The Prosodic Hierarchy as a Form of Meter
Chris Golston

1. Introduction[1]

This paper has two goals. First, it seeks to establish that Middle English Alliterative Verse (MEAV) is a meter based on hierarchically organized prosodic constituents above the foot. In particular, I claim that MEAV is based straightforwardly on the Prosodic Hierarchy, as conceived of in work by Selkirk (1978, 1980, 1984, 1986), Hayes (1989) and others. Second, the account of MEAV advanced here requires reference to the notion of *branching* in prosodic structure above the foot, suggesting that branching may be a relevant property of prosodic constituent above the level of the syllable and foot[2].

Discussion proceeds as follows. In section 2 I outline the facts about Middle English Alliterative verse in general and in the poem *Cleanness* in particular, following recent work by Cable (1991). Section 3 presents a brief overview of work on the Prosodic Hierarchy and Section 4 proposes an analysis of MEAV in terms of it. In section 5 I discuss the relation of this proposal to Cable's work and extend the analysis to metrical structure *above* the line in Cleanness. A brief conclusion follows in section 6.

2. Cleanness and Late Middle English Alliterative Verse

Cleanness (also known as *Purity*) consists of 1812 lines of alliterative verse. The poem is most probably by the same author as *Sir Gawain and the Green Knight, Pearl* and *Patience*; no other works by this author are known. The data used here are taken from Cable (1991); all scansions are either his or are consistent with his rules of scansion. All statistics are taken from his work.

The Middle English Alliterative line generally has four metrically prominent (stressed) words and a number of prosodically subordinated (unstressed) words. Of the four prominent words, three tend to 'alliterate', i.e. to share a stressed syllable (usually the initial syllable) with a common onset, as in (1), the first four lines of *Pearl*[3].

(1)   Perle, plesaunte to prynces paye   *Pearl, pleasing and delightful for a prince*
       to clanly clos in golde so clere: *to set flawlessly in gold so bright:*
       Oute of oryent, I hardyly saye   *among the pearls of orient, I confidently say*
       ne proved I never her precios pere.   *I never found her equal.*

The alliterative scheme of the lines above may be outlined as below.

[2] See Bickmore 1990 for evidence that branchingness is crucial in constructing certain phonological phrase boundaries in the postlexical phonology of Kinyambo.

[3] Here and elsewhere I follow the orthographical conventions used in Cawley and Anderson 1976; modern renditions (as in 1) are also theirs.

(2) Perle   Plesaunte   Prynces   Paye
     Clanly   Close   golde   Clere
     Oute   Oryent   (h)Ardyly   saye
     Proved   never   Precios   Pere

Note that although each line contains four prominent syllables, not all of these syllables begin with the same onset. In line 1 this is the case, but lines 2 and 4 show the more normal situtation in which only three of the four prominent words alliterate (*clanly, close, clere; proved, precios, pere*). Line 3 shows that the *lack* of an onset counts as alliterative: vowel initial *oute, oryent* and *(h)ardyly* alliterate, presumably because they share an onset consisting of the same set of segments, i.e., the empty set.

Note that the four prominent syllables tend to be content words, lexical items generally of the categories noun (*perle*), verb (*proved*), adjective (*precios*), adverb (*clanly*). Function words, nonlexical items such as prepositions (*in*), infinitival markers (*to*), pronouns (*I*), and particles (*so, ne*) generally are not included in the alliteration scheme[4].

Cable (1991: 80, 91-92) offers the following account of the major patterns found in MEAV:

(3) Late Middle English Alliterative Verse
    Definitions
    Strong dip: A sequence of two or more metrically unstressed syllables.
    Metrical stress:
    1. Nouns, adjectives (except indefinite and interrogative pronominal adjectives: *alle, many, any, fele, other, on, no, uche, ilk, what*), infinitives, and participles always receive metrical stress.
    2. Finite verbs and adverbs might or might not receive metrical stress. (The determining factors are complex, involving the rhythmical structure of the verse, the pattern of alliteration, semantic considerations, etc.)
    3. Articles, prepositions, conjunctions, auxiliary verbs, linking verbs, the verb *have*, pronominal adjectives, and pronouns (personal, demonstrative, indefinite, relative, and interrogative) do not receive metrical stress unless they occur at the end of the half-line.
    First half-line
    Normal verses: Two metrically stressed syllables and at least two strong dips
    Extended verses: Three stressed syllables with any pattern of dips.
    Second half-line

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[4] For discussion of the relation between alliterating function words and stress see Matonis (1984: 343, 347-51) and Borroff (1962: 170-171.

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Two metrically stressed syllables, one and only one of which is preceded by a strong dip. Exactly one metrically unstressed syllable at the end.

Cable is quick to point out that these rules are not exceptionless. They

> overstate the regularity of the meter, because there are exceptions that must be explained, but this first approximation moves us toward understanding the general principles by which most of the extant fourteenth-century alliterative poetry was composed.   (1991:90)

Given this cautionary note, let us go through Cable's account one step at a time. Exceptions to the generalizations given above will be dealt with below.

Consider the following line from *Cleanness* (line 213). Main stresses are represented by capital Xs, sequences of stressless syllables that constitute strong dips are underlined.

(4) Regular 4-beat line

```
x      x   X    x  x   X      x    X x    x    x    X
With  this word that he warp  the wrake on hym lyght;
                       spoke      vengeance      fell
```

The sequences *with this* and *that he* constitute strong dips before *worde* and *warp*, respectively. Each of these words is metrically unstressed because of their inherent grammatical categorization as preposition (*with*), demonstrative (*this*), conjunction (*that*) and pronoun (*he*). Conversely, *worde* and *warp* receive metrical stress because of their inherent grammatical categorization as noun (*worde*) and verb (*warp*). (I will not consider here the optional assignment of metrical stress to finite verbs and adverbs as Cable's discussion of this is rather cursory.[5])

The second half-line has two metrically stressed syllables (*wrak-* and *lyght*), one and only one of which (*lyght*) is preceded by a strong dip (*-e on hym*). This half-line has exactly one metrically unstressed syllable at the end (see Cable 1991: 66-84 for evidence that <lyght> represents underlying disyllabic /lyghte/, the form found in Old English).

Now consider an extended 5-beat line (*Cleanness* line 214).

(5) Extended 5-beat line

```
X x      x   x  X x   X      x    X   x    x    x X x
Dryghtyn with his dere dom  hym drof to  the abyme.
God              stern judgment drove        pit
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5 The fact that certain content words do not receive the same level of metrical prominence as others need not be taken as a fact about Middle English *per se*. In pentameter function words often occupy prominent positions within the line, as the first line to Marvell's "To his coy mistress" shows: *Hád we but wórld enough and tíme, this cóyness, lády, wére no críme*. MEAV seems to differ from pentamer in that it demotes the stress of certain content words instead of promoting that of function words.

The extra beat in a five-beat line occurs in the first half-line: *dryghtyn...dere...dom* gives us three rather than the expected two main stresses before the caesura. Where we would expect two strong dips in the first half-line in a 4-beat line, we get only one: *...tyn with his...*. Note that the second half of an extended line is no different than that of a normal 4-beat line: two main stresses (*drof...abyme*) with a single strong dip (*to the*).

Turning now to the main types of half-line in *Cleanness*, let us see how the generalizations in (3) actually pan out as lines of verse. According to Cable, the fifteen most common half-line types found in *Cleanness* are those in (6).

(6) Most frequent types of half-line in *Cleanness*

#	Cable #	Syllable array	% in A half-line	% in B half-line	% of Lines
i.	3B3	x x x X x x x X	100.0		1.66
i.	3B3A	x x x X x x x X x	100.0		2.16
ii.	3B2A	x x x X x x X x	98.3		3.27
iii.	2B3	x x X x x x X	100.0		1.72
iii.	2B3A	x x X x x x X x	96.6		3.27
iv.	2B2	x x X x x X	100.0		1.83
iv.	2B2A	x x X x x X x	93.9		3.66
ix.	B3A	x X x x x X x		96.7	10.00
v.	3BA	x x x X x X x		94.6	3.11
vi.	3C	x x x X X x		100.0	1.50
vii.	2BA	x x X x X x		97.0	5.60
viii.	2C	x x X X x		100.0	1.66
x.	3A	X x x x X x		94.2	3.83
xi.	B2A	x X x x X x		98.9	13.72
xii.	2A	X x x X x		100.0	5.22

(Capitalized letter/number sequences in the second column are Cable's names for half-line types; see Cable 1991: 43-44 for an explanation of the system of naming.) I have categorized Cable's fifteen types according to a 12-type division (i-xii) in which half-lines that differ only by the presence or absence of a final unstressed syllable (categories i, iii and iv) are categorized together; justification for this will become apparent later when it is proposed that final syllables may be extrametrical. These twelve types account for approximately 88% of the B half-lines and 36% of the A half-lines, or 62% of the half-lines in *Cleanness*. Most of the remaining A half-lines in *Cleanness* have 3 beats; the half-line types that these 3-beat lines fall into vary considerably, with the result that none occur often enough to appear on the chart above.

152 other types account for the remaining 12% of the B half-lines and 54% of the A half-lines, or 38% of all the lines in *Cleanness*. It should be clear that while the 12 types

in (6) account for only 62% of the half-lines in the poem, they nonetheless account for a disproportionately large share of the half-lines, as the graph in (7) makes clear.

(7) General distribution of half-line types in *Cleanness*

■ 12 types (62%)
▨ 152 types (38%)
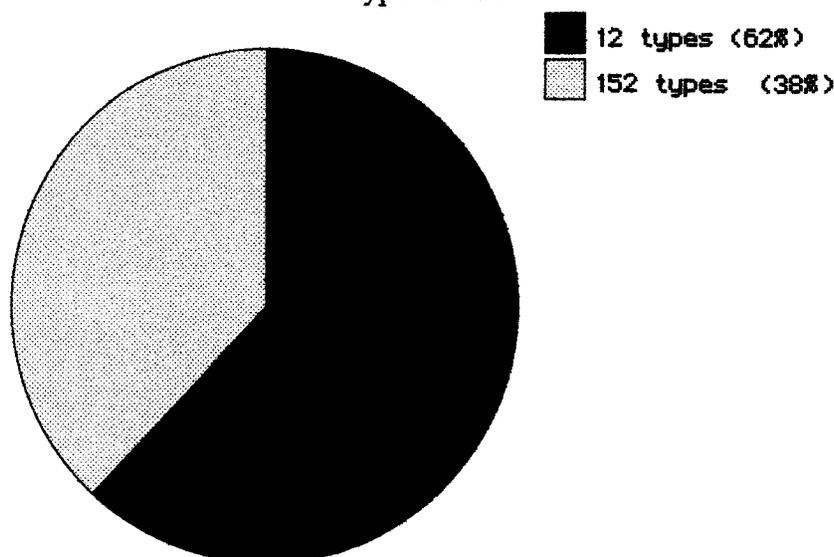
Of the remaining 152 types of half-line, each occurs in less than 1.5% of the lines of the poem. In a very clear sense, then, the 12 half-line types in (6) form the core of *Cleanness*.

Cable's succint generalizations in (3) above clearly represent a major step forward over the list of half-line types in (6), especially when we consider that there are 152 *other* types of half-line in *Cleanness* not shown in (6) that also fall under Cable's account in (3). Nevertheless, the following question arises: What relation does the account in (3) bear to processes or structures encountered in the phonologies of natural languages? In particular, the following issues arise when one considers the relation of this type of verse to phonological theory:

    a. What is a *strong dip*?

    b. What is the connection between *strong dips* and *stresses*?

    c. What unifies the 12 half-line types so central to this verse form?

In what follows I will argue that the answers to these questions crucially involve *hierarchical prosodic structure* and the notion of *branching*. I will propose that MEAV is structured by an idealized version of the hierarchy of prosodic structure used in the phonologies of the languages of the world.

3. The Prosodic Hierarchy

Much recent work in phonology has gone towards establishing a cross-linguistically viable hierarchy of prosodic constituents above the level of the syllable and foot (Selkirk 1978, 1980, 1986, Nespor & Vogel 1982, 1986; Hayes 1989; see also Inkelas & Zec 1990 for a collection of recent work). A common version of the prosodic hierarchy is given below, with an example sentence[6].

(8) The Prosodic Hierarchy

U	Utterance
I	Intonational Phrase
P P	Phonological Phrase
ω ω ω	Phonological Word
he képt it in a lárge jár	
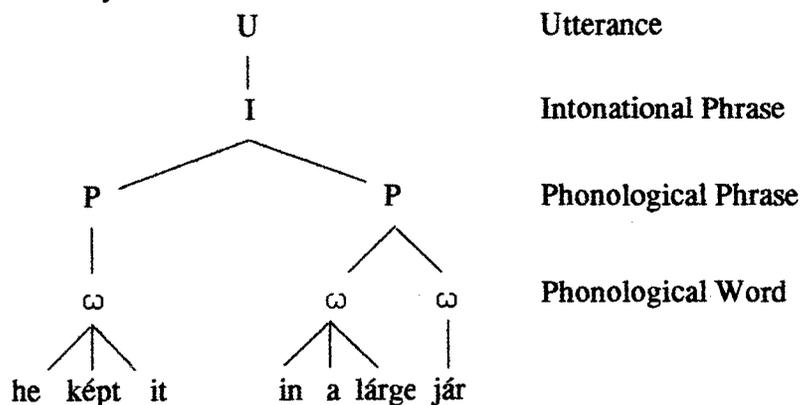
The Prosodic Hierarchy is meant to do three things. First, it helps to define prominence relations among the words in a sentence. In (8), for instance, each phonological word (ω) has exactly one stressed element (*képt, lárge, jár*)--the function words (*he, it, in, a*) do not form phonological words of their own and thus do not receive the same level of sentence-stress assigned to the content words in the sentence. For further prominence relations, consider the grid-notation below.

(9) Prominence relations

							x	Utterance	(U)
							x	Intonational Phrase	(IP)
	x						x	Phonological Phrases	(PP)
	x				x	x		Phonological Words	(ω)
he	kept	it	in	a	large	jar			

Columns of x's indicate relative prominence for each constituent in the hierarchy. In addition to the x's that mark the prominent content words that head ωs (*kept, large, jar*), two x's on the next level mark the prominent words in the PPs (*kept* and *jar*), and one x on the IP level marks the most prominent word in the sentence (*jar*). (*jar* will receive

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6 For the rules that build these prosodic constituents off of syntactic structure see Selkirk 1986, Hayes 1989, Nespor & Vogel 1986, Chen 1990. For the view that prosodic constituents are isomorphic to syntactic structure, see especially Kaisse 1985 and subsequent work.

an additional x for the U level; but since the Utterance here consists of a single IP, the prominence added is superfluous.)

The second function of the constituents in (8) is to define natural pause breaks other than those that coincide with syntactic bracketing. Natural pause breaks thus include [he kept it … in a large … jar] at the level of the phonological word and [he kept it … in a large jar] at the level of the phonological phrase. Note that neither phrasing conforms to the usual syntactic bracketing in which [he kept it] and [in a large] do not form constituents.[7]

(10) Pause breaks

```
(                                    )     Utterance
(                                    )     Intonational Phrase
(       )  (                         )     Phonological Phrase
(       )  (            )  (    )          Phonological Word
 he kept it   in a large       jar
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Finally, and most importantly, constituents such as the PP and ω define rule domains for phonological operations above the word (see Nespor & Vogel 1986 for crosslinguistic data). The phonological word, for instance, has been taken as the domain in which a postlexical rule of v-deletion applies (Hayes 1989)[8].

(11) V-Deletion (Hayes 1989): $v \rightarrow \emptyset / \_\_ [+son]...]_\omega$
   a. [Leave me]$_\omega$ [alone]$_\omega$ [liymiy...]
   b. [Leave]$_\omega$ [Maureen]$_\omega$ [alone]$_\omega$ *[liymoriyn...]
   c. [Give me]$_\omega$ [the book]$_\omega$ [gimiy...]
   d. [Give]$_\omega$ [Mike]$_\omega$ [the book]$_\omega$ *[gimayk...]

The final [v] in leave and give freely deletes when followed by a sonorant within the same phonological word (a, c), but does so less freely when followed by a sonorant in the following phonological word (b, d).

4. MEAV and the Prosodic Hierarchy

The Prosodic Hierarchy in (8) is motivated by purely phonological considerations such as rule domains, pause breaks and prominence relations in a large number of

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[7] Again, however, see Steedman 1990, who argues that categorial approaches to syntactic structure allow any number of syntactic bracketings, many of which do define the natural pause breaks seen here.

[8] Hayes uses the term 'Clitic Group' for what I have called (following Selkirk) here the prosodic word v. Hayes reserves the term prosodic word for an additional level of prosodic structure beneath the Clitic Group; for Hayes, the string [in a large] consists of 3 prosodic words but a single Clitic Group. For Selkirk (1984, 1986) function words do not form prosodic constituents on their own: cf. homophonous pairs such as a fence and offence or in capable hands (prepositional phrase) and incapable hands (noun phrase).

genetically and typologically diverse languages. It is therefore somewhat surprising to see that the same hierarchy of prosodic constituents forms the very basis of MEAV.

I will try to show that the maximal line in MEAV is best modeled as in (12), i.e., as a hierarchically organized set of prosodic constituents each of which dominates at most two constituents on the next-lowest level of structure (with one important exception). Sub-maximal (but still well-formed) lines are derived from the structure in (12) by introducing non-branching nodes into certain parts of the tree.

(12) The Prosodic Hierarchy as Meter
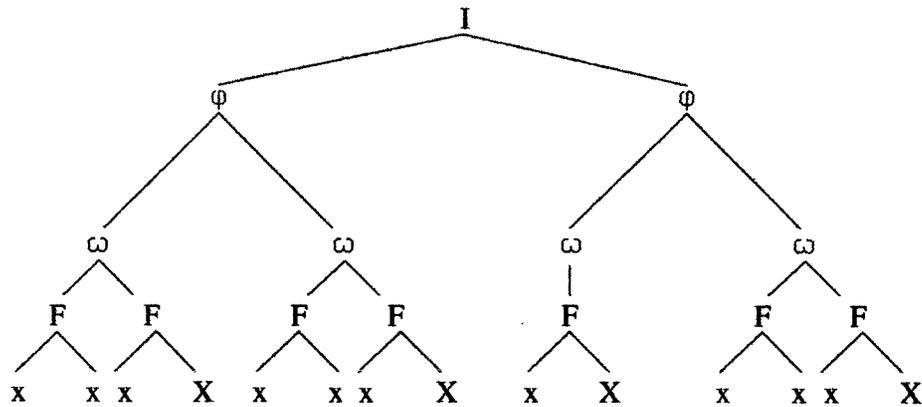
Let us plunge right in by defining the line in MEAV as a branching Intonational Phrase (IP) dominating exactly two Phonological Phrases (PPs). Each half-line is then a branching PP dominating exactly two Phonological Words (ωs). In the first half-line each ω branches and dominates a branching (iambic) foot (F). The second half-line differs from the first in that only one ω branches, with the result that only one ω dominates two iambic feet. Which of these ωs branches is irrelevant, with the result that the following structure (in which the first ω in the second half-line branches) is equivalent to the one above (in which the second ω in the second half-line branches):

(13) A metrically equivalent line to the one in (12)

61
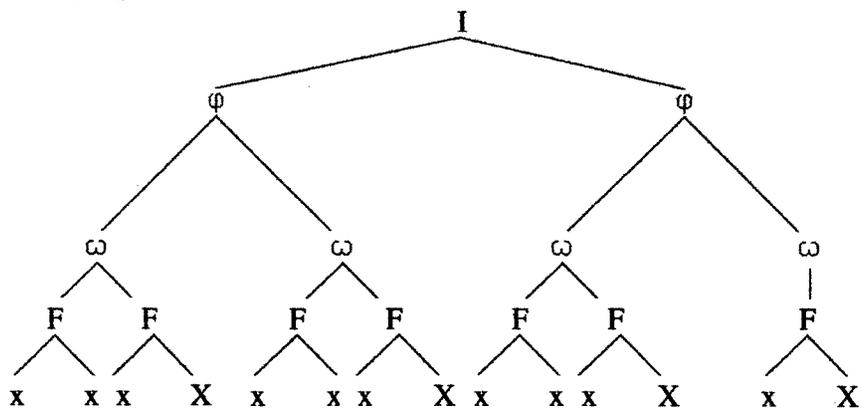
We may now break the line into the following parts, noting the equivalence of terms in the meter and terms in the prosodic structure.

(14) Parts of a line

Line	IP	Branching
A half-line:	PP	Branching
	ω	Branching
	F	iamb
B half-line:	PP	Branching
	ω	Branching (One Only)
	F	iamb

We will return to the prosodic constituent U later (section 5).

Let us now be more concrete and turn to an actual line from *Cleanness: He is so clene in his courte, the kyng that al weldes* (line 17). The first half-line contains one branching PP, two branching ωs and four branching feet, for a total of eight syllables to the half-line. Note that, as is commonly the case with verse, the prosodic divisions in the meter do not always line up with the prosodic divisions we would expect given the morpho-syntax: in particular, although the two syllables in *clene* form a single prosodic unit in normal speech, in meter they may be parts of separate prosodic units (the F dominating *so clen* and the F dominating *-e in*).

(15) a first half-line

```
                        φ
                      /   \
                    /       \
                  /           \
                ω               ω
              /   \           /   \
            F       F       F       F
           / \     / \     / \     / \
          x   x x   X     x   x x   X
         He  is so clen e  in his courte
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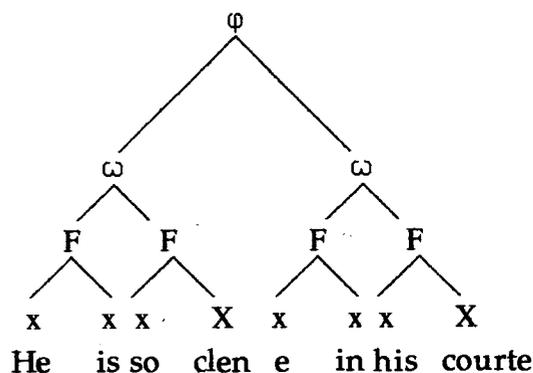
Note that each of the ωs above ends in a stressed syllable (*clén* and *coúrt*). We may add this as an important restriction on the well-formedness of ωs in the verse as follows:

(16) ωs are Right-headed

This restriction prohibits a type of line such as the minimally different (and, to my knowledge, unattested) type shown below:

(17) an unattested type of first half-line

```
                    φ
            ／           ＼
        * ω                 ω
       ／  ＼             ／  ＼
      F     F           F     F
     ／＼  ／＼         ／＼  ／＼
    x  X x  x        x  x x  X
    So clen e  he    is in his courte
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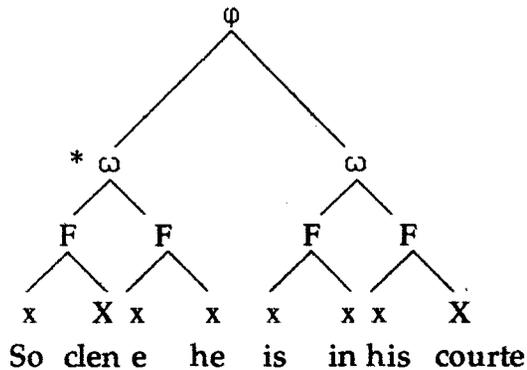
The same prohibition against ωs that are not right-headed rules out the (again, unattested) half-line below:

(18) another unattested type of first half-line

```
                    φ
            ／           ＼
         ω                 * ω
       ／  ＼             ／  ＼
      F     F           F     F
     ／＼  ／＼         ／＼  ／＼
    x  x x  X        x  X x  x
    in such a  clen   e court is  he
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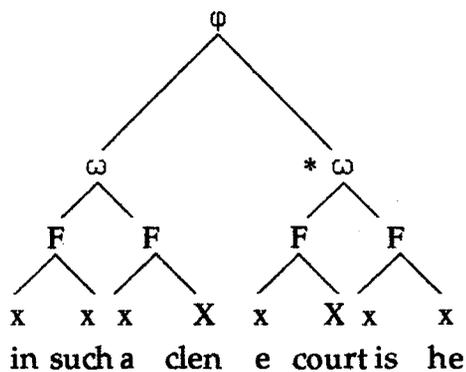
By ruling out half-lines such as those in (17) and (18), the requirement that ωs be right-headed derives the otherwise stipulated fact that strong dips precede rather than follow lexical stresses. Languages seem to allow only a limited number of options in determining the headedness of a constituent: (i) Left-headed (Shanghai Chinese[9]) (ii) Right-headed (Modern French[10]), and (iii) headed by a lexical item (Modern English[11]). Since a language chooses only one of these options, a language that allows (15) cannot allow (17) or (18)--the exclusion of lines in which strong dips follow but do not precede main stresses is thus a principled one.

Turning now to the second half-line in line 17, we see that it differs from the first half-line in only two respects. First, where the first half-line has two branching ωs, the second has only one.

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[9] Selkirk & Shen (1990).

[10] Nespor & Vogel (1986).

[11] Hayes (1989).

(19) second half-line

$$\begin{array}{c}
\varphi \\
\diagup\diagdown \\
\omega \qquad\quad \omega \\
| \qquad\quad \diagup\diagdown \\
F \qquad F \quad F \\
\diagup\diagdown \quad \diagup\diagdown \quad | \\
x \quad X \quad x \quad\; x \quad X \quad x \\
\text{the kyng that} \quad \text{al weldes}
\end{array}$$
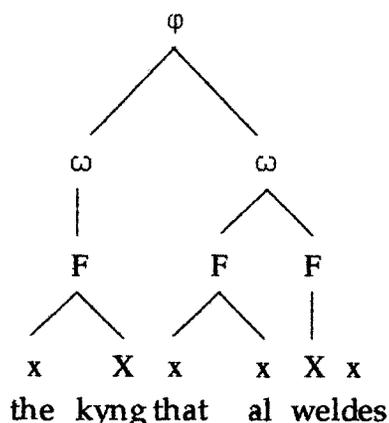
Second, one of the feet in (19) does not branch. This is to be expected given the fact that the feet are iambs: the three well-formed iambic feet are unstressed-unstressed (˘˘), unstressed-stressed (˘—) and stressed (—). Indeed, the half-line in (19) illustrates all three types: *the kyng* (˘—), *that al* (˘˘), and *weld* (—). The prohibited groupings for an iambic foot are a single unstressed (˘)and a sequence of stressed-unstressed (—˘). This restriction on foot types rules out a very large number of possible half-lines, such as those below.

(20) two unattested types of second half-line

$$\begin{array}{cc}
\begin{array}{c}
\varphi \\
\diagup\diagdown \\
\omega \qquad\quad \omega \\
| \qquad\quad \diagup\diagdown \\
{}^*F \qquad F \quad F \\
| \qquad \diagup\diagdown \quad | \\
x \quad\; x \quad x \quad X \quad x
\end{array}
&
\begin{array}{c}
\varphi \\
\diagup\diagdown \\
\omega \qquad\quad \omega \\
| \qquad\quad \diagup\diagdown \\
{}^*F \qquad F \quad F \\
| \qquad \diagup\diagdown \quad | \\
X \quad\; x \quad x \quad X \quad x
\end{array}
\end{array}$$
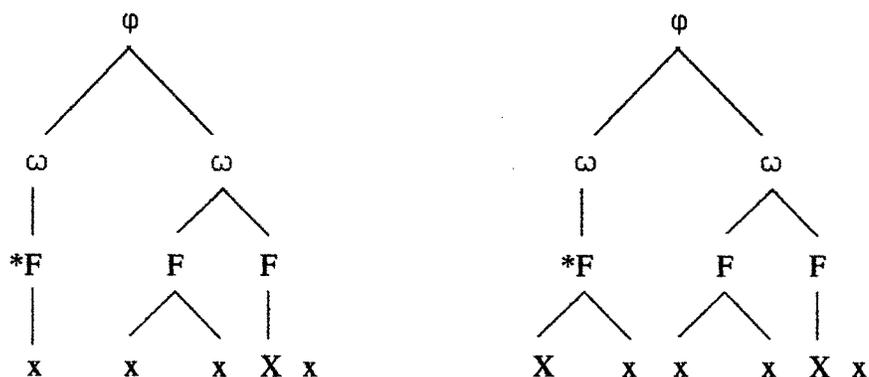
In general, the iambic restriction on feet requires that the left F within a ω must branch. To see why, consider the options if the left F within a ω did not branch. The foot would then either contain a single unstressed (˘) or a single stressed (-). In the first case, the foot would be ill-formed, since iambic feet may not consist of simply a single unstressed. In the second case, the foot would be well-formed, but the ω that dominated it would not: it would be left-headed (—˘) and thus ill-formed.

Thus, two conditions rule out a large number of possible lines: (i) a ω must be right-headed and (ii) a F must be iambic. Returning now to a characterization of the first

half-line, we can see now that the account of the meter given here allows only four types. These are given schematically in (21).

(21) The four types of first half-line

(i)   (ii)

(iii)   (iv)
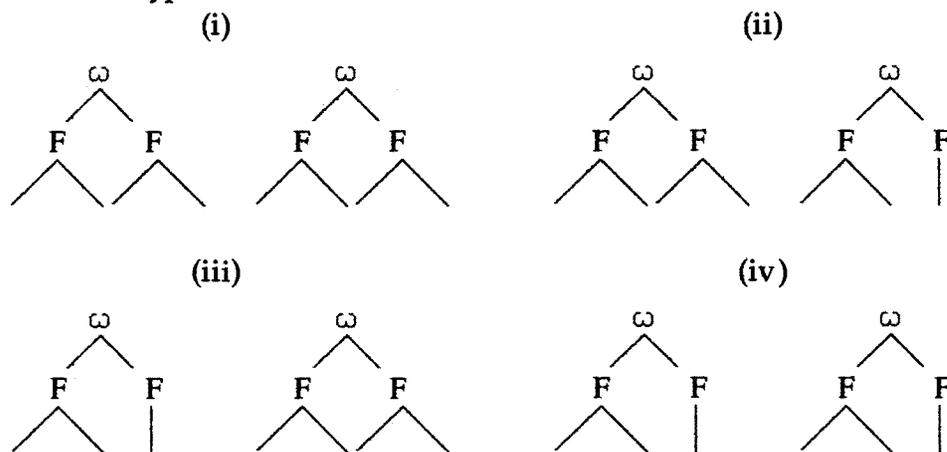
Abstracting away from the presence or absence of a final unstressed syllable, note that these are all and only the four types of first half-line given earlier in (6), repeated here for convenience.
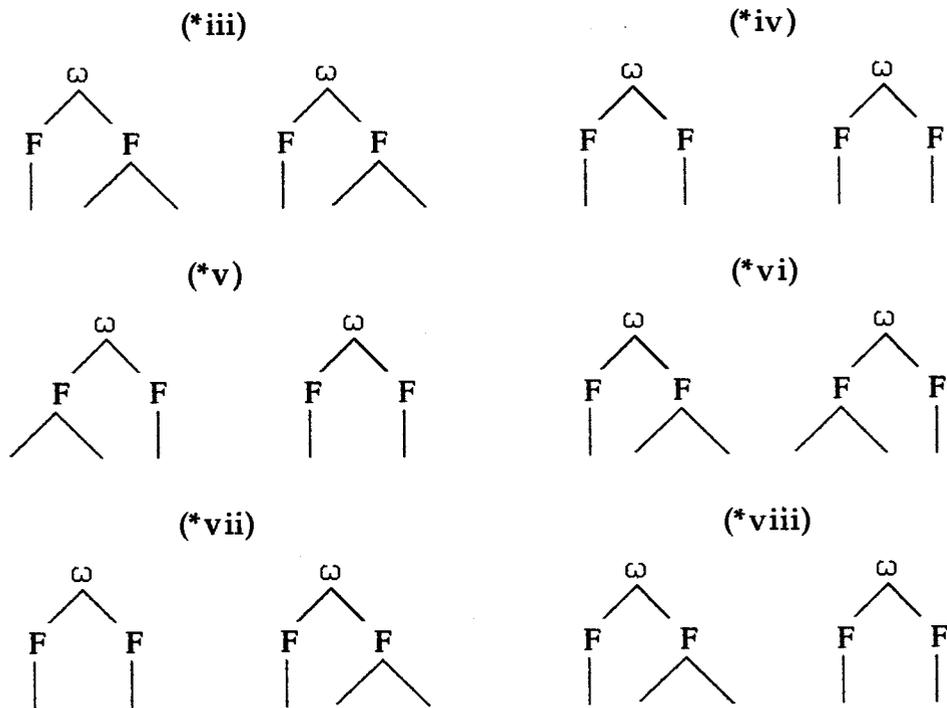
(22) Four most common types of first half-line in *Cleanness*

#	Cable #	Syllable array	% in A half-line	% in B half-line	% of Lines
i.	3B3	x x x X x x x X	100.0		1.66
i.	3B3A	x x x X x x x X x	100.0		2.16
ii.	3B2A	x x x X x x X x	98.3		3.27
iii.	2B3	x x X x x x X	100.0		1.72
iii.	2B3A	x x X x x x X x	96.6		3.27
iv.	2B2	x x X x x X	100.0		1.83
iv.	2B2A	x x X x x X x	93.9		3.66

Superficially similar types of half-line, such as those below, are excluded by the restriction on right-headed ωs and iambic feet.

(23) Eight unattested types of first half-lines

(*i)   (*ii)

(*iii)   (*iv)

ω   ω   ω   ω

F   F   F   F   F   F   F   F

(*v)   (*vi)

ω   ω   ω   ω

F   F   F   F   F   F   F   F

(*vii)   (*viii)

ω   ω   ω   ω

F   F   F   F   F   F   F   F
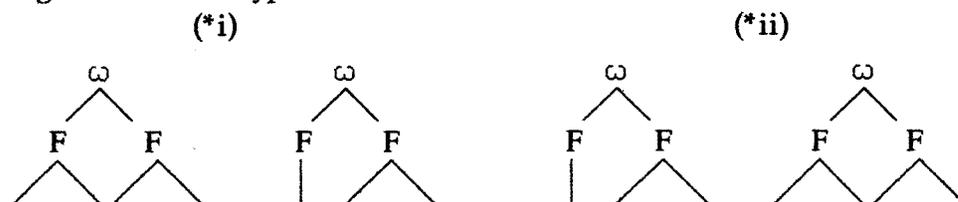
The excluded types above actually exclude a much larger number of configurations of stressed and unstressed syllables: for each of the ill-formed patterns above, one can imagine cases in which each non-branching F dominates a single unstressed (ˇ) *or a single stressed (-)*[12].

Returning now to the second half-line, right-headed ωs and iambic F allow only the following eight types of half-line.

(24) The eight types of second half-line

(v)   (vi)

ω   ω   ω   ω

F   F   F   F   F   F

(vii)   (viii)

ω   ω   ω   ω

F   F   F   F   F   F

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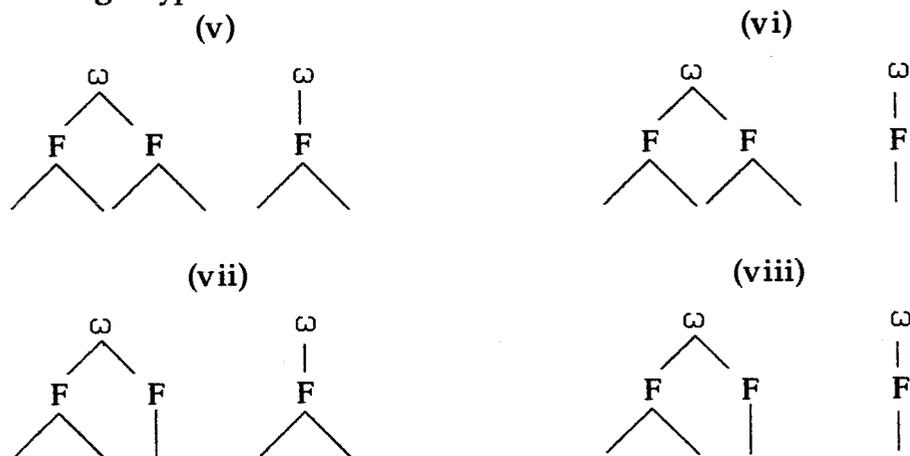
[12] Not all distinct abstract types of half-line, of course, correspond to distinct sequences of light and heavy syllables. A sequence x x x X x x X may be represented both by the illicit type (*i) in (22) and by the acceptable type (ii) in (21).

66

(ix)   (x)

(xi)   (xii)
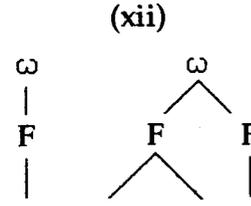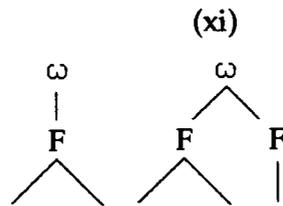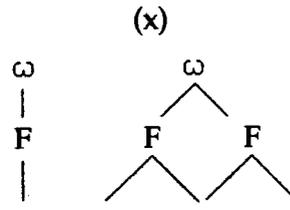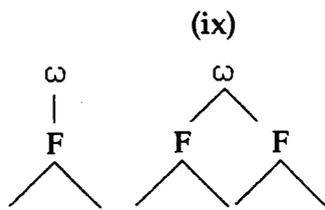
Excluded are the following types of second half-lines in which the first foot of a branching ω branches.

(25) Eight unattested types of second half-line

(*v)   (*vi)

(*vii)   (*viii)

(*ix)   (*x)

(*xi)   (*xii)
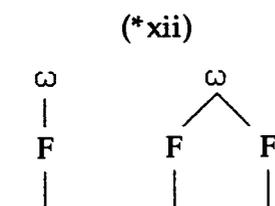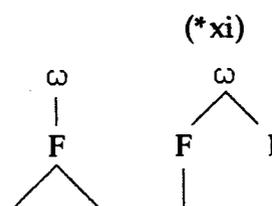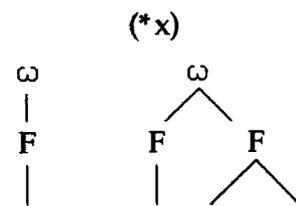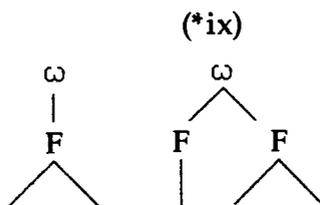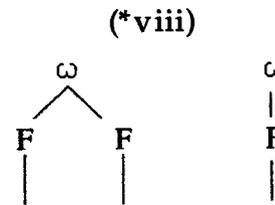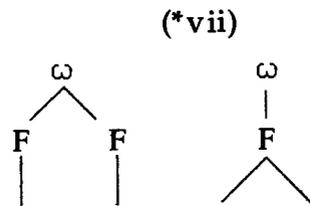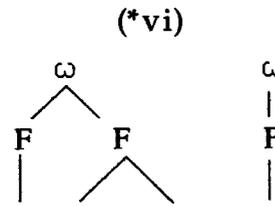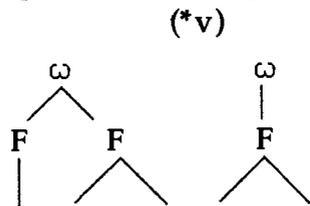
(Again, note that not all of (*v)-(*xii) necessarily describe distinct strings of syllables: e.g., (*viii) and (*xii) each describe a string of three syllables.)

5. Answering the Questions
I return now to the questions I posed earlier, repeated below:
  a. What is a *strong dip*?
  b. What is the connection between *strong dips* and *stresses*?
  c. What unifies the 12 half-line types so central to this verse form?
The prosodic hierarchy analysis proposed above brings with it straightforward answers to these questions. Let us begin with the first.

WHAT IS A *STRONG DIP*? Cable's 'strong dip' is defined as "a sequence of two or more metrically unstressed syllables". It should be clear from the chart in (6), however, that this definition is too broad: of the strong dips in (6), none consists of more than three syllables. Judging from half-line types Cable presents for poems other than *Cleanness*, this is the case generally[13]. Let us then redefine 'strong dip' (for *Cleanness*, at least), as "a sequence of two or three metrically unstressed syllables". The generalizations to be accounted for are thus: (i) why doesn't a single stressless syllable count as a strong dip?, (ii) why do two *or* three stressless syllables count as a single strong dip?, and (iii) why are strings of four stressless syllables so rare in the poem? Schematically, we need to account for the following:

  (26) Patterns of stressless syllables in *Cleanness*
       * 1 syllable strong dip: (˘)
         2 syllable strong dip: (˘˘) (-)
         3 syllable strong dip: (˘˘) (˘-)
       * 4 syllable strong dip: (˘˘) (˘˘)

Consider the role of the iambic foot in the analysis outlined above. Permissible instantations of an iamb are limited to (˘˘), (˘-) and (-). This fact, coupled with the requirement that a ω contain at least one and at most two F explains the patterns in (26) as follows. (i) (˘) does not count as a strong dip because it can always be grouped with a following syllable to form an iambic F: it may group either with another unstressed to form (˘˘) or with a following stressed to form (˘-). (ii) Two stressless syllables count as a single strong dip because they form an iambic F. Three stressless syllables also count as a single strong dip because they can form at most one iambic F; the remaining stressless syllable can always be grouped with a following syllable to

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[13] Of the many half-line types Cable cites for medieval rhythmical prose and for alliterative verse, only two contain a strong dip containing four stressless syllables: types 4A (XxxxxXx) and B4A (xXxxxxXx). None he cites contains a string of more than four stressless syllables. Types 4A and B4A do not occur among the 12 common types in *Cleanness* and thus fall outside of the scope of the present paper. I plan to treat these types in future work.

form an iambic F of its own. (iii) Strings of four stressless syllables cannot be grouped into ωs and thus cannot be incorporated into a well-formed half-line. The reason for this is that a ω can contain at most four syllables (two F that each contain at most two syllables) and must end in a lexically stressed (and therefore stressed) syllable. Four stressless syllables result either in a four-syllable ω with no lexical stress or in a ω that contains more than two F. The result is that the ad hoc notion of a 'strong dip' may be dispensed with in favor of the independently necessary notion 'iambic foot'.

WHAT IS THE CONNECTION BETWEEN *STRONG DIPS* AND *STRESSES*? The answer to this question should now be clear: neither 'strong dips' nor 'stresses' are units that the half-line pays any attention to. Strings of two and three stressless and single stressed syllables may combine in exactly three ways to form iambic feet, (˘˘) (˘-) (-), but only the latter are actual parts of the half-line.

WHAT UNIFIES THE 12 HALF-LINE TYPES SO CENTRAL TO THIS VERSE FORM? The formal answer here is that these 12 half-line types comprise all and only the well-formed PPs of the idealized prosodic structure given in (12) above and repeated below as (27).

(27) The Prosodic Hierarchy as Meter
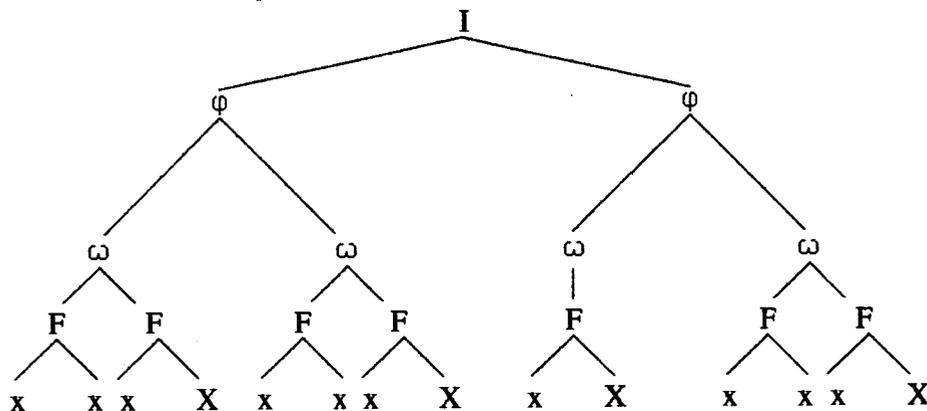
But the prosodic account allows us to state a much more far reaching generalization about the structure of the poem than the statement about PPs. The insight that this account offers is that the formal character of each half-line is the same as that found both at higher and at lower levels of structure within the poem: each constituent in (12), from IP to PP to ω to F, branches at most once.

There is, then, a global symmetry to this verse-form that transcends the structure of its half-lines. Indeed, the very existence of *half*-lines falls out from the fact that IPs branch into exactly two PPs. Broadening the search for symmetry somewhat, it is interesting to note that lines in *Cleanness* come in groups of four (which I will call stanzas), with major clause breaks usually appearing at the ends of the second and fourth lines in a group. The following stanza is typical in this regard.

(28) The four-line stanza (*Cleanness* 213-216)

With this worde that he warp	the wrake on hum lyght
Dryghtyn with his dere dom	hym drof to the abyme.
In the mesure of his mode	his mes never-the-lasse;
Bot ther he tynt the tythe	dool of his tour ryche.

With this speech that he uttered the vengeance fell on him;
the Lord with His stern judgment drove him to the pit.
Nevertheless His blow was in keeping with the moderation of His nature;
He struck down on that occasion only the tenth part of His splendid entourage.

We have seen that each half-line may be taken as a PP and that each line (IP) contains exactly two PPs. Generalizing, we may note that each set of two lines forms a constituent, which we may tentatively identify with the constituent Utterance in (27). The structure of a four-line stanza would then be as follows:

(29) The four-line stanza
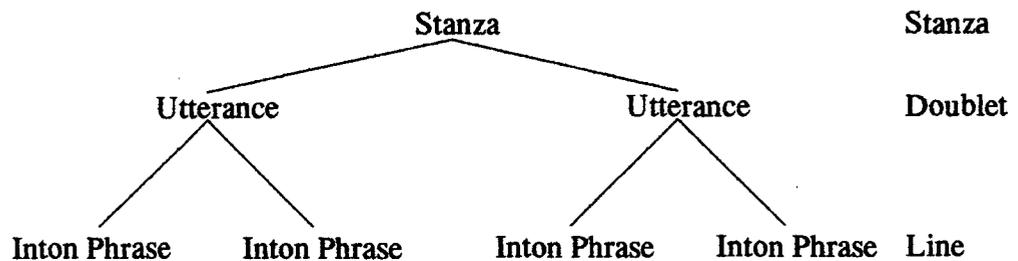
Combining the trees in (27) and (29), we can see that the simple branching structure of the verse extends all the way from F to ω to PP to IP to U to Stanza, from the simple groups of syllables to groups of (groups of) lines.

Having answered the questions posed earlier and considered the overall structure of the poem, let us note two more results of the prosodic analysis advocated here.

First, recall Cable's claim that all *second* half-lines require a final stressless syllable; first half-lines may or may not have a final stressless syllable. How may we account for this on the prosodic analysis? The phonological notion of extrametricality provides the answer here (see Hayes 1982 for extensive discussion of this notion). If we assume that IP-final syllables are extrametrical, we immediately account for the requirement that lines end in stressless syllables. Recall from (6) above that second half-lines (and by extension full lines) always end in the sequence ...Xx; if the final syllable is extrametrical, these lines will end in the sequence ...X(x), where the parenthesized syllable does not count for purposes of the meter (is 'extra-metrical'). Now consider what would happen if the final unstressed syllable were not present: extrametricality would then force the line to end in the sequence ...(X). The lexical stress would then not be taken as part of the verse, resulting in a half-line with only one lexical stress.

Thus the final stressless syllable acts as a buffer to protect the (would-be) final stressed syllable from extrametricality.

Extrametricality also allows us to explain why lines do not end in *more than one* stressless syllable: if a line were to end in, say, two stressless syllables ...Xxx, extrametricality would give ...Xx(x), yielding an unfootable sequence Xx, which cannot be formed into an iamb without following syllables.

Extrametricality violates an otherwise well-supported requirement on the Prosodic Hierarchy known as exhaustive parsing, the claim that a phonological string is *exhaustively* parsed with respect to each prosodic category. In the proposal at hand, extrametrical syllables are not parsed with respect to F.[14]

The final issue I would like to address here is somewhat more speculative. Cable argues at length against the traditional claim that MEAV represents a simple continuation of the OE tradition of alliterative verse found in *Beowulf*.

> Middle English poetry does not show the continuity of tradition that standard authorities... assert. With the Norman Conquest came a clear break, and what followed was a drastic misreading of what had preceded." (Cable, 1991:3)

Supposing that Cable is correct, we might ask ourselves whether anything in the structure of MEAV shows any French influence. Put slightly differently, is there anything in the verse-form itself that should make us expect MEAV to have appeared *after* the Norman Invasion of 1066? I mentioned earlier that Modern English ωs are stressed on the lexical word they contain (Hayes 1989); the result is often a lexical stress that occurs non-finally within ω:
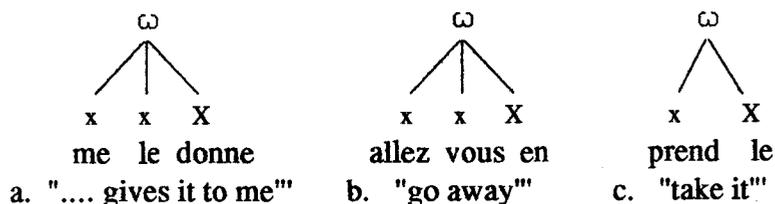
(30) Modern English

```
          ω
        /|\
       / | \
      /  |  \
     X   x  x   x
     |   |  |   |
   gave  it to me
```
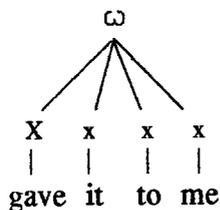
Modern French ωs, on the other hand, are invariably R-headed, regardless of where the lexical and non-lexical items occur (Nespor & Vogel 1986).

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[14] Itô (1986) and Borowsky (1986) have argued that extrametricality is universally operative at the lexical level but universally absent at higher levels of prosodic structure. For evidence that extrametricality may persist into post-lexical levels of phonological representation see Rice (1990).

(31) Modern French

The requirement in MEAV that ωs be right-headed is clearly more like Modern French than Modern English. If it can be shown that Norman French (like Modern French) had right-headed ωs and that Old English (like Modern English) did not, the right-headedness of ωs in MEAV can be taken as a borrowing from Norman French. This is obviously only speculation at this point, but interesting nonetheless.

6. Conclusion

The verse found in *Cleanness* is structured top to bottom, stanza to foot, by a hierarchy of prosodic constituents that branch at most once. The number and general character of these prosodic constituents are precisely those proposed independently in work in phonological thoery under the name Prosodic Hierarchy. *Cleanness* stands as evidence that the Prosodic Hierarchy is accessible enough to the poetic ear to be used as a verse-form.

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