visualised in FIG. 8.

FIG. 8: Metrical quantity in the Rígsþula, the Völuspá and the Hymiskviða

Old Icelandic syllable structure differs from the Old English primarily in that complex codas, including those with quasisyllabic endings are very common. This gives a preponderance of short lines with many more heavy syllables, particularly word-internally, than are found in Old English. The shortness of Old Icelandic lines means that the model presented for Old English is unsuitable. These data suggest that Old Icelandic verse lines are best described using a Sievers-like model predicated on lines composed of combinations of four or five syllables.

The following data and histogram show the lengths of the Old Saxon sample by metrical weight:

<table>
<thead>
<tr>
<th>Moraic weight</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>9</td>
<td>12</td>
<td>20</td>
<td>11</td>
<td>16</td>
<td>12</td>
<td>23</td>
<td>19</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Percent</td>
<td>3.0</td>
<td>4.0</td>
<td>6.7</td>
<td>3.7</td>
<td>5.3</td>
<td>4.0</td>
<td>7.7</td>
<td>6.3</td>
<td>7.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moraic weight</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
<th>30</th>
<th>31</th>
<th>32</th>
<th>33</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>5</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percent</td>
<td>7.7</td>
<td>4.0</td>
<td>8.3</td>
<td>8.7</td>
<td>9.0</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

TAB. 10: Metrical quantity in the Heliand and the Genesis
TAB. 10 is split into two to fit the page. The data are visualised in FIG. 9.

![Saxon moras diagram](image)

FIG. 9: Metrical quantity in the Heliand and the Genesis

The Old Saxon quantity data show a flat and uneven distribution over a large range of values with no pattern or indication of any particular trend.

A comparison between the Old Icelandic, the Old Saxon and the Old English data show that the model developed for Old English provides no insights into the structure of Old Icelandic or Old Saxon, which are better described by existing studies than Old English.

### 6 Conclusion

These findings and the model developed from them both represent a substantial deviation from previous, qualitative, studies and provide a reliable means of distinguishing acceptable from unacceptable lines in Old English verse. It has been shown that the variation in the features of the Old English verse line is caused by deviation from a metrical template, which preferentially creates prototypical lines, which deviate from a 12-mora line comprising four verse feet, each headed by a metrically prominent syllable such as a stress. The metrical template is based on a preference for verse feet to be congruent with prosodic words, and for prosodic words to be measured in length by the combined syllable weight of metrical feet. In addition, it is shown that Old English verse structure must be explained with a different analysis than Old Icelandic and Old Saxon verse, despite their historical relationship and superficial similarities.
References


